

Integrating a Kestrel Nest Box Program in Undergraduate Biology Courses

Joseph Gubanyi, PhD

Concordia University, Seward, Nebraska



<http://res.freestockphotos.biz/originals/16/16559-an-american-kestrel-in-flight-or.jpg>

Program Beginnings

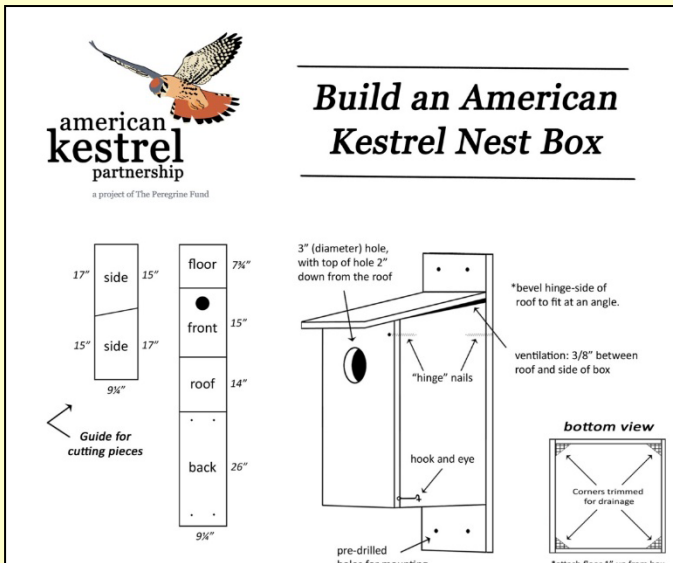
- Fall 2013, I attended a kestrel nest box workshop hosted by local Wachiska Audubon (Lincoln, NE); it was led by Matt Giovanni
- Spring semester 2013: kestrel nest box projects were incorporated into two courses
 - Bio 499 Honors Biology - Ornithology
 - Bio 399 Biology Research
- Program Goals:
 - Bio 499 Ornithology: citizen science projects were part of course
 - six students chose to help with the kestrel nest box project
 - Bio 399 Biology Research
 - Three students chose to research kestrel nest box habitat
 - Using GIS data, they analyzed macrohabitat and microhabitat

Program Beginnings

- Program Goals
 - Build and put up 50 nest boxes throughout Seward County, Nebraska
- Funding
 - American Kestrel Partnership approved a \$500 grant
 - Home Depot (Lincoln, NE) and Seward Lumber gave discounts and donated materials
- Finding Nest Box Sites
 - Private landowners gave permission to put up nest boxes on their property
 - Nebraska Game and Parks Commission gave permission to put up nest boxes on NGPC property
 - Seward Public Power District gave permission to put nest boxes on power line poles

Nest Box Construction

- 8 students divided up in teams of 2-4
- Following AKP protocol, one board = one nest box
- A few boxes were made per hour per team
- 50 boxes built over the course of 3-4 weeks



