

## Invasive Animals Cooperative Research Centre



Australian Government  
Department of Industry and Science

**Business**  
Cooperative Research  
Centres Programme

Australia's largest integrated invasive animal research and innovation collaboration focused on developing new technologies and integrated strategies to reduce the impact of vertebrate pests on Australia's economy, environment, and people.



**80+** introduced vertebrate pest species have established populations in Australia  
**\$1 BILLION +** the financial impact of pest animals on the agricultural and fishing sector each year

## IMPACT THROUGH COLLABORATION



PARTICIPANTS <b>44</b> 2005-12	<b>120</b> RESEARCH PROJECTS
PARTICIPANTS <b>27</b> 2012-17	<b>80</b> RESEARCH PARTNERSHIPS
	<b>46</b> RESEARCH DOCTORAL (PhD) STUDENTS

### GETTING NEW PRODUCTS ON-FARM

**RABBIT BIOCONTROL AND DELIVERY SYSTEM**  
Freeze dried RHDV1 K5

**FOX BAIT**  
Foxecute (PAPP based)

**DOG BAIT**  
Dogabait® (PAPP based)



**PIG BAITS**  
PigOut®  
(and HogGone in development)

**PIG BAIT DELIVERY SYSTEM**  
HogHopper™

**MOUSE BAIT**  
Rodemise®  
(for brassica and plantation tree crops)

### ENHANCING KNOWLEDGE THROUGH RESEARCH EXCELLENCE

250+ scientific journal publications

30 PhD GRADUATES  
to date through the Balanced Research Program

**CARP HERPESVIRUS**  
evaluation of CyHV-3 potential carp biocontrol



**PERI-URBAN WILD DOGS**  
best practice management recommendations developed

**PREDATOR AERIAL BAITING**  
research undertaken demonstrating benefits

**LONG TERM FOX PREVENTION AND ERADICATION STRATEGY**  
developed for the Tasmanian Government

### NEW TECHNOLOGIES AND STRATEGIES TO DETECT NEW INCURSIONS

**DNA DETECTION**  
environmental DNA detection technology for pest fish, and scat based DNA detection technology for pest and native mammals

**NATIONAL INCURSION PREVENTION AND RESPONSE STRATEGY**  
provides strategic direction an agreed set of principles to respond to new pest threats



### NEW COMMUNITY PLANNING TOOLS

**PESTSMART CONNECT**  
best practice management platform

**FERALSCAN**  
community mapping and planning program


**FIELD GUIDE TO PEST ANIMALS OF AUSTRALIA**  
mobile application


**INVASIVES ACTION TOOL**  
enhancing community engagement





### ENGAGING WITH END-USERS

**100+** Pestsmart roadshow and field day events  **200+** PestSmart toolkit (guides and factsheets) 

**5000+** Social media fans 

**340,000+** YouTube video views 

**70,000+** FeralScan users 

**240,000+** PestSmart Connect users 

**725,000+** PestSmart Connect website views

**"TOGETHER, CREATE, APPLY SOLUTIONS"**



The **Invasive Animals Cooperative Research Centre** has brought together world class researchers, governments and industry professionals since 2005 to find solutions to challenging and national pest animal problems.

## RABBIT BIOCONTROL

The problem: variable performance of RHDV in temperate Australia



RESEARCH	INNOVATION	KNOWLEDGE & APPLICATION
Discovered and mapped benign calicivirus (RCV-A1) that impedes RHDV biocontrol in temperate Australia	38 RHDV variants evaluated RHDV1 K5 strain shown to overcome benign calicivirus protection  New delivery system Freeze-dried RHDV reduces transport costs	National RHDV1 K5 release planning and coordination at over 550 Australian sites in March 2017.  <b>Economic benefit: \$294m+ to 2035</b>
Key areas identified where genetic resistance of rabbits has increased  Research into the spread, distribution and interaction of RHDVs in the landscape	Proof of principle demonstrated for developing new RHDV1 variants in the lab through accelerated natural selection  Best future rabbit biocontrol agent prospects identified RHDV2 and Eimeria parasite	Business case and pipeline strategy developed to inform governments and industry investment in future rabbit biocontrol innovation.
Systems approach developed for community led rabbit management	National Rabbit Facilitator project demonstrates effectiveness of community-led regional rabbit Management.  RabbitScan mapping and biocontrol tracker tools	Victorian Rabbit Action Network developed and model for national application  PestSmart Toolkit best practice management for pest rabbit managers

## BEST PRACTICE WILD DOG AND FOX CONTROL

The problems: Increased restrictions on 1080 use. Localised individual control is ineffective in agricultural areas



