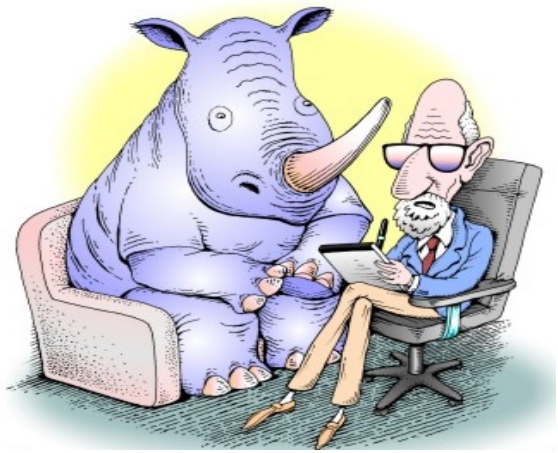
Identifying design priorities for optimal welfare

Dr Jake Veasey
BSc (Hons), MSc, PhD, CBiol, FSB

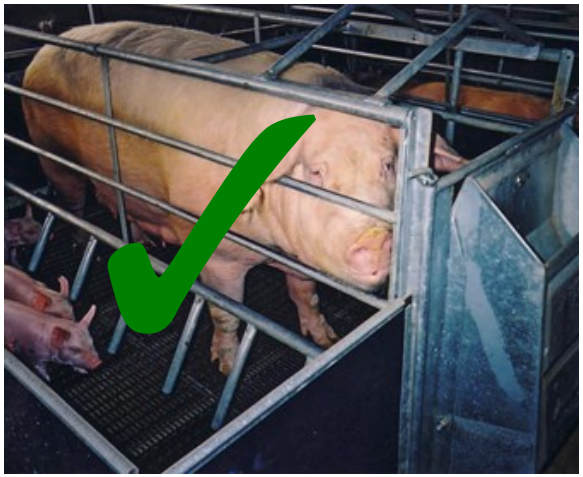
What is welfare?

- No universally agreed definition
- Most definitions include physical & psychological wellbeing
  - Some scientists argue health is irrelevant if it doesn't impact feelings
- However
  - Feelings can't be measured; reliant on imperfect indirect indicators
    - Abnormal behaviours, corticosteroids, physiology etc
  - Physical health has numerous of tangible metrics
    - Longevity, fecundity, body condition, healthcare provision etc
    - Intuitive link to welfare
    - Most influential…
  - But health ≠ welfare



Its all about priorities: 'Health-care' & welfare

- AVMA state '*protecting an animal's welfare means providing for its physical and mental needs*'
- In 2008 California State Farm Animal Welfare Act:
  - Requiring farm animals be able to lie down, stand up, extend their limbs and turn around
- AVMA' position on the legislation:
  - Clearly provide greater freedom of movement
  - Compromise several of the factors necessary to ensure welfare with regard to protection from disease and injury
- Reasoning?
  - Psychological gains less significant than perceived health costs?
  - Or less tangible?



Its all about priorities: Health, welfare & nutrition

- Widely accepted health is a foundation of good welfare
- Nutrition is a foundation of good health
  - First of 5 Freedoms: Freedom from Hunger and Thirst; by ready access to fresh water and a diet to maintain full health and vigor (FAWC 2010)
- AAZV:
  - 'When possible the use of species specific, commercially prepared animal diets should be utilized as the basis for any nutrition program'
- Consequences for health & welfare?

