Australian wild
BARRAMUNDI

Food Service Packaging Preferences and Sustainable Packaging Options

(2022)

Disclaimer:

Disclaimer:

This report has been created by Honey & Fox for the Fisheries Research and Development Corporation as part of the project 2019-067 *Investigate the changes in acceptance of wild caught Barramundi in the food service and hospitality sectors*. The information in this publication is intended for general use to assist public knowledge and discussion and to help improve the development of the Australian Wild Barramundi industry. You must not rely on any information contained within this publication without taking specialist advice relevant to your particular circumstances.

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Author: Jayne Gallagher, Joanne Freeman

Contributors: Janet Howieson, Australian Insitute of Packaging

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Purpose

This report details the findings of a research project that aimed to establish the needs of the Australian Food Service sector regarding the packaging and presentation of Australian Wild Barramundi. Recommendations are made and information about sustainable packaging options available from packaging manufacturers is provided

Background

Packaging is an important decision as it can perform many functions, including:

1. Temperature control
2. Contamination prevention
3. Physical protection
4. Customer convenience
5. Product information
6. Branding

There is increasing concern globally about the use of plastics and about the impact of this use on the oceans. Expanded polystyrene (EPS) has been the mainstay of packaging options for chilled seafood as, until recently, there was little option from a temperature performance and robustness point of view. EPS is not a sustainable packaging option, and moves are currently being made in some markets to ban its use.

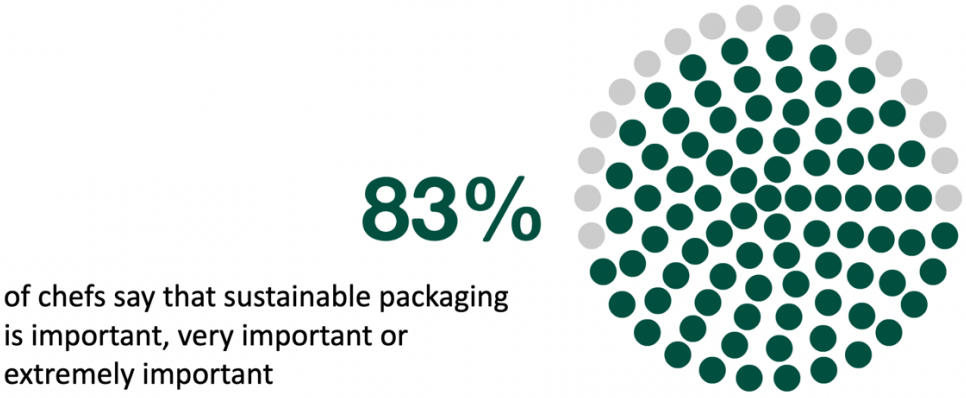
Frozen seafood, like Barramundi, is typically packaged in a cardboard outer (5kg or 10kg) with individual fish or fillets separated by plastic sheets or bags. To provide extra protection from leakages, a plastic liner and/or a wax coating on the cardboard may also be used.

Detailed responses provided by fishers are provided in Appendix 1.

Food Service Sector Expectations

Research with the food service sector found that the size of the box was not a key purchase consideration, although there is a desire for smaller boxes to help manage inventory. Of greater concern was the issue of sustainability (See Figure 1).

Figure 1: Importance of sustainable packaging



Source: Honey & Fox 2021

Research undertaken by the University of Sunshine Coast in relation to preferences for packaging found that there were no clear packaging preferences amoung the food service buyer/chef respondents (Figure 2).

Figure 2 Chef responses to questions on preferred packaging

Whole - What type of packaging would you prefer barramundi to come in?

- 9 On ice, but not touching fish
- 9 Styrofoam box with ice
- 3 Cardboard Boxes
- 5 Reusable cartons

Fillets - What type of packaging would you prefer barramundi to come in?

- 13 Cryovac/vacuum sealed
- 2 Individually sealed in small packs
- 4 Individual portions

Source: USC 2021

Research undertaken by Honey & Fox found that there is a growing trend among food service buyers to seek to minimise packaging waste (due to the cost of disposal) and to request suppliers to provide more sustainable packaging options. Interestingly there is a difference of opinion between supply chain partners and chefs/food service buyers regarding the importance of sustainable packaging (see Table 1).

