

The science behind waterfowl behaviour



Dr Paul Rose

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p.rose@exeter.ac.uk
@pauledwardrose

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What the duck is this man talking about?

I'm a zoo man. Sorry if this is not very "private focussed".

Don't preach to the converted; we need to convince others that ducks are great.

We need to base management on evidence.



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Why observe behaviour?

Behaviour is your friend!

It tell us lots about an animal's physical and psychological health.

It helps us with record keeping and population management.

It helps us understand breeding activities and when to change husbandry.

It allows us to evaluate our management, housing and care routines.

It provides an insight into the emotional state of our birds and what they are thinking or feeling.



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The dreaded P word.

Ethics

- Acceptable?
- Accountable?
- Relevant?
- Required?
- Evidence-based?

Welfare

- Species considerations
- Natural ecology
- Population management
- Individual bird considerations
- Housing system
- Health and wellbeing



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Is quality of (captive) life improved by flight restraint?

What biological realities are there to judge this against?

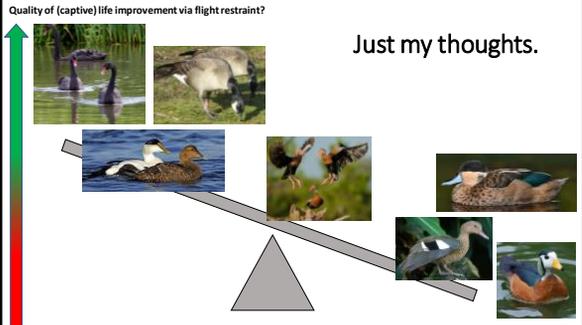
- Species' habitat choice.
- Mode of locomotion.
- Quantification of daily time budget.
- Anti-predatory or escape mechanisms.




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Quality of (captive) life improvement via flight restraint?

Just my thoughts.



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What are we doing about this?

Measure time spent on behaviour = Energy = Motivation



Measure where birds are and what they interact with

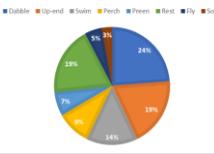


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Comparing the wild with the zoo

*hypothetical data

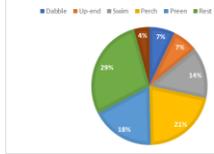
WILD



Activity	Percentage
Dabble	24%
Up-land	18%
Swim	14%
Perch	9%
Preen	7%
Rest	5%
Fly	2%
Social	1%



ZOO



Activity	Percentage
Dabble	14%
Up-land	21%
Swim	18%
Perch	7%
Preen	29%
Rest	4%
Fly	1%
Social	7%



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Free-living wildfowl time-activity budgets

Afton (1979). Time budget of breeding northern shovelers. *The Wilson Bulletin*, 91(1), 42-49.

Amor Abdâ et al. (2015). Phenology and diurnal behaviour of the northern shoveler *Anas clypeata* in the Guerbes-Sahadja wetland complex (north-eastern Algeria). *Zoology and Ecology*, 29(1), 19-25.

Guillemain et al. (2000). Foraging behavior and habitat choice of wintering northern shoveler in a major wintering quarter in France. *Waterbirds: The International Journal of Waterbird Biology*, 23(3), 353-363.

Metallaoui et al. (2014). A comparative study of the diurnal behaviour of the northern shoveller (*Anas clypeata*) during the wintering season at Garaet Hadj-Tahar (North-East Algeria) and Garaet, Timganine (Algerian highlands). *Turkish Journal of Zoology*, 38(2), 158-167.



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Natural ecology in husbandry



What has it evolved to do?

What fitness benefits does it get from X behaviour?

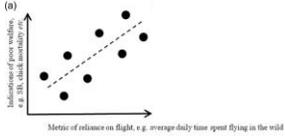
What will "go wrong" if that behaviour cannot be performed?

How can captive management provide the outlet for such important behaviours?

Rose, P. E. (2018). Ensuring a good quality of life in the zoo. Underpinning welfare-positive animal management with ecological evidence. In M. Berger & S. Corbett (Eds.), *Zoo animals: Behavior, welfare and public interactions* (pp. 141-198). New York, USA: Nova Science Publishers Inc.

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Why we must consider species differences

Mellor, E., McDonald Kinkaid, H. & Mason, G. (2018). Phylogenetic comparative methods: Harnessing the power of species diversity to investigate welfare issues in captive wild animals. *Zoo Biology*, 37(5), 369-388.

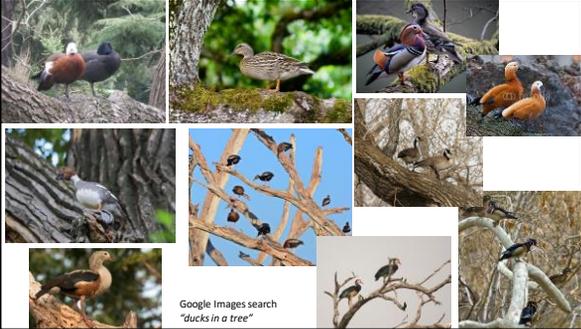
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Pet ducks do science too

What do birds choose to do and why?
Perching preferences in open enclosures.




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Google Images search "ducks in a tree"

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Measurement and assessment of individual bird welfare

EAZA / BIAZA take note! An essential component of running your zoo. Coming soon!

Remember: Good care is not the same as good welfare.

- Animal-based measure
- Resource-based measure




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The One Plan Approach to conservation and you!

I appreciate these aren't ducks!

Traylor-Holzer, K., Leus, K., & Bauman, K. (2019). Integrated Collection Assessment and Planning (ICAP) workshop: Helping zoos move toward the One Plan Approach. *Zoo Biology*, 38(1), 95-105.

Wild world Captive world Species conservation outcomes

Metapopulation management

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Bruce says:

Science matters!

It supports why we keep wildfowl in our collections.

It will provide information that is needed to ensure wildfowl keeping remains relevant and sustainable.

More evidence → more value → better display → better feedback on an exhibit → more return visitors.

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If you'd like a good book.

Handbook of Waterfowl Behaviour
Paul A. Johnsgard

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Thank you and do get in touch

Help develop priorities for research for waterfowl across EAZA.

Draft of mixed-species holding questionnaire for BIAZA zoos all but finalised.

How can we work out "what ducks want/need"?

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