5th & Final Update on the Shenandoah Valley Raptor Study Area July 23, 2023

2023 ~ A record year for the SVRSA in some ways

We declared this kestrel season was officially **over** on the day we banded 5 kestrel chicks in our last occupied kestrel nest box on afternoon of July 17th. They were very photogenic, this last batch of fluffy white kestrel chicks, but we forgot to take a photo! Here's approximately what they looked like sitting in a bucket prior to banding. These chicks are actually from the previous nest box we banded with Tim Rocke a week earlier (Tim took this cutesy photo).



By all measures, 2023 was a very good year for kestrels. Since we've been monitoring these boxes for many years, we can safely say this year was a good one by comparing it to long term results from the past 10 years 2013-2022! One measure that was high this year was the rate of box occupancy by kestrels. We call a box "occupied" when there is at least 1 kestrel egg inside. This year kestrels occupied 73 of 80 available boxes (91%) - which is higher than the past 10-year average of 87%. Also, this year had an 87% success rate which is defined as the % of nesting attempts that successfully fledge at least 1 kestrel chick! Our 10-year average is 78% successful so this year beat that handily. The biggest booster this year was that kestrel eggs were unusually hatchable. Of the 354 kestrel eggs laid in SVRSA boxes, a whopping 92% hatched. The SVRSA average hatch rate over the past 10 years is only 75%. We attribute much of the success (lack of failure) in kestrel nests this year to the nice weather from March continuing through the summer. It was not too hot, too cold, too dry, or too rainy in 2023 which allowed most of the kestrel eggs to hatch, contributing to the high success rate and high number of nestlings fledged per box (4.7 this year vs. the 10-year average of 4.2 babies produced per successful nest box). That means in 2023 the SVRSA produced an extra half a chick per successful box. This adds up to around 32 "bonus" kestrels fledged this season. This year also set the all-time record for the most kestrel nestlings banded in the SVRSA during a single breeding season = 307 babies banded in 2023!



Following (mostly) female kestrels for years

During most winters we attempt to trap kestrels that are spending the non-breeding season in our study area. This year our efforts for winter trapping were very lame, as we only trapped 6 kestrels in winter, 5 of them on the same day! Lance wanted to invite some fellow bird banders to our study area for a trap-a-thon so Bob Dean and October Greenfield went off trapping with their vehicle while Lance, Jill, and Alan Williams went trapping from our truck. Our first trapped kestrel was hanging around our southern-most SVRSA nest box. Once she was in the hand, we saw she had a band already! We checked our records and found that she'd been banded by us while on eggs in that same nest box in 2022. So, we documented her wintering near her box and in April this year we caught her INSIDE the same box on eggs. Same situation with another female we winter-trapped by the box she'd used in 2022 and again in 2023. Seems like pretty good evidence that these female kestrels are non-migratory!

Next in the trap-a-thon we trapped another female kestrel; she also had a band. However, it wasn't one of our bands. It was a foreign recapture that we immediately reported to the bird banding lab (BBL) hoping to receive information on who, when, and where this approximately 8-month-old kestrel came from. BBL didn't have the answer for us, but we soon figured out it was the same string of bands that we had encountered previously when we recaptured a different banded foreign kestrel. A mutual friend and bird bander, Zig Ziegenfus, had most likely banded this bird as a nestling in one of his nest boxes last year. BBL didn't have the record because, sadly, Zig passed away before reporting this band. We recently attended Zig's celebration of life and realized that we were so fortunate to still be doing what Zig also loved – ornithological research. He'll be missed...

As usual, this spring we attempted to capture every female kestrel breeding in our nest boxes, and we were pretty successful: we captured 72 of the 75 females (96%) who laid eggs in our boxes. A couple of females would hear us approaching the box carrying the plug to trap them inside and they flushed out every time! Some birds are very skittish but others will let you catch them in a box without even using a plug! If they are incubating eggs, this apparent complacency is normal. However, kestrels that are constantly flushing off eggs is not normal, and we suspected those skittish females would fail. One skittish female laid 6 eggs and hatched and fledged 5 chicks. The other skittish female's nest failed and the 3rd female we failed to capture was a new box installed by Corey Guilliams. We were not aware of this box's existence until we took an unusual route in late June and could hear the chicks inside screeching for food. Fortunately, we got in touch with Corey who graciously allowed us to band these kestrels and add his box to our research program.

We only caught 9 breeding male kestrels inside boxes this year. It is just by chance that we catch males, as they normally only set eggs while the female is off taking a short break. This year we recaptured quite a few breeding adults (mostly females, but a couple of males too) bearing our own bands placed from <1 up to 7 years ago. Some of these females kestrels we've been monitoring for up to 8 years, as we generally capture them in boxes each spring! Our oldest known breeding female was at least 8 years old. Her age is not known because we caught her incubating eggs and we banded her, not able to determine her age at that time.

There were 6 fox squirrels using our boxes this spring, this caused some boxes to be unavailable to kestrels for varying lengths of time. After squirrels left two of the 6 squirrel-occupied boxes, 2 different sets of breeding kestrels moved in and raised chicks. For unknown reasons, the rest of the squirrel-occupied boxes didn't get kestrels in 2023. Sometimes the young squirrels grow up and leave the nest box, but they come back periodically and this disrupts any kestrels attempting to nest inside. They are cute but nuisances. Below is a combination nest of grasses and corn husks brought in by the mama squirrel.



Nest failures: since 89% of SVRSA boxes were successful, that means 11% failed this year. This year 10 nest boxes that had kestrel eggs but produced no chicks = failure. Reasons for failure are multiple but here's the breakdown for our 2023 failures:

Five (50%) of the failed boxes were inconclusive as to cause but all failed during the egg laying stage. Kestrels typically lay an egg every other day, so it takes an average of 9 days to complete an average clutch of 5 eggs.

