

NATIONAL CARP CONTROL PLAN

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PROGRESS REPORT - DECEMBER 2019



DELIVERING THE PLAN

The National Carp Control Plan (NCCP) is being finalised, to be delivered to the Australian Government in late December 2019.

The Plan brings together results from each of the 18 research projects and numerous planning investigations commissioned as part of the NCCP.

The Plan also includes a feasibility assessment based on three main criteria:

- Will carp virus biocontrol be effective?
- What are the carp virus biocontrol risks and how can they be managed?
- How can carp virus biocontrol be implemented?

The Plan also includes an implementation strategy, should the Government decide to release the virus. This is supported by a cost-benefit analysis and a number of case studies outlining how the release might be managed in specific regions.

With the delivery of the Plan to Government, the FRDC's role concludes. The Australian Government will then evaluate the Plan together with state governments to decide whether to proceed with the virus release. If the decision is made to proceed, a phase of legislative approval will follow before reaching the final implementation stage in which the virus would be released.

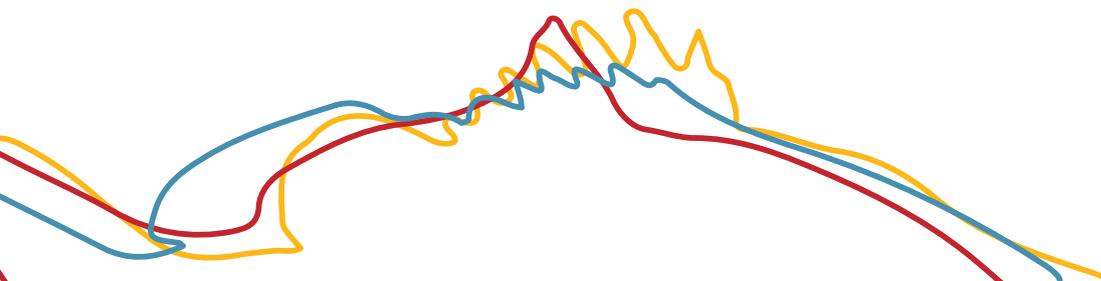
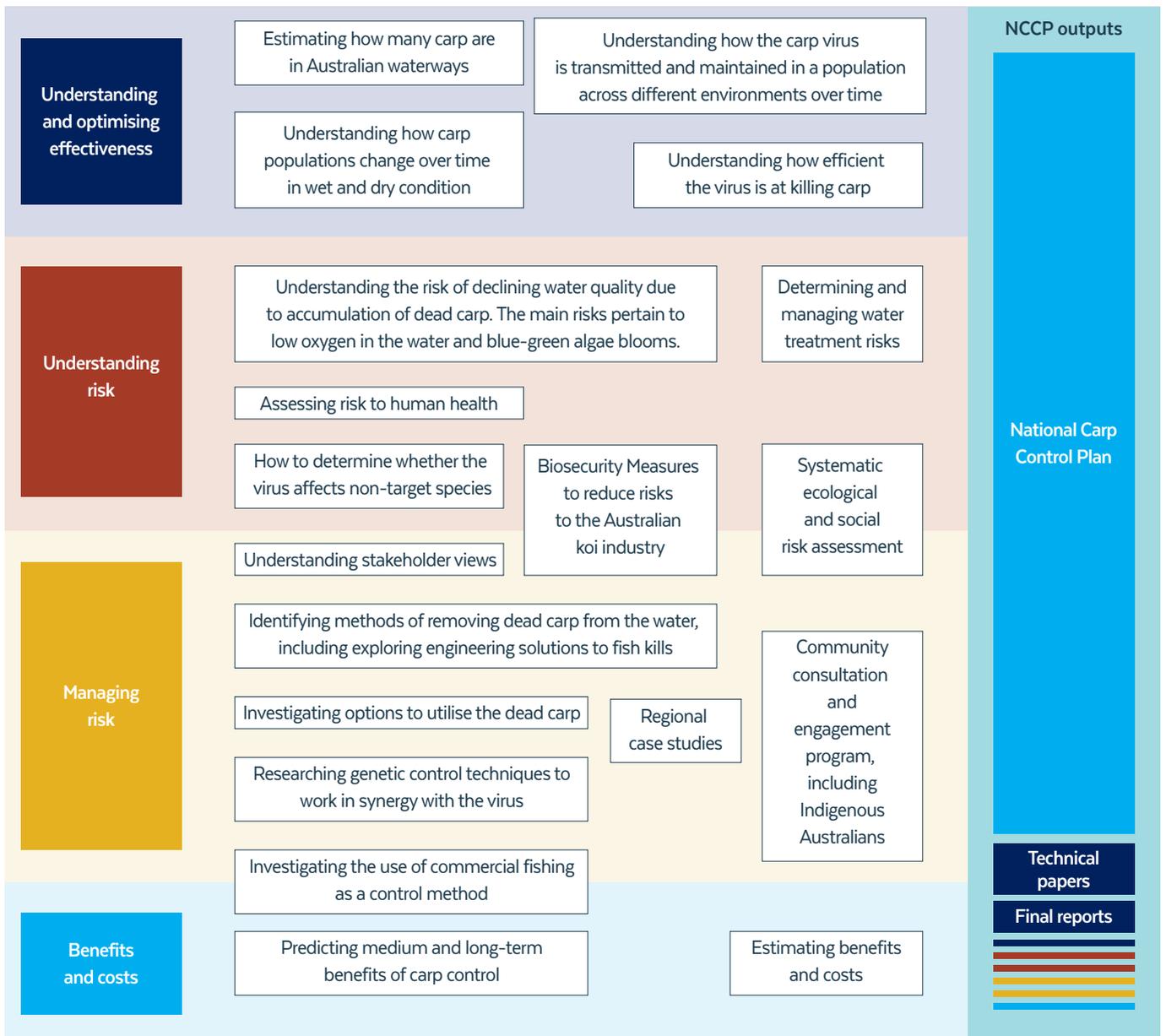


