

AMOYWG Day 2- November 8, 2023

Session: Habitat Restoration & Creation

Tim Keyes – Intro to session

Georgia habitat restoration projects- currently trying to target nesting habitat and the adjacent foraging habitat. This project has been in the planning phases for 4 years and finally got a permit, NEPA in Jan2024 with dredge in FY25. The pilot shell rake restoration will begin in December this year, and they got permits from ACOE and CMPA. The shell will be added to 6' NAVD88. The project will include 300 cubic yards of shell. They will experiment with geofabrics- this should keep the shell in place longer. The cost was \$70,900, with shell (\$19,000 for 220cy) and contracting (\$45,000) as the most expensive components. Tim is working with the Navy as part of the Kings Bay Submarine Base to create a bird island. This effort is partly because of the loss of gravel rooftops that previously occurred on the base.

During past AMOYWG meetings, it was noted that restoration actions were needed to benefit oystercatchers throughout the range. From that, a habitat restoration sub-team was created. The team created a template to track projects in a way that allows us to facilitate sharing information on all aspects of restoration/creating projects, including the steps to get projects started. The template still needs some work, but we will send it to the AMOYWG for input. The restoration projects will be stored via an ESRI story map. We will be contracting with Black Cat GIS to create the database. The goal is for the database to be searchable. For example, if you are interested in restoring shell rake, marsh, beach, etc., you could search for those types of projects.

Bulk material bags- each bag ways 3 to 4k pounds



Questions/Response

Caleb- Is the plan to make the database publicly available? Yes, but we will need to discuss what information can be shared with the public and what shouldn't be shared.

Alex asked about the maintenance and lifespan expected of the shell rakes in GA- Tim- vegetation management has to occur, or the sites will not support oystercatchers long term.

Ezra Thompson- was herbicide and fire used in alternating years for vegetation management or during the same year? How quickly did the herbicide work at killing vegetation and removing remaining duff?

Lindsay alternated between different herbicides; Tim- used a similar approach, switching between imazapyr and glyphosate.

Mike Molnar – Habitat and Beneficial Use of Dredged Material along the Atlantic Coast

They are looking at coastal habitat and the accelerating decline of shorebirds in North America. With sea-level rise, salt marsh loss is expected to be extensive. They aim to establish a community of practice with frequent communication/coordination to continue building on existing restoration efforts and ongoing dredging projects. This project advances the idea that dredge activity can benefit habitat and wildlife— by forecasting dredging projects and priorities with increased collaboration opportunities for beneficial use. Planned workshops are upcoming in NC, SC, and GA. They follow a holistic approach with ecosystem services identified and described as part of the communication strategy.

This presentation focused on the beneficial use of sand.

Paul Medders – Live oyster bed restoration

Talk about what they have learned about oysterbed restoration and artificial reefs in GA. It is challenging because of the high tidal amplitude. There isn't much difference between the oyster projects and the inshore artificial reefs outside of using large concrete for the reefs. These projects have been ongoing for 40-50 years, mainly to benefit fisheries. The long-term benefit when placed in the marsh interface is the hardest to overcome. For example, the shell may sink in the marsh mud and not function as it should, reducing spat settlement and future oyster recruitment.

In 2021, they used a loose shell deployment with 140 tons of shells. This approach is more expensive but is the direction they would like to go.

Bagged shell on pallets banded together. This is a quick way to deploy oyster bags, allowing oyster spat to get established before mud covers the shells.

Shell is hard to get, and they are considering using sand to create concrete as a shell substitute. Even with shell recycling projects

Oyster tables – these have been promising so far.

Bird Island- placing shell in the intertidal zone- they used a track loader on a barge and pushed the shell into the intertidal. The shell didn't stack up as well as they would have liked, and the sand covered the shell more than ideal. They are looking to stabilize the shell but are seeing settlement of spat on some of the shells, so not all is lost.

Questions/Response

Lindsay- how do they deal with future dredge placement on Bird Island, and will it cover the shell? Tim- this is not an active dredge placement site, and there are no plans for future sand placement.

Niels Lindquist – Phillips Island restoration

Used oyster tables to create foraging and nesting habitat for AMOY – these were tested several years ago in NC. The tables are a cloth-based hardscape, and a cement slurry is added over the top. These are very effective in supporting oyster spat.

