*Experimental Design*

**Designing a Strong Research Investigation**

***It starts with a question …***

***Corvid Feeder Behavior***

Often times a research investigation starts with an “I Wonder” Question. Then the Research Question follows. Finally, the Methodology to investigate the question is determined and the research is carried out. Below is a series of steps taken to get to a good Research Question. A Research Question is testable and measurable.

*For purposes of the example, see the Key below:*

* IWQ = I Wonder Question
* IWH = I Wonder Hypothesis
* RQ = Research Question
* RH = Research Hypothesis
* RD = Research Design
* SP = Single-peanut
* DP = Double-peanut

**Example:**

IWQ: I Wonder why Blue jays (and other corvids like crows) pick up and drop different unshelled peanuts before selecting one and cropping or flying

away with it?

IWH: I think the Blue jays (or other corvid) are selecting the peanuts based on weight. They are dropping the lighter ones (single-peanuts inside) and

selecting the heavier ones (two-peanuts inside).

RQ: What is the percentage of single peanuts selected vs. double peanuts in a tray feeder offered to Blue jays (or other corvids)?

RH: The percentage of double-peanut peanuts selected will be higher than the single-peanut peanuts selected because the birds will select the

peanuts that will provide them more food.

RD:

* **Materials:** tray feeder(s); single-peanut peanuts; double-peanut peanuts; game camera to record feeder visits.
* **Methodology:**
  + Step 1: Deploy and set up tray feeder(s)
  + Step 2: Count out the same number of single-peanut peanuts and double-peanut peanuts. Example: N = 50 total (25-SP; 25-DP).
  + Step 3: Mix peanuts thoroughly in the tray feeder, so the Blue jays will have to pick through them to select what they want.
  + Step 4: Deploy the game camera near the feeder; settings should be on video, motion activation.
  + Step 5: Run experiment recording several visits, to determine which peanuts are being selected the most.
  + Step 6: Analyze data.
  + Step 7: Draw conclusion about which peanuts were selected the most.
  + Alternative Set-up:
  + Instead of mixing the two sizes of peanuts, put them in two distinct trays, side-by-side; set up game camera to record video; analyze results; draw conclusion.