Bringing together all NCCP research

The Plan is the culmination of three years' work, during which 18 research projects and numerous planning investigations considered all aspects of releasing a virus to control carp in Australian waterways.

The Plan will be accompanied by a suite of technical papers summarising the research undertaken, as well as the final research reports for each project.

This figure shows all the NCCP research across four key topics: effectiveness; understanding risk; managing risk; and costs and benefits.



Some key findings from the NCCP research include:

Carp numbers

This work has provided the first estimates of carp density across the continent for different points in time. Biomass was estimated to be 368,357 tonnes in May 2011, a wet year.

In May 2018 (a wet year in the southern basin, but dry for the north) biomass was estimated at 205,744 tonnes. These estimates provide snapshots of the past and baseline information to allow for predictive modelling for future biomass estimates based on drought or flood cycles.

Predictions for five years from now estimate that carp biomass can be as low as 167,960 in a dry cycle, or as high as 858,696 tonnes in a flood cycle.

Density mapping of carp highlighted that even at times when carp biomass is low, their densities in many rivers and waterbodies are enough to cause damage to the ecosystem at over 100 kilograms per hectare. Densities of 200 to 400 kilograms per hectare were found through much of the middle and lower reaches of Australia's major southern river systems.

This work identifies the areas where carp control is most urgent and where it will have the greatest impact.

The effect of the virus on carp

Integrated modelling was used to assess how effective the virus would be at reducing carp populations and for how long carp numbers would be suppressed.

Work undertaken by the CSIRO indicates that the carp virus could reduce carp populations by an average of 40 to 60 per cent, which would effectively drop density below ecological damage thresholds in many areas. Model outputs show that suppression should last at least five to 10 years, and indicate that it may last much longer.

Susceptibility of native species to the carp virus

The original 2017 CSIRO study on the interactions between the carp virus and Australian native species indicated that no native or other tested species appeared to show any sign of infectious disease.

The NCCP undertook a review of best-practice methods to test for infection or impacts on non-target species (NTS). This review provided advice for future NTS testing to ensure the Australian Government has the most thorough scientific evidence on which to base its decision to proceed with the virus or not.

The review highlighted a suite of tests and recommended methods to be applied to identify viral presence or impacts on other species.

Water quality

Understanding water quality impacts of carp mortality is important to assess the risks of virus release and to inform carcass management and water treatment.