Table 1 Supply chain and chef/food service buyer perceptions of the importance of sustainable packaging

¤	**Sustainability·Packaging¤**	
Response¤	Supply·chain¤	End·Users/Chefs¤
Not·at·all·Important¤	6.3¤	3.3¤
Little·Important¤	**43.8¤**	16.7¤
Somewhat·Important¤	25¤	16.7¤
Important¤	25¤	6.7¤
Very·Important¤	-¤	**40.0¤**

(source: Honey & Fox, 2021)

What is Sustainable Packaging

Internationally sustainable packaging is defined as packaging that:

- is beneficial, safe and healthy for individuals and communities throughout its life cycle
- meets market criteria for performance and cost
- is sourced, manufactured, transported, and recycled using renewable energy

- optimises the use of renewable or recycled source materials
- is manufactured using clean production technologies and best practices
- is made from materials that are healthy throughout the life cycle
- is physically designed to optimise materials and energy
- is effectively recovered and utilised in biological and/or industrial closed-loop systems

Packaging Policies, Regulations and Standards

Sustainability regulations and requirements are being established by governments globally. These are also changing on a regular basis, with some countries (and states and local government authorities within Australia) setting targets and timetables for the phasing out of packaging that is not considered sustainable.

Australia has established 2025 National Packaging Targets. The federal government, all states, and territories support these. The Australian Packaging Covenant Organisation (APCO) is responsible for delivering on these targets, which include:

- A shift to 100% reusable, recyclable, or compostable packaging
- 70% of plastic packaging is recycled or composted at the end of its life
- The phasing out of problematic and unnecessary single-use plastic packaging

Some useful resources and information sources have been published to help businesses to help decide on packaging. Here are some of them:

Australian packaging recyclability evaluation portal (PREP)
https://prep.org.au/main/content/home

Australasian Recycling Label
https://recyclingnearyou.com.au/arl/

International market requirements
https://my.nzte.govt.nz/collection/how-to-sustainably-package-your-products/article/overseas-sustainability-targets-to-be-aware-of

Opportunity for Branding and Communications

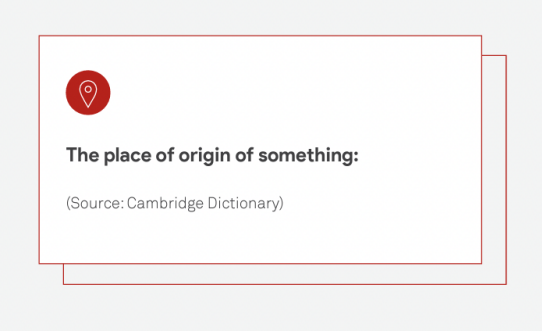
The packaging does not just need to provide a functional benefit. It is now becoming more and more common for packaging, both B2B and B2C, to be used to enhance brand recognition and to communicate key marketing messages, including provenance and authenticity.

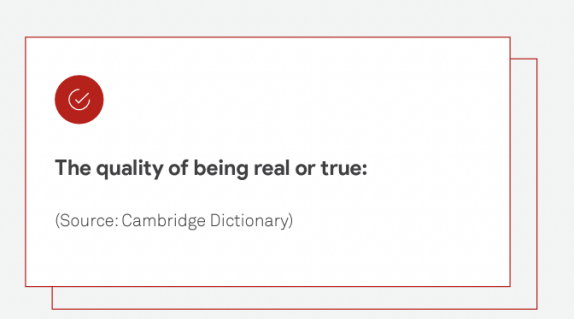
Figure 3 is an example of a recently released packaging for Petuna Atlantic Salmon. This packaging was developed in partnership with Opal Packaging. Opal's solution, which contains more than 55 per cent recycled paper, as assessed through the Packaging Recyclability Evaluation Portal (PREP), is recyclable in Australia and New Zealand and widely accepted through council kerbside recycling collections. The corrugated box was designed with moisture barrier properties to withstand low temperatures for fresh chilled products, approved for airline transportation for export and suitable for domestic controlled cold chain transportation.

Figure 3: New packaging for Petuna Atlantic Salmon

Provenance, Authenticity and Storytelling

Packaging provides a great opportunity to communicate provenance and authenticity, both provenance and authenticity create value and benefits to customers.





There are many technologies commercially available to help communicate and prove provenance, something that the Australian food service sector is increasingly demanding.

Research undertaken as part of this project (FRDC Project 2019-067 to *Investigate the changes in acceptance of wild-caught Barramundi in the food service and hospitality sectors*) found that many customers in the food service sector are seeking provenance and authenticity. Almost 70% of chefs

said that provenance was extremely important. Furthermore, 95% said that storytelling about provenance was important.

