# Williamsburg Bird Club April 19, 2023

Hybrid meeting hosted in person at the Williamsburg Regional Library auditorium and via Zoom hosted by Ann Carpenter, 6pm

Attendance: 28 in person; 12 via Zoom

<u>President's Remarks</u>: President Nancy Barnhart welcomed the assembly and those watching via Zoom. She announced there would be a short business meeting and a raffle (first post Covid lockdown) after the program.

#### Program – Recipients of 2022 Bill Sheehan/Ruth Beck Ornithology Research Grants:

Before introducing the students, Dan Cristol reported that an Anhinga was spotted by his TA flying over Lake Matoaka and again by him and his students; probably a first for W&M campus.

Dan also requested assistance with a study he and his students are doing. They are looking for robin nests that are under construction or have no eggs or just one. He asked that if comfortable with this study wherein 2 eggs will be donated to science while the other 2 left to be incubated, to please contact him.

Relating a summary of their scholastic backgrounds, Dan introduced the three ornithology research grant recipients. He noted how important our Club's grant donations are for students conducting research projects on a slim budget.

The first presentation, Eqg Vibrations in Response to Parental Calls: Genuine Feedback or Scrambled Eggs! was delivered by 2<sup>nd</sup> year graduate student, Liz Elliot, who will soon be starting her career as a biology teacher in Phoebus High School in Hampton. Liz, who's been studying the potential communication between parent birds and the developing embryo in the egg, reported that it has been established that parents do 'talk' to their developing offspring but it is not known if and how the embryos respond. She described how Zebra Finches, who are native to Australia's deserts, regularly endure heat above 100 degrees. When the temperature rises above 80 degrees, the parents emit a unique 'heat' call that becomes more frequent the hotter it gets. Other researchers found that when they played this call to finch eggs in the absence of heat, the hatchlings were more heat tolerant. Liz wanted to know if there is immediate feedback from parental communication that could be measured. Does the embryo's heart rate and limb movement create vibrations that is felt by the incubating parent and nearby embryo siblings? So, she posed 2 questions: 1. Do eggs vibrate? (How fast and strong?) and 2. Do heat calls cause eggs to vibrate differently? Using lasers, she was able to measure the frequency and amplitude of movement in the egg. When she played the heat-call, she recorded variations of very low frequency vibrations resulting from the embryo's muscle movement. Collaborators in this research are planning to make robotic eggs that will vibrate at the frequencies Liz has recorded to see if/how the parent reacts and whether embryos in the nest have same response. She concluded that this ancient form of communication needs a lot more research, including how it may be affected by the loud noise from human activity.

The next presentation, *Worlds Collide: Conservation and Engineering Meet in the Form of a Bird Collision Sensor,* was delivered by Moira Meehan, a W&M biology master's graduate this last August and who currently works for the Army Corps of Engineers as a regulator protecting our wetlands. She

reported that collisions associated with human actions are a leading cause of bird mortality but that there is only an estimate about how many birds are impacted because of limited scientific research. The Swainson's Thrush, American Robin, Dark-eyed Junco, and White-throated Sparrow are the most frequent colliders recorded in NA and there is interest in understanding why some species are more prone to collision deaths than others. There are known factors correlated with collisions and Moira's interest is how birds perceive light conditions affected by weather and time of day on buildings. Because we don't have data showing when birds are likely to strike buildings, Moira decided to create a device for recording bird collisions in real time. She went to W&M's Makerspace for help in picking out hardware, sensors, programming information and help assembling a prototype of a collision detector. The detector was further refined by the help of interested researchers at Indiana University and their engineering department, with the added benefit of shared funding. The detector consists of a miniature computer with a microphone and vibromator to detect impact on a window and a second miniature computer containing a camera that records constantly and has a circular buffer that only saves a video clip when both the microphone and vibromator are triggered. Moira has graduated but interested W&M undergraduate students have taken over and connected the sensor to Wi-Fi so they can will receive live data on their laptops. They've focused it on the Kaplan Arena. The resulting data will not only give us an understanding of the time and weather conditions that may influence impact but the sensor may also become valuable in testing the efficacy of products meant to prevent collisions.

