

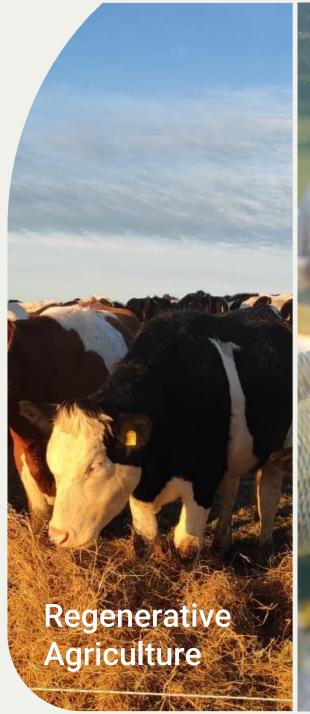
We partner with farmers and corporations to create and deliver

FOOD ANIMAL SOLUTIONS











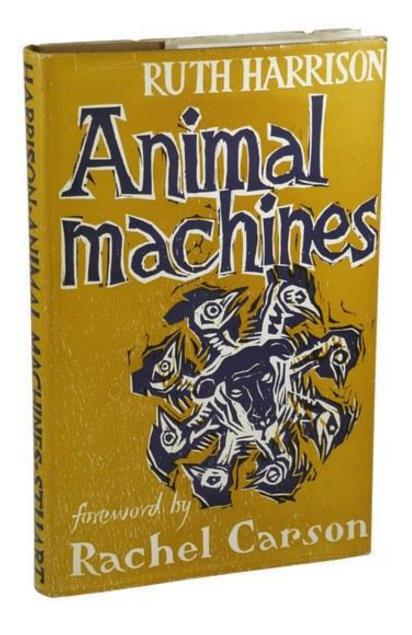


© 2022 FAI Farms Ltd.



HISTORY OF ANIMAL WELFARE

- A few historical figures have put animal rights at the same level as human rights (Siddhartha Gautama, Pythagorus, Leonardo Da Vinci)
- 1823 Bentham
- 1964 Ruth Harrison's book "Animal machines"
- 1965 Brambell report development of the 5 Freedoms
- Increase in Legislation protecting welfare of animals
- Last 35 years has led to improved understanding of motivation, cognition and complexity of social behavior in non-human animals





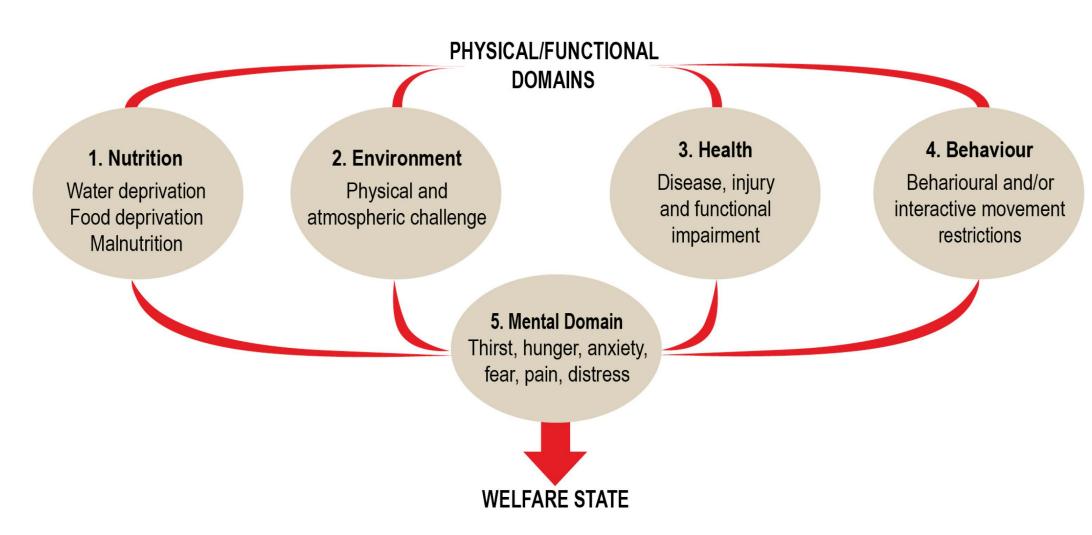
THE FIVE FREEDOMS

- Freedom from hunger or thirst
- Freedom from discomfort
- Freedom from pain, injury or disease
- Freedom to express (most) normal behavior
- Freedom from fear and distress



