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Emotional valence: Is it reflected in call types and in acoustic properties of piglet vocalizations?

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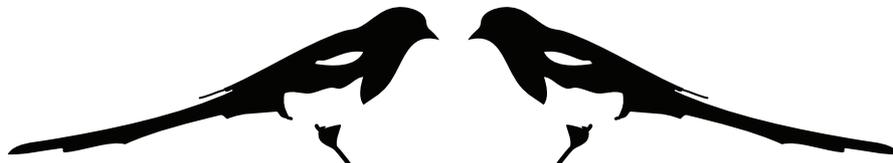
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BEHAVIOUR 2013

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Abstract Book

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starlings conformed to economic rationality on both tests, showing strong stochastic transitivity and no violation of the independence principle. The results endorse both axiomatic microeconomics and optimality assumptions in behavioural ecology.

C5: Applied Ethology

C5.1 Emotional valence: Is it reflected in call types and in acoustic properties of piglet vocalizations?

Marek Spinka, Institute Of Animal Science Prague
Celine Tallet, Pavel Linhart

How emotional valence is encoded in mammalian vocalizations is a prominent question in animal-welfare-oriented bioacoustics. We assessed this question using 1513 calls produced by 84 piglets in 11 situations. The negativity of the situations was ranked based on judgments of 28 pig behaviour experts. The acoustic quality of calls was described with 8 acoustic parameters. K-means clustering method was used to classify the calls into 5 call types. Statistics were calculated based on situation means (N=11, P adjusted for multiple testing). More negative situations were associated with longer calls ($r_s = -0.80$, $P = 0.025$) but no other acoustic parameter was associated with the experts' ranking of situations. The proportion of high-pitched, stable frequency "scream" calls was higher in more negative situations ($b = -0.55$, $P = 0.012$) while medium-pitched tonal "croaking" calls were increasing in more positive situations ($b = 0.34$, $P = 0.012$). Thus the acoustic quality and the call types were related to the expert-ranked negativity of the situation but not as much as expected. The experts might have overrated negativity of some human-induced situations (eg, brief isolation) and underrated negativity pig-induced situations such as fighting for teats. Emotional valence is encoded in piglet vocalizations but animal-based measures of the situations' negativity are needed to assess the relationship precisely.

C5.2 Chronic noise affects predator avoidance behaviour via trade-offs in resource use

Sophie Holles, University Of Bristol
Stephen Simpson, Erica Morley, Andrew Radford

Trade-offs in resource allocation are vital to survival through developmental stages. Many recent studies have revealed impacts of anthropogenic noise on a wide variety of taxa including birds, mammals and fish varying from stress responses, to disruption of vital cue detection via distraction and masking. In this study we investigated the impact of chronic

noise through early stages of development in an economically important vulnerable species where recruitment is vital for population dynamics; Atlantic cod (*Gadus morhua*).

Three experiments revealed that 1) acute exposure to ship noise playback caused startle responses; 2) chronic exposure to ship noise playback lead to reduced body condition and 3) reduced body condition was linked with reduced survival time in a predator avoidance experiment. We propose two mechanisms where trade-offs may affect body condition and as a result, predator avoidance behaviour: a cognitive trade-off in the allocation of attention to noise versus foraging, affecting resource acquisition; and a physiological trade-off in resource allocation to growth and development versus the metabolic load incurred by chronic adrenal activation.

These experiments reveal that anthropogenic noise has the potential to impact behaviour, survival, population dynamics and selection through trade-offs in resource allocation during developmental stages.

C5.3 Simple environmental enrichments improve reproductive success in a model captive carnivore, the American mink (*Neovison vison*)

Rebecca Meagher, University Of Guelph / University Of British Columbia
Jamie Dallaire, Dana Campbell, Maria Diez-Leon, Misha Buob, Georgia Mason

Unstimulating enclosures typically reduce welfare, and some hypothesise that they impair reproduction (e.g. in breeding centres/zoos). We tested this hypothesis via a large-scale experiment on three mink farms. We selected two 3-month-old male-female pairs from each of 260 families, providing one pair/family with balls and a hose or chain. Temperament (in "stick tests") and play were assessed two-three months later; and fur-chewing scored in the c. 60% subjects "pelted" at 7 months. Enrichments increased play, and reduced fearfulness (plus aggression on one farm) and fur-chewing. As adults (9-10 months), faecal cortisol metabolites (FCM) and locomotor stereotypies (e.g. pacing) were assessed; mating observed in a male sub-sample; and 380 new age-matched individuals recruited (half enriched). Enrichments did not reduce stereotypies, and only reduced FCM on one farm. However, enriched males copulated for longer than controls, and life-long enriched females had reduced infertility. Once litters were born, c. 20% of females were given elevated shelves for resting.