


# ÁSA JOHANNESSEN

## CONTACT

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 @WhatBehaviour

## EDUCATION

### 2010 – 2013 PHD BEHAVIOURAL ECOLOGY - UNIVERSITY OF LEEDS

**Thesis title:** Predator-prey interaction in aquatic environments (Funded by the Faroese Research Council)

**Supervised by:** Dr Lesley Morrell and Dr Alison Dunn

**Synopsis:**

- Detection and location of prey was investigated in behavioural experiments
- Focus was the effects of group size, turbidity and turbulence on predator ability to detect prey
- Final chapter comprised applied research into the use of lumpfish as cleaner fish in salmon industry

### 2006 – 2007 MSC ANIMAL BEHAVIOUR – MANCHESTER METROPOLITAN UNIVERSITY

**Dissertation title:** Three-spined stickleback (*Gasterosteus aculeatus*) behaviour and stocking density

### 2003 – 2006 BSC (HONS) ANIMAL BEHAVIOUR AND WELFARE – MYERSCOUGH COLLEGE

## RESEARCH INTERESTS

My work focuses on fish welfare in aquaculture. This is an area with much room for improvement and a lot of cutting-edge science related to fish sentience and ability to suffer. Fortunately, the industry is keen to always improve methods, so working in this area opens up a lot of opportunities for exciting science. The two major species of study for me at the moment are lumpfish (*Cyclopterus lumpus*) and Atlantic Salmon (*Salmo salar*). These two species are farmed together, yet have very different requirements, so adjusting farms to accommodate them both has proven challenging. Add on to this the need to move farms to more exposed sites, and new challenges arise, both in terms of farm management and fish welfare.

## RESEARCH EXPERIENCE

### **2018-2021 SALMON AND THE SURF - FISKAALING**

This two-year post-doc project aims to improve salmon welfare in exposed salmon farms by investigating how salmon alter their behaviour to cope with strong currents and large waves. Current and wave profilers are used to monitor physical conditions and echo sounders, video cameras, and RFID readers and tags are used to monitor salmon movement within the cage as well as behaviour and swimming effort. In addition to monitoring salmon behaviour, regular welfare assessments are made to ascertain the extent to which bad weather events affect operational welfare indicators (such as fin and eye health) in salmon. Cage deformation is monitored using pressure sensors on the cage bottom. Data collection covers one whole year of production allowing similar data to be collected from the same fish during summer and winter as well as at different sizes. The data from this project can inform decision making in terms of farm management, cage sizes and stocking as well as farm location.

### **2013-2020 PERSONALITY OF LUMPFISH AND BEHAVIOUR ON SALMON FARMS – FISKAALING**

In this project, a range of behavioural traits are measured on 200-300 fish, culminating in a test to ascertain whether the fish consume salmon lice. Methods involve mostly observational behavioural tests. In a parallel investigation, PIT tagged lumpfish are released into salmon farms and antennas are used to monitor their movements within their salmon cages. Plans are to correlate this data with video recordings to gain information on benefits and drawbacks from these two methods of data collection on farms. These observations are combined with regular visits to farms where lumpfish stomach contents and health parameters are recorded.

### **2013-2018 LUMPFISH PRODUCTION AND WELFARE - FISKAALING**

I have been involved with a series of small experiments relating to this subject, including an investigation of optimal rearing conditions, efficacy of a newly developed vaccine, courtship and breeding behaviour of lumpfish and cryopreservation of lumpfish milt.

## 2010-2013 PHD PROJECT – UNIVERSITY OF LEEDS AND FAROE ISLANDS FIELD SITES

This project was an investigation of predator-prey interaction in aquatic environments. Studies included an investigation of the shift in sensory modalities from vision to olfaction in murky water, the efficiency of aggregation as a predator avoidance strategy, olfactory prey cue detectability as a function of prey group size in turbulent water, and a separate set of studies investigating lumpfish behaviour as a cleaner fish.

## GRANTS

### FUNDING AWARDED:

2009	Faroese Research Council PhD Studentship (DKK 754,402.83)
2014	Faroese Research Council Research Grant (DKK 651,000.00)
2018	EXPOSED Post-Doc Grant (NOK 1,500,000)
2020	EXPOSED Post-Doc Grant add-on (NOK 800,000)

## SELECTED PUBLICATIONS

### Johannesen, A., Dunn, A.M. & Morrell, L.J. (2012)

Olfactory cue use by three-spined sticklebacks foraging in turbid water: prey detection or prey location? *Animal Behaviour*, 84(1), 151–158.

### Johannesen, A., Dunn, A.M. & Morell, L.J. (2014)

Prey aggregation is an effective olfactory predator avoidance strategy. *PeerJ* 2:e408. <http://dx.doi.org/10.7717/peerj.408>

### Johannesen, A., Joensen, N.E., Magnussen, E. (2018)

Shelters can negatively affect growth and welfare in lumpfish if feed is delivered continuously. *PeerJ* 6:e4837. <https://doi.org/10.7717/peerj.4837>

### Johannesen Á, Patursson Ø, Kristmundsson J, Dam SP, Klebert P. (2020)

How caged salmon respond to waves depends on time of day and currents. *PeerJ* 8:e9313. DOI: [10.7717/peerj.9313](https://doi.org/10.7717/peerj.9313).

## OTHER PUBLICATIONS:

### Johannesen, A., Arge, R., Eliassen, K. (2018)

'Rearing, farm application, and behaviour of lumpfish (*Cyclopterus lumpus*) in the Faroes', in Treasurer, J. (ed) *Cleaner fish biology and aquaculture applications*. Sheffield: 5M publishing, pp 429-443.

## PRESENTATIONS

### **AQUACULTURE EUROPE 2019 IN BERLIN, GERMANY**

Talk on salmon behaviour in an exposed farm

### **GRC PREDATOR-PREY INTERACTIONS 2018 IN CA, US**

Poster given on how to best monitor and use lumpfish as cleaners

### **AQUACULTURE EUROPE 2016 IN EDINBURGH, UK**

Talk on lumpfish personality and cleaning behaviour

### **SEA LICE CONFERENCE 2014 IN PORTLAND, MAINE**

Talk on lumpfish behaviour and use as cleaner fish

## COMMUNICATION OF SCIENCE

- Gave an interview for a video produced by Verge for sharing on social media:  
<https://twitter.com/verge/status/959701755293347840>
- Have taken part in a range of TV and radio programmes for the KvF (National Faroese Broadcasting), where I have spoken about animal behaviour and my research. Shows include, Dagur og Vika (TV), Vitan (radio), Speki (TV), Forvitin er fegin (TV), Barnaútvarpið (radio), and Karusellin (radio).
- Have presented my work on lumpfish to the general public at several events, including a 30-minute talk on predator-prey interactions and prey aggregation at a science for the public event "Vísindavøkan" on the Faroe Islands (2013).
- Have given a webinar for the Pet Professional Guild on fish welfare including a short history of animal welfare ethics, a discussion on why to protect fish from suffering, and what we can do in how we affect fish.  
<https://www.petprofessionalguild.com/event-3494967>