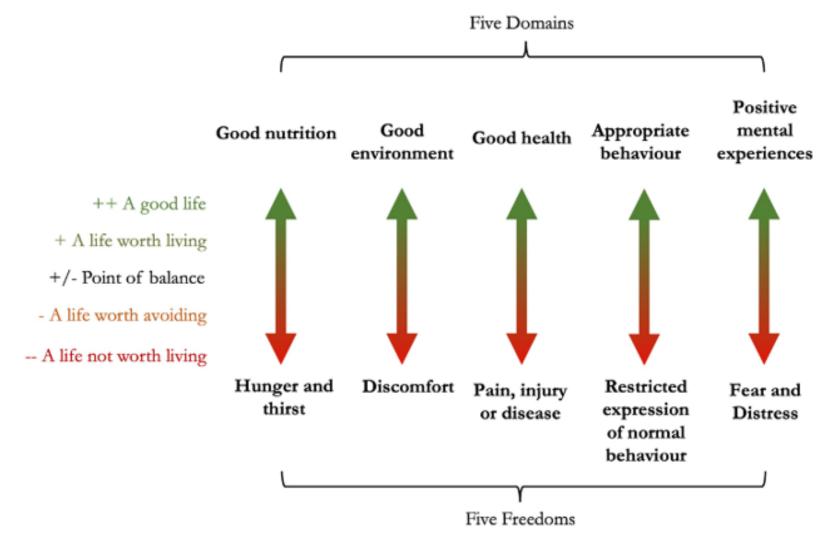


THE FIVE DOMAINS





FIVE FREEDOMS & FIVE DOMAINS





Who is the salmon?

The Atlantic salmon is migratory and can swim great distances in a short time.

Atlantic salmon have a lifespan of 5-13 years but in commercial production are slaughtered before they reach adulthood in most cases. Salmon are harvested at 3-6 kg.





What does the salmon want?

10

q

8

to live quali

live in good uality water

to have access t

TOP 10

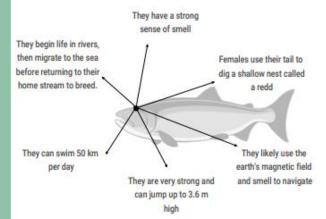
food
4.
to be disease

and parasite free

to have space

What can salmon do?

Salmon are expert navigators



Swimming

Salmon are migratory fish and swim great distances. Their prefered swimming depth depends on the environment such as temperature and currents

Hunting

Salmon are carnivorous and feed on insects and other invertebrates as juveniles. At sea, salmon hunt and eat small fish and crustaceans

Resting

Salmon tend to be nocturnal but can be diurnal based on temperature

Little is known about how salmon spend their time at sea including their social and resting behaviour

How can we provide salmon with a good quality life?

Provide meaningful environmental enrichment appropriate for each life stage

Prevent parasite infestations and disease



Give them a life that is free from pain and stress: no fin clipping

Give them enough space to swim, explore, and escape dominant fish



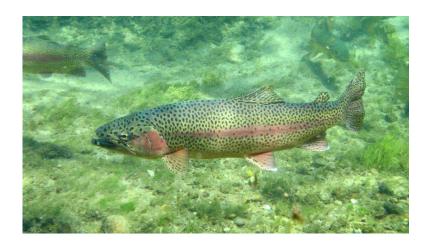


ANIMAL SENTIENCE

Sentience is the capacity to have positive or negative experiences such as pain, distress or pleasure.









ANIMAL SENTIENCE

- DEFRA commissioned the London School of Economics (LSE) to undertake an independent review of cephalopod and decapod sentience.
- Looked at evidence in 8 criteria including physiological and behavioural evidence
- Very strong evidence of sentience in octopuses and true crabs
- Somewhat less evidence concerning other cephalopods such as squid and cuttlefish & decapods such as anomuran crabs however the evidence is still substantial.



Review of the Evidence of Sentience in Cephalopod Molluscs and Decapod Crustaceans

Jonathan Birch, Charlotte Burn, Alexandra Schnell, Heather Browning and Andrew Crump November 2021



DEFRA: Department for Environment Food and Rural Affairs



CERTIFICATION & WELFARE STANDARDS IN AQUACULTURE





- Late development of welfare standards and certification in aquaculture compared to terrestrial farming.
- Certification have different level of welfare standards.
- Standards should be species specific and life stage specific.