In VA- They are working with TNC at Wachapreague on a project to create a living shoreline to combat erosion. They pushed the oyster tables into the shoreline mud. By 2023, these were more natural looking with lots of oyster shells, functioning as they should with wave attenuation- reducing erosion.

Savana, GA (2021)- added the tables to a shoreline and noted substantial oyster development less than a year later. They were forming a robust reef in a relatively short period.

Swansboro, NC (2023)- wanted to add a nature-based section in front of a rock revetment – they placed the oyster tables in front of the rock in May 2023, and by Oct, they had ample oyster recruitment.

Phillips Island, NC- Intertidal oyster leases, shell rakes, islands, these collective features are important to maintain. In 2015, they worked with an oyster company to culture oysters in leases. After around 5 years, the reef system developed, gaining sediment. In 2021, they added some spartina, and now they see a rapid expansion of plants and sediment. They now have 9 acres of leased habitat using this strategy. If you build it, they will come. They see AMOY at every low tide foraging. Phillips Island has an interesting history, with dredge placement and oyster shell placement occurring in the 1940s. Erosion over time has led to 50% of the habitat today than what was there historically. Planning to add several oyster areas to help protect the island from further erosion, but also to enhance foraging availability,

Projects that assessed some of their ongoing oyster work.

Moore, Christopher, et al. 2020. <i>Food Webs</i> 25 e00167	Atkinson, Cameron. 2022. MS Thesis, Savannah State University (GA)
Wellman, Emory, et al. 2021. <i>Ecological Applications</i> https://doi.org/10.1002/eap.2506	Lucas, Jonathan. 2022. MS Thesis, UNC Chapel Hill
Bieri, Elizabeth. 2022. MS Thesis, University of Virginia	Albright, Anna. 2022 MS Thesis, East Carolina University
Mulvey-McFerron, Owen. 2021. MS Thesis, UNC Chapel Hill	Woodward, Nina. 2022. MS Thesis, East Carolina University

Questions/Response

Carolyn asks what is the maximum energy environment the oystercatcher works in.- Niels- the table legs can be sunk into various levels in different situations. The interlocking of the table legs and the settlement of oysters helps stabilize areas over time. With this method, wave energy is less of a concern.

Rob Longiaru- What sort of permitting was involved? Niels- we can put this material out in any shape or volume by treating the proposed work as a research project- This has allowed them to bypass some permit requirements. NC, in particular, has a flexible permit process if projects are under a specific size. Large projects must go through federal/state review, and a more extended permit development/wait period exists to complete the project.

Jamie Infanti – Snake Island vegetation management

Snake Island Restoration began in 2022. Pre-restoration oystercatchers were in open areas, and as time continued and vegetation encroached, the oystercatchers began nesting lower and closer to the shoreline and were more prone to overwash. Small-scale vegetation reduction was accomplished over 2 years, targeting invasive species like clover, phragmites, etc. They also targeted areas that oystercatchers had previously bred. Post-restoration- some are still nesting close to the tide line, but more and more oystercatchers nesting higher on the island in the vegetation removal areas. Most of the 2023 nests were

in the cleared areas. Productivity increased annually post-restoration, and nest overwash declined dramatically in 2023.

Dead Neck Sampsons Island, Cotuit- ~117 acres. This site was experiencing a high rate of erosion, reducing breeding habitat availability. 3-year restoration via dredge spoil placement at multiple locations that reduce vegetation and provide expansive open habitat. They had the first successful AMOY fledglings (3 fledged) in 17 years. 1 pair in 2022 and 2 pair in 2023 (fledged 5 chicks)

Takeaways- small-scale veg removal can be successful. 0 productivity vs 1.9 pre/post removal. Large-scale renourishment and restoration can also have immediate impacts on recolonization for AMOY. Both of these approaches benefit AMOY.

Questions/Response

Shiloh- wondering about the lifespan of the 2 approaches. Jamie- For the small-scale site, these areas must be maintained to minimize future veg encroachment. But Dead Neck (large-scale site) is also expected to need repeated restoration, but maybe not as frequently.