Its all about priorities: Health, welfare & nutrition

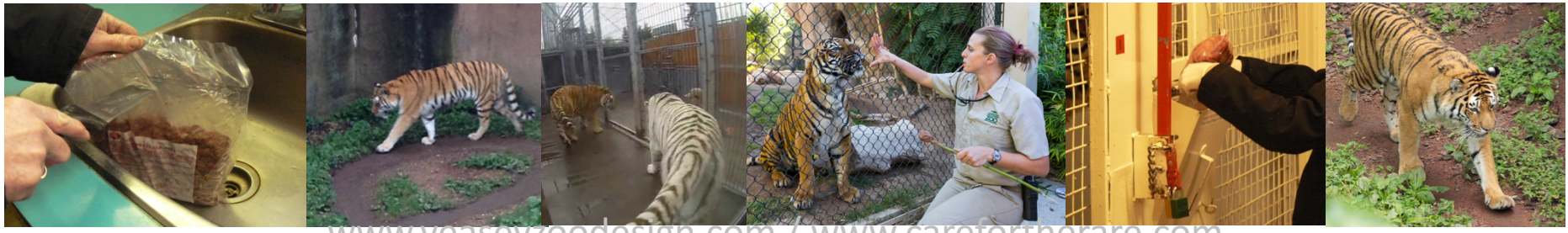
Appetitive phase

Consummatory phase

Post-consummatory phase

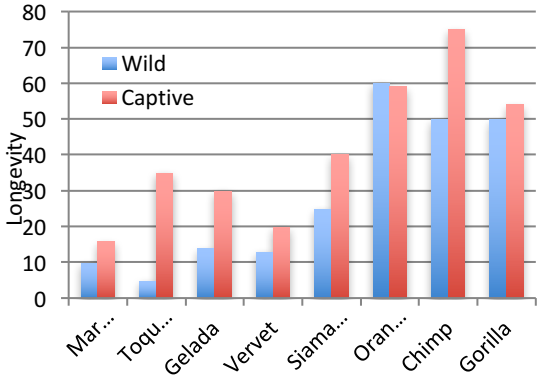
American Association of Zoo Veterinarians

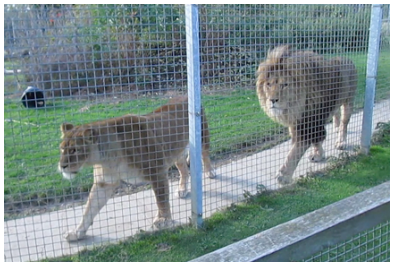
'When possible the use of species specific, commercially prepared animal diets should be utilized as the basis for any nutrition program'



The challenge of balance

- Captivity can be great in protecting physical health
  - Disease, predation, starvation, flood, fire, aggression, injury etc
- Captivity is often poor at safeguarding psychological wellbeing
  - Behavioural restriction, frustration, lack of choice, boredom etc
- We are poor at finding the balance!
  - Focus on the measurable rather than the meaningful
- If we can find the balance, captive welfare could exceed that in wild populations
  - Maintain physical protection & provide for psychological needs





Captive management spectrum; finding a place for zoos….