One kestrel nest failed when something (more than likely, probably a 98% chance, a European starling) poked holes in the kestrel eggs, causing kestrels to abandon the box.

The skittish female who refused to be captured in her box failed to hatch any of her 5 eggs.

A sad case of failure that we don't see often was likely caused by the death of one of the parents. The eggs hatched but one parent couldn't take care of them by him or herself so chicks starved or were abandoned.

Another failed box is one we had predicted would fail due to the handicapped adult male. He was hatched and reared within the study area in 2020 but, upon recapture this year, we found that he had at least one broken healed leg and the other foot was also functionally impaired. The pair of kestrels had 5 eggs and at least 3 hatched but, when we returned to band the chicks, we found two chicks that had died at approximately 5 days of age. Normally, after the eggs hatch, the female broods, feeds, and protects them for about a week while the male provides food for the whole family. In this case, it appears the handicapped male was unable to fulfill this duty, so the nest failed.



The 10th failure was likely due to snake depredation, as the 5 small chicks plus one unhatched egg left over from the previous failure disappeared. The chicks were about 2 days old when we documented they'd hatched: perfect snake snack size! This particular box had 2 different females who both failed in 2023 and has had a history of failure over the years.

In general, we saw fewer snakes this summer, but we suspect a black rat snake killed 4 of 5 nestlings in one kestrel box.



Four snake-killed young kestrels from a SVRSA box. We think the snake ran out of saliva after trying unsuccessfully to swallow 4 chicks and gave up. One female chick survived so this nest box counts as a success because it produced at least 1 nestling.

Within the SVRSA the habitats used by our kestrels are in constant flux, all changes are detrimental to kestrels. The kestrel boxes that were once surrounded by livestock grazing and hayfields become devoid of kestrel food after they are converted to row crops.

Other species in the SVRSA

For the past few years, we have been pretty lax monitoring our bluebird boxes in the study area, as we are primarily focused on kestrels. Our subpermittee bird bander Judy Good used to monitor and band bluebird boxes but she hasn't felt up to it for the past couple years.



So, we try to keep track of those bluebird boxes that are close to kestrel boxes since we don't have time or energy to do all 100 bluebird boxes in addition to the 80+ kestrel nest boxes. Despite our lack of effort, we did manage to band some birds using our bluebird boxes this year:

- 1 Eastern bluebird adult female & recapture of one more
- 11 Eastern bluebird chicks
- 3 Tree swallow adult females
- 13 Tree swallow chicks

In addition, we banded 20 baby barn owls nesting within the SVRSA. There were more but we missed banding them due to our Canadian black bear hunting trip in mid-June. It was not a banner year for barn owls. Barn owl clutch sizes are known to fluctuate with food availability and this year clutch sizes were fairly small (about 5 per nest). So, by inference, we can surmise there were fewer small rodents this season.



Just 5 sleeping barn owl chicks surrounded by young rats in an unused silo. Photo by Dr. Stevie Maxwell.

Kestrel stats from Highland County nest boxes

Other local kestrel nest box programs are also having a good season. In Highland County, Dr. John Spahr and Patti Reum are monitoring their nest boxes and have also wrapped up a banner year with 194 kestrel chicks banded in addition to capturing and banding 22 new adult kestrels. They also attempt to capture all breeding females and have recaptured birds with their own bands from past years! The Highland County kestrel nest box program is regularly updated in VSO publications: <u>American Kestrel Project Virginia Society of Ornithology (virginiabirds.org)</u>

Dr. Spahr has also been monitoring 54 screech owl boxes in Highland County for over a decade. His nest boxes are installed for screech owls in very different habitat (woods) than those installed for kestrels (open spaces). However, the birds just pick whichever box suits their fancy which means John has owls in kestrel boxes and kestrels in owl boxes. In 2023 John had 4 active screech owl boxes in April but one was depredated.

The following photos were provided by Dr. John Spahr, and they are adorable!



Screech owl egg with 4 hatched babies in a nest box. Note the prey items' fur and flesh scattered around.

John banded 7 new adult Eastern screech owls plus in May he banded 16 chicks. John reports that 3 -4 occupied boxes out of his 54 screech owl boxes have been the norm for the past few years.



Screech owl captured while roosting in a nest box in mid-December 2022. Check out the long ear tufts and the sharp talons on this bird. The eyes are slits, squinting against the sunlight because these owls

normally don't have to deal with sunlight. Plus, closed eyes and erect ear tufts are a stress response to being captured and held.



Screech owl chick being weighed in a Pringles? can. Photo by Dr. Spahr.

In a recent memo to all bird banders, the USGS wrote:

"If you discuss or share your banding projects to any public platform or social media, please indicate all banding, marking, and sampling is being conducted under a federally authorized Bird Banding Permit issued by the U.S. Geological Survey."

Also, bird banders are required to obtain a bird banding permit from their state wildlife department. We have both the Federal and state permits for this research – in case you were wondering. This year we asked for, and received, permission to band kestrels statewide instead of on a county-by-county basis.

Thanks to all of you who've helped us trap birds and check boxes and silos! We appreciate your help and your friendship.

As always, you can go to our Research Gate page to read any of our published papers: <u>ResearchGate</u>. For those of you who might be interested in any of our previous updates going back a couple years, please go to our ResearchGate page (<u>ResearchGate</u>) where updates are found under "experimental findings". Our updates are also posted on the webpage of the Rockingham Bird Club.

Feel free to forward to friends and let them know we will add them to our email list if they contact us: Lance & Jill Morrow saltlick2003@gmail.com

If you want to be removed from these updates, please contact us by email.



May your wineberries always be plentiful!