

➤ affect water quality parameters, which will help inform clean-up efforts, he added.

WOULD THE VIRUS BE THE END OF BUSINESSES?

And how will businesses that rely on carp be able to continue their livelihood with tons of virus-infected carp?

Businesses, such as Charlie Carp, that harvest carp to use as fertilizer will still be able to do this, as the initial release will mean a lot of dead fish will be available for use in various ways, said Mr Barwick.

"We are actually proposing to undertake research to better understand options for use of harvested carp biomass. The overall aim is to minimise the amount going to landfill, and try and use it in smart ways," he explained. "Even as carp numbers diminish, there will still be carp available as the virus alone will not eradicate all the carp, so it's important that we have complimentary control measures, like harvesting, to keep numbers low."

Carp fisherman, like Keith Bell from K&C Fisheries Global Pty Ltd, are convinced that releasing the virus would be the end of many businesses that rely on carp. With 45 plus years' experience in the fishing industry, Mr Bell has worked exclusively in the carp fishery industry for more than three decades and is today recognised as an expert in his field. He acts as a consultant and presents at conferences in Australia and around the world on carp production.

"I don't believe releasing the virus is necessarily the right answer to controlling carp numbers," he said. "It might be a short-term fix but not a long term one."

Based in Victoria, K&C Fisheries Global Pty Ltd specialises in fresh and frozen carp, and is one of the largest carp harvesting and carp processing companies in the Southern Hemisphere. In the height of the industry, K & C Fisheries Pty Ltd alone removed in excess of 1000 tons of carp per annum primarily from the Gippsland lakes and rivers catchments.

K&C Fisheries Global Pty Ltd processes carp for food, fertilisers, animal supplements and pharmaceutical products. Releasing the virus would be

detrimental to all the 'carp virus-free' marketing established to promote Mr Bell's carp products.

"The minute the virus is released, we can't export carp products from Australia anymore because our certificates say 'carp virus free'. We are using carp in pharmaceutical products. No one will buy off a country that has a herpes virus status. Releasing the virus will kill this type of business 100 per cent," he said.

Mr Bell agrees, however, that carp shouldn't be in the waterways, as they are not native, but he believes carp is also used as a scapegoat for other human activities detrimental to the environment.

Mr Bell is also certain carp numbers are now not as high as the government is reporting them to be.

"Authorities are saying carp makes up 90 per cent of the fish biomass. That was in the 1970s to 1990s, but not anymore. I talk to so many people (commercial fishermen) and the numbers just don't add up," he said.

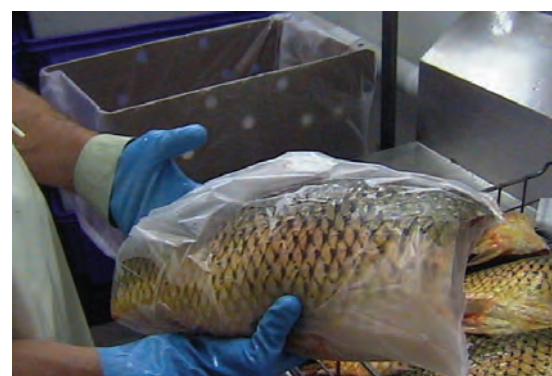
ALTERNATIVE METHODS TO RELEASING THE VIRUS

If not the herpesvirus, what alternative methods can eradicate or at least reduce carp numbers? Options available for the public to effectively control carp are limited and any one option on its own is unlikely to be effective, said Mr Barwick.

"A long list of control measures has been trialled in Australia over recent decades, however all have been unsuccessful in putting a dent in carp impacts at a continental scale," he said.

"In fact, during 2004 - 2014, whilst Australians were catching carp recreationally in organised events, using carp traps, synthesising sex pheromones to attract male carp into traps, installing carp screens to exclude carp from spawning habitats, commercially fishing carp, turning them into fertiliser, and yes, even eating them, carp number quadrupled in Australia. Put simply, we now know that these measures will never fix the carp problem. For this we need to do something different, which is why we are considering biocontrol."

Manual carp removal, including trapping and controlling access to breeding



grounds, has seen localised success in small water bodies including Tasmania's Lake Crescent and Lake Sorell.

"Lake Crescent was declared free of carp in 2007 after 12 years of manual removal work. Carp removal work is continuing in Lake Sorell, since 1995. The cost of the program to date is approximately \$11 million," said Mr Barwick.

Dr Pit from the PIAA said the Association welcomes recent fishing tournaments in which recreational fishers are paid a fee for every fish captured from the environment.

"While this method would not eliminate carp, it would certainly be an effective and environmentally safer option to releasing the virus," said Dr Pit.

GENETIC MODIFICATION OF CARP A SOLUTION?

Australian and international researchers have also investigated opportunities to genetically alter fish to produce offspring of only a single sex, such as 'Daughterless Carp' and another promising approach called 'Trojan Y Chromosome'.

'Daughterless technology' works by removing females so a population can no longer breed, and this method has previously been used to tackle mosquitos and successfully trialled on zebra fish, creating an all-male population, according to the Fisheries Research and Development Corporation.

Dr Pit said the PIAA understands the negative costs and losses to other industries and the environment as a result of the common carp but supports the 'daughterless technology' as an alternative to using the Koi Herpes Virus.

"The daughterless carp program over time will have a similar effect in which the carp ➤