

Senate Standing Committee on Economics
ANSWERS TO QUESTIONS ON NOTICE
Innovation, Industry, Science and Research Portfolio
Budget Estimates Hearing 2010-11
31 May 2010

AGENCY/DEPARTMENT: COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION

TOPIC: CSIRO Projects in Northern Australia

REFERENCE: Question on Notice (Hansard 31 May 2010, E35).

QUESTION No.: BI-18

Senator IAN MACDONALD—Dr Johnson, what I am really asking for is—and perhaps you can even take it on notice—a list of the projects that you are doing at the moment. I prefaced my question by saying that I appreciate the government had not responded, but I am aware that even before the taskforce was set up, CSIRO were doing a certain number of projects related to the north.
Dr Johnson—We have been working in Northern Australia since after the Second World War, so we are happy to provide that listing of projects to you.

ANSWER

The following list contains projects directly related to Northern Australia covering issues of plant production, biosecurity, biodiversity, animal production, agricultural sustainability, water, oceans, climate and atmosphere. Many other nationally focussed projects across CSIRO provide benefit to northern Australia

Plant Production

- The Development of Sustainable Farming Systems for Coastal North Queensland for Cotton Cooperative Research Centre (CRC)
- Developing sugarcane for production systems utilizing total biomass
- More crop per drop: breeding sugarcane for higher water use efficiency
- Bureau of Sugar Experiment Stations-CSIRO Joint Venture in sugarcane breeding;
- Maximising rate of parent improvement in Australian sugarcane breeding programs
- Understanding the reproductive biology of sugarcane to manage the safe release of genetically modified cultivars
- Towards a complete genome sequence of sugarcane; generation of data and development of bioinformatic resources
- Sugarcane nutritional analysis to enable food safety assessment of modified varieties
- Cane2Fuel: Developing an optimised and sustainable sugarcane biomass input system for the production of second generation biofuels

- Identification and capture of *Eucalyptus pellita* and *E. cloeziana* populations and development of a CSIRO led tree improvement project for intensive plantation forestry in the tropics.
- Essential oils projects using *E. stageriana* and *C. citirodora* in Northern Queensland.

Biosecurity

- Assessment of new biocontrol for parkinsonia for Meat and Livestock Australia
- Various termite chemical control consultancies
- Developing genetic tools to understand the population structure of *Culicoides* species in Australia for the Biosecurity CRC
- Forecasting spread of plant pests for rapid response
- Best practice Mesquite management in the Rangelands of Western Australia (Management Committee)
- Yellow Crazy Ant Management in North East Arnhem Land for Dhimurru Land Management Aboriginal Corporation
- Identifying and mapping Hendra virus strain diversity in bats (DEEDI Biosecurity Queensland is the lead agency)
- Supply of reference laboratory services for the detection and characterization of emerging animal diseases to the northern states under an agreement with the Department of Agriculture, Fisheries and Forestry (DAFF) for both terrestrial and aquatic animal health issues
- Support of national surveillance programs operating in Northern Australia, e.g. National Arbovirus Monitoring Program (NAMP) and Northern Australian Quarantine Strategy (NAQS)
- Indonesia Veterinary Laboratory Capacity Building Project for AusAID
- Control and characterisation of highly pathogenic avian influenza strains in poultry in Indonesia for Australian Centre for International Agricultural Research (ACIAR)
- Support of the Pandemic Influenza and Emerging Infectious Diseases Prevention and Preparedness Program in Indonesia through the Animal Health Support for South Sulawesi and Papua Provinces for AusAID
- Implementation of a web-based data transfer system ("*InfoLab-Plus*") to enhance the management and national reporting of animal and zoonotic disease in Indonesia for AusAID
- Monitoring AI virus variants in Indonesian poultry and defining an effective and sustainable vaccination strategy for FAO
- Development of a new classical swine fever vaccine (CARD in Vietnam)
- International Consultant on Laboratory Quality Management for Vietnam
- Strengthening the EID Surveillance Capability of Thailand & South East Asia for AusAID
- Biosecurity Management in Indonesia for the Department of Foreign Affairs and Trade (DFAT)
- Diagnostic Laboratory Improvement in ASEAN Countries for FAO
- Malaysian Veterinary Research Institute (VRI) - Upgrading capacities and capabilities towards achieving OIE Reference Laboratory status for Avian Influenza

- Strengthening Veterinary Services (PSVS) to combat Avian Influenza (AI) and other transboundary animal diseases in South East Asia for OIE/AusAID Project
- Feral Pigs in the Daintree for the Invasive Animals Cooperative Research Centre..

