GS1 Australia

SEAFOOD TRACEABILITY CASE STUDY

DELIVERING BIOSECURITY THROUGH TRACEABILITY

Biosecurity issues (diseases that affect animal or plant populations) are an increasing problem due to the dual threats of global movements of infected produce and climate change. These biosecurity issues threaten our food sources and the livelihoods of our food producers.

In the face of a biosecurity incident, and with the real prospect of closure their businesses due to biosecurity restrictions, fishers in the Clarence River region of Australia needed to find a way to get their prawns to market in a way that complied with the biosecurity restrictions. Therefore, a project was undertaken to trial a secure, real-time traceability system for their seafood supply chain.

This case study demonstrates that traceability can deliver biosecurity and empower trade.

SEAFOOD FROM CLARENCE RIVER, AUSTRALIA

From nature's most pristine estuary and oceans Clarence River Fishermen's Co-operative (CRFC) members harvest an array of commercial seafood species that appeal to seafood lovers around the globe[1]. CRFC has over 60 members, all professional fishers, who supply fresh seafood products all year round.

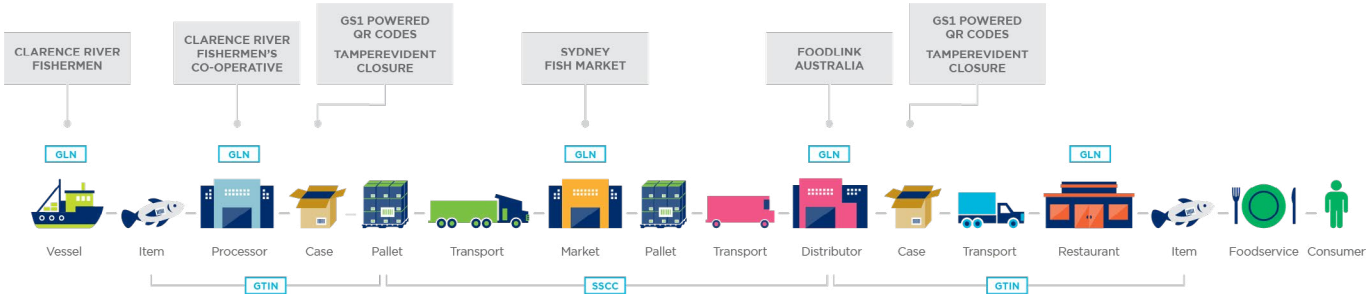
BIOSECURITY AND TRADE CHALLENGES

Clarence River's Prawn Fishers were devastated after 'white spot' virus was discovered in some wild prawn populations of NSW North Coast[2]. [3]A ban on the sale of uncooked prawns from the affected area was imposed to avoid spread of this biosecurity issue.

However, cooking destroys the virus[4], and it poses no threat to human health or food safety and the prawns remain safe to eat[5].

Prawn cooking could occur on vessels under pre-existing regulations, but restaurants and foodservice venues prefer to receive raw prawns and cook them on-site, providing a better eating experience for consumers.

However potential transfer of raw prawns posed possible issues for biosecurity and market access. To enable trade, it was proposed that a fully secure, traceable supply chain was needed to safely transfer raw prawns to chefs to cook at restaurants and foodservice sites. This solution needed to perform as well, or better than the system under pre-existing regulatory controls.



A subsequent trial was therefore designed to demonstrate the concept, under strict control measures, and without the use of real prawns.

PROJECT AIMS

Funding was provided by the Fisheries Research & Development Corporation (FRDC)[6], to undertake an initial trial to create and implement a biosecure traceability system that complied with the biosecurity orders. Honey & Fox, a specialist in food and agribusiness market innovation, led the project, with stakeholder engagement and project management support provided by Fish Beatty Consultancy. The aims were to:

- Engage with the CRFC and its members to implement a traceability system, resolve any barriers to use, and provide relevant digital education
- Achieve equivalent, or better, biosecurity risk management than pre-existing regulatory controls
- Enable CRFC supply chain partners to trade with minimal disruption
- Trial a commercial traceability software system and supporting hardware that could provide a bio-secure solution for prawns from white spot affected areas

RISK ASSESSMENT AND TRACEABILITY DEVELOPMENT

The project activities were

- Extensive stakeholder engagement with industry and government
- Stakeholder education
- Mapping the supply chain; establishing Critical Tracking Events CTEs and Key Data Elements KDEs
- Compliance with equivalent regulations for imported prawns
- Risk management matrix development
- Traceability standards alignment
- Traceability solution provider engagement
- Traceability solution implementation and trial
- Report and recommendations development

'SEA TO TABLE' TRACEABILITY SOLUTION

The Honey & Fox project team engaged Trust Provenance to provide a secure 'sea-to-table' traceability solution which traced the prawns' journey from Fisher > Co-op > Market > Distributor > Chef. The Trust Provenance solution used unique GS1 powered QR codes, as well as tamper-evident seals and jaw-lock tag hardware, to maintain prawn product integrity across the journey.