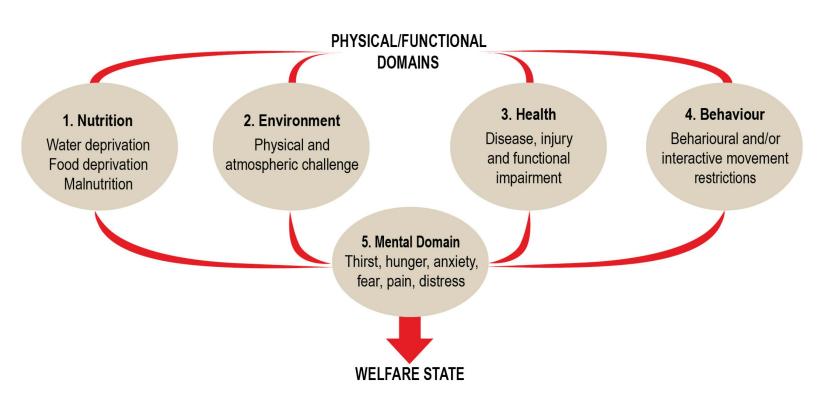






HOW TO MEASURE WELFARE?









OUTCOMES MEASURES AND FISH





% of fish with sea lice damage at harvest

% of fish with a skin condition at harvest

% of fish with eye damage/loss at harvest

% Mortality End of seawater production

Stocking density during peak production (kg/m3)

% of fish with ineffective first stun

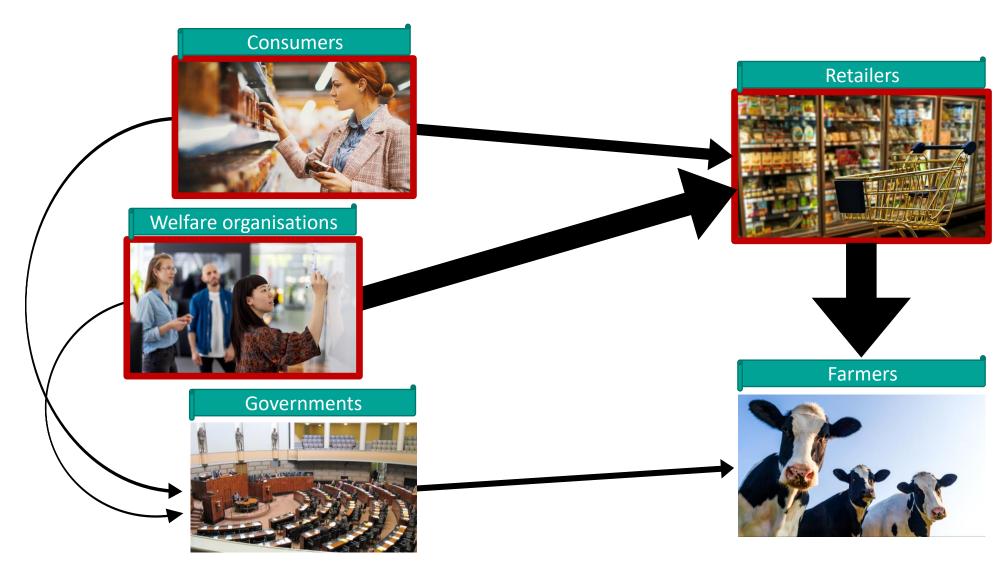
% of fish dead on arrival at killing station

No. of disturbances/crowds during production





INCREASING EXPECTATIONS AROUND TRANSPARENCY OF SUPPLY CHAINS





Nicky Arnos, Dr Rory Sullivan,

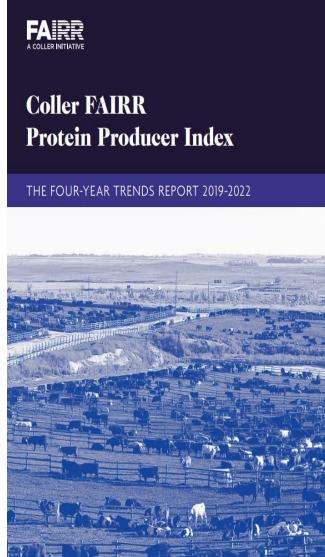
Basia Romanowicz and Dr Heleen van de Weerd.