Biodiversity

- An interactive identification and information system for plants of the tropical rainforests from Broome to Townsville – on CD
- Savanna Tree Seeding Experiment with Wageningen University
- Protecting biodiversity on Cape York Peninsula by building fire management on indigenous, pastoral and conservations lands
- Biodiversity assessment of Southern Gulf Catchments for Xstrata Mount Isa Mines Limited
- Movement ecology & landscape
- Cassowary Genetic Surveys for Marine & Tropical Sciences Research Facility
- Flying Fox Monitoring Study
- Ecosystem Services
- Strategic natural resource management and land use planning for Marine & Tropical Sciences Research Facility
- Mammal declines in Northern Australia - Science for conservation and recovery (ARRC Project with JCU)
- Kimberley Conservation Planning
- Rainforest Key Forbs & Grasses - Status and trends of biodiversity for Marine & Tropical Sciences Research Facility
- Rainforest ecosystem health in the Torres Strait for Marine & Tropical Sciences Research Facility
- Northern Australian plant taxa within the Australian Plant Census for The Department of the Environment, Water, Heritage and the Arts (DEWHA)
- Ant Surveys on Groote Eylandt
- Status and trends of biodiversity and ecosystem services: State of the environment reporting and gap filling for Marine & Tropical Sciences Research Facility
- Impact of Invasive Pests for Marine & Tropical Sciences Research Facility.

Livestock production

- Cattle Welfare Measures for Beef Cooperative Research Centre (CRC)
- Horn Genetics for Beef
- Tropical Animal Health
- Genetics of Beef Quality for Beef CRC
- Genes for Fertility for Beef CRC
- Bull Fertility for Beef CRC
- Meat Quality Beef CRC
- Beef Information Nucleus for Australian Brahman Breeders Association

- Post Partum research for Beef CRC.

Sustainable Agriculture

- Mitigation of methane emissions from the northern Australian Beef Herd
- Plants and plant products for reducing methane emissions from livestock
- Savanna Burning
- Tiwi Island Carbon study
- Capability for Rangelands Australia
- Increasing in-mill NIR effectiveness and communicating data to all sectors for improved decision making in the sugarcane value chain
- Reef Rescue Multiple Criteria Analysis
- Development of integrated land suitability analysis for Northern Australia
- Vegetation Mapping Dampier Peninsula
- Reporting ecosystem health in the Torres Strait
- Indigenous Landscapes of the World Heritage Area.

Climate and Atmosphere

- Seasonality of greenhouse gas emission factors from savanna fires
- Australia's national greenhouse inventory 2008, Non-CO2 gases from the biosphere sub-sector
- Kimberley air quality study
- Aerosol composition and climate
- Climate and vegetation structure as drivers of phenology in northern Australian Savannas
- Comparing hemispheric digital photo and the Moderate Resolution Imaging Spectroradiometer (MODIS) estimates of leaf area index in northern Australian savannas
- A benchmark test for ecohydrological models of interannual variability of *NDVI* in semi-arid tropical grasslands
- A simple ecohydrological model captures essentials of seasonal leaf dynamics in semi-arid tropical grasslands
- Burrup Ambient Air Quality Study
- Kimberley Ambient Air Quality Study
- Australian Tropical Atmospheric Research Station (ATARS) - Pilot at Gunn Point (12°S), NT (in situ and flask GHG and aerosol monitoring station)
- Australian Greenhouse Gas Network – flask GHG monitoring station at Cape Ferguson (19°S), Queensland;
Collaborative CO₂ monitoring at Danum Valley/Bukit Atur Global Atmospheric Watch (GAW) station (5°N)
- GA Baseline Monitoring – in situ and flask GHG monitoring station at Arcturus (22°S), Qld
- Aerosols and Australian climate change (Australian Climate Change Science Program)
- Terrestrial Ecosystem Research Network.

Climate Adaptation

- MTSRF-Community Resilience
- Social learning to support adaptive management approaches to water quality improvement in the GBR catchments
- MTSRF - Management practices
- Engaging QLD Tourism enterprises
- Climate Change in Torres Strait Region
- Regional Tropical Cyclone Hazard
- MTSRF-Climate chg ecosystems
- Weed Response to tropical cyclones
- Rainforest understory dynamics
- Sugarcane industry in the Mackay Whitsunday region
- Better beef grazing practices and industry strategies for adapting to climate change
- Northern Grazing Systems
- Genetic traits in wheat and sorghum for climate change adaptation
- Climate Ready Sugarcane
- Enhancing and utilising landscape heterogeneity to meet multiple ecosystem service objectives
- NT Peanuts
- Adaptive Mining Communities
- Fire regimes under climate change
- National Adaptation (DAFF Farming Future-QLD and NT).