TRACEABILITY STANDARDS

GS1 global traceability standards[7] were used by the traceability software solution of Trust Provenance. These GS1 standards were aligned with the Global Dialogue on Seafood Traceability GDST[8], The Australian Guide to Implementing Food Traceability[9]: Seafood AGIFT and the United Nations Traceability Protocol UNTP.

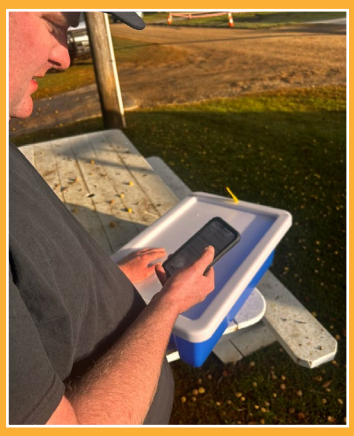
GS1 traceability standards are foundational to enable interoperability, reduce duplication, support rapid crisis response, ensure credibility of provenance and disease-free claims, unlock automation and enhance supply chain productivity. GS1 traceability standards help to futureproof industries by supporting the world's best practice for information interoperability between stakeholders along the supply chain.

A PRACTICAL PROTOCOL FOR INDUSTRY AND GOVERNMENT

To fulfill all trade and biosecurity requirements, a trial was run with these user-friendly and practical features:

Packaging

- Tamper-proof jaw-lock packaging for uncooked prawns
- GS1 powered QR codes for verifiable product integrity during transit and storage
- Insertion of Tive tracker featuring a light sensor, triggered by box opening
- For safety, no real prawns were used in the trial



1. Jaw-lock tags on vessel boxes and smartphone data entry

2. Scanning of GS1 powered QR Codes on boxes during distribution

3. Receipt by Chef at Restaurant

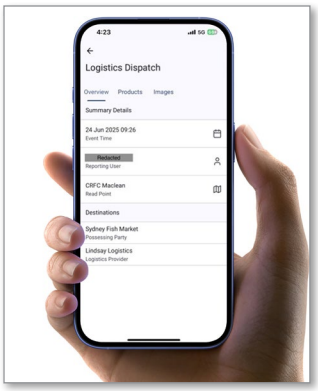
Software and Integration

- Implementation of Trust Provenance traceability software
- Software was integrated with two third party systems:
  - The existing GS1-member Enterprise Resource Planning (ERP) system of Clarence River Fishermen's Co-operative
  - Tive trackers
- CRFC fishers and prawn supply chain partners were trained in software use

Critical Tracking Events and Key Data Elements

Information posters for Fishers, Co-op staff and Chefs outlined the requirements of each Critical Tracking Event, which included capture of Key Data Elements including

- Product data such as mass balance, volume, weight, and temperature
- Dispatch and receive events; these events gave evidence of custody
- Evidence of tamper proof measures



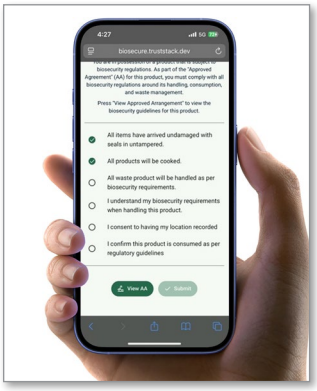
Example of Critical Tracking Event and Key Data Elements, on the Trust Provenance traceability software.

User Experience

- Scanning, data entry and real-time tracking was all performed via smartphone
- An intuitive interface on smartphones ensured easy adoption by small operators with unique workflows and variable technical capability

Biosecurity

- To meet the biosecurity agreements of the project, all procedures were mapped to align with the Australian Government Approved Arrangement 3.3, for imported uncooked prawn product processing requirements[10].



Scanning of GS1 powered QR Codes, with data entry and real-time tracking via smartphone

Compliance and Security

This traceability system enabled

- Robust monitoring and reporting to deliver supply chain transparency
- Mitigation of product diversion risks
- Support for compliance assessment
- Adherence to all relevant trade compliance standards
- Prevention of data manipulation or loss
- Real-time instant ability to scan a QR code and see the complete prawn journey, including all date and time stamps and touch-points

SUCCESSFUL OUTCOMES

This initial trial successfully demonstrated how a secure 'sea-to-table' provenance journey, based on global traceability standards, can limit biosecurity risks and empower seafood trade.

Trial Results

46	Unique Critical Tracking Events
3	Trials
12	Users
12	Traceable Assets
3	Restaurants
0	Lost Cartons

CALL TO ACTION

This project provides a first step for industry and government to demonstrate traceability protocols that support thriving seafood supply chains to address biosecurity and product tracing requirements. Wider technical validation could be achieved through expansion of the trial to include:

- Real fresh and frozen product (other than prawns)
- Additional local fisher cooperatives
- Independent fishers and non-cooperative affiliated supply chains
- Alternative supply chain pathways and transaction modals.

The technical validation can support future government internal review of processes, trade agreements and regulations.

This project also provides an excellent example of a traceability protocol to manage biosecurity, relevant to other products facing similar challenges.

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Australian Council of Prawn Fisheries
Sydney Fish Market
Trust Provenance
GS1 Australia
Foodlink Australia
The Old Clare Hotel
The Butler
Sala Dining
The Fish Girl

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