Intensive management

- Animals more reliant upon human inputs for welfare

Extensive management

- Animals more reliant upon environment for welfare

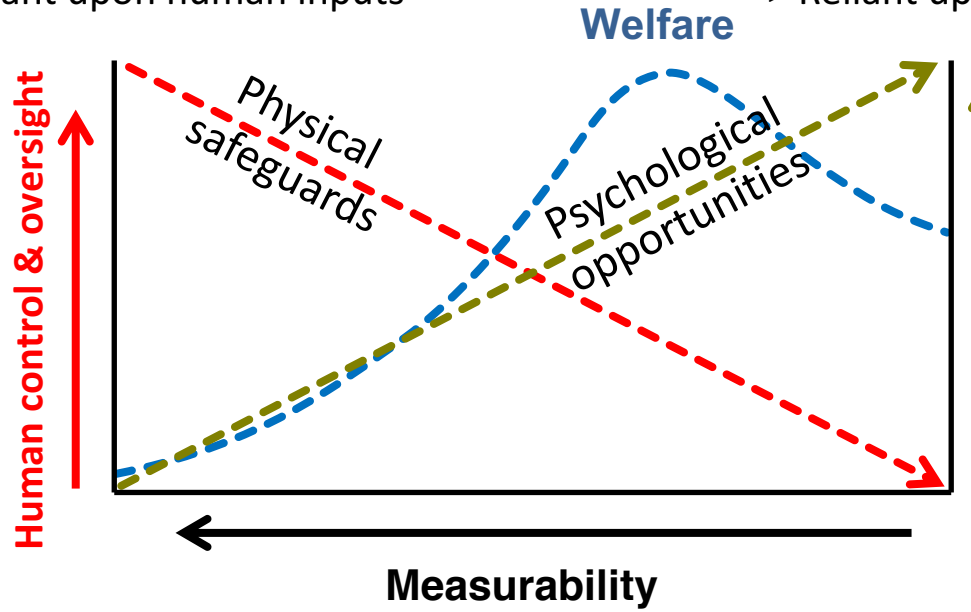
Zoos

Peak welfare; finding the balance

Intensive management
> Reliant upon human inputs

Extensive management
> Reliant upon habitat

- Surveillance
- Environmental stability
- Health care
- Nutrition
- Risk reduction (predation, starvation, parasitism etc.)



- Biologically appropriate physical & social environments
- Environmental complexity
- Choice
- Control

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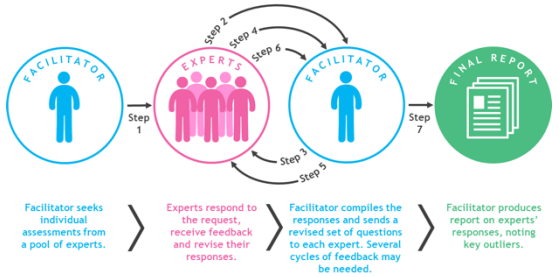
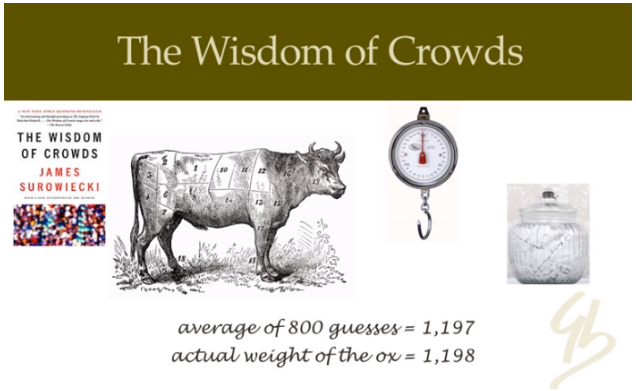
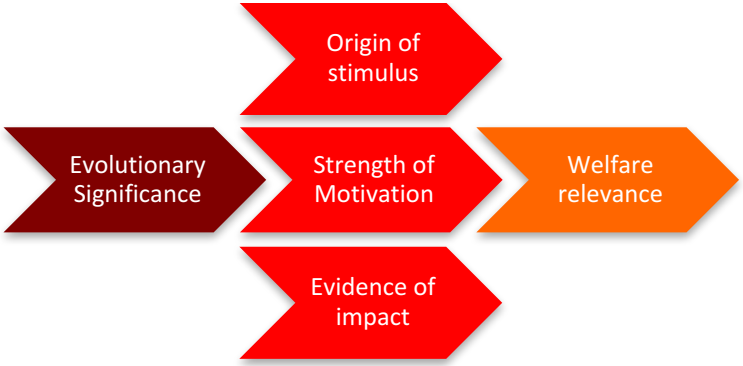
Towards quantifying the psychological needs of animals

- Facilitated Delphi process using expert panel (~12 members)
  - Zoo staff, welfare scientists, field biologists
  - Essentially we ask the panel 12 times about the welfare significance of each behaviour / cognitive process
  - Questionnaires completed independently
- Collectively reflecting
  - Evolutionary significance
  - Strength / frequency / duration of motivation
    - Modulated by origin of stimuli
    - Evidenced by consequences of expression / non expression
- Discrepancies reviewed by the group
  - Results from ~ 144 scores consolidated into single welfare score