More information is available in the Provenance Storytelling for Success kit. The kit includes Consumer Trends and Authenticity Technologies Report as well as several case studies. For more information and to download the free kit, go to www.honeyandfox.com/storytelling

Benefit-Cost Considerations for Packaging

When considering packaging benefits and costs, companies need to consider:

- Temperature control performance – The packaging must protect your product by providing thermal insulation for long periods outside the chiller and/or freezer. Any breakdown in temperature control can be costly due to loss of product and business reputation, which can impact whether someone will purchase from you.
- Whether it is strong enough, durable and leakproof – The packaged product may be stored and transported in wildly variable environments. There are specific requirements that need to be met if the product is to go by airfreight.
- Food safety – the materials must be food safe, and the packaging needs to protect your product from cross-contamination.
- The costs of transportation and storage of empty packaging – the smaller the packaging footprint, the more cost-efficient the transport and storage will be.
- Ease of handling – if the packaging is too hard to use, it won't be used properly, creating potential opportunities for packaging failures and impact on the product.
- Time taken to construct the boxes ready for the product (when the materials are provided flat packed
- Suitability of the packaging for the size and shape of the product
- Potential for branding and marketing messaging on the boxes
- Environmental credentials (recyclable/reusable/biodegradable). The costs of plastic waste disposal are increasing, so customers and end users are seeking more environmentally friendly packaging alternatives
- Customer specifications (size, environmental standards, quality standards)

Packaging Costs Calculator

When assessing packaging, all the costs associated with it need to be considered and then compared to the value of the potential benefits such as those outlined above. Appendix 2 is a template you can use to compare the costs of different packaging options. You might find it useful to use a spreadsheet so that you can compare different options at different quantities and price points.

Sustainable packaging options for seafood

The Australian Institute of Packaging has developed several fact sheets (Appendix 3) on different sustainable packaging alternatives:

- ICEE Containers
- Planet Protector Packaging
- Plantic Technologies
- Tempguard

The Australian Institute of Packaging also recently completed a project for the Australian Council of Prawn Fisheries to identify sustainable packaging alternatives to EPS suitable for fresh chilled and

frozen products. Several options, including packaging for 1kg, 3kg, 5kg, 10kg and 20kg were investigated..

The suppliers they considered were

- Opal Packaging
- Visy Glama Pak
- Disruptive Packaging

Further details for these trials are available from the Australian Council of Prawn Fisheries

Appendix 1: Packaging currently used by wild caught barramundi fishers (2020)

Format	NT		QLD	
	Packaging	Quantity	Packaging	Quantity
Whole chilled	Cardboard boxes		King bins	300kg, 500kg and 800kg 5kg boxes 10kg boxes
Whole frozen			King bins	300kg, 500kg and 800kg 5kg boxes 10kg boxes
Fillets frozen	Individually wrapped fillets layered in box, snap frozen. Branded small, medium and large. Waxed food grade cardboard. Interleaved in shatter packs Individually wrapped fillets layered in box, snap frozen Waxed cardboard boxes	5kg , 7kg and 10 kg box. Individually wrapped. Small fillets packed into sleeves. 5 kg	Use cartons and liners. All fillets individually bagged Interleaved fillets single fillet packaging	5kgs (pensioners) 10kgs wholesalers and restaurants 10kgs 10kgs 5kg boxes 10kg boxes
Other			Barra portions	Portions of approx. 110g to 135g 5kg boxes 10kg boxes

Appendix 2: Packaging Costs Calculator

You can download a fillable PDF version of this calculator and a spreadsheet calculator from the Australian Wild Barramundi website www.australianwildbarramundi.com.au

Item	Calculations	Per box ($) (total cost divided by the number of boxes)
Upfront purchase price (box only)	Total cost for the number of boxes you need (note any minimum order quantities)	
Box liners or plastic bags	Total cost for the number of liners/bags you need (note any minimum order quantities)	
Coolant (ice, gel packs etc)	Total cost for the number of coolant items you need. You might need to cost different formats separately (note any minimum order quantities)	
Transport costs	Total cost for transporting the packaging from the manufacturer to your site You might have several different costs. These should be added together to get the total cost for	
Storage costs	Total costs for the storage space Even if you are storing on-site you may have costs	
Disposal costs	Waste Disposal Costs may include transport and/or fees	

	You may also need to ask your customer if there are any disposal costs and if so what they are.	
Other	List any other costs not included above	

Appendix 3: Sustainable Packaging Options Fact Sheets

Fact sheets have been provided for the following sustainable packaging options:

- ICEE Containers
- Planet Protector Packaging
- Plantic Technologies
- Tempguard
- Disruptive Packaging