On-site Nest Box Installation

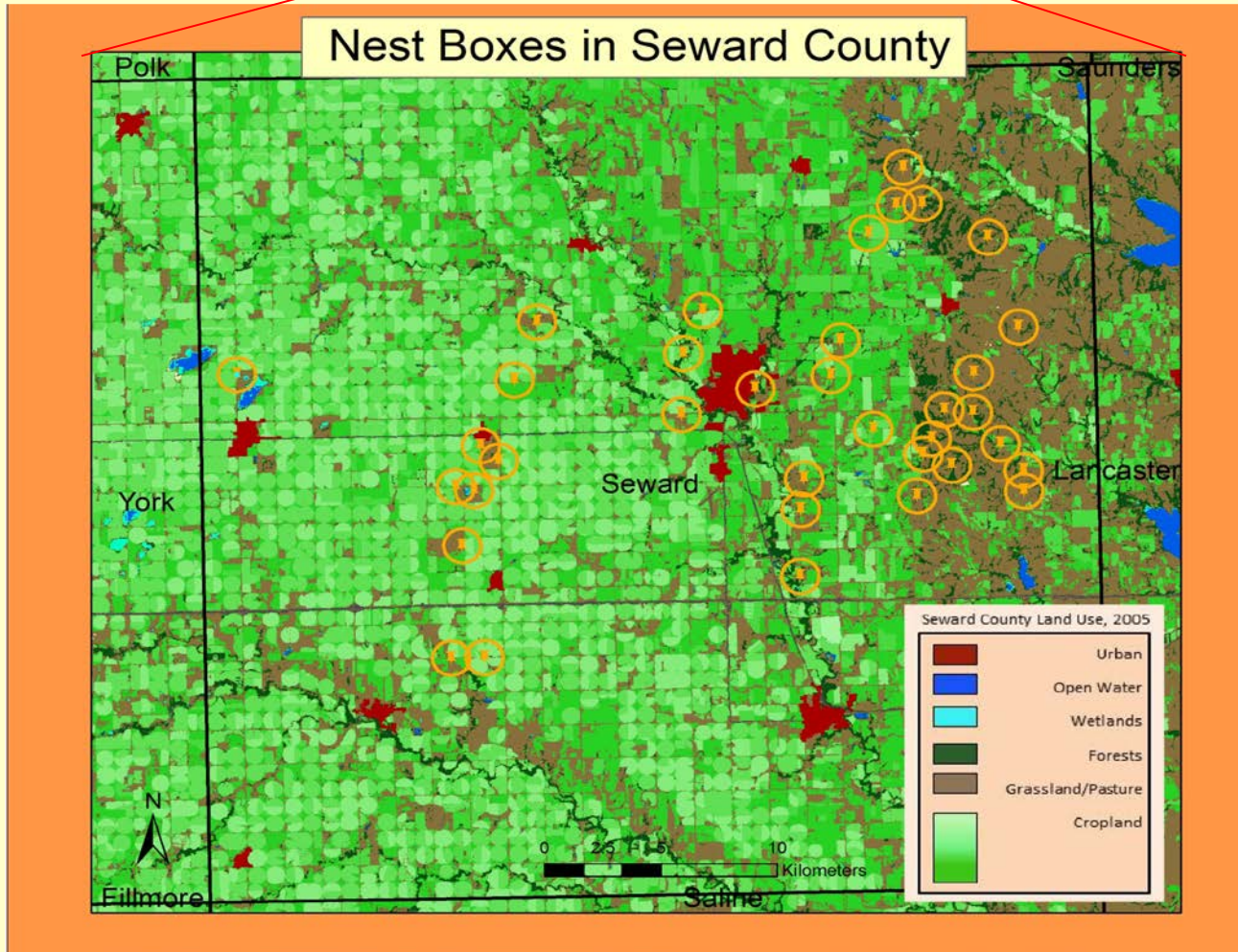
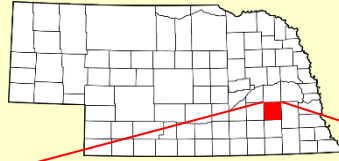
- One person held box while another drilled screws into tree
- Fill the box with nesting material (wood shavings)
- Record nest site data (height, orientation, GPS, tree species, etc.)



Nest Boxes Built and Placed

- 50 nest boxes built, 46 placed in Seward Co in 2013
 - 26 were put up before April 2
 - 11 were put up on April 26,27
 - 9 were put up June 7-10 (not checked for kestrel use in 2013)
- Nest Box Habitat Data:
 - Land Ownership/Use:
 - Private: 20, Public: 8 Public Power District: 18
 - Nest box height: 3.4 to 6.3 m
 - Nest box entrance orientation
 - N – 9; E – 10; S – 21; W - 6
 - Where mounted
 - Tree: 26, Telephone pole: 19, Barn (outside): 1
 - Land use surrounding habitat (data for 35 sites)
 - Agriculture (22 nests sites with 25% or more agriculture use)
 - Prairie (28 nests sites with 25% or more prairie, pasture or wetland)
 - Other (4 nest sites with 25% or more habitat wooded or in town)

Nest Box Locations



Initial Protocol for Nest Box Monitoring

- February- March
 - Check status of current nest boxes
- March-April
 - Check nest box sites for kestrel or other bird use
 - If nest box is being used, check for eggs
- May-June
 - Continue monitoring nest sites with known bird use
 - No. of eggs, No. of hatchlings, No. fledged

Other Nest Box Site Protocols

- Non-nest season nest box management
 - Verify nest boxes are still there
 - Repair nest boxes if damaged
 - Add nesting material if needed
 - Clean out nest boxes if needed (squirrel use)
- Fledgling kestrels not banded
- Nest boxes required little cleaning during winter
- Note use by non-kestrel species in nesting season
 - starlings not removed

Nest Box Monitoring

Nest boxes were monitored using a camera mounted on