The third presentation, Full Metal Sparrow: Investigating Behavioral Adaptation to Environmental Lead Contamination in an Urban Passerine, was given by Joseph Di Liberto, a 2<sup>nd</sup> year graduate student who plans to continue his research while pursuing his PhD. He began by noting that lead, a 'forever' chemical that doesn't break down and go away, is a major health concern for humans and wildlife. A study last year found that one-half of all Bald and Golden Eagles in the US suffer from chronic lead poisoning. Lead causes a litany of negative health effects, with decrease of bone density and shifts in behavior due to cognitive and neurological damage. Amazingly, there have been recent potential signs of adaptation in fish called Mummichogs that live in heavily polluted portions of the Elizabeth River. They are showing a higher expression of genes associated with pollution resistance to help them survive. There have been no reports of similar adaptation in terrestrial animals until a 2019 study in an isolated town in Australia called Broken Hill, which is the oldest lead mining community there, started in 1893. House sparrows were introduced over 100 years ago and despite currently extremely toxic lead levels in the soil and in their blood, there is a very big population that are reproducing and doing fine! Geneticists found that these sparrows have evolved to avoid lead poisoning. This stimulated a world-wide, multi-university research collaboration which included whether this adaptation extend to behavior. Joey flew to Australia in the summer of 2022 and conducted research to test for degree of aggression when he handled them; their take-off flight performance; and their activity in a novel environment. He then banded the sparrows and released them for future observation. He predicted that there would be no difference in these sparrows from that of uncontaminated sparrows due to genetic adaptation. Please refer to the video for his interesting account of how he measured behavior, which included his buying wood with the funds from our grant to build structures for his tests. The results showed that the only difference between the highly and the less contaminated sparrows was that the highly contaminated ones were a little slower in take-off which could affect ability to escape a predator. Joey is currently continuing his research by dosing non-adaptive US House Sparrows with lead to compare the results with those in Broken Hill.

It is really inspiring to hear the details of our grant recipients' research that is not covered in this summary, so please check out this link to the YouTube of their presentation. https://youtu.be/aq70NsKsNG0

## Announcements:

## Bird Walks:

• **Saturday, April 22:** Nancy reported that the regular monthly bird walk at NQP will be held at 8 am with Scott Hemler leading. We will be joined by the Middle Peninsula Bird Club.

## Field Trips – George Martin, Field Trip Coordinator:

# • SATURDAY, MAY 13 - PINEY GROVE PRESERVE

The Club has been granted access for 15 members (maximum!) to visit Piney Grove Preserve on Saturday, May 13. This preserve in Sussex County is the home of the Red-cockaded Woodpecker, which Chance Hines described at our March meeting. Chance will be leading us around the preserve. It will be EARLY—Chance recommends we take the 5:20 a.m. ferry to Surry. We will also need carpools because space for cars (5 only) is very limited in the preserve. There is one opening still available and a wait list. So, contact George if interested.

**The Flyer:** Nancy reported that our editor, Mary Ellen, has set April 26<sup>th</sup> as the deadline for contributions to the May newsletter. She already has a lot of content but is interested in recent sightings and photos.

Spring Bird Count – May 7: Nancy reminded us that Jim Corliss, who has just retired from NASA, will be coordinating our annual Spring Bird Count on May 7<sup>th</sup>. Folks participate in teams or from their yards. Please contact Nancy or Jim if you want to join a team.

#### Upcoming Membership Meetings & Programs:

- May 24 (Fourth Wednesday): Jan Lockwood will give a presentation on her amazing birding trip to Kenya.
- June 8 (Second Thursday): We will have an outdoor event at the Chickahominy Riverfront Park pavilion including an update on our Purple Martin Project from Cheryl Jacobson and Judy Jones.

<u>VSO Activities – VSO 2022-2023 President Bill Williams</u>: He announced that the VSO annual meeting will be held virtually May 5<sup>th</sup> at 7pm. There will be a business meeting. The featured speaker is Bryan Watts discussing Eagles on the Chesapeake Bay. There will be a Zoom link for VSO members.

**Shirley Devan -VSO Membership Secretary** announced that the VSO is also sponsoring a field trip to Piney Grove on May 28<sup>th</sup>. Spaces will be limited and one must be a VSO member.

The next VSO field trip will be in Gloucester County including Machicomoco State Park and Beaverdam. Again, VSO membership is required to participate. More info will be in an upcoming newsletter.

Nancy and Shirley had just returned from a birding trip in Teas and saw 171 species in 4 ½ days!

**Free Raffle:** Three bird feeders were donated by Back Yard Birder.

Nancy Barnhart adjourned the meeting at 7:20 pm

Respectfully Submitted, Cathy Millar, Secretary Williamsburg Club, April 24, 2023