Assessing welfare of captive wild animals using the Animal Welfare Assessment Grid (AWAG)

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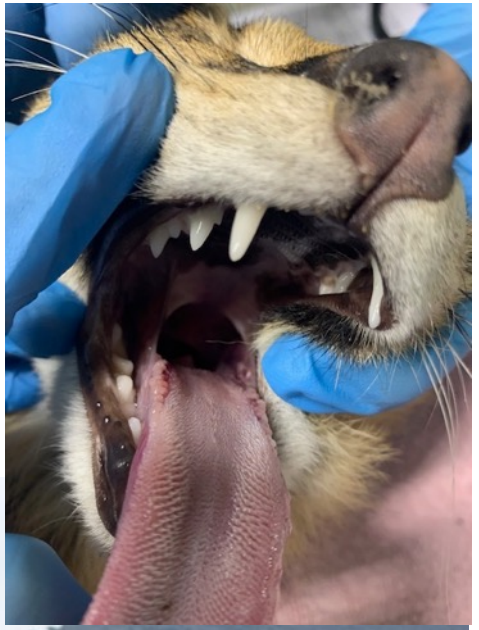
Welfare in zoos

- Conservation
  - ‘Ark’ populations for reintroductions
  - International breeding programmes
- Education
  - Inspiring future generations
  - Advocates for their species
  - Public opinion
  - Staff morale
- Accreditation
  - Zoo licence, BIAZA, EAZA, etc
- Research and scientific knowledge
  - Wild animal behaviour
  - Captive animal behaviour
  - Nutrition, physiology, comparative anatomy, pharmacology etc



Animal welfare at Marwell Zoo

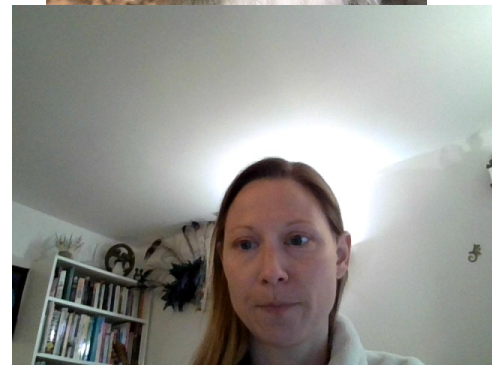
- Veterinary Team
  - Animal Behaviourist
  - Animal Nutritionist
  - Vets and Vet Nurses
- Quality of Life Assessments
- Geriatric health plans
- Preventative health plans
- Animal Welfare Assessment Grid (AWAG)

- Species of conservation importance
- Species well-suited to captive life

Welfare Assessment

- Regular - rapidly highlights issues → intervention
- Objective
- Provides quantitative data
- Lifetime assessment not ‘snapshot’
- Assists decision about the timing of euthanasia

Marwell Wildlife

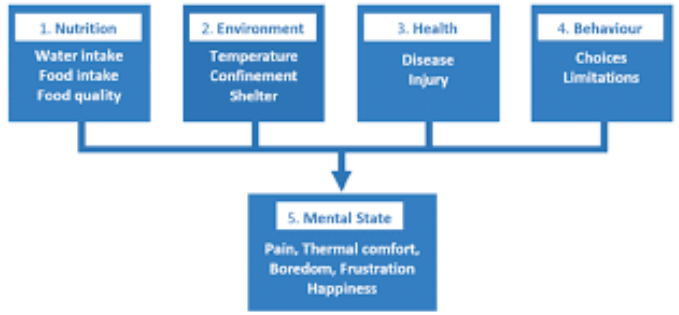


Challenges in Zoos

- Avoid anthropomorphising
- Non-invasive assessment
- Staff time → scoring from snapshots / non-representative
- Validation (small sample sizes)
- Cryptic species, diverse taxa (fish, invertebrates)
- Huge variety e.g. visitors
- Huge number of species
- Data deficiency on normal behaviours, wild diets, social groups etc.
- NB Not all natural behaviours promote positive affective states
- NB Eustress

AWAG

- Animal Welfare Assessment Grid
- Lifetime experience assessment
- Compares one animal to itself over time
- Based on five domains model principles:
  - Nutrition, Environment, Health, Behaviour, Mental State
- Grid parameters:
  - Physical, Psychological, Environmental, Procedural
- Factors chosen for each parameter
- Flexibility



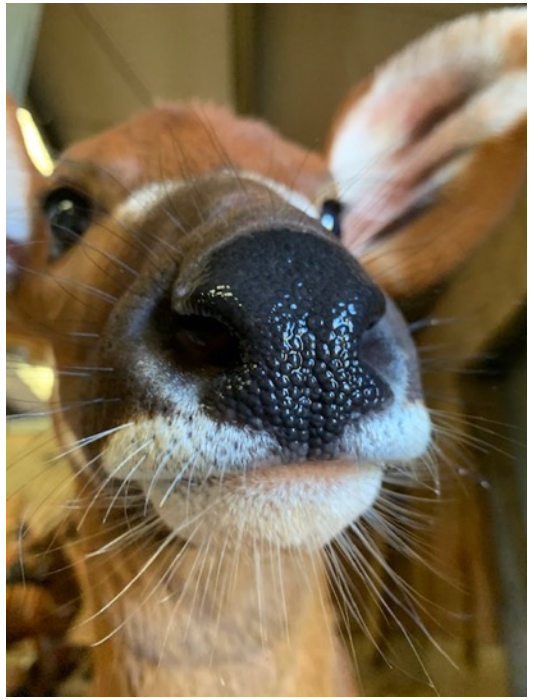
The AWAG

AWAG Parameters

Physical, Psychological, Environmental, Procedural

Factors

Criteria 1-10

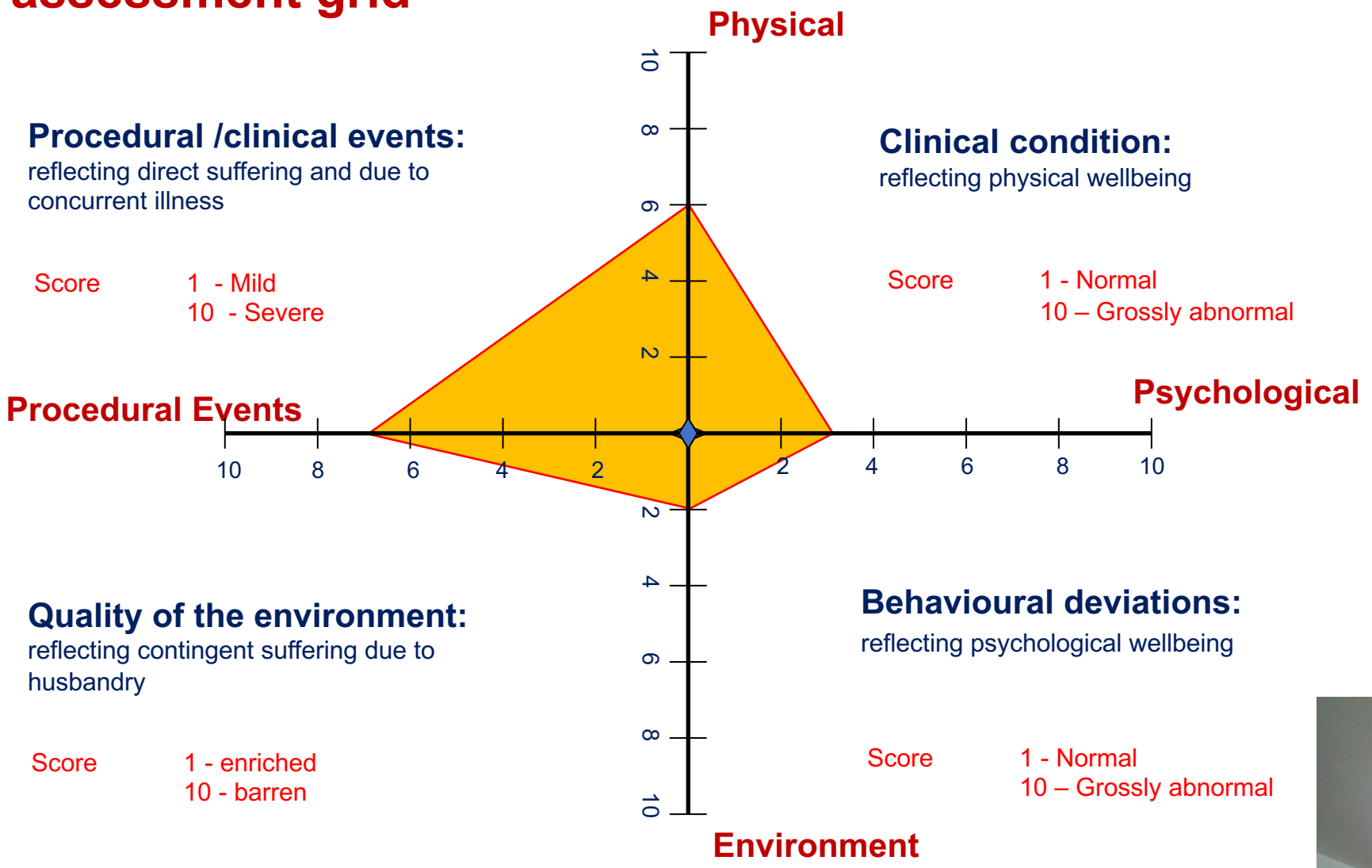


Parameters and factors assessed

- **Physical**
  - Body condition, weight, mobility, feed intake, faecal score (not invasive)
- **Psychological/behavioural**
  - Training, activity level, social interactions, stereotypies, natural behaviours, reaction to visitor presence
- **Environmental**
  - Enclosure complexity and size, group size, nutrition, access, enrichment
- **Procedural**
  - Restraint, veterinary procedure, change in routine

- Objective measure of relative impact of each factor on animals' ove welfare

Basic welfare assessment grid



Procedural /clinical events:
reflecting direct suffering and due to concurrent illness

Score 1 - Mild
10 - Severe

Clinical condition:
reflecting physical wellbeing

Score 1 - Normal
10 – Grossly abnormal

Quality of the environment:
reflecting contingent suffering due to husbandry

Score 1 - enriched
10 - barren

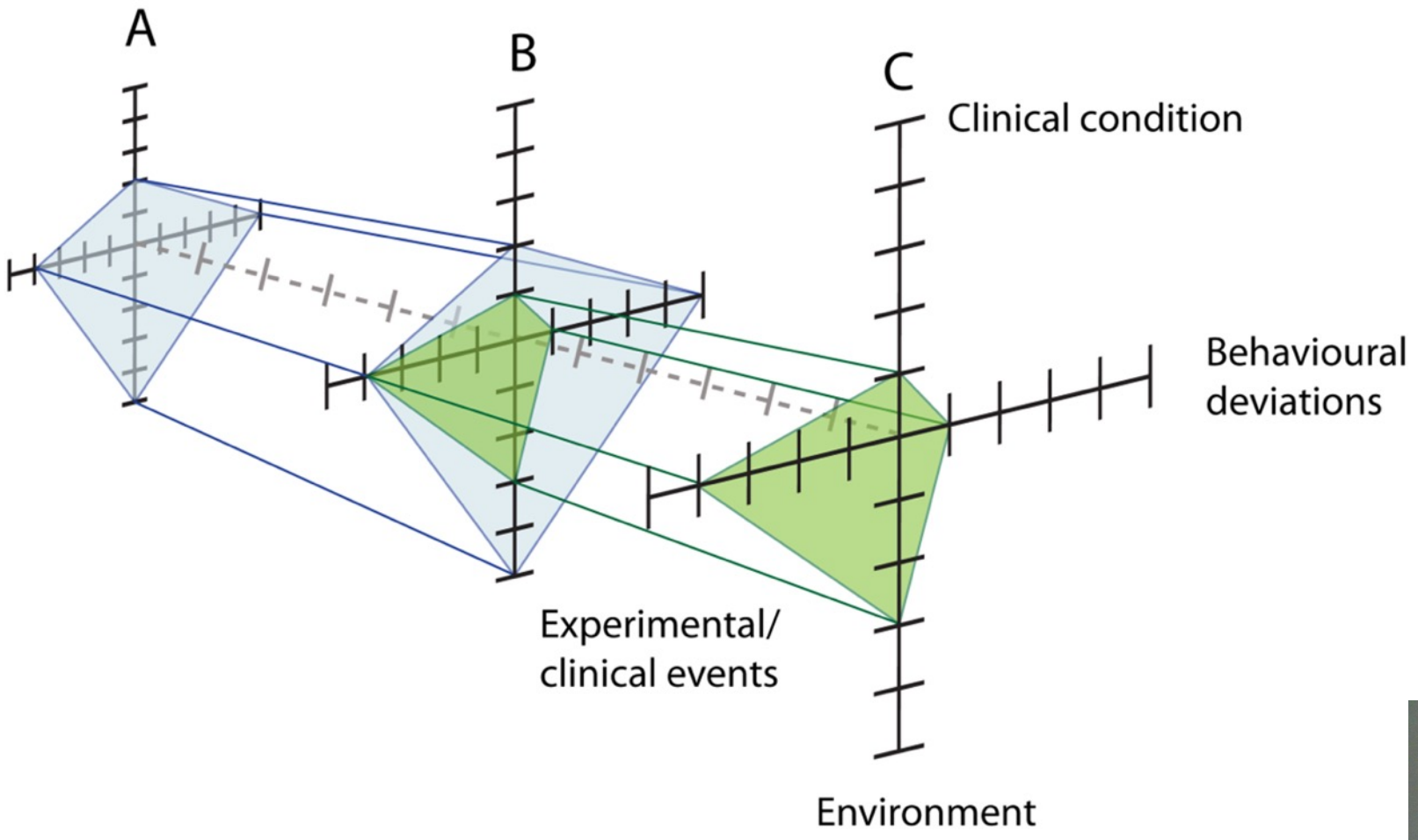
Behavioural deviations:
reflecting psychological wellbeing

Score 1 - Normal
10 – Grossly abnormal

AWAG
ANIMAL WELFARE ASSESSMENT GRID

Slide courtesy of Sarah Wolfensohn

AWAG to illustrate temporal component



AWAG
ANIMAL WELFARE ASSESSMENT GRID

Slide courtesy of Sarah Wolfensohn

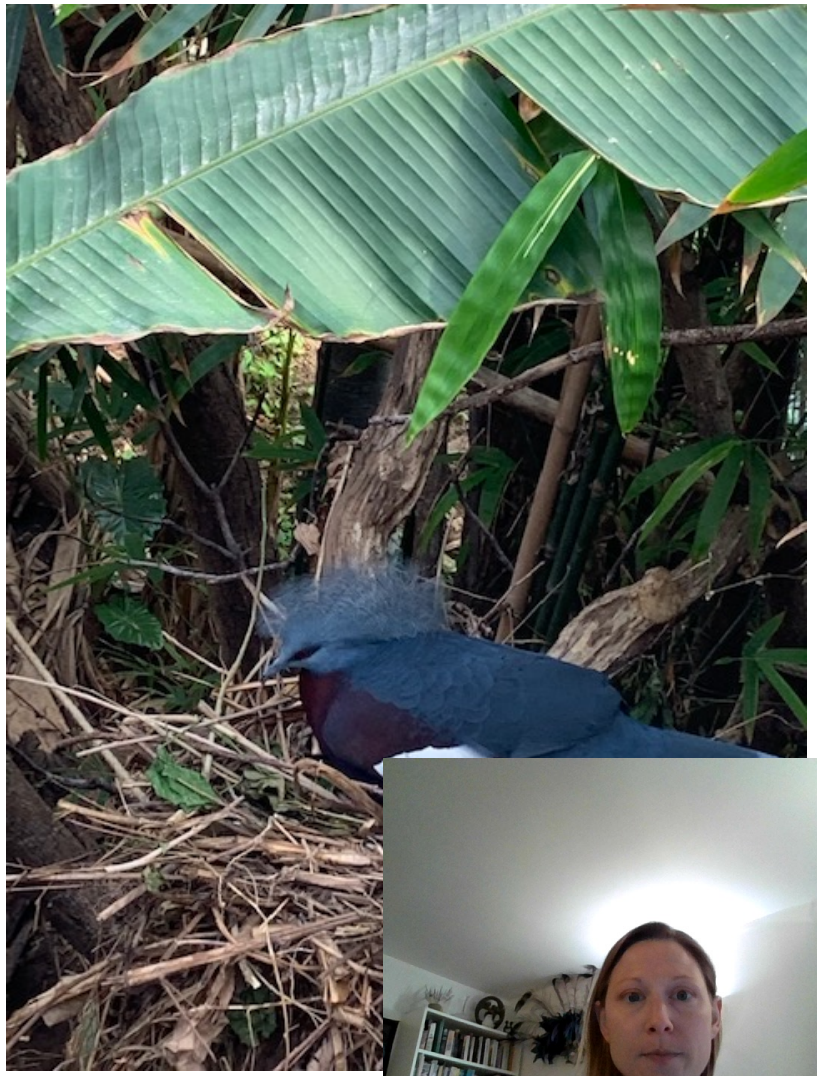
Benefits of the AWAG

- Can be used predicatively or retrospectively
- Variable frequency of scoring
- Flexibility/adaption for:
  - Taxonomic groups
  - Groups vs individuals
  - Specific situations e.g. during transport
- Quantitative assessment of cumulative suffering
- Positive and negative affective states considered
- Visual depiction
- Weighting of scores possible

Animal Welfare Assessment Grid

- Species development and validation
  - Laboratory Primates*
  - Zoo Primates*
  - Birds (wildlife park and zoo*; including during transport)
  - Zoo carnivores*
  - Zoo large herbivores*
  - Dogs (PhD project)
  - Dairy cows
  - Horses
  - Fish
  - Macropods
  - Decapods and Cephalopods

- App development with Reuben Digital
  - Quick and easy functionality
  - Keepers can score in real-time
  - Option to add comments



AWAG

Select site

AWAG

Help

Dani Free

- Dashboard
- Owners
- Animals
- Animal Groups
- Studies
- Assessments
- Events

Data Management

Studies

Dashboard / Studies

Search options

Search

Id #: | Keyword: | Start date: | End date: | Sort by: Date | Order: Desc.

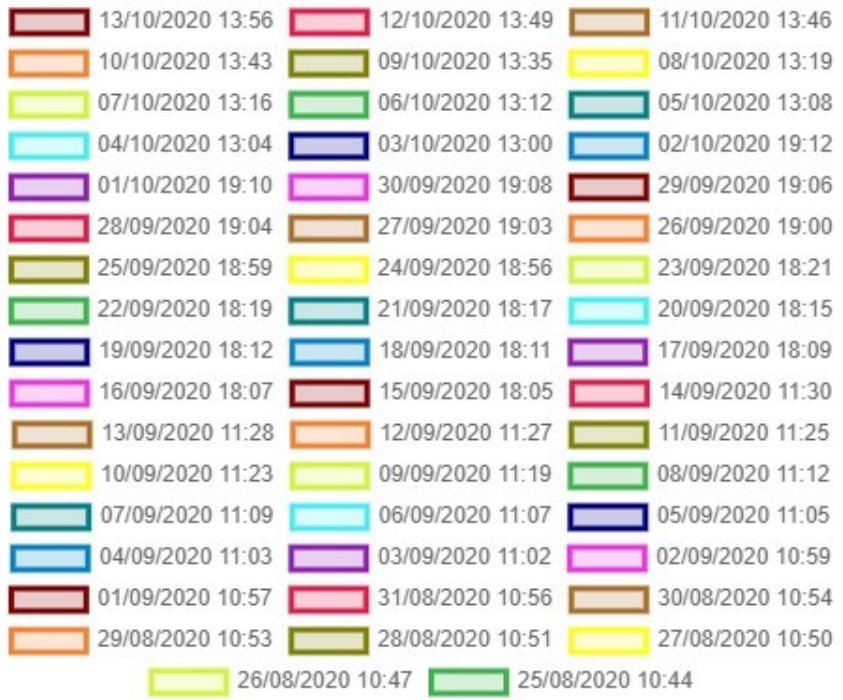
#	Study Name	Start Date	End Date	Organisation
57	7119 Makeda (A-)	01/03/2021		Marwell Zoo
58	3597 Matilda (A-)	01/03/2021		Marwell Zoo
59	8084 Christa (A-)	01/03/2021		Marwell Zoo
60	8920 Jade (A-)	01/03/2021		Marwell Zoo
61	8996 Irsula (A-)	01/03/2021		Marwell Zoo

Details about each welfare parameter by date. Colour-coded to aid identification of high scores. Notes possible.

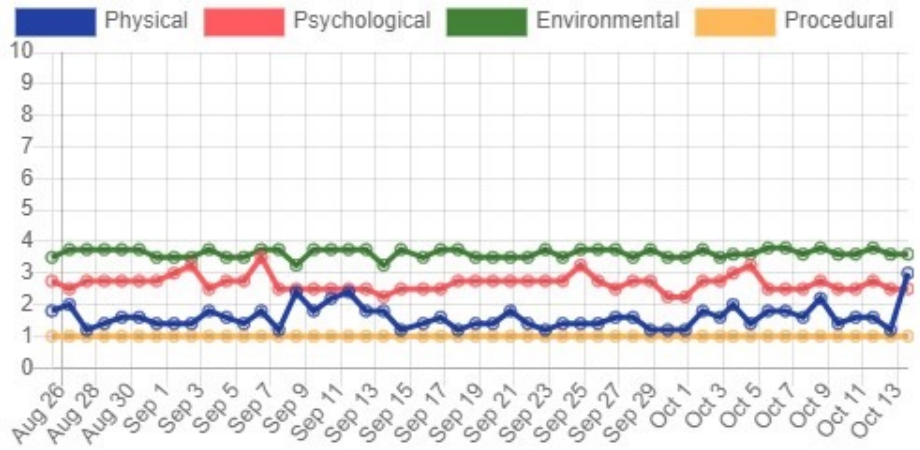
Assessment Data

Assessement date	Notes	Physical	Psychological	Environmental	Procedural	Cumulative
25/08/2020 10:44	Eryn Started scoring	1.80	2.75	3.50	1.00	9.94
26/08/2020 10:47		2.00	2.50	3.75	1.00	10.06
27/08/2020 10:50		1.20	2.75	3.75	1.00	9.28
28/08/2020 10:51		1.40	2.75	3.75	1.00	9.66
29/08/2020 10:53		1.60	2.75	3.75	1.00	10.03
30/08/2020 10:54		1.60	2.75	3.75	1.00	10.03
31/08/2020 10:56		1.40	2.75	3.50	1.00	9.19
01/09/2020 10:57		1.40	3.00	3.50	1.00	9.80
02/09/2020 10:59		1.40	3.25	3.50	1.00	10.41
03/09/2020 11:02		1.80	2.50	3.75	1.00	9.71
04/09/2020 11:03		1.60	2.75	3.50	1.00	9.56
05/09/2020 11:05		1.40	2.75	3.50	1.00	9.19
06/09/2020 11:07		1.80	3.50	3.75	1.00	12.49
07/09/2020 11:09		1.20	2.50	3.75	1.00	8.66
08/09/2020 11:12		2.40	2.50	3.25	1.00	9.89
09/09/2020 11:19	Report lacking	1.80	2.50	3.00	1.00	8.40
10/09/2020 11:23	Report lacking	2.20	2.50	3.75	1.00	10.41
11/09/2020 11:25	report lacking	2.40	2.50	3.75	1.00	10.76
12/09/2020 11:27	report lacking	1.80	2.50	3.75	1.00	9.71
13/09/2020 11:28	report lacking	1.80	2.25	3.25	1.00	8.21
14/09/2020 11:30	report lacking	1.20	2.50	3.75	1.00	8.66
15/09/2020 18:05		1.40	2.50	3.50	1.00	8.58
16/09/2020 18:07		1.60	2.50	3.75	1.00	9.36
17/09/2020 18:09		1.20	2.75	3.75	1.00	9.28
18/09/2020 18:11		1.40	2.75	3.50		
19/09/2020 18:12		1.40	2.75	3.50		
20/09/2020 18:15		1.80	2.75	3.50		
21/09/2020 18:17		1.40	2.75	3.50		
22/09/2020 18:19		1.20	2.75	3.75		

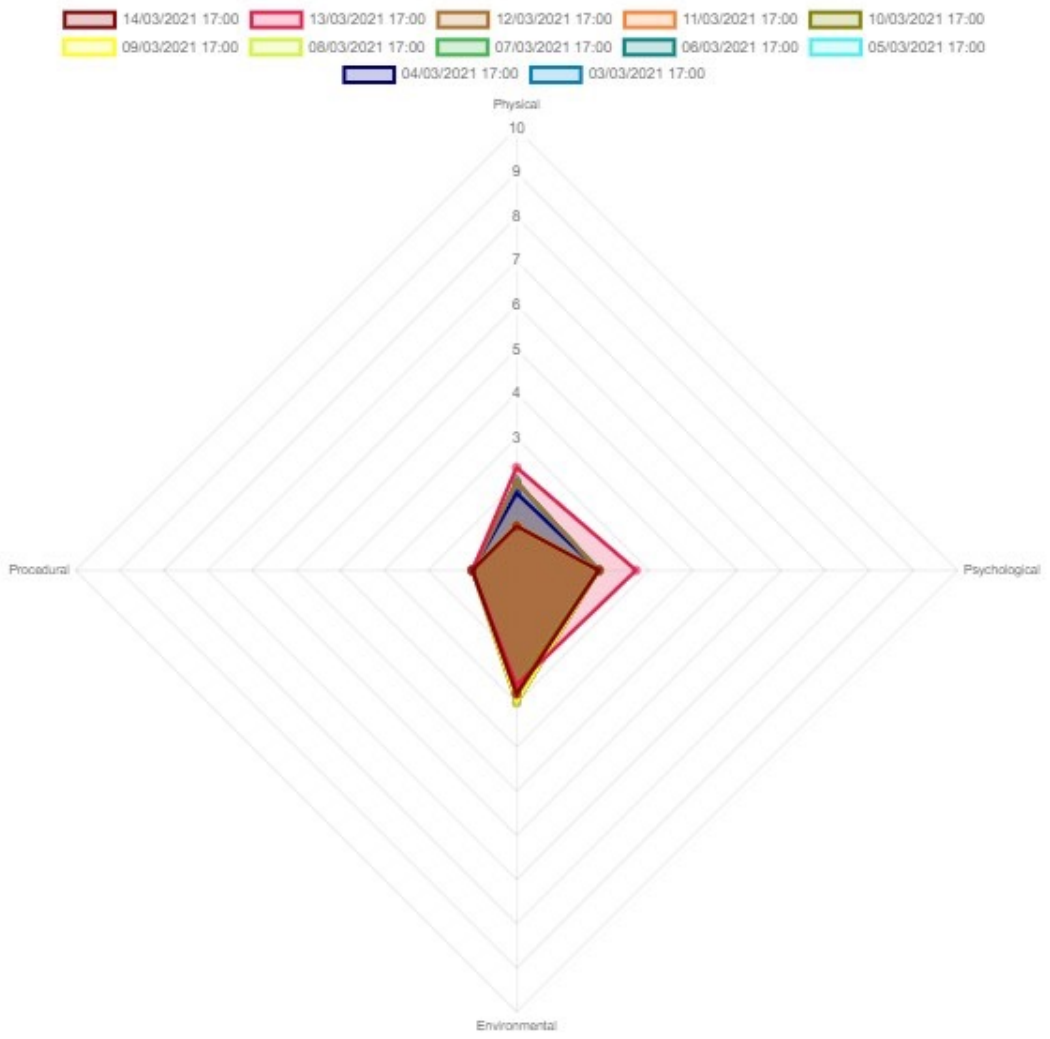
Welfare Assessment Grid (WAG)



Parameter Average

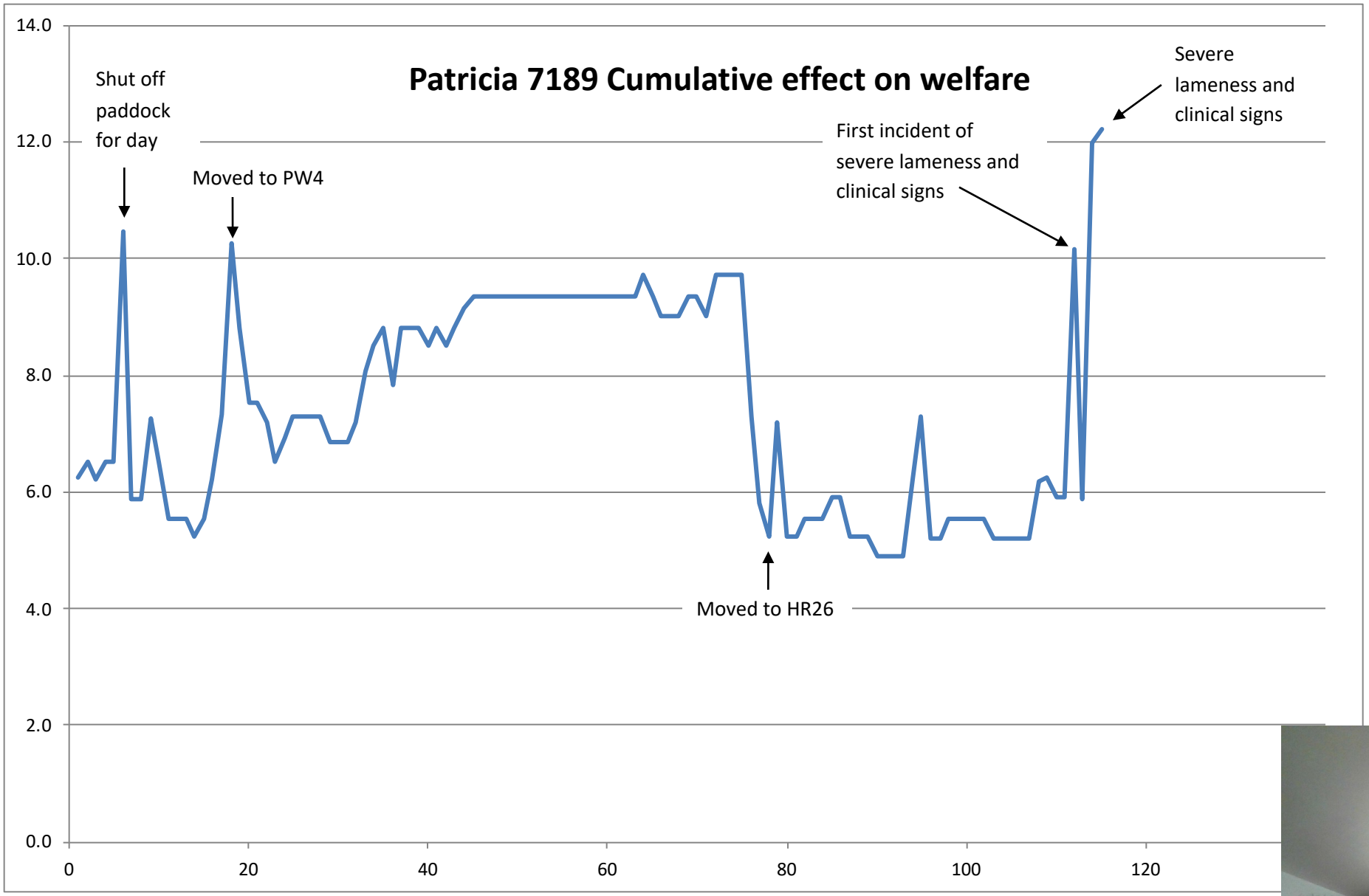


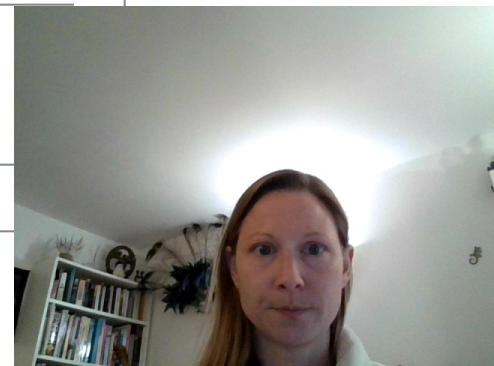
Welfare Assessment Grid (WAG)



Parameter Average

Visualisation of cumulative welfare assessment score over time


Patricia 7189 Cumulative effect on welfare
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
20
40
60
80
100
120
Shut off paddock for day
Moved to PW4
First incident of severe lameness and clinical signs
Severe lameness and clinical signs
Moved to HR26



The outcome of using the AWAG

- Allows objective feedback on changes affecting animal QoL
- Enables drilling down to the separate components of welfare: Physical, Psychological, Environmental, Procedural
- Ongoing refinements can be targeted at specific elements
- Visual representation of QoL which may be easily understood and encourages communication about animal welfare
- Demonstrates to regulators, keepers, management, guests, the public, and welfare groups that a proactive approach is being taken for welfare
- Will generate big data on animal welfare that will inform policy makers and drive improved attitudes and investment in this area
- Improve, or prevent deterioration, of animal's quality of life

→ A good life, a life worth living…..

AWAG
ANIMAL WELFARE ASSESSMENT GRID

Slide courtesy of Sarah Wolfensohn

Further work

- Increased use across taxa
- Validation
- Trialling for wild animals with different sub-parameters
- Use of tech and remote behavioural monitoring

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References

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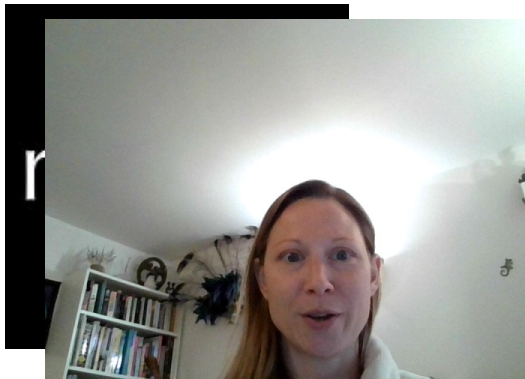
Public Health England



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Any Questions?!