Grackle nest checking protocol
The Grackle Project, www.CorinaLogan.com
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Individually ID each nest, describe nest location and record a GPS point while standing under it so that you can find it again.
- Describe the location of the nest tree using permanent nearby landmarks and cardinal directions (e.g., "Western palm in cluster of palms in planter on southside of Wilson Hall bldg.")
- Observe the tree from multiple angles to determine where the best point for viewing the nest is
- Record this location, and describe the location of the nest (i.e., "in center of tree, visible from SW on 3rd floor balcony")

To GPS a nest either:
- download the "GPS Data" app and take a screenshot of the data while standing next to the tree, add text description to photo and upload to ASU Grackles photo album,
- OR open google maps while standing next to the tree, zoom in to your position, tap your location on the map, it will show you the GPS coordinates
- enter GPS coordinates in the data_NestsNestlings data sheet

To find/check a nest using binoculars:
- Starting in early spring (March), scout around campus to find active breeding sites. A site is active if females fly into trees while carrying nesting material in bill and if males guard nest trees (typically date palms in Tempe, AZ) and display to females there.
- Look for and identify color marked grackles around active nest sites. Follow color marked grackles back to their nests and collect nest description and GPS coordinates. *Note: we are only collecting data on color marked grackle nests and prioritizing those color marked grackles that were in the aviary.*
  - Grackles may alert to your presence and alarm call. If this occurs, back away for a few minutes until they calm down and stop alarm calling or when they engage in normal behaviors.
  - To help with identifying the color bands, you may toss crackers on ground to lure grackles down so it is easier to see the bands, and then follow them back to their nest.
- Continue observing identified nests 2-3 times per week, record the mother's behavior (Table 1, i.e., nest building, incubating, carrying food, feeding fledgling)
  - Once at a nest, observe for at least 30 minutes - if there is no activity at the nest when you get there, this time period will hopefully allow for the female to return to the nest with nesting material or food (if building or nestlings), or leave the nest to search for food (if incubating)
  - Enter data into the nest check datasheet every time you see a color marked grackle engaging in breeding behaviors (see Table 1. Solicitations/courtship is excluded unless it ends in copulation).
  - If you find a new nest, make an entry for it in the NestsNestlings data sheet.

Table 1: We used binoculars to determine the stage of the nest based on the mother's behavior as indicated here.

Nest stage	Description of mother's behavior
1) Building	Mother seen with nesting material in her bill such as sticks, leaves, mud, grass
2) Copulating	A male mounts a female and they move their tails such that their cloacas can touch and insemination can occur
3) Incubating	Mother goes in to the nest with no material in her bill, and remains in the nest for 20 minutes or more. May be observed out of the nest foraging and swallowing food, but then is observed returning and staying in the nest.
4) Nestlings	Mother is observed foraging and holding food in her bill. Then the mother is observed returning to the nest, begging sounds may be audible later in nestling development. The mother then leaves the nest with food no longer in her bill.
5) Fledglings	Mother is observed foraging and holding food in her bill. Then the mother is observed feeding a juvenile grackle (brown eyes, short tail) outside of the nest.
6) Failed	After being observed doing any of the above behaviors, the mother is observed on 2 sequential days for 20 minutes or more not doing any of the above behaviors.

To check a nest using the 30ft pole with a camera on top
All nests of color-marked birds that are lower than 30 feet high must be checked with the GoPro and pole approximately once a week
- **Equipment:** 30ft pole, adapter, GoPro camera (remember to bring extra batteries with you), mobile phone to control the camera remotely, safety glasses.

Grackle SAFETY
Do NOT touch the nest or move branches with the pole/camera. We don't want to risk disturbing the nest such that it falls. It is better to skip a nest if you can't see inside from a distance.
- When **two people** are checking nests: The person handling the pole looks only at the

pole to ensure grackle safety. A second person holds the mobile phone to control the camera.

- If only **one person** is doing nest checks, start recording video before handling the pole, then use the pole to check the nest, bring the pole back down again, stop the video, and check the video to make sure you recorded a view of the inside of the nest. NOTE: only do single person checks as a last resort because it takes multiple people to safely handle the pole (see setup/take down instructions below).
- For shorter trees (<20ft), set up pole ~10m away and carefully walk it to the tree to minimize the time near the nest.

