

Current research directions in paua biology

presented by:
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In other words...

- **Who's** doing what? *and*
- **Why** are they doing it? *and*
- **How** does this effect me?



Today's objective:

'Maximising the yield' will inevitably require carefully targeted research...

Help determine who you should talk to when considering a research project.




What is covered:

- o Current/recently completed research of relevance to the paua industry


What is NOT covered:

- o Stock assessments, reseedling and relocation work already discussed at this meeting
- o Post-harvest issues
- o Not intended to be a comprehensive review




Project categories:




1. Why performance parameters differ:
 - a) Genetic differences
 - b) Interaction with the environment
2. Population enhancement
3. Stress and handling
4. Ecotoxicology
5. Forensics
6. Pathology



1. a) Genetics


Project title	Investigators	Institutions	funding	Notes
Genetic Population Structure of Blackfoot paua	Peter Smith Margaret McVeagh Julie Hills	<i>NIWA</i> <i>MFish</i>	MFish, Oceanz Blue	mtDNA & microsatellites of paua from Great Barrier Island, Chatham Islands, New Plymouth, and Stewart Island
Variation, gene-flow and differentiation in paua	Margee Will Marie Hale Dave Schiel Neil Gemmell	University of Canterbury	Univ. Cant'y Sigma Xi Education NZ Royal Society NZ	mt & nuclear DNA from 35 locations




1 b) Environmental effects

Project title	Investigators	Institutions	funding	Notes
Effects of acute salinity change on body weight, respiration, circulation, and haemolymph composition	Harry Taylor Yun Kyung Shin Sophie Bell	Univ. Canterbury NFRI, Korea Bristol University	Univ. Canterbury	75% seawater causes unregulated blood dilution, weight gain and depressed oxygen uptake
Effects of simulated wave action on oxygen uptake, heart rate and muscle electrical activity	Harry Taylor Deb Donovan	Univ. Canterbury Washington State Univ.	Univ. Canterbury	Appears to actively resist each wave, requiring significant amounts of energy
Demographic variation in paua	Reyn Naylor N. Andrew S. Kim	NIWA	MFish, NIWA	Growth, temperature, wave action from 30 sites suggest >17°C detrimental to growth




2. Population enhancement

Project title	Investigators	Institutions	funding	Notes
Shellfish cryopreservation	Serean Adams	Cawthron	FRST	Can successfully store paua sperm
Stock enhancement by release of hatchery reared seed in Marlborough sounds	Gerry Prendeville Rodney Roberts	PAUAMAC7 Cawthron	FRST + private	Appears economically feasible
Stock enhancement by release of hatchery reared seed in Chatham Islands	Alan Culverwell Ellie Watts Nigel Keeley Rodney Roberts	PAUAMAC4 Cawthron	PAUAMAC4	Appears economically feasible
Stock enhancement of area 5	Andy Elliot Paul Young Bob Street	Aortearoa Seafoods Ltd	PAUAMAC5	Growth / survival data recently commenced
PAUAMAC4 translocation project	Reyn Naylor Ellie Watts	NIWA Cawthron	PAUAMAC4	Recently started




3. Stress and handling

Project title	Investigators	Institutions	funding	Notes
Handling effects on blood volume and circulation	Norman Ragg Harry Taylor	Cawthron Univ. Canterbury	Marsden	weight loss, damaging blood pressure surges, disrupted heart activity
Righting behaviour and weight loss	Steve Webb	Cawthron	FRST	Standardised righting test as stress assay
Release agents for handling abalone	Peter Bell Mike Barker Rodney Roberts	Univ. Otago Cawthron	?	Effective agents include KCl, CO ₂ , Epsom salts and vinegar



4. Ecotoxicology

Project title	Investigators	Institutions	funding	Notes
Effects of Brodifacoum spill at Kaikoura	T. Primus G. Wright P. Fisher	Landcare	ECan, MoH	100m zone of influence Paua gut/muscle levels above NZFS for 471 days
Trace metal accumulation in Victorian coastal species	Gastone Fabris Nicholas Turoczy Frank Stagnitti	DPI Deakin University	Govt.	No heavy metal accumulation above ANZFSA limits in blacklip abalone





5. Forensics

Project title	Investigators	Institutions	funding	Notes
Paua origin determination by trapped sediment composition	Nick Walker Philip Clark Graeme Bremner	MFish	MFish	Can reliably link shell to area of known mineral sediment composition
Determination of age, growth rates and spawning events in shellfish using stable isotopes	Reyn Naylor B. Manighetti H. Neil S. Kim	NIWA	MFish	Useful indicators of age and thermal history



6. Pathology

Project title	Investigators	Institutions	funding	Notes
Outbreak of ganglioneuritis virus in Victoria	(Australian) Dept. of Primary Industries		Govt.	Closure of 4 farms and 10km coast quarantined
Pathogen detection in abalone	Steve Webb	Cawthron	FRST	PCR primers detecting abalone and specific pathogen DNA; histological reference library





Thank-you...

- o Review supported by the Cawthron Institute
- o All researchers who kindly shared material for this presentation

