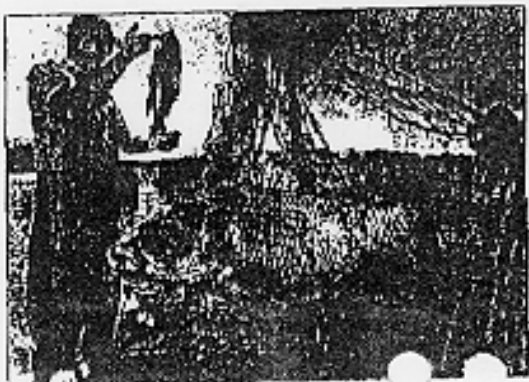


Sterile ferals to save our land

Gene block program targets carp, toads



... after Stupa Church with carp brought in 1937



A cane toad found in Catta National Park ... his days are numbered

cc96

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- 7 Physical removal as an option Ron Thresher
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- 10 Molecular approaches for environmentally benign management...Peter Grewe

Grewe, P. 1996. Preliminary Investigations into the Potential of Genetic Manipulation of the Common Carp (*Cyprinus carpio*) as a Means of Minimizing its Impact in Australian Waters. CSIRO CRIMP Technical Report

August 1998

CENTRE FOR RESEARCH ON INTRODUCED MARINE PESTS

TECHNICAL REPORT NUMBER 15

PROCEEDINGS OF A MEETING ON THE BIOLOGY AND MANAGEMENT
OF THE INTRODUCED SEASTAR *ASTERIAS AMURENSIS* IN AUSTRALIAN WATERS

19 MAY 1998

C. LOUISE GOGGIN (ED)



Sabella cf. spallanzanii



Assessment framework (from Norton, 1983)

Technically feasible
Practically feasible
Environmentally acceptable
Economically desirable
Politically advantageous

