Animal Protection Science:

What it is, why we need it, why it matters

Becca Franks, PhD

Animal Law Conference

October 26th, 2019

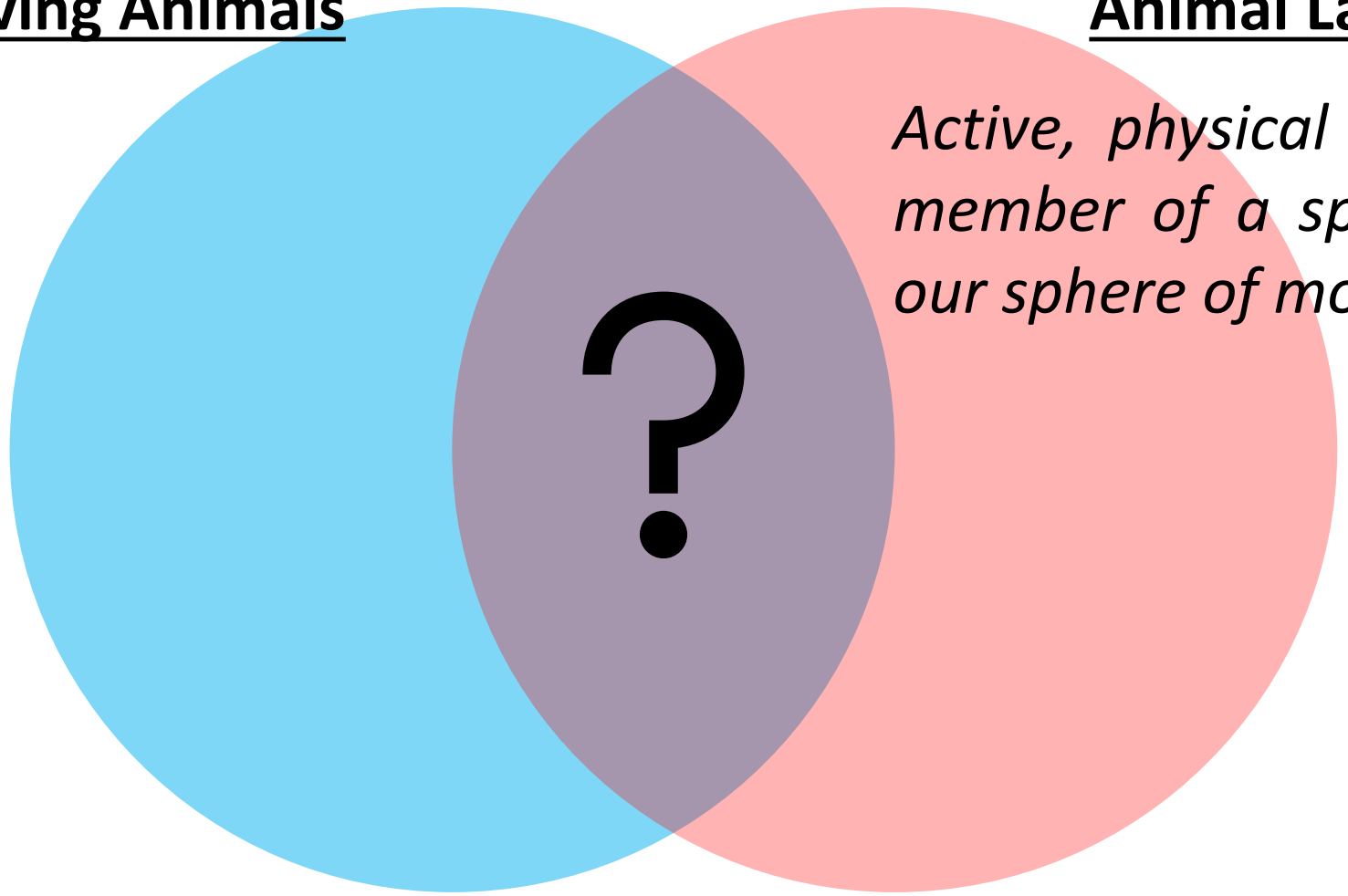
Scientists are not value-free; and therefore <u>science</u> is not value-free.

"Scientists influence us by their imagery, by their selection of topics, by the terms in which they explain their theories, by the views that they express about what does and what does not constitute a proper scientific attitude."

