

## research capabilities

New Zealand has unique and diverse fishery resources that are well suited to meet the growing international demand for fresh and natural seafoods and functional and health-promoting fish extracts.

Crop & Food Research's Seafoods & Marine Extracts group helps maximise the value of New Zealand's fishery resources by researching the intrinsic properties of raw materials harvested from the sea and developing new product concepts and post-harvest technologies for the seafood industry.

With research centres in Nelson and Auckland, we work alongside clients to create and develop innovative product and processing solutions.



## seafoods & marine extracts group

The Seafoods & Marine Extracts group develops and delivers harvesting, handling, processing and preservation technologies for New Zealand's fishing, aquaculture and seafood processing sectors.

### Key areas of research expertise

- Characterising raw materials and developing higher value seafoods (hoki, mussels, lobster, squid and other raw materials).
- Developing novel seafood sterilisation, processing and preservation techniques.
- Studying seafood discards and developing novel marine extracts (collagens, oils, enzymes and other biomolecules).
- Developing further-processed seafood products and ingredients.

The group has strong support from the seafood industry with product development partnerships becoming increasingly common as the preferred means of taking new discoveries through to the market.

### Higher value seafoods

To maximise the value of seafood in the marketplace, we need to understand the postharvest physiology, biochemistry and

intrinsic food-related properties of fish tissue. Based on our fundamental knowledge, we develop more effective harvesting and postharvest handling techniques to avoid loss of freshness and eating quality. Where live seafood is exported, we develop ways to ensure the product is delivered to the market in top condition. To complement this work, our researchers are also developing non-invasive techniques for assessing the postharvest condition of important seafood species.

Optimising seafood value chains is an important part of what we do. The hoki fishery is a large and unique New Zealand resource and the need for work which helps optimise returns from this and other middle-depth fisheries is well recognised. Much of our work is focused on researching factors that affect hoki quality so processors can manipulate these factors and provide consumers with a consistent high quality product. The New Zealand green-lipped



mussel is another key resource, so a significant share of our effort is devoted to finding ways to improve the meat yield, food safety and eating quality of this species. We take a similar approach to lobster, squid and other marine species.

## Processing & preservation technologies

Extending the shelf-life of seafoods is critical to increasing market access and export returns for New Zealand seafoods. We research the micro-organisms associated with chilled seafood products and develop novel processes for eliminating pathogens and minimising the growth of spoilage bacteria. Modified atmosphere packaging and high pressure processing are two areas where we lead seafood research in the Southern Hemisphere.

Optimising post harvest handling and processing operations for maximum product yield and processing efficiency is becoming of high importance to seafood companies. We research and develop new technologies and approaches for improving overall operational effectiveness without detrimental impact on product safety and quality requirements.

## Novel marine extracts

Marine extracts obtained from seafood processing discards have many unexplored and under-exploited properties. Fish enzymes, protein and mineral extracts, and biomolecules extracted from fish protein or lipid sources, promise a wide range of unique biological, chemical or physical functionalities. Our understanding of seafood composition, and our combined seafood biochemistry and bioprocessing skills (including the ability to scale up from lab bench to pilot plant) enable us to develop and deliver high quality, innovative solutions in this area.

Novel marine ingredients have applications in fortified foods, cosmetics, pet food, animal feeds, dietary supplements, bioactive packaging and industrial products. Our effort in this area focuses on researching and demonstrating concept products and applications to potential customers, then working with them to develop commercial processes for the manufacture of ingredients or finished goods.

## Research capability

The group has 26 research staff based in Nelson and Auckland and 6 post-graduate students with 3 universities. In addition to microbiology, chemistry and physiology laboratories, our team has live fish rearing and holding facilities and a versatile bioprocessing laboratory.

## contacts

**GROUP MANAGER**  
**TC Chadderton**, Nelson  
**Phone** 03 539 1813  
**Mobile** 027 249 9134  
**Email** ChaddertonT@crop.cri.nz

**BUSINESS MANAGER**  
**Liz Harvey**, Nelson  
**Phone** 03 539 1825  
**Mobile** 027 496 9023  
**Email** HarveyE@crop.cri.nz

**HIGHER VALUE SEAFOODS**  
**Alistair Jerrett**, Nelson  
**Email** JerrettA@crop.cri.nz

**PROCESSING & PRESERVATION TECHNOLOGIES**  
**Graham Fletcher**, Auckland  
**Email** FletcherG@crop.cri.nz

**NOVEL MARINE EXTRACTS**  
**Sue Marshall**, Nelson  
**Email** MarshallS@crop.cri.nz