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Studying corvids in lab and field

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Members of the Corvidae family ('corvids') exhibit a wide range of 'primate-like' behaviours. Ravens, for example, form social relationships of notable complexity¹, some food-caching jays have the ability to plan for the future², and two tropical crow species use tools for extractive foraging^{3,4}. This striking evolutionary convergence has sparked considerable research interest, as it provides valuable opportunities for comparative research⁵.

The socio-ecology and cognition of corvids is being studied productively in both laboratory and field. Lab-based studies, which often use hand-reared subjects, offer a high degree of experimental control, good replication, and opportunities to expose birds to foods, materials or problems they would not normally encounter in nature^{6–9}. This said, some species do not tolerate permanent captivity well, or at least should not be held longer-term in social isolation or outside their natural climes, so expert advice must be sought before setting up new research colonies. Sometimes, it is possible to work with temporarily-captive subjects: wild birds are trapped, housed in (field) aviaries for the brief duration of behavioural experiments (from a few hours up to several weeks), before being released again at the site of capture^{10,11}. This approach can only be used with species that habituate well to novel environments, and requires carefully-designed study protocols^{10,11}, to ensure the welfare of birds both in captivity and after release, and to avoid the unintentional 'seeding' of novel behaviours in wild populations.

In field studies, corvid researchers have an arsenal of well-established ornithological techniques at their disposal, including straightforward methods for marking individuals (leg rings, wing-tags, radio-tags), and assessing their body condition (flight-muscle development, parasites) and reproductive performance (laying date, clutch and brood size). Free-ranging birds can often be enticed to engage with experimental set-ups^{12–14}, including naturalistic or artificial stimuli, or baited problem-solving tasks. This enables close-range observation of natural behaviours from hides or with camera traps, and/or

controlled investigation of social interactions, foraging performance or cognitive capacities; again, care should be taken not to alter irreversibly the behavioural repertoire of wild populations. Finally, recent advances in cutting-edge ‘bio-logging’ technology offer exciting opportunities to remotely investigate the behaviour and social dynamics of free-ranging corvids. For example, GPS tags have been used to chart the movements of wide-ranging species¹⁵, bird-mounted miniature video cameras can spy on completely undisturbed behaviour¹⁶, and so-called ‘proximity loggers’ are capable of recording – minute-by-minute – the social interactions of entire populations¹².

Two closely-related ‘common-sense’ approaches have proved particularly useful for boosting the efficiency of corvid research programmes. First, a sound understanding of the study species’ natural history is usually key to asking productive research questions¹⁷, and principal investigators should encourage their teams to spend time observing wild birds, especially if fieldwork is not a primary objective. Many corvid researchers have fascinating stories to tell, of how anecdotal observations inspired some of their most important work. Second, combining lab- and field-based research often generates fruitful synergy, and as a result, exciting insights¹⁸. Sometimes, intriguing field observations³ inspire controlled laboratory experiments¹⁰, while on other occasions, interpretation of experimental results requires a sound understanding of species-typical behaviours¹⁸.

Corvid research is thriving, making critical contributions to comparative studies of social complexity, cognition, and tool behaviour⁵. Research opportunities abound, and it is surprising just how little we still know about some of the most wide-spread and abundant species, such as carrion crows, American crows, ravens, house crows, jackdaws, rooks, and various jays and magpies. In fact, many of us regularly encounter corvids where we live and work – willing participants, no doubt, for field experiments that offer interesting puzzles and some juicy morsels of meat.

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