-Mary Midgley

Science Involving Animals

Animal Law



Active, physical cruelty to a member of a species within our sphere of moral concern

Intersection of Science and Animal Law

1) Moral Status of species currently outside of or uncertainly in our sphere of moral concern→ *animals with unknown sentience*

2) Non-consensus cases of potential Cruelty → *ambiguity over what a good/decent/just/fair life looks like and cruelty of omission (neglect)*

Potential fullness of the life → gauge the harm

Intersection of Science and Animal Law

Questions re Moral Status & Cruelty → *Subjectivity/subjective experience of an individual animal*:

- Whether she can feel and/or desire autonomy and a meaningful, engaging life
- Whether she does feel sufficient autonomy and meaning and engagement under current human management practices

Intersection of Science and Animal Law

Subjectivity/subjective experience of an individual animal:

1) Anim
   - k
   - f

enes

2) Anin
   - subjective states
   - systems of use/abuse as ‘standard/control conditions’ with little-no opportunity to explore more autonomous, meaningful lives

actively undermine autonomy and meaningfulness in animal lives

Intersection of Science and Animal Law = Animal Protection Science

Animal Protection as the broad umbrella that encompasses animal welfare, animal rights, and psychological s

puts whole an *l states) first to enhance our c* *tanding and broaden our u* *ties impact and constrain ani*

Archerfish

(Newport, et al., 2016, *Nature: Scientific Reports*)

Seabass

(Anthouard, 1987, *Behavior*)

Cleaner Wrasse

(Bshary & Wurth, 2001, *Proceedings of the Royal Society B*)

Tuskfish

(Jones et al., 2011, *Coral Reefs*)

Giant Manta Ray

(Ari & D'Agostino, 2016, *Journal of Ethology*)

Pufferfish

(Kawase & Ito, 2013, *Nature: Scientific Reports*)

Applied Animal Behaviour Science 139 (2012) 143–150

Contents lists available at SciVerse ScienceDirect

Applied Animal Behaviour Science

journal homepage: www.elsevier.com/locate/applanim

Does structural enrichment for toxicology studies improve zebrafish welfare?

Luanne Wilkes[a,b,*], Stewart F. Owen[b], Gareth D. Readman[b], Katherine A. Sloman[c], Rod W. Wilson[a,*]

[a] *Biosciences, College of Life and Environmental Sciences, Geoffrey Pope Building, University of Exeter, Exeter, EX4 4QD, UK*
[b] *AstraZeneca, Brixham Environmental Laboratories, Freshwater Quarry, Brixham, Devon, TQ5 8BA, UK*
[c] *School of Science, University of the West of Scotland, Paisley, Scotland, PA1 2BE, UK*

cited anxiety-related behaviours and whole-body levels of the stress hormone cortisol in juvenile zebrafish measured over a 1-week period. Activity levels and shoaling density showed no response to tank structures and fish did not spend a significantly greater or lesser amount of time in areas of tanks containing glass rods. Aggression remained high during days 1–5 in tanks containing glass structures before falling to a lower level by day 7. In control tanks, this lower level was reached 2 days earlier, by day 5, suggesting that the glass structures may have slowed the rate of establishment of dominant/subordinate relationships. Overall, whole-body cortisol levels of fish were comparable to those reported in unstressed zebrafish in other studies. Levels were significantly higher in both treatments after 24 h than on subsequent days, most likely due to the handling stress of the initial transfer to experimental tanks. However, cortisol levels did not vary significantly between control and structured tanks at any point during the study. These results indicate that the addition of glass rod structures as hypothesised enrichment did not result in a measurable improvement in welfare.

- 6 tanks of ~10 fish/tank
- mixed sex
- 29 gallon tanks
- 12 light:dark
- H_20 quality
- morning = flake; afternoon = mosquito larvae
- Twice daily welfare checks

Baseline Behavior


-2014 Fri 13:34:51
Camera 2

Heightened-shoaling


07-15-2015 Mon 16:46:13
Camera 2

animals

MDPI

Article

Is Heightened-Shoaling a Good Candidate for Positive Emotional Behavior in Zebrafish?

Becca Franks [1,2,*], Courtney Graham [1,†] and Marina A. G. von Keyserlingk [1]

[1] Animal Welfare Program, Faculty of Land and Food Systems, University of British Columbia, Vancouver, BC V6T 1Z4, Canada; courtney3graham@gmail.com (C.G.); nina@mail.ubc.ca (M.A.G.v.K.)

