Corvid cultural transmission: learning to learn from others

Supervisory team:
Main supervisor: Dr Alex Thornton (University of Exeter)
Second supervisor: Dr Dick James (University of Bath)
Dr Neeltje Boogert (University of Exeter), Prof Darren Croft (University of Exeter)

Collaborators: Dr Alex Mesoudi (University of Exeter)

Host institution: University of Exeter (Penryn)

Project description:
The ability to learn from others (social learning) allows individuals to develop important skills and can generate cultural traditions within groups. However, social learning also has costs: by learning from others, rather than through their own interactions with the environment, animals risk picking up out-dated or irrelevant information. Animals from bees to birds and humans are known to solve this problem by switching between individual and social learning selectively, using rules to specify when, how and from whom to learn. These rules, known as social learning strategies, are generally assumed to have been shaped by natural selection and be under genetic control. The possibility that social learning strategies are themselves learned has not been investigated in natural populations.   Learning to learn from others could be highly beneficial, allowing individuals to change their social learning strategies as conditions change. For instance, as knowledge accumulates with age, many animals follow a "copy older individuals" strategy, but it could be useful to switch from this strategy if, for example, a group of young individuals discovers a new source of food. This project will examine whether wild jackdaws, birds of the large-brained corvid family, can learn social learning strategies, and explore how such learning influences group structure and dynamics.

Our field sites contain thousands of colour-ringed and RFID-tagged jackdaws. Using programmable RFID-detecting feeders and social network analyses, the project will test

(1) how early life experiences affect individuals' positions in social networks and (2) whether jackdaws learn to learn:

a) When to learn socially: using programmable feeders to control individuals' access to food we will test whether birds can learn when to follow or avoid others and examine how this learning affects patterns of social interaction in other contexts.

b) Who to learn from: by controlling which individuals are able to access food, we can alter their value as models for others to learn from. This allows us to test whether birds can learn to pay attention to specific individuals or classes of individuals (female/male; young/old) and to change their strategies if conditions change.

c) To coordinate with social partners: in cooperative contexts, such as parents raising young together, coordinating actions may maximise their joint rewards. We will test whether the strength of existing relationships between individuals affects their ability to learn to coordinate to solve cooperative puzzles.

Together, this work will provide important insights into animal social learning and the evolution of culture.

Social foraging jackdaws
©Cornish Jackdaw Project