Framework for determining welfare priorities

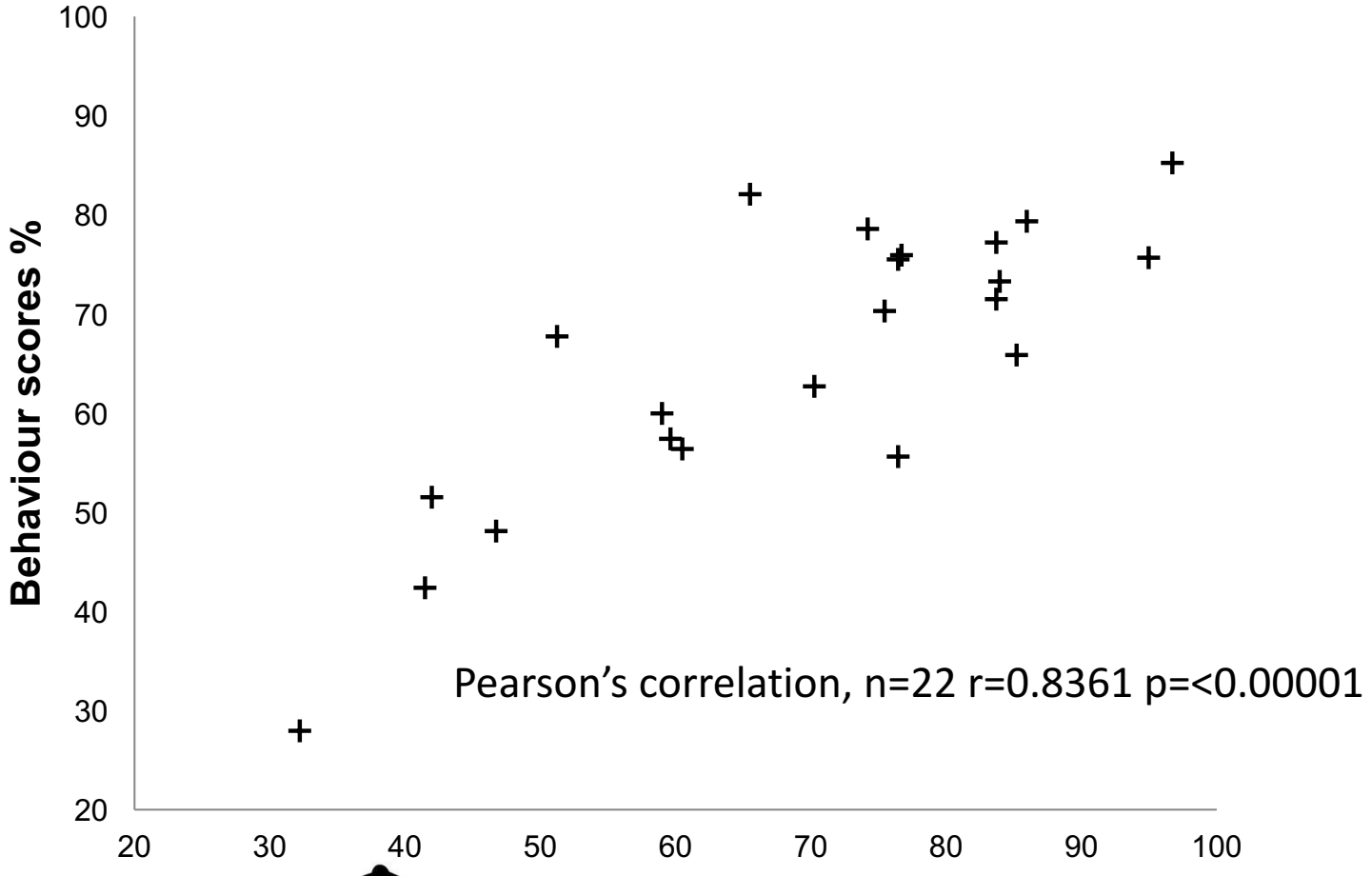
Reference population		Parameter
Wild	Evolutionary significance	Survival impact
		Reproductive impact
		% of total energy demand
		Lifetime duration
		Prevalence in wild population
		Risk of expression
		Innate
Wild & Captive	Motivation	Strength
		Frequency
		Stimulus
Captive	Consequences	Non - expression
		Expression