[2] Animal Studies, Department of Environmental Studies, New York University, New York, NY 10003, USA

* Correspondence: beccafranks@gmail.com

† Current address: Department of Population Medicine, Ontario Veterinary College, University of Guelph, Guelph, ON N1G 2W1, Canada

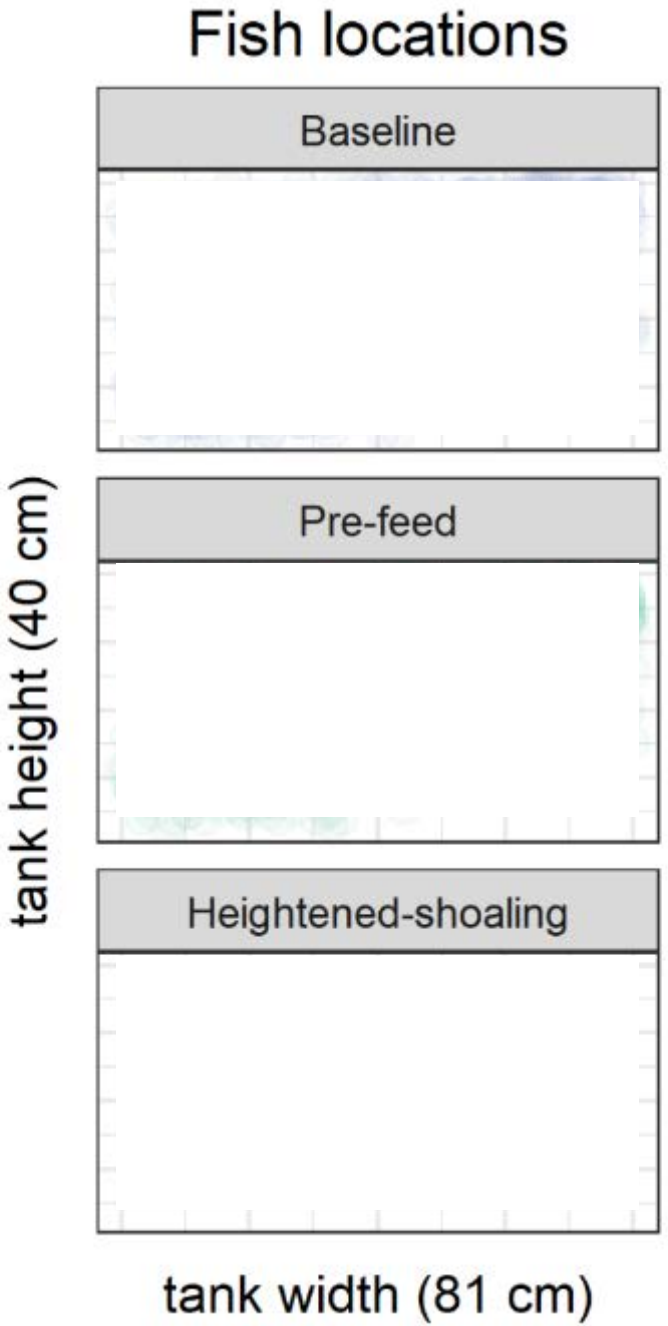
- Document the behavior and evaluate its characteristics
- Consistency with positive (vs. negative) experience