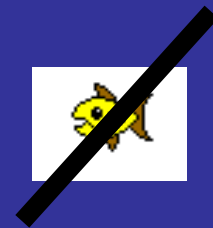
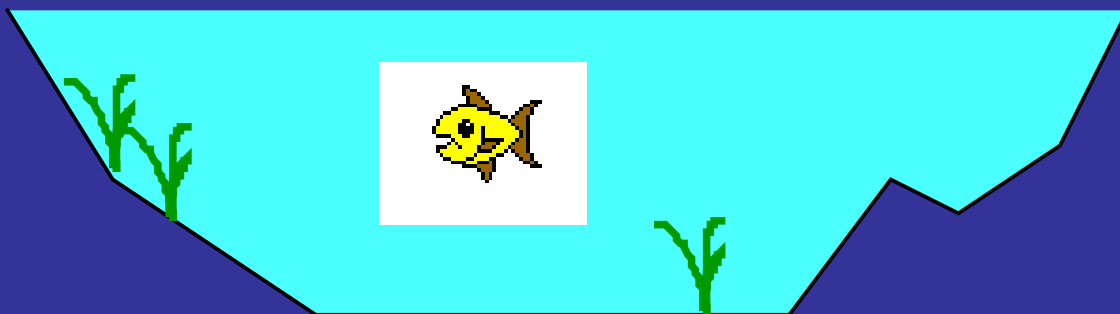
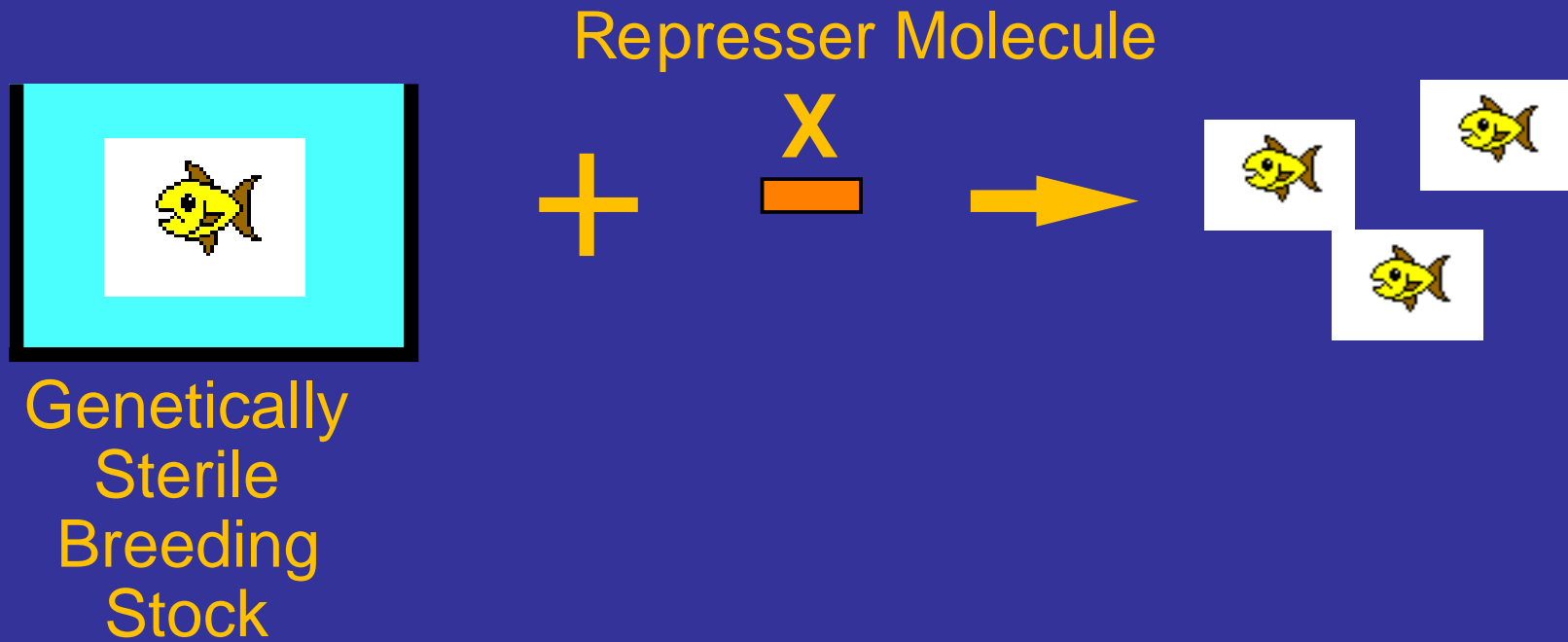
Workshop Rankings

1. Do nothing and hope it goes away
2. Environmental remediation (pests in disturbed areas only)
3. Physical removal
4. Commercialise
5. Species-specific biocide
6. Augment native predators
7. Non-specific biocides
8. Augment native pathogens
9. Genetic manipulation of pest only
10. Exotic parasites (classic biocontrol)
11. Exotic non-viral diseases
12. Genetic manipulation of native species