RESEARCH	INNOVATION	KNOWLEDGE & APPLICATION
Regional management strategies validated in a major demonstration site	Regional wild dog plans facilitated across Australia  Wild Dog Scan community mapping and planning tool	National Wild Dog Facilitator promoting cooperative regional scale wild dog management throughout Australia.  <b>Economic benefit: \$18m+ to 2035</b>
Field trials assessing and validating effectiveness of current and new tools for strategic feral predator control  Research validating that primary and secondary control tools are effective at the scale appropriate for the target pest animal	New wild dog and fox PAPP toxin baits to complement 1080 based wild dog and fox control  Canid Pest Ejector (CPE) field trials indicate that they are target specific to feral predators	Research informing policy application of forty 1080 baits per km vs ten 1080 baits more effective for targeted feral predator control (approx 90% knockdown of wild dogs and foxes).  Promotion and use of new tools at events nationally
Determined wild dog movement patterns and degree of hybridisation between dingos and other dogs	Improving placement of control tools and achieving better management outcomes through use of modern camera trapping approaches and GPS collaring	PestSmart Toolkit best practice management for wild dog managers



**We have done this through three main platforms encompassing:**

## RESEARCH

Our large-scale collaborations in pursuit of ethical and effective solutions aimed to mitigate the impact of invasive animal species on agriculture and the natural and built environments.

## INNOVATION

We provide our partners and the wider community with products and solutions that can be implemented to help manage the threat of invasive animal species across the landscape.

## KNOWLEDGE AND APPLICATION

Through knowledge we empowered those on the ground to take effective action against the threat of invasive animal species with best practice information, training and facilitated community engagement.



RESEARCH	INNOVATION	KNOWLEDGE & APPLICATION
<p>Developed surveillance data modelling approaches including predicting high risk areas for starling settlement in WA</p> <p>Pathway analysis to improve incursion response planning for exotic birds and reptiles.</p>	<p>Sensitive, efficient DNA genetic tools to detect pest animals through scats and water samples.</p>	<p>Better understanding of the threat of new incursions through world class research such as the pest information hub (Pest-iHub).</p> <p>National incursion prevention and response toolkits and plans developed which can be used by jurisdictions for incursion prevention and response</p> <p>National incursions strategy developed as the strategic direction for the next five years.</p>
<p>Probability of detecting a fox incursion in Tasmania determined using scat monitoring</p> <p>Assessed suitability and risks of several toxins and delivery systems</p>	<p>New faster scat DNA detection technology underpins Tasmanian fox eradication program strategic detection and baiting approach</p>	<p>Long term strategy for the Tasmanian fox eradication program</p> <p>Great Poo Hunt survey collects 2,885 scats over 4,000 kms</p>



RESEARCH	INNOVATION	KNOWLEDGE & APPLICATION
<p>Identified major MDB carp spawning hotspots to enable an efficient and targeted carp biocontrol agent release</p>	<p>Australia's first potential carp biocontrol agent CyHV-3 evaluation confirms carp susceptibility and target specificity</p> <p>Daughterless carp technology researched and proof of concept established</p>	<p>Carp vulnerability analysis synthesis of research on carp movement, trapping, reproduction hotspots, population genetics.</p> <p>CyHV3 APVMA registration package submitted</p> <p>National Carp Control Plan initiative launched in 2016 to further plan for a potential carp biocontrol (Funded by the Australian Government)</p>



RESEARCH	INNOVATION	KNOWLEDGE & APPLICATION
<p>Feral pig 'genetic fences' research demonstrates discrete regional feral pig management units</p>	<p>PIGOUT (Feral pig bait) world's first stable, shelf-ready bait containing 1080 in a toxic core.</p> <p>HogGone sodium nitrite based toxin and formulation in development with AUS, NZ and USA partners.</p> <p>HogHopper™ secure feral pig specific feeding station.</p>	<p>Enhanced feral pig knowledge focused on understanding their ecology, movement and behaviour around Australia.</p> <p>PestSmart Toolkit best practice information for feral pig managers</p>



RESEARCH	INNOVATION	KNOWLEDGE & APPLICATION
<p>Research supports 'community of practice' development enhancing management outcomes for wild dog and rabbit networks</p> <p>Developed specific tools to enhance systems strengthening approaches - to community action</p>	<p>Community Engagement Masterclasses involving participants from across Australia</p> <p>Developed new methods to enhance community based social change for pest animal control</p>	<p>PestSmart toolkits developed to promote best practice pest animal management</p> <p>FeralScan community mapping platform has more than 60,000 sightings uploaded</p> <p>Online community engagement learning modules available to all stakeholders</p>





PHOTOS SUPPLIED BY OUR PARTNERS AND RESEARCH LEADERS