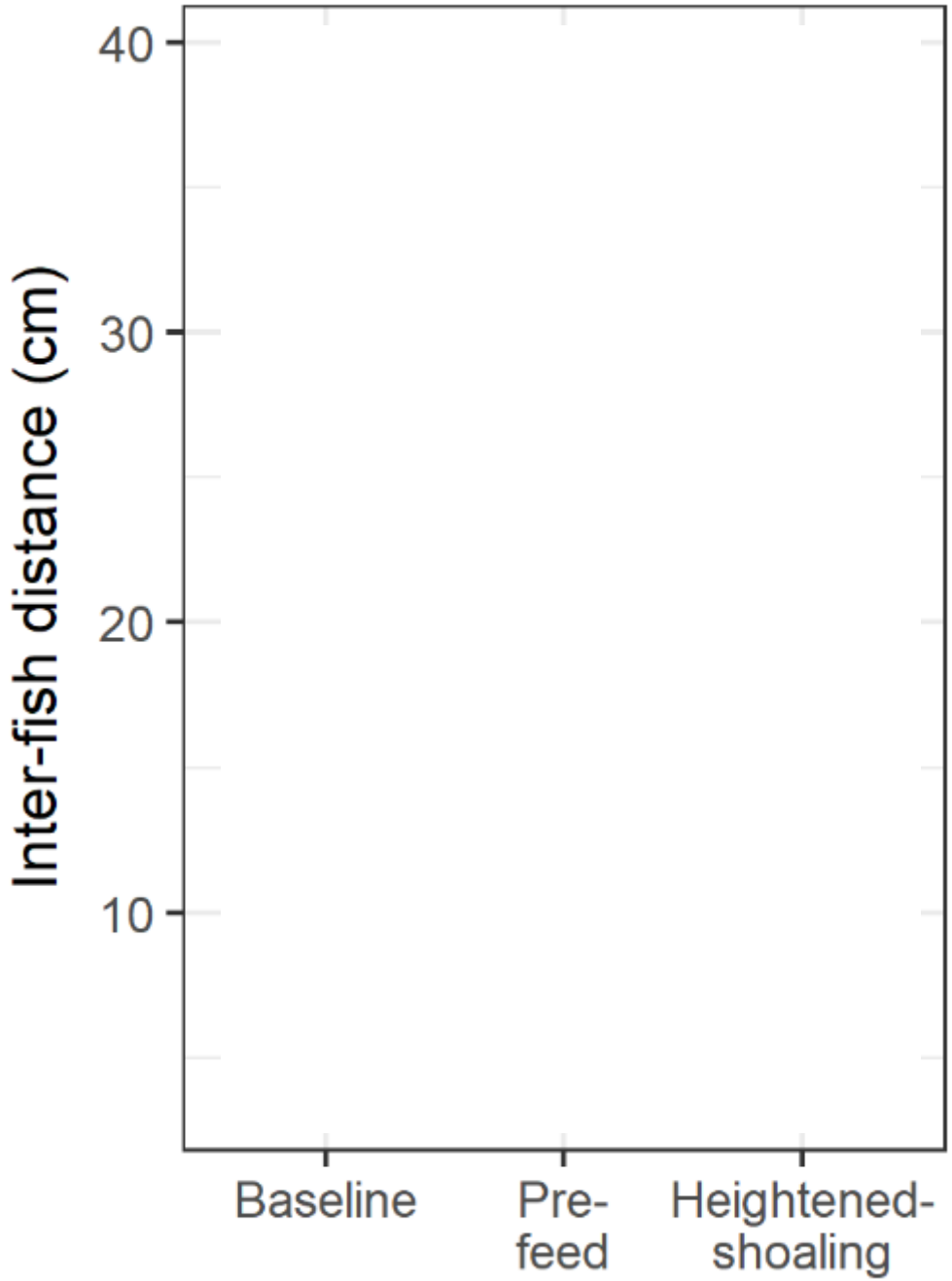
Scan sampling

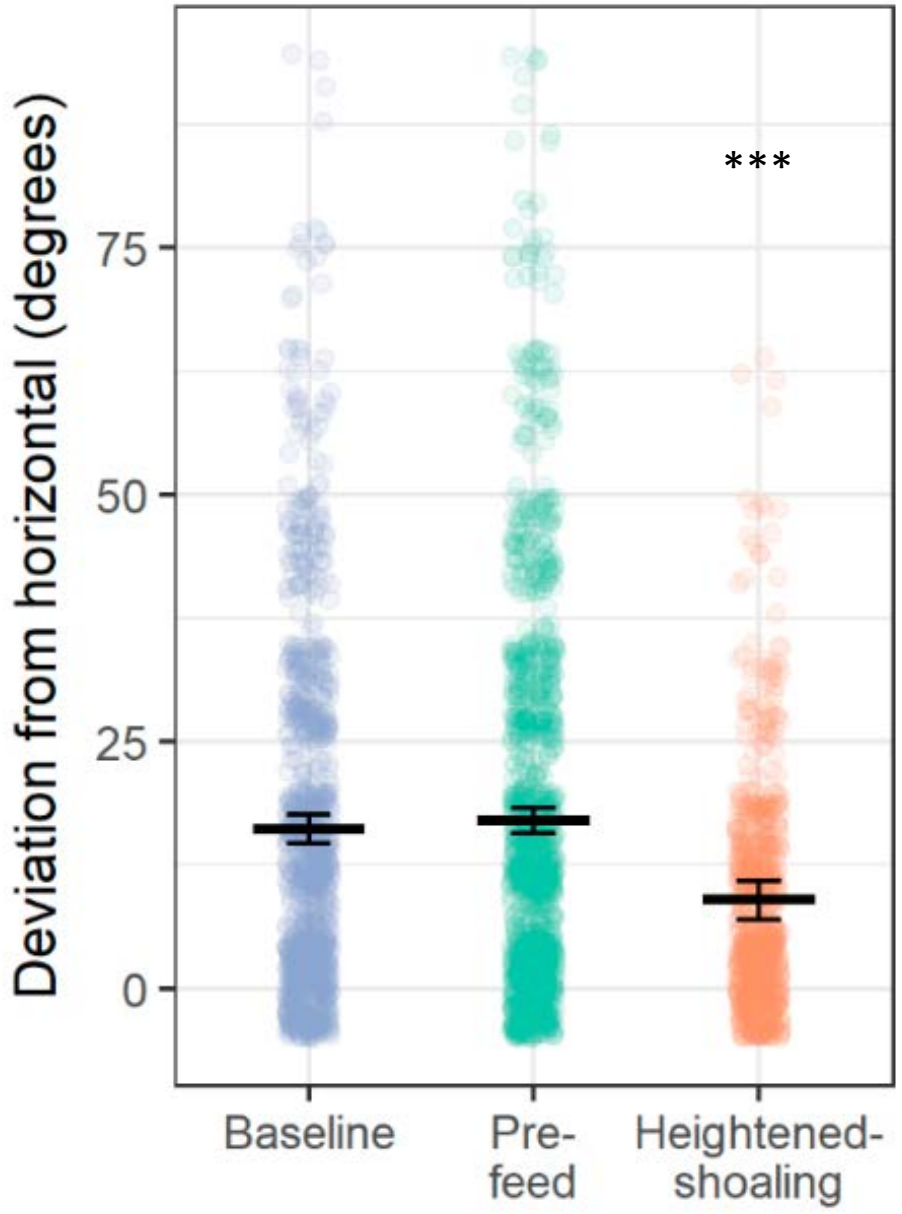
- Compare to behavior during “baseline” and “pre-feeding”
- 4 Days; 100 second video clips: 9 heightened-shoaling, 18 baseline, 18 pre-feed (45 clips)
- Every 10 seconds, snapshots of: fish locations, fish orientations, aggression
- Generalized Multilevel Modeling