There are two potential impacts on water quality from carp mortality – reduced oxygen levels and algae outbreaks.

The carp decomposition process will cause algae and other organisms to thrive, which in turn will cause the oxygen level in the water to drop. This may impact native species which are susceptible to reduced levels of oxygen. Cyanobacterial (blue-green algae) blooms are also more likely when additional nutrients (e.g. from carp mortality) are added to water bodies.

Water quality modelling undertaken by the University of Adelaide showed that in most areas there would not be significant impacts on water quality, especially where there is mixing from wind or flow. However, some still and shallow waterbodies may have increased impacts.

The presence of dead carp in the water supply could also pose a challenge to treatment plants that supply water for human uses.

Experimental work undertaken by Water Research Australia found that at predicted carp densities, facilities could easily cope with additional water treatment needs. However, at extreme densities, it is possible to exceed treatment capability. Indicators for monitoring have been developed to allow for early actions and communication between facilities and the public, and to ensure that safe drinking water availability is maintained.

Environmental risk assessment

The study evaluated the ecological risks associated with releasing the virus in a variety of Australian ecosystems, such as wetlands, river systems, lakes and impoundments. The work relied on the water quality research as described above.

The study identified a few species and communities for additional precautionary consideration. These included a small number of fish and bird species, and RAMSAR wetlands. Key risks included de-oxygenation and cyanobacteria impacts on fish and birds, and botulism impacts on birds.

The report discussed mitigation strategies to minimise these risks and the residual risk after the strategies are implemented. Mitigation is mostly centred on the timing of the release.

Clean-up and carcass management

A detailed review of available studies on clean-up of fish kills revealed the importance of planning and preparation. This information, paired with carp density maps will assist in coordinating carcass management efforts where required.

Workshopping with planning and response agencies was also undertaken in case study areas to get a realistic idea of carcass management strategies in specific geographic areas. This work showed that carcass management is possible to manage risks.

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Right: Close-up carp eggs on net.



Carp exclusion cage at Burrawang West.



Island Creek carp separation cage.



Carp exclusion experiments.

PHOTOS: NSW DEPARTMENT OF PRIMARY INDUSTRIES

Community and stakeholders' attitudes

Social attitudes towards carp control were assessed over time and showed that although communities mostly accept the possibility of carp control using the virus, there were some concerns. Responses were driven by peoples' familiarity with the NCCP, personal interactions with waterways, knowledge of carp impacts, personal values and sense of community responsibility for environmental stewardship.

Stakeholder interviews, surveys and workshops were also conducted to gather the views of a wide range of groups who may be impacted by the virus release. These included traditional owners, tourism sector workers and owners, commercial fishers, recreational fishers who target carp, koi breeders and hobbyists, and native fish breeders.

Recommendations were included in this project on how to best minimise and manage impacts to these groups.

Case studies

A number of detailed case studies have been included in the NCCP to provide examples of how virus deployment and carcass management could occur in specific regions.

The chosen case studies in the Lachlan, Mid Murray River and Lock 1 to Lock 3 in South Australia assessed every aspect of implementation including: implementation planning; communication and engagement; regional coordination; operations preparation; virus deployment; carcass management; surveillance; and monitoring and evaluation.

The case studies also provided real-world information to use in calculating the cost of virus release, should it be deemed feasible.

As the NCCP draws to a close, the www.carp.gov.au website will continue as a central repository of research completed as part of this work.

Thank you

The FRDC's contracted work on the NCCP is now almost complete, and the Plan will be delivered to and considered by the Australian and state governments.

The NCCP has involved multiple Australian jurisdictions, government and research agencies, many researchers, numerous experts and independent reviewers, and many members of the community who provided their views.

The FRDC would like to sincerely thank these individuals for their interest and dedication. In particular, the FRDC would like to thank:

- all NCCP researchers and expert contractors;
- members of the Science Advisory Group;
- members of the Operations Working Group;
- members of the previous Communications Working Group;
- members of the previous Policy Working Group; and
- the NCCP team within the FRDC.

WANT TO FIND OUT MORE ABOUT THE NCCP?

You can get in touch with the National Carp Control Plan team at:
carp@frdc.com.au

News and information on the individual research projects can be found on the NCCP website:



www.carp.gov.au