PUBLIC BENCHMARKING REPORTS

The Business Benchmark on Farm Animal Welfare Report 2021















WORLD ANIMAL PROTECTION











BUSINESS BENCHMARK OF FARM ANIMAL WELFARE

- BBFAW aim: to enable investors, NGO's and other stakeholders to understand corporate practice and performance on farm animal welfare.
- Annual assessments are conducted on **publicly reported information** against the BBFAW assessment criteria.
- A Benchmark is published annually providing the companies rating and, since 2021, an Impact rating.

The Business Benchmark on Farm Animal Welfare Report 2021

Tier 1 Leadership	Tier 2 Integral to business strategy	Tie Establis work to
4	12	
Marks & Spencer PLC (B) Noble Foods (B) Premier Foods PLC (B) Waitrose (B)		3
	— Greggs PLC (B)	▼ Fonterra (C)
	— Cargill (C) ▼ Cranswick (C)	▼ Nestlé SA (
	— Groupe Danone (c)	= 2 Sisters Fo
	= Tesco PLC (C)	— BRF SA (D)
	Barilla SpA (D)	— Coles Group
	— Co-op UK (D)	▼ Danish Cro
	J Sainsbury PLC (D)	— Domino's P
	▲ Maple Leaf Foods (D)	Group (D)
	- Marfrig Global	- ALDI Nord (/
	Foods SA (D)	— ALDI Süd/A
	— Unilever NV (D)	GmbH&Co
	- Wm Morrison	— Carrefour S
	Supermarkets PLC (D)	- Charoen Po Foods (E)
		— Cheesecake (E)
		- Chipotle M
		- Compass G
		▼ Coop Group (Switzerland Genossensi
		- Elo Group (
		▼ Hilton Food
		- IKEA (Inter II
		- Jeronimo M
		- Les Mousqu
		- Migros-Ger Bund (E)

on Farm Animal Welfar

Tier 5 On the business agenda but limited evidence of implementation

Tier 6 No evidence on the business agenda

- Perrachon SA (E) - Hershey Co (E)
- EG Group (E)
- ICA Gruppen AB (E)

Tier 4

Making

progress on

implementatior

35

- Roval FrieslandCampina (E)
 - Agro Super (F)

be done

- SA (E)
 - - schaft (E)

 - d Group (E)
 - IKEA Group) (E
 - quetaires (E)

 - ▼ Mitchells & Butlers PLC (E
 - Perdue Farms (E)
 - ▼ Woolworths Group (E)
- - Papa John's Pizza (F)

▼ Casino Guichard-

Market (F)

BJ's Wholesale Club

▼ Camst – La Ristorazione

Italiana Soc. Coop. ARL (F)

Holdings (F)

Cencosud (F)

— Chick-fil-A(F)

— ConAgra (F)

 Cooke Seafood (F) ▼ Cooperativa Centrale

▼ Costco Wholesale

Corporation (F)

— Cracker Barrel (F)

▼ Gruppo Veronesi (F)

Inspire Brands Inc (F)

Aurora Alimentos (F)

Bimbo (F)

- Mars Inc (E)
- Albertsons (F) Amazon/Whole Foods
- Ahold Delhaize (F)
- Aramark Corporation (F)
- Arla Foods Ltd (F)
 - Associated British Foods PLC (F)
 - Campbell Soup Company (F)
 - Colruyt (F)

 - Coopérative U Enseigne (F)
 - Cooperl Arc Atlantique (F) — Cremonini SpA (F)
 - ▲ E.Leclerc (F)
 - Edeka Group (F)
- ▼ Elior Group (F) Corporation (F)
 - JD Wetherspoon (F)
 - ▼ KraftHeinz (F)
- ▼ LDC Groupe (F)
- ▼ Lidl Stiftung & Co (F)
- ▼ McDonald's Corporation (F)
- OSI Group (F)
- JAB Holding Company (F)

- 25 - Aeon Group (F)
- Alimentation Couche-Tard (F)
- Autogrill SpA(F)
- Bloomin' Brands (I
- C&S Wholesale (F)
- China Resources Vanguard (F)
- China Yurun Group
- Chuying Agro-Pastoral
- Group (F) — CKE Restaurants (F)
- CNHLS (F)
- Conad Consorzio
- Nazionale (F) - Dico's/Ting Hsin International Group (F
- Gategroup Holding (F)
- Dairy Farmers of America (F) ▼ Darden Restaurants PLC (F) Habib's (F)
- Empire Company/Sobey's (F) Lianhua Supermarket ▼ Ferrero SpA (F) Holdings Co (F)
 - Maruha Nichiro (F)
- General Mills Inc (F) ▼ Meiji Holdings (F) Groupe Lactalis (F)
 - Müller Group (F)
- H E Butt Company (F) New Hope Liuhe Co (F) ▲ Industrias Bachoco (F) - Nippon Ham (F)
 - Seven & I Holdings (F)
 - ▼ Umoe Gruppen (F)