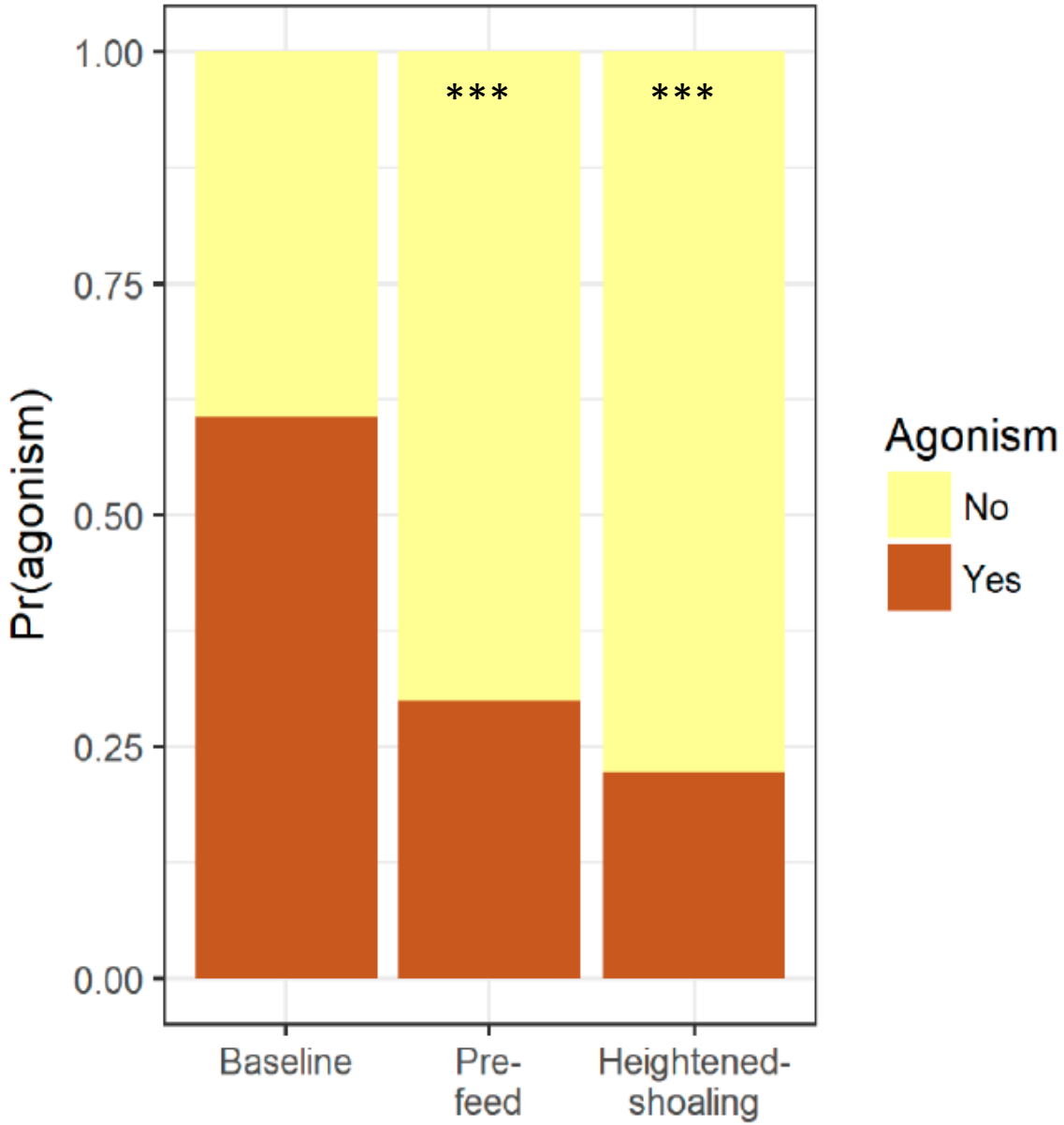
All-occurrence sampling

- 10 Days all 6 tanks
- Timing and duration


Fish locations
Baseline
Pre-feed
Heightened-shoaling
tank height (40 cm)
tank width (81 cm)