Water

- Ecological Monitoring of the Townsville Field Training Area
- Marine and Tropical Science Research Facility Projects
- Catchment and Aquatic Health
- Wetland filtering function assessment
- Fitzroy Flood analysis & modelling
- Reef Water Quality Options
- Department of Primary Industries Demonstration Farms
- Meat and Livestock Australia - Grazing Management
- Department of Premier and Cabinet - Reefplan Baseline Loads
- Reef Rescue Multi Criteria Analysis for DEWHA
- Economic modelling of cane farms for DEWHA
- Socio-economic research for Marine and Tropical Science Research Facility
- NQ Dry Tropics Paddock to Reef field monitoring program

- Reef Plan Monitoring and Evaluation, Production Systems with DERM
- Terrain NRM - Nitrogen Replacement Trials
- MTSRF - Project 4.9.6a, Planning for Water Quality Improvements
- MTSRF Project 4.9.6c - Ecosystem Goods and Services
- Fitzroy Basin Association - Beef Plan
- Regional scale sediment for TRaCKCERF
- Biogeochemistry for TRACK CERF
- Urbanisation and catchment management for TRACKCERF
- Load reporting for MTSRF
- Northern Australia Sustainable Yields Project (Technical Reports and follow-on)
- Surface water-groundwater interactions and water balances in northern Australia (TRaCK)
- Indigenous water values across northern Australia (TRaCK)
- Indigenous water management across northern Australia
- Groundwater Assessment: Ooloo Dolostone, NT
- CRC Irrigation Futures: Northern Australia Irrigation Futures (NAIF)
- NAWFA Cultural and Social Assessment Scoping study and review
- Ord Valley AEM Interpretation
- Evaluation of mining discharge to Weeli Wolli and Marillana Creeks (WA)
- Impact of climate change to groundwater systems (National)
- Vegetation dynamics and water yield (WA).

Oceans

- Collaboration cluster - socioeconomic information on the reef and region, habitats, biodiversity, human impacts, tourism, integrated models
- Ocean:Reef fluxes (Flagship Collaboration Project)
- Impacts of nutrient loads on seagrasses (Flagship Collaboration Project)
- Acidification and effects on corals (Ningaloo and GBR) Flagship Collaboration Project
- Hydrodynamics of coral reefs
- Effects of fishing closures on foodwebs
- Ecosystems and fishery effects of zoning
- Fish habitat utilisation
- Effects of fishing on reef fish
- Diversity, abundance sharks and rays WAMSI
- Local and regional migratory whale sharks
- Integrated software for multiple use management strategy evaluation
- Qualitative modelling - tourism

- Management integration - MSE of recreational line fishery
- Client outreach project
- Subsea pipelines cluster
- GBR water quality - assessment of terrestrial runoff into GBR lagoon
- Hydrodynamics at the whole of GBR scale (marine biogeochemistry)
- Ecological effects of zoning plan on inshore biodiversity resources
- River flood plain food web subsidies
- Likely impacts of modifications to the hydrological regime of Gulf of Carpentaria (GoC) rivers.
- Develop and test harvest strategy
- Bycatch assessments
- Estimates of allowable catch
- population assessments
- Risk assessment of tiger prawns
- Development of Atlantis ecosystem model that considers all parts of marine ecosystems - biophysical, economic and social
- Survey and evaluation of potential sites, impacts for new LNG hub
- Kimberley coastal ecosystem study
- Kimberley coastal ecosystem sample collection voyage
- Feral animal management Kakadu NP
- eReefs pilot (visualisation) study
- Northern Aus water futures assessment
- GBR biodiversity studies from voyages of discovery/Census of marine life
- Tropical Red Snapper research
- Exploring sources, impacts & methods for amelioration of ghost nets as a threat to marine species
- Assessment of Torres Strait hand collectables (beche de mer and trochus) fisheries
- Assessment, MSE of Torres St lobster fishery
- Minimally Realistic Models of Australian marine ecosystems, with an initial focus on the northern Gulf of Carpentaria
- Illegal, unregulated and unreported fishing activity - pilot management program.

Resources – Coal, Oil and Gas

- Development of a Single Particle Model of Oil Shale Pyrolysis
- Broadmeadow support program
- Grasstree leasing
- NEXSYS Technology

- NGL separation project
- Pyrolysis for transport fuel generations
- Catalytic methane pyrolysis
- Modified FT processes for synfuels generation
- Low emissions routes to hydrogen
- Redox processes for transport fuels
- Thermal maturity studies for coal samples from Galilee B
- Project with Buru and DoIR in the Canning on shale properties
- Hydrates flow loop
- GTL pilot plant facility.