Pilot Assessment: Asiatic Black Bear

AnimalsAsia

RVC Royal Veterinary College University of London

Between assessment comparison: Asiatic Black Bear Psychological Priorities



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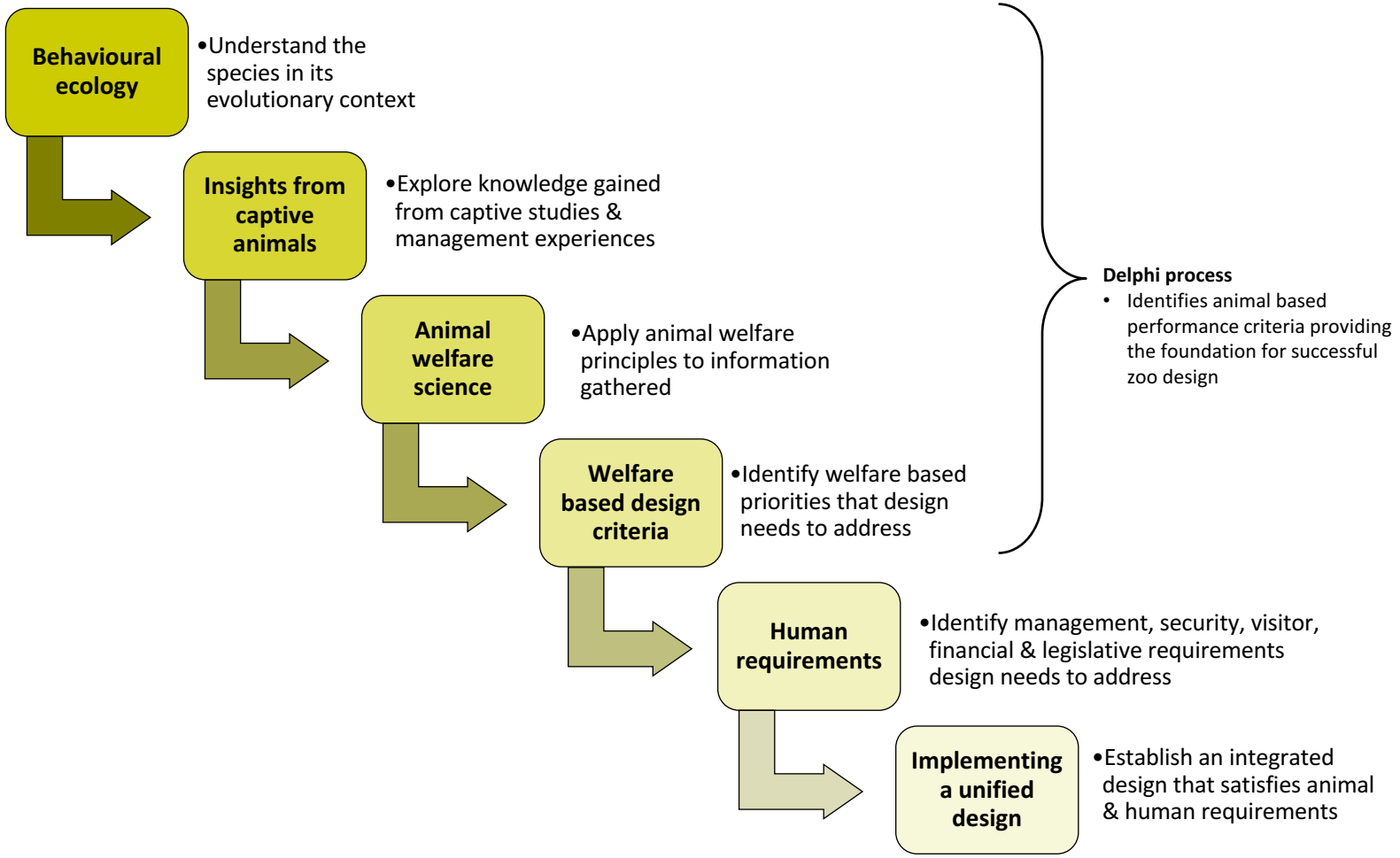
Optimising welfare through design; an interdisciplinary challenge



Thank you

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