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Inferring the “Meaning” of Wing-Tail Flicking Behavior in American Crows

Avree Kestay
Binghamton University--SUNY

Aardash Devkota
Binghamton University--SUNY

Inferring the "meaning" of Wing-Tail Flicking Behavior in American Crows

Avree Kestay[1], Aadarsh Devkota[1], Sheila Moore[2], and Anne B Clark[1,2]
[1]Integrative Neuroscience Program; [2]Department of Biological Sciences

Introduction: Wing-Tail Flicking behavior (WTF) is a very common behavior in some species of crows (*Corvus sp*.), including American Crows (*C. brachyrhynchos*). Movement similar to WTF in other birds has been associated with wariness, but it could also act as a social signal. However, there is little research investigating the contexts or signal value of the behavior in any bird. Knowing its "meaning" would allow us to interpret the underlying emotional or motivational states of crows, an especially important addition to experiments on personality and learning.

Goals:

A) Describe: Distinguish intensities
B) Quantify differences due to :
- **Environments**
- **Contexts (e.g., landings)**
- **Age**
- **Group size**

C) What factors predicts intensity and number of flicks ?

Environmental Contrasts

Territory: Small family groups (2-10 birds)
- Few birds- less safe; related birds

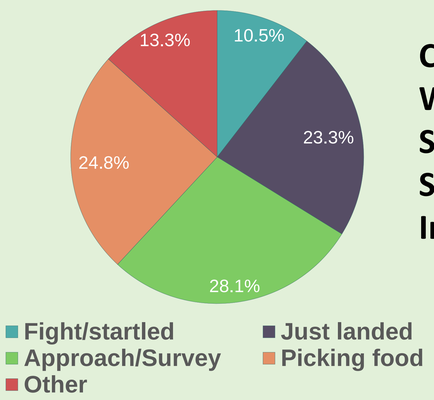
Compost: Large foraging groups
- Potentially Safer, but unrelated birds

Methods:

- Data taken from videotapes made in a single experimental situation—crows coming to a food source,
- In two environments: small family groups (Territory), large communal area (Compost)
- Recorded contexts, intensities, number of flicks, rates of WTF, age of individual crow, group size

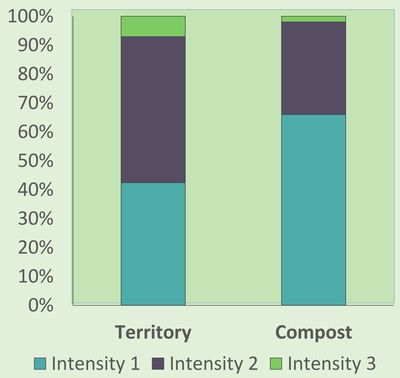
A) Levels of Intensity Distinguished

0= no flicks in common contexts
1= Slight wing tip movement
2= Wings Flick upwards, tail spreads down
3 = pronounced wing move, tail fully spread

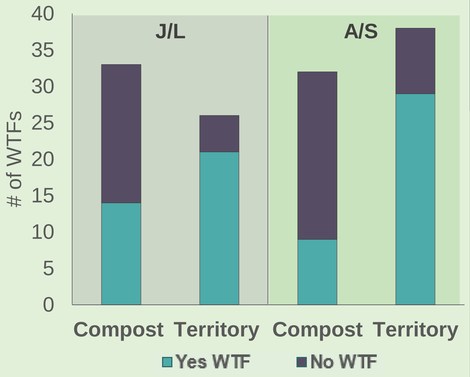


Contexts where WTF is observed: Social and non-Social; all contexts In both Environments

B) Environments differed in Intensity



More low intensity WTF at the Compost vs Territories.
(χ^2= 11.9, df=2, p=.0027)



Crows more often did not WTF at all at Compost
(J/L χ^2= 7.34, p=0.007;
A/S χ^2= 14.4, p=0.0002)

C) Context and Family explain variation in Intensity and Frequency on Territory

- **Context** played significant role in level of intensity (p=0.0089)
- Only **family identity** played a role in variation of number of repeats (p=0.01)
- Age of individual and group size do not explain variation in WTF behavior

Conclusions:

Behavioral contexts included social and non-social in both environments.
- Non-social—prepare for flight in risky situations
- Social signaling of risk

WTF was more common, higher intensity on Territory than Compost.
- Fewer birds on Territory, less safe.
- Stronger relationship among birds, greater motivation for signaling.

On Territories, intensity varied with context, not age of bird, but families differed in rate of WTF.
- WTF informative of context; may be contagious.

Future Directions

- Explore family differences
- Differences in territory
- Variation in WTFs with individual, sex, breeding status, etc.
- Wing folding patterns
- Explore its signal value