Not acceptable

Exotic predator, Exotic virus, Genetically modified virus

Sterile Feral Concept

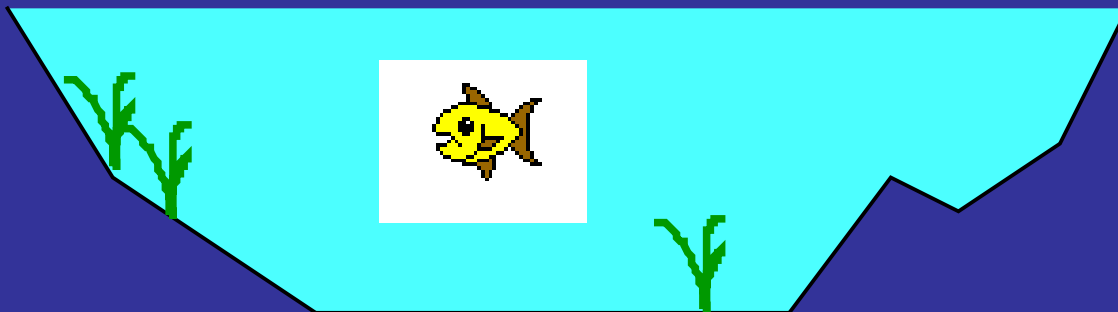


Sterile Feral Concept

Repressor Molecule



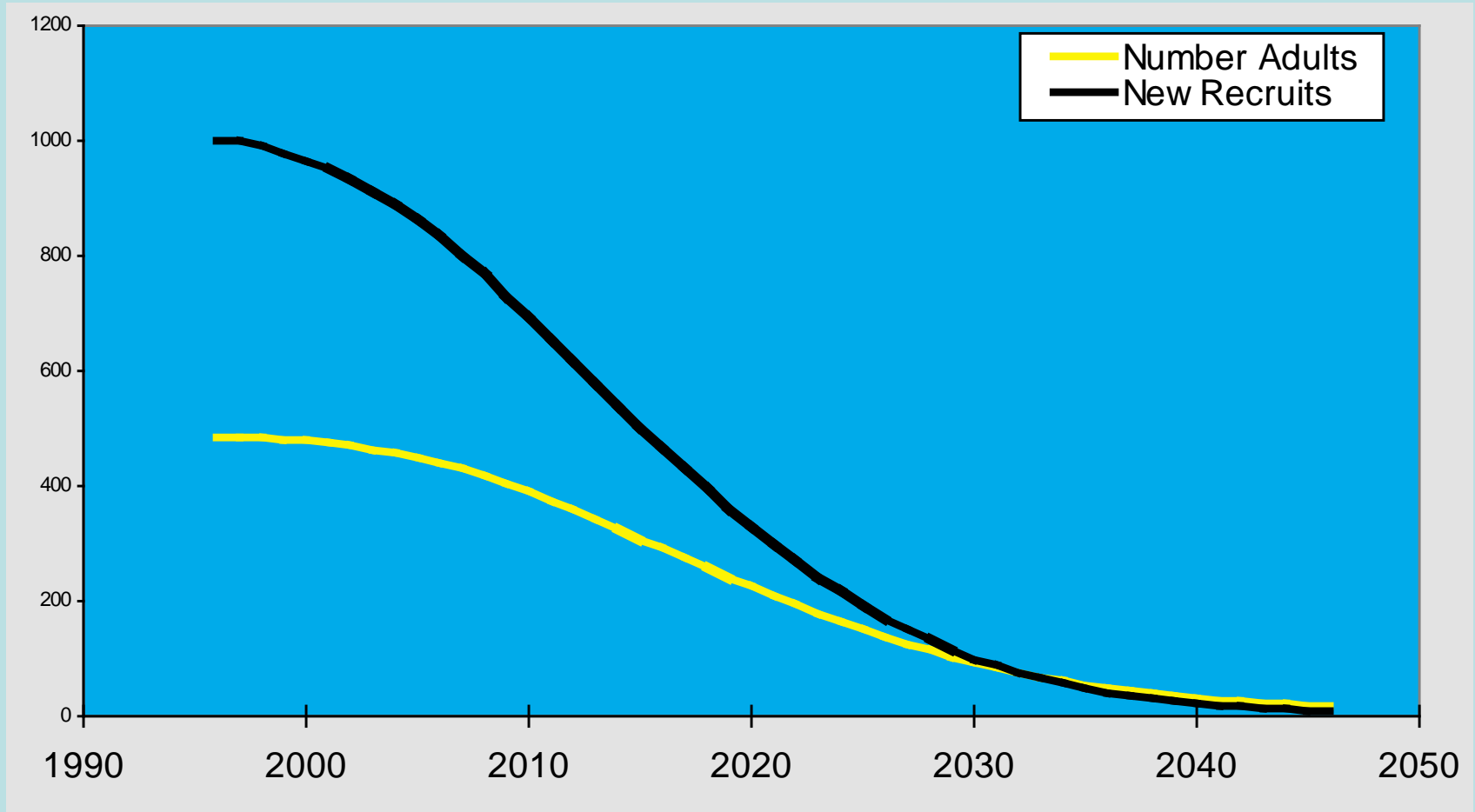
1. Develop a genetic method for preventing the establishment of feral populations by escaped GM and non-native species
2. Look for genetic options for the control of carp