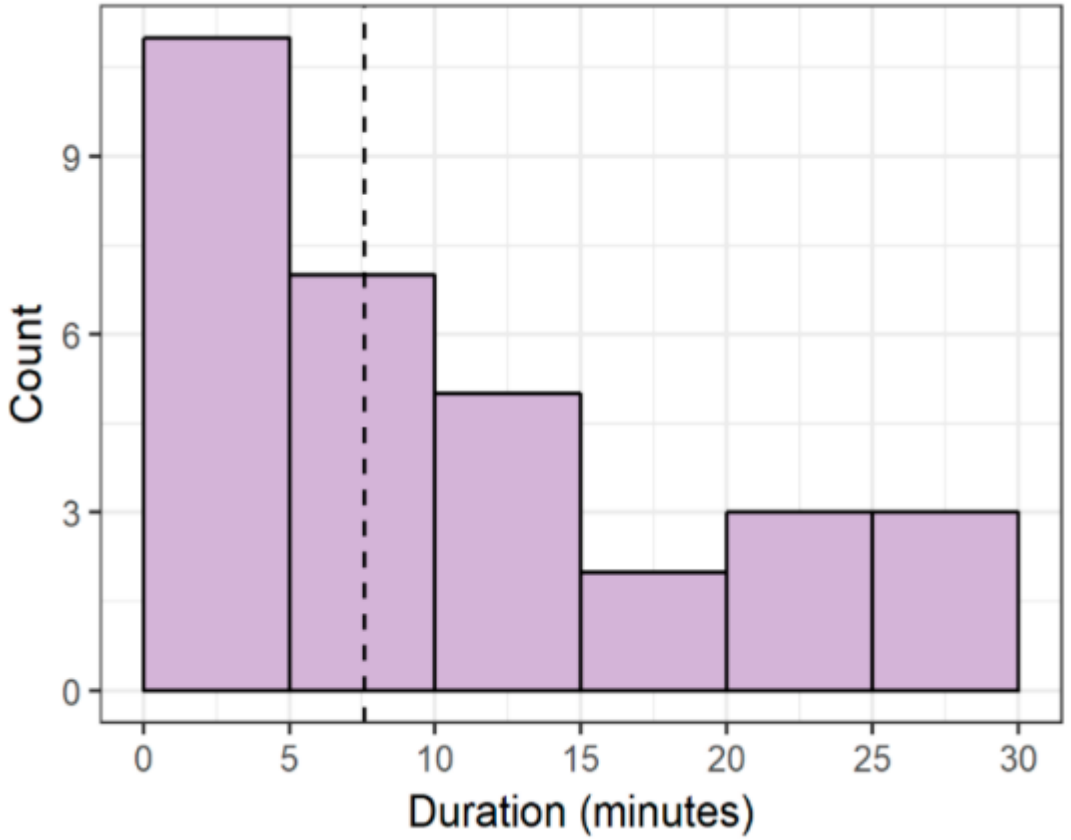

Inter-fish distance (cm)
40
30
20
10
Baseline
Pre-feed
Heightened-shoaling

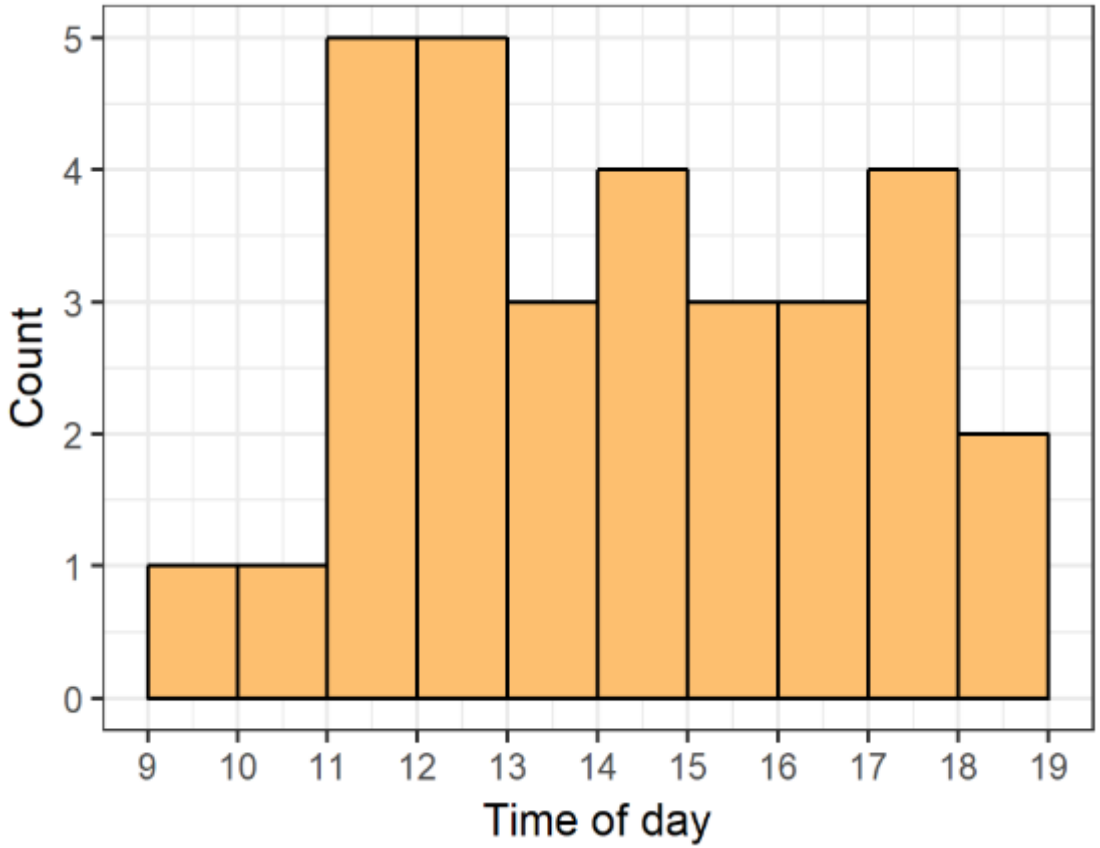

Deviation from horizontal (degrees)
75
50
25
0
***
Baseline
Pre-feed
Heightened-shoaling


Pr(agonism)
1.00
0.75
0.50
0.25
0.00
***
***
Baseline
Pre-feed
Heightened-shoaling
Agonism
No
Yes

Heightened-shoaling Study: *All-occurrence sampling*

- Co-occurred in two tanks at the same time *only once* out of 31 observations





Heightened-shoaling:

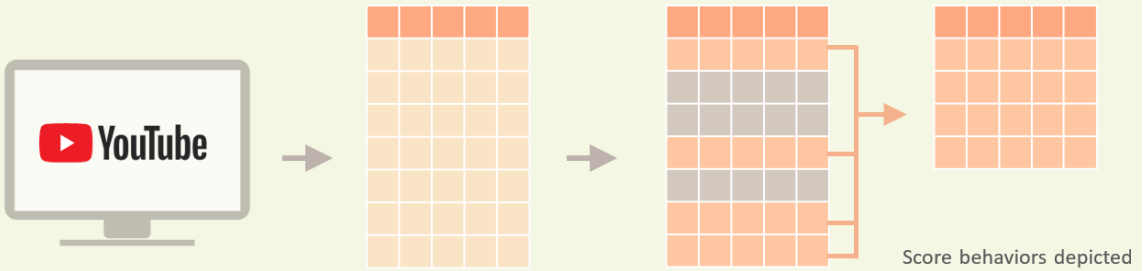
- **No signs of negative affect**
- **Synchronization**
- **Spontaneous (driven internal group dynamics)**
- **High participation (attractive)**
- **Protracted (self-reinforcing)**

(Franks, Graham & von Keyserlingk, 2018)

Do fish have fun?

Identifying potential play behaviors in fish using online video analysis

Methods



A team of six trained volunteers searched the internet for relevant videos using key phrases such as “fish play”, “playful fish” and “fish bubble play”.