BBFAW: ISSUES TACKLED IN FISH FARMING

- Ending the use of close confinement (e.g. stocking density)
- Provision of enrichment (e.g. providing shelter)
- Ending mutilations (e.g. fin clipping)
- Responsible use of antibiotics
- Ending long distance live transport
- Use of humane methods of preslaughter stunning (e.g. percussive and electric)
- Companies are expected to have:
- Public commitments
- Public reporting on progress at farm level (%)





CRUSTACEAN COMPASSION

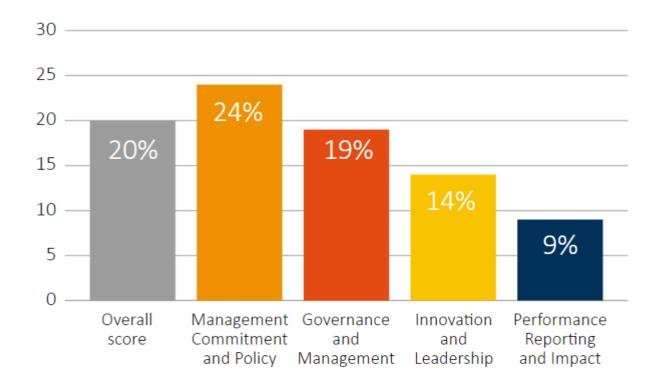
- UK's first industry benchmark of leading seafood producers, processors, and retailers
- Benchmarks 30 leading companies in the UK on their management practice and reporting on decapod welfare
- Welfare at the following stages of the supply chain:
 - Capture and handling
 - Holding and storage
 - Transport
 - Mutilations
 - Stunning, slaughter, and killing





CRUSTACEAN COMPASSION RESULTS

Figure 1: Overall average score (%)







CRUSTACEAN COMPASSION RESULTS

Key Findings

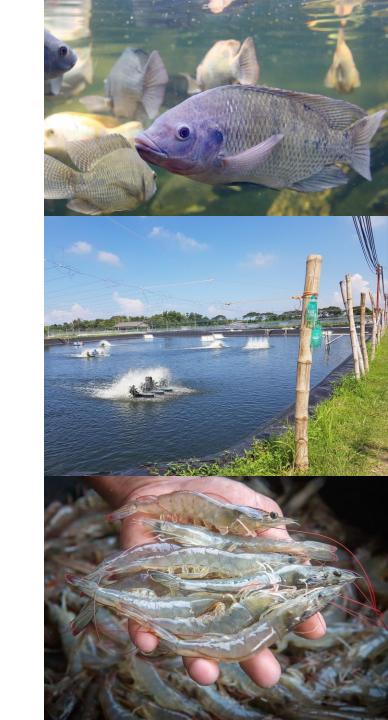
- Decapod crustacean welfare is advancing up the business agenda, but many companies have yet to implement formal management processes.
- Companies are prioritizing the welfare of farmed decapod crustaceans over that of wild caught decapods.
- Companies are investing in research and development aimed at improving decapod crustacean welfare.
- Companies are beginning to report on their performance on decapod crustacean welfare.
- Companies are not yet communicating to consumers on decapod crustacean welfare.





CONCLUSION

- The five domains approach used to assess welfare in aquaculture
- Outcome measure is an easy way to assess welfare but can lack details to set up improvement plan
- Welfare organisation that report public information on welfare are very efficient in triggering changes





- Mellor (2016) Life worth living & five domains: https://www.mdpi.com/2076-2615/6/3/21
- Who is the salmon: https://www.compassioninfoodbusiness.com/media/7440680/who-is-the-salmon.pdf
- Business Benchmark on Farm Animal Welfare: https://www.bbfaw.com/
- Report crustacean compassion https://www.crustaceancompassion.org/the-snapshot-report-2022

CONTACT: MARIUS.NICOLINI@FAIFARMS.COM