ICEE CONTAINERS

PIDA AUSTRALASIAN PACKAGING INNOVATION & DESIGN AWARDS
SUSTAINABLE PACKAGING DESIGN SPECIAL AWARD GOLD WINNER 2018

2018 SUSTAINABLE PACKAGING DESIGN SPECIAL AWARD GOLD WINNER

ICEE Containers

eeco6 EPLA Insulated Boxes

Key Outcomes and Measurement

98% air — **98% air** and 2% bioplastic

World Food Programme — Member of United Nations Save Food Initiative

Replaces expanded polystyrene (EPS)

Flat packed for storage, increasing transport volume

Made from expanded polylactic acid (EPLA)

Thermal insulation

Industrially compostable European standard EN 13432

Up to **70% more efficent** to use and store

Company: ICEE Containers

Product: eeco6™ EPLA Insulated Boxes

Country: Australia

Based in Melbourne, Australia, ICEE Containers, provides technology and product designs to the particle foam industry. ICEE began life with an idea to create fold flat insulated boxes by putting hinges in expanded polystyrene (EPS).

The team developed a unique, globally patented process to create integrated hinge during the moulding cycle, removing unwanted bulk and reducing storage costs.

The winning entry builds on their original EPS design, popular for perishables such as fish, produce and pharmaceuticals, and upgrades the material to a biobased, expanded polylactic acid (EPLA) foam to make an industrially compostable fold flat insulated box.

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PIDA PACKAGING INNOVATION & DESIGN AWARDS

EXCLUSIVE ENTRY TO WORLDSTAR FOR PACKAGING

WORLDSTAR FOR PACKAGING MERIT 2019

1

PLANET PROTECTOR PACKAGING

PIDA AUSTRALASIAN PACKAGING INNOVATION & DESIGN AWARDS
SUSTAINABLE PACKAGING DESIGN SPECIAL AWARD - TRANSPORT GOLD WINNER 2017

2017 SUSTAINABLE PACKAGING DESIGN SPECIAL AWARD - TRANSPORT GOLD WINNER

Planet Protector Packaging

Woolpack

Key Outcomes and Measurement

7million
Estimated number of expanded polystyrene (EPS) boxes replaced since inception

70%
Savings on storage and movement costs from using Woolpack packaging

7 million dollars in revenue given to sheep farmers and processors

Woolpack is a natural cooling system designed to support stable e-commerce for cold chains.

Made from unusable sheep waste wool

Reduced ice pack usage means new lower delivery costs

Less fuel and transport costs with more boxes fitted on trucks

Reusable and recyclable food-grade liner

Wool is washed with only soap and hot water

Woolpack liner material is compostable

Company: Planet Protector Packaging
Product: Woolpack
Country: Australia

Planet Protector Packaging was established in January 2016. Their flagship product, Woolpack aims to reduce fossil-fuel based packaging through waste wool based thermal insulation. Woolpack is an environmentally friendly product that transforms supply chains and is a 'game changer' in high performance packaging options for many different industries (e.g. food, seafood, pharmaceutical).

This winning entry provides cold chains with scientifically proven environmental performance to deliver temperature sensitive goods. Since winning the PIDA Awards, Planet Protector has expanded its geographical footprint with operations in Sydney, Tasmania and Auckland and has won numerous packaging and sustainability awards globally.

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EXCLUSIVE ENTRY TO WORLD STAR FOR PACKAGING
WORLD STAR FOR PACKAGING WORLDSTAR WINNER 2018

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PLANTIC TECHNOLOGIES

PIDA AUSTRALASIAN PACKAGING INNOVATION & DESIGN AWARDS
SUSTAINABLE PACKAGING DESIGN SPECIAL AWARD - RETAIL GOLD WINNER 2017

2017 SUSTAINABLE PACKAGING DESIGN SPECIAL AWARD - RETAIL
GOLD WINNER

Plantic Technologies

Plantic™ R Packaging Material

Key Outcomes and Measurement

- PLANTIC™ R is both ABA and ISO certified
- **50%** Savings of energy in the production of the material
- Use of the Australasian Recycling Label (ARL) on pack
- PLANTIC™ HP sheet + PET = PLANTIC™ R
- Reduced virgin materials
- Sealable to PET based lidding films
- Recyclable high barrier
- High renewable content
- Performs to deliver gas barrier and taint and odour barrier
- Excellent surface gloss

Company: Plantic Technologies
Product: Plantic™ R Packaging Material ultra-high barrier bioplastic.
Country: Australia

The growing trend of consumer awareness towards the impact of their actions on the environment encouraged Plantic Technologies to successfully develop and commercialise ultra-high barrier bio-plastic materials including the award-winning PLANTIC™ R. The R material has many unique features. Its offers ultra-high barrier, is renewably sourced, has high clarity and is certified. PLANTIC™ R combines Plantic bio-based high barrier material with PET to create a globally unique product.