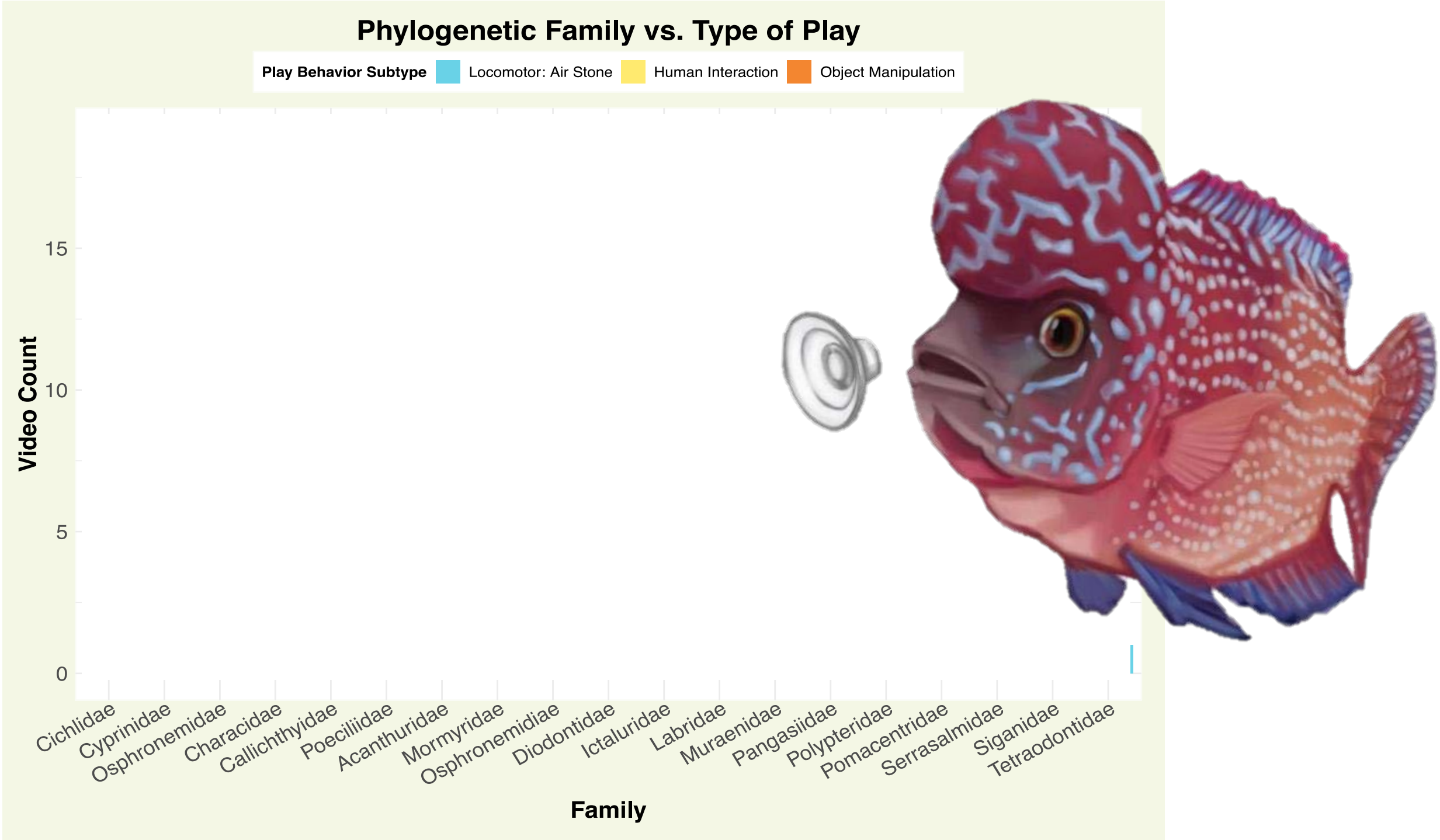
Generate a preliminary database of videos depicting fish engaging in potential play behavior.

Evaluate entries according to Burgardt’s five-point criteria for play behavior.

Score behaviors depicted in qualifying entries as "unlikely play”, "potential play”, and "likely play” to eliminate instances of “unlikely play” from final analyses.

Isabel Fife-Cook (illustration credits)

Phylogenetic Family vs. Type of Play



In Conclusion

Considering individual animals who are studied in scientific research underscores "*the pressing need to realign ethics and practice with current knowledge: to create research that is directed and shaped by other animals' needs. The minds and hearts of other animals must be understood from their own points of view, not from an enforced anthropocentric standard based on exploitation and domination*."

Gay Bradshaw, PhD
Elephants on the Edge

NYU ANIMAL STUDIES

NYU ENVIRONMENTAL STUDIES

CEAP Center for Environmental & Animal Protection

Open Philanthropy Project

Joanna Makowska

Lauréats KILLAM Laureates

JOHNS HOPKINS UNIVERSITY

CAAT

Jennifer Jacquet

UBC animal welfare program

Courtney Graham
Nina von Keyserlingk
Dan Weary

THE UNIVERSITY OF CALIFORNIA UCLA

ANIMAL LAW AND POLICY SMALL GRANTS PROGRAM