How many cubic yards are on restoration projects? Jamie- Three years, about 44k CY each year

Janell Brush – Restoring Oystercatcher Nesting Habitat at Gomez Key

Objective- Restore Gomez key using resilient natural and nature-based features

Three of the islands historically supported oystercatchers are disappearing due to erosion and high rates of overwash. The total area of nesting island around Cedar Key decreased by 39% between 1974 and 2016 while simultaneously seeing a reduction in oyster beds. With this in mind, the new oysters were critical to the restoration and stability of the island. They were able to apply lessons learned from a restoration project just north of Gomez- called Lone Cabbage Reef. As part of the restoration approach, they focused on oyster reef expansion and the placement of a breakwater. The term breakwater was required as part of funding through NFWF. By 2021, the project was funded, and funding was in the bank. A year and a half into the project, everything was going well, and all pre-restoration data had been collected. However, the next stage needed DEP permits since part of the project areas is within a DEP aquatic preserve and is considered state-sovereign submerged lands. They learned that the permit options for submerged lands were no longer an option. They needed to show upland benefits, or they required an FDEP co-applicant. FDEP did not want to be a co-applicant and were generally against the project as they had concerns about modifying the area and possibly filling in seagrass. However, FWC did seagrass surveys and found no seagrass in the project area. It turns out that FDEP did not like the word 'BREAKWATER' as part of the project. FDEP said they would be surprised if anyone supported this project. Janell sent an SOS to AMOYWG members and other partners and received ample support for this project. Janell thinks this would not be an issue if the title did not have Breakwater but instead said they were creating island resiliency using natural and nature-based features. The next steps are uncertain. We know that there are many critical restoration needs in the Cedar Key area- critical high-tide roost sites, breeding sites, and oysters. It is even uncertain if there will be support for future restoration projects to benefit oystercatchers. We may see restricted tools for restoration. For now, this story is to be continued...

Research & Management Project Presentations

Abby Sterling – Education and disturbance management in Georgia

Katrina Toal – NYC disturbance management and vandalism follow-up

Despite posting efforts, in 2022, 19 AMOY nests, 2 PIPL nests, and 1 PIPL was killed. They also had people walking through the nesting area repeatedly. After these incidents, they added an orange construction fence, field cameras, removed all nest markers, and added locks on boardwalk entrances (previously zip-tied). The construction fencing did reduce the number of people walking through the area. They also implemented a dynamic management approach this summer to allow for more public access through the season (e.g., as nesting was finished in specific areas, it was reopened to the public). They also piloted the use of exclosures for PIPL but did find that exclosures were vandalized, and the vandals removed eggs. Exclosures were removed immediately to reduce visibility to the public. 4 PIPL nests had eggs taken, and 1 AMOY egg was taken from a nest. In the PIPL nest, a rock was left in place of the eggs. Following these incidents, they got LE on-site to help with enforcement. This 2023 season, there was substantial press almost immediately after the eggs were stolen. This led to increased public support. Preliminary public perception surveys noted high support for protection efforts at this site. For 2023, PIPL productivity was low again this year. They did document an AMOY destroy at PIPL nest. 36 AMOY pair and, despite some predation and disturbance, had high 1.11 productivity.

Questions/Response

Did oystercatchers move in and out of the construction fence? Katrina- Yes, they added the fencing high enough for the oystercatchers to move under, and they moved in and out with no concerns.

Predation and competition between PIPL and AMOY is also occurring at the Lido Beach site in NY.

Emmy Casper – Delaware Bay AMOY Monitoring

Monitoring of AMOY that were previously unsurveyed. Management has focused on the Atlantic coast, but not much is known about marsh and bay nesting birds. This focus is on the Delaware Bay section of NJ. 2023 was the first year of comprehensive monitoring on the bay shore with NFWF funding. Project goals include estimating the bay population and distribution, accessing nesting habitat and strategies to enhance or restore habitat, and tracking productivity and threats that may differ from the Atlantic coast. For the habitat assessment, they are conducting nest site assessments, managing invasive plants, and conducting photo points and elevation measurements to track the beach profile over time. Because of accessibility issues, game cameras were added to all nests. Game cameras documented various threats, including impacts by Bald Eagles. Most nests were disturbed by BAEA that were keeping adults from incubating. 19 pairs, 25 nests, and 4 fledglings = 0.21 productivity. Based on bands, they did see recruitment to the bay population from the Atlantic beach sites.

Questions/Response

What is the ownership of these sites? It varies; some are wildlife management areas, some are refuges.

