**Appendix 1:** Overview of studies linking cognitive performance and reproductive success in wild animal populations. Studies are classified by taxon. For each cognitive task, we provide details about whether the study took place in a field laboratory or directly in the field. Reproductive success metrics are provided. The relationship between cognitive performance and reproductive success is either positive (+), negative (-) or non-significant (NS).

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Species** | **Context** | **Cognitive traits** | **Cognitive task** | **Reproductive success metric** | **Statistics** | **Intrinsic characteristics** | **Sample size**  | **Results** | **References** |
|  |  |  |  |  |  |  |  |  |  |
| Great tit (*Parus major*) | Wild tested in field lab | Problem solving | Lever pulling food acquisition | Clutch size | GLMM for Poisson data | SexAge | N = 676308 ♂368 ♀ | **+** in ♀ NS in ♂ | (Cole et al., 2012) |
| Nestlingsurvival | GLMM for binomial data | N = 676308 ♂ 368 ♀ | - in ♀NS in ♂  |
| Fledglingnumber | GLMM for Poisson data | N = 580273 ♂307 ♀ | **+** in ♀NS in ♂ |
| Great tit (*Parus major*) | Wild | Problem solving | String pulling obstacle removal | Clutch size FledglingnumberNestlingsurvival | GLM for binomial data | SexBody condition | N = 26 pairs | **+** fledgling number + clutch size NS NestlingSurvival  | (Cauchard et al., 2013) |
| Great tit (*Parus major*) | Wild | Problem solving | String pulling obstacle removal | Fledglingnumber | LM for binomial data | SexBody condition | N = 150 pairs | **+** fledgling numberin year 1 | (Cauchard et al., 2017) |
| Great tit (*Parus major*) | Wild | Problem solving | Obstacle removalFood acquisition  | Clutch size, Hatchingsuccess,FledglingNumber  | LMM for quasi-binomial data | SexPersonality Age  | N = 55 pairs | Obstacle removal: NS clutch size + hatching success + fledgling number Food acquisition taskNS clutch size, hatching success, fledgling number  | (Preiszner et al., 2017) |
| House sparrow*(Passer domesticus)* | Wild | Problemsolving | Obstacle removal | NestlingSurvivalNestlingsize | GLM for binomial data | SexAge | N = 8041 ♂39 ♀ | NestlingsurvivalNS in ♀+ in ♂Nestling sizeNS in ♀ and ♂  | (Wetzel, 2017) |
| Satin bowerBird (*Ptilonorhynchus**violaceus*) | Wild | Problemsolving | Obstacle removalCoverage task | Matingsuccess | Regression analyses | AgeMotivation | Obstacle removal: N = 25 ♂Coverage task: N = 33 ♂ | + for both tasks  | (Keagy et al., 2009) |
| Satin bowerBird (*Ptilonorhynchus**violaceus*) | Wild | ‘Intelligence score’from 6 tasksand each task separately | Problem-solving (x 2)Mimetic repertoireBower rebuilding (x 3) | Matingsuccess | Regression analyses |  | 21 ♂ | NS Problem solving (task 1)- Problem solving (task 2) + Mimetic repertoire+ Bower rebuilding (tasks 4 and 5) NS Bower rebuilding (task 6)  | (Keagy et al., 2011) |
| Spotted bowerBird (*Ptilonorhynchus**maculatus*) | Wild | PCA scorefrom 6 tasks | Motor task, Colour andshapediscrimination, 3.reversal learning,4.spatial memory | Matingsuccess | Spearman rank correlation &LMM with PCA score | Age | 11 ♂ | NS for all tasks  | (Isden et al., 2013) |
| AustralianMagpie (*Cracticus**tibicen dorsalis*) | Wild | PCA scorefrom 4 tasks | Inhibitorycontrol Associativelearning ReversallearningSpatialmemory | Number ofclutches andfledglingsper year Fledglingsurvival | GLMM with PCA score | Body mass | 22 ♀ | + for all tasks | (Ashton et al., 2018) |
| New Zealand robin (*Petroica**longipes*) | Wild | Spatial memory | Food acquisition | Number of fledglings Hatching successFledglingsurvival | GLM & GLMM for Poisson data | SexAgeBody condition | N = 4931 ♂18 ♀ | ♂+ Number of fledglings NS Hatching success + Fledglingsurvival ♀NS Number offledglings, hatching success fledglingsurvival  | (Shaw et al., 2019) |
| Black-capped chickadee (*Poecile gambeli*) | Wild | Spatial learning and memory | Spatial array | Clutch sizeBrood size  | GLM | Sex Age | 27 ♂ 14 ♀ | ♂ + Clutch size + Nrood size ♀NS Clutch size, brood size  | (Branch et al., 2019) |