Considerations

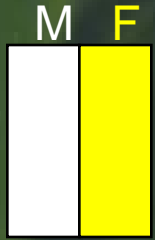
- Inducible Fatality
 - How to trigger fatality - benign substance or environmental anomaly?
- Programmed Death
 - If and where density dependence occurs
 - How to make programmed juveniles outcompete wild
- Bioengineering
 - Species specificity
- All Options
 - Factors leading to non-random mating

Carp Pop Model - 5% annual SF stocking



Presentation to CSIRO Chief Executive 2000

2001



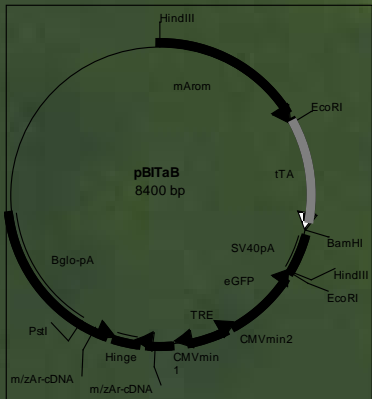
Wild-type



GFP only



GFP and blocker



MDBC Carp Project

2002-2012

- Developed from a joint meeting between CSIRO and key environmental management agencies, including the MDBC
- High risk of failure, but potentially high pay-off
- Provides a framework for carp control studies in Australia, leading to the delivery of a management plan in 2012
- \$2.9 million over three years for research into the applicability of CSIRO “daughterless technology”
- Managed by PAC and IA CRC
 - Public communications strategy
 - Multi-agency coordination
 - Business Plan, annual reviews, milestones

How long will daughterless carp technology take to work?

Because carp are long lived and have established huge populations, it will take 20 years after implementation for carp numbers to decline from the impact.

Are daughterless carp a GMO and are they safe?

Daughterless carp will be classified as a Genetically Modified Organism (GMO) under the Gene Technology Act 2000, but are not a transgenic - i.e. they only contain their own genes which are modified and reinserted into the carp. Other fish species cannot be affected, nor can the gene be transferred to humans.

However, because carp sexual development is similar to other fish and amphibians, the daughterless concept could be potentially applied to other pest fish or amphibians such as cane toads.

Controlling carp will take many years and coordinated effort from researchers, government agencies, business organisations and the community.

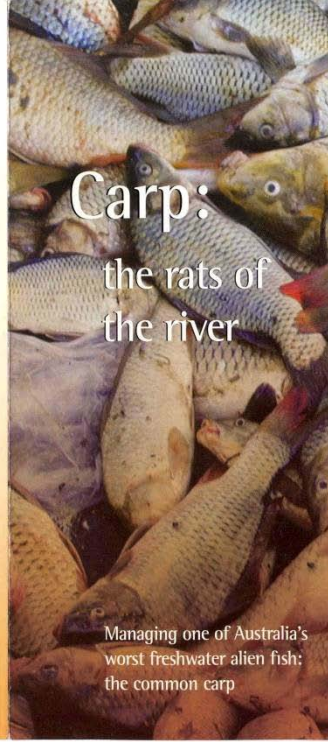


For more information:

Pest Animal Control CRC
www.pestanimal.crc.org.au
Phone (02) 6242 1768
(Will become Invasive Animals CRC as of July 2005)

Murray-Darling Basin Commission
www.mdbc.gov.au
Phone (02) 6279 0100

Murray-Darling Association and National Carp and Pest Fish Task Force
Phone (02) 6021 3655



Carp: the rats of the river

Managing one of Australia's worst freshwater alien fish: the common carp

A 50 year plan Part of the MDBA's Native Fish Strategy