If a bird **mobs** the pole/camera, stop the nest check and come back later when the adult is not around.

Human SAFETY
Wear glasses and a hat to protect from any birds that may mob you. When it is hot, only perform nest checks in the morning to minimize heat risk. Do not use the pole during mid-day to avoid sun damage to eyes from looking up at pole. A second person not holding the pole can use an umbrella to shield the pole handler's eyes from the sun. Take breaks between nests/trees.

How to set up the pole
1. Insert the GoPro into its case and screw it into the camera adapter, then screw the adapter to the top of the pole. Turn on GoPro and its wifi before lifting the pole.
2. With the pole laying down, first extend the middle section by twisting the middle green piece to the right and pulling out the pole extension until you see the black ring. Then twist the green piece to the left to lock it in place. Repeat with the end green piece to extend the next section.
3. Before the pole is upright, turn on the GoPro and the wifi. Go to the phone's wifi settings. Download and open the GoPro app on phone to see video preview and make sure it is working.

To lift the pole into the vertical position
1. One person stands at the base of the pole. A second person stands at the extended end of the pole
2. The person at the base braces the end of the pole against their shoe and places one hand on the pole near their midsection, and the other hand on the pole above their head. They then use both hands to slowly lift the pole upwards.
3. The person towards the extended end of the pole lifts the pole above their head with both hands and walks toward the base to gently guide the pole upward.
4. With the pole in the vertical position, both people will be standing at the base with all four hands on the pole to stabilize it.

How to operate the pole
1. One person handles the pole and slowly walks it towards the tree we want to check.
2. At least one person (could be phone/GoPro operator) will be on the ground acting as a

"spotter" and will help guide the handler to the tree. The spotter will stand ~10ft from the operator to help handle the pole if necessary, and to check the tree from a different vantage point to ensure the pole doesn't bump into the tree/branches/objects.

3. Once the pole is next to the tree, use the remote/phone to start recording on the GoPro.
4. The handler slowly moves the pole around the tree (reminder from above: do NOT touch branches!) to take pictures and/or video. The phone/GoPro operator will look at the video preview on the phone and direct the handler regarding where to move the camera.
5. Once finished at a tree, back away from the tree by at least 30ft to give yourself clearance to lower the pole (see instructions below), then shorten it to the smallest position.
6. Turn off the GoPro between checks to conserve battery life.
7. Review the footage on the phone app (phone may need to be in close proximity with camera to do this), or on a laptop, and adjust pole accordingly. If unable to review footage in the field, write down the photo/video number, time, and description of nest/tree to review later.
8. Move to the next tree and extend pole, turn on GoPro, and then repeat steps 1-7 above.

How to put the pole away
1. To lower pole into the horizontal position:
   a. Two people stand at the base of the extended pole with all four hands holding it upright.
   b. One person stays at the base and keeps hands on pole, and braces the end of the pole against their foot to steady it as it lowers.
   c. The other person moves hands along length of pole while walking toward the extended end as it lowers.
   d. Once the second person reaches the third extension, the pole should be parallel to the ground, and they can place it on the ground together.
2. With the pole laying flat, twist the end green piece to the right to loosen, then push the end extension into the middle section. Once fully inserted, twist the green piece to the left to tighten. Repeat with the middle section to insert it into the base section.
3. Unscrew the camera adapter and GoPro and store in its case for safe travel.
4. Walk the pole back to the storage room. Use the stairs because the pole does not fit in elevators.

How to download/upload videos
1. Plug GoPro into laptop and turn on. Open GoPro files and copy/paste into a new folder on the computer labeled with date (YYYY-MM-DD)
2. Rename video files with the nest ID. Refer to data sheet for nest ID. Naming convention is NestID_#ofpic_name of parent grackle. Ex. AN050_001_Chalupa.mp4
3. Delete all video files off of GoPro and eject from computer. Don't forget to re-charge GoPro and extra batteries before the next nest check!
4. Upload folder to Keeper under Grackle Data>Nest Checks, and also backup files to the Grackle1 hard drive. Once all files are backed up, delete them from the computer to save space.