The material is manufactured using modern technology where thin layers of PET are adhered to a core layer of renewably sourced, ultra-high barrier PLANTIC™ HP sheet. The PLANTIC™ HP core provides exceptional gas barrier, and the PET provides moisture/water vapour barrier to the structure.

AIP AUSTRALIAN INSTITUTE OF PACKAGING | INTERNATIONALLY ENDORSED BY WORLD PACKAGING ORGANISATION | PIDA PACKAGING INNOVATION & DESIGN AWARDS | EXCLUSIVE ENTRY TO WORLD STAR FOR PACKAGING | WORLDSTAR WINNER 2018

1

SEALED AIR

PIDA AUSTRALASIAN PACKAGING INNOVATION & DESIGN AWARDS
SUSTAINABLE PACKAGING DESIGN SPECIAL AWARD - PRODUCT PROTECTION GOLD WINNER 2020

2020 SUSTAINABLE PACKAGING DESIGN SPECIAL AWARD - PRODUCT PROTECTION GOLD WINNER

Sealed Air
TempGuard™

Key Outcomes and Measurement

85% recycled content and the filling is made from 100% recycled paper

14 Liner pads are only 14mm thick

Recyclable via Australasian Recycling Logo (ARL)

2025 Committed to 2025 National Packaging Targets

100% Kerbside recyclable improving post-consumer recovery

Flat packed boxes enables space efficiency

Alternative to expanded polystyrene (EPS) boxes

Provides cushioning and protection

Designed for the shipping of pre-packaged, temperature sensitive goods

Opportunity to reduce secondary packaging

Sealed Air®

Company: Sealed Air

Product: Sealed Air brand TempGuard™ kerbside recyclable packaging for pre-packaged, temperature sensitive goods

Country: Australia

Growth in B2C 'door to door' food delivery services is on the rise. Contributing to this trend is the growth in the ready meal market which is expected to rise to AU$184.3 million by 2023 at a compound annual growth rate of 10.6% during the forecast period (2016-2023). [1] The challenge for brand owners and processors, however, is maintaining temperature assurance throughout the distribution chain. Breakdowns in the cold chain will drive huge amounts of food and resource loss and compromise food safety and consumer health.

Sealed Air® Brand TempGuard™ is a fully curbside recyclable solution designed for the shipping and protection of pre-packaged, temperature sensitive goods. Comprising 100% paper, TempGuard™ provides excellent insulating properties.

AIP AUSTRALIAN INSTITUTE OF PACKAGING

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PIDA PACKAGING INNOVATION & DESIGN AWARDS

EXCLUSIVE ENTRY TO WORLDSTAR FOR PACKAGING

WORLDSTAR WINNER 2021

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Disruptive Packaging

Disruptive Packaging is an environmentally focused Australian family business, committed tosustainability with relevant experience spanning over 30 years. Through innovation and partnership, we have implemented and are quickly moving toward a circular economy.

UNIQCOR® and UNIQCOMB® are two new patent pending packaging materials developedand distributed by Disruptive Packaging Pty Limited.
Based on the Cradle-to-Cradle concept, our aim is for no UNIQCOR® or UNIQCOMB® material to go to landfill, with a short-term target of closing the loop on most of our productconsumed within the Australian market. As an innovation led, specialist producer of corrugated UNIQCOR® and UNIQCOMB®, Disruptive Packaging are continuously researching new materials and technologies that reduce waste, enhance product performance, enable easy customer use within the circular economy.

Package Description:
The two products' core materials are Calcium Carbonate and HDPE as well as comprising additional raw materials dependent on the application as per below:

- Between 20 – 80% Calcium Carbonate dependent on customer application
- Between 20 – 80% HDPE dependent on customer application

Other materials included as appropriate in very small amounts:

Packaging Structure

- 60% minimum natural earth elements (Calcium Carbonate)
- 40% maximum HDPE (virgin, recycled or any variation)

Packaging Benefits

- 100% Recyclable via a closed loop capability to support a circular economy
- 100% Waterproof
- Washable & Reusable.
- 100% integrity through cold chain environment
- Photo quality branding with up to 10 colour highest quality Gravure printing
- Increased load containment performance
- Customisable to any box style
- Machine erectable
- Die cut, RSC
- Leak proof capable designs
- Reusable and able to support 99% circular re-use
- Flat packed compared to bulky Styrofoam
- FDA approved raw materials
- Dirt from infield packing or supply chain easily hosed or wiped off with zero degradation to print or board
- Tapes and labels easily pealed off with minimal degradation to print or board