Sam Collins – Marsh-nesting AMOY in New Jersey

A multi-agency initiative to advance and improve dredging and marsh restoration techniques. This is a marsh-dominated system in Cape May County. Focal study sites were largely areas with historic sediment placement. Some more than 30 years ago. Or Recent placement, those less than 10 years ago.

Ring Island- material placed in 2018. 800-acre marsh island. Elevated nesting habitat was created in 2014 with maintenance in 2018 to maintain a 5.5' elevation and to disrupt vegetation growth. AMOY using this site every year since 2015. *Great Flats*- created in 2018 and maintained in 2021. AMOY using the site since 2019. Some adult loss, but the number of breeders has increased. *Gull Island*- created in 2020- also has 3 historic placement sites on the island's north end. *Sturgeon Island*- historic placement on the south half of the island, first new placement in 2020 and follow-up in 2022.

They are observing an increase in the breeding population for AMOY across all sites, but this could be due to an increase in monitoring. Based on band resights, chicks have returned to natal sites that were restored, and adults have remained on these sites. Nest fate and natural vs enhanced – hatch rates were higher at the enhanced site. Did see more evidence of avian and mammalian predation compared to higher flooding at natural sites. Increased productivity at enhanced sites was short-lived. But they were generally exceeding natural sites.

Questions/Response

Caleb- Are ENH nests surviving flooding more frequently than barrier beach nests during storm events?
Sam- She hasn't had the opportunity to dive into how flooding or elevation differs between the marsh vs beach breeders.

Liana DiNunzio- Shorebird Science in Eastern Massachusetts

Manomet has identified 17 important sites for shorebirds, with Cape Cod as an important site in 2022. They've worked to conduct a Shorebird Blitz using the International Shorebird Survey protocol. They had 89 participants, 115 sites, 73,008 shorebirds of 29 species, and the most abundant were SESA and SEPL. Numbers included 283 AMOY, with the highest counts on Monomoy NWR. Other projects in the state include Whim- tracking, REKN- use of eDNA to understand diet, and RUTU- assessing diet to understand their reliance on horseshoe crab eggs.

Lyn Brown – 2023 research updates

Diet and foraging movement of oystercatchers on 2 islands in VA. Interested in how foraging quality influences reproductive success. This year, 10 GPS tags were deployed. Two foraging strategies were noted, one with foraging on the beach and bay habitat. The other stayed near the breeding habitat and fed mainly on mole crabs. Lyn says this hasn't been described for AMOY in their range. On Assawoman, the AMOY fed within 2 km of the nesting site and used beach and bay habitat. One individual on Assawoman traveled up to 12 km for her nest. Spatial data suggests territoriality in the feeding grounds, not just at the nest site. The mole crab foraging strategy seems to be primarily isolated to Assateague.

There may be niche partitioning between sexes, both spatially and prey type. Males tend to have shorter, more robust bills than the females' narrow, longer bills, which may contribute to prey differences. This has not been tested with AMOY. Sexed AMOY based on physical features and confirmed them with copulation observations and DNA confirmation in the AMOY band database. There is a 99% overlap in diet between the sexes for AMOY. The most frequent species consumed was mole crab.

Janell Brush – Wintering oystercatcher survival linked to high-tide roosts

Oyster research in the area indicated a 66% decline in oyster reefs. We knew these declines could influence overwintering survival, 88% loss of offshore reefs, but no apparent shortage of oyster larvae.

Two grant phases 2011-2013- important and function of foraging and roost habitat for wintering AMOY. They confirmed that 95% of the prey American oystercatchers consumed was oysters, with 37 minutes of foraging per day to satisfy daily energy needs. During the study, they were not limited by prey availability. High tide roosts were the limiting factor. At the time of the project, there were only 12 offshore reefs. Select sites with a 360 view of approaching disturbance with sparse to no veg. They predicted that there would be consequences with roosting in sub-optimal habitat. Substantial overlap exists between recreation use and roost sites at high tide.

Phase II was 2014-2017, enhancing 2 roost sites- targeted roosts that supported the most AMOY. Increased reef area, elevation, oyster resettlement, and withstood storms and hurricanes. They had the opportunity to work alongside IFAS and the local community to stimulate the local economy and promote project support.

Used band resights from the AMOYWG band database- used winter data 2007-2018. Doris and Pat Leary recorded 95% of the resight data and modeled survival as a function of high tide roost availability. They used the maximum high tide data. There are two high tides each day, and they used the highest of the day. The primary covariate of interest was the average # of hours per year where high tides were unavailable – tides greater than 1.6.

AMOY have high site winter fidelity. Survival rates were high and similar to annual survival elsewhere in the range. The duration of extreme high tide had a significant negative effect on survival. They noted a declining trend in adult survival that could have potential range-wide population effects.

Questions/Response

What are the most common species that roost with AMOY at these locations? Janell- 1000s of shorebirds use cedar key in the winter. Not many REKN, but they see MAGO, AMAV, WHIM, etc. When we do our statewide winter snapshot survey, we tend to focus on AMOY and other state/federal species only because of how many birds use the area.

Trevor MacLaurin – Impacts of vegetation encroachment on American Oystercatcher nest-site selection and reproductive success

Climate change can influence barrier islands by increasing storm frequency and intensity and the subsequent post-storm planting efforts. There may also be longer growing seasons that contribute to great vegetation densities.

Study site- Chincoteague NWR, VA. Assateague and Assawoman islands. AMOY experienced a sharp decline in productivity over the recent decade. Interestingly, AMOY experienced an increase in productivity after Hurricane Sandy, but it was short-lived. Vegetation density was lowest in the year following Hurricane Sandy. Following these observations, he was interested in the influence of vegetation on reproductive success and if AMOY were selecting sites with lower veg density. They used data from 2007-2022. To assess vegetation, used USGS Landsat imagery and data from the breeding season. NDVI values represented vegetation well. Nest site selection (comparing nests with random points) found that AMOY selected areas with less veg density. There was a stopping density; AMOY wouldn't nest in locations above a specific density. Vegetation density significantly impacted hatch and fledge success. However, the island had a strong influence too. The patterns were reversed between Assateague and Assawoman. Assawoman had higher rates of overwash and weather-related failure, whereas Assateague had higher rates of depredation. Increased storm events leading to vegetation reduction may benefit AMOY, and removal of veg in dense areas may increase AMOY nesting effort.

Questions/Response

Alex- sometimes brood-rearing areas are far from nest locations. Trevor- only quantified veg at the nest site and not at brood-rearing locations.

Lindsay-Curious, Will/Lyn, do you think the mole crab specialization might/does allow the adults to spend more time protecting the chicks/attending the brood if they can forage on territory? Lyn- I certainly think that is an important factor at play that might drive potential differences in chick survival. It will be interesting to see how diet might affect chick survival this winter. I will keep you all in the loop of our results.

Eza Thompson- was reproductive success separated between nest hatch and chick survival rates. Often, we see nest site selection to be less vegetated (excluding some very small islands), but chicks taken to habitats with more vegetated cover. Trevor- yes, see similar behavior

Katie Oliver- Curious about the NDVI value and on-the-ground veg density. I.e., what is the density threshold for AMOY? Trevor- Not, but that should be easy and maybe something he can do during the next breeding season.

William Thompson- I think it may help chick-rearing in some cases; both adults are closer to one another in the event predators come through. The chicks certainly learn where to look for food with adults quickly. Scary in some cases when young chicks follow the adults to the dynamic shorelines to forage and lose their footing in the surf zone. I Would love to chat more about this!

Lyn Brown- Yes, it would be great to continue the conversation. I wonder how much behavioral plasticity there is in individual chicks who have more crab specialists as parents and whether/how they are able to learn to feed on other food sources in the winter if mole crabs are unavailable.

Short discussions

- E-bikes and vehicles

Lindsay- Does anyone have a policy for e-bikes at their site?

Mike S- The speed in general, and the quick change in speed (with little effort from the user), of e-bikes, is concerning. Birds get flushed because of that (walkers at a steady pace are 'more predictable' and don't generate the same reaction from the birds).

Lindsay- Beth has been looking into e-bikes in CT where local businesses are starting to rent e-bikes near their important nesting areas.

Kevin Holcomb- At CNWR, regardless of the style of bike, we do not allow them on the beach.

Katrina Toal- NYC Parks just started a pilot program to allow e-bikes on greenways and park drives. This allows e-bikes on the boardwalk adjacent to our breeding sites. <https://www.nycgovparks.org/things-to-do/e-bikes>

Lindsay- And in CT fishermen are going down the spits at night. Also, they make thicker, deeper tracks that chicks can hide in and possibly be run over. CT will be able to ticket them because they are considered motorized.

Lindsay- At one site in NJ, Stone Harbor Point, the town doesn't allow e-bikes bc they are considered motorized. Regular bikes are allowed. Megan K has been having her stewards count bikes so she can talk to them.

Bridie Farmer- I think bikes in general and e-bikes specifically are a bad idea for several reasons already discussed but also because it is another avenue for bringing more trash into more remote areas and invites shell collectors to be able to remove more shells, therefore being tempted even more so to go above high tide lines.

Lyra from MA has had narrow beaches where sand bikes (fat tire bikes) are of concern for PIPL. They have put up signage asking people to dismount the bikes at specific places.

Ezra Thompson- We see indirect impacts from walkers using e-bikes to access remote areas. enforcement of non-motorized vehicles is complicated, and I have heard e-bikes could be accessible vehicles (different from dirt bikes or motorcycles?). Some people definitely start pedaling when they see people, so I think e-bike users know it is sometimes a gray area.

Shelby Casas- Some of our outreach site partners have expressed concerns with them and know they lack messaging around it. Many of these sites do not have any signage around it since it is a new disturbance for them but do but it is under the motorized vehicle, but the messaging and enforcement is muddled.

- Owl predation

Todd in NJ may have a landowner who doesn't want them to remove a problem owl from their property.

Norm (Smith?) from Mass Audubon is an owl removal expert who helps remove owls at airports and other places. Lyra will send along contact information.

Raya- Interested in techniques others may use throughout the AMOY range to manage owls (lethal and non-lethal). In Florida, we've used perch removal and perch deterrent approaches to minimize impacts from GHOW. However, owls are impacting breeding populations throughout the FL panhandle of all of our state-listed focal species, including AMOY. One major impediment we have is similar to what Todd

mentioned, and we have struggled to get land manager permissions. If there are communication strategies developed around owl management, we would be interested.

Shiloh- suggests that there may be a need to update the AFSI predation management PMBs to update recommendations and strategies for owl management.

- Ghost crab traps

Katie Oliver- We used Fripp traps at Chincoteague this year- we caught some crabs but had low capture rates.

Rebecca from TX: doesn't have a problem with GCs on AMOY due to the AMOY habitat, but they are hard on their plovers, going after their eggs.

Beth in CT had a problem with crabs digging out from around the traps. Help is available to finesse technique!

Katrina- We struggled to use traps--no success with them at Rockaway Beach

Ezra Thompson- we found some issues with using Fripp Traps in dry sand but found that partially excavating the burrow and placing the trap deeper in the substrate where sand is more compact. opportunistic hand removal and collapsing burrows to reduce the frequency of ghost crabs around nests

Heidi Hanlon- removed around 10,000 crabs this year. Had issues with plastic traps blowing with the wind. Had better success with the metal traps.

Raya- We are continuing to experiment with ghost crab removal and strategies. For example, we are adding passive bucket traps to capture ghost crabs from the landscape either before nests hatch or far enough away to minimize concerns for flightless chicks. This trap type is being used in conjunction with Fripp traps. The Fripp trap at the nest site and the bucket trap at the swash, near brood-rearing features, or elsewhere in the landscape. We are also exploring using nano bugs inside the Fripp and bucket traps as an attractant for ghost crabs. Although preliminary, it seems that using nano bugs reduces the trap time. Crabs were captured in as quickly as 15 minutes. This addition could reduce the need to leave traps overnight.

Group project ideas/recap:

- 1) Habitat restoration - Story Map development
- 2) Productivity – what outputs do you want to run for your sites? Anything specific you want to run is important to know before development
- 3) Birds of North America update – reach out to Cornell to inquire about updating information
- 4) Think about big-picture threats – what are they, and what are we doing about them? For example, predator-related threats as well as sea level rise and storms.

The steering committee will discuss these topics and determine ways to organize groups to advance these issues. Please reach out if you are interested in helping with any of these topics.

Future meeting location suggestions/limitations. Require hybrid meetings for in-person/remote options. Some suggestions on location have been brought up, but if you have ideas or think you can host, please

reach out to the steering committee. Becoming easier to do remote meetings, but still some sound/technology limitations.

People asking for owl information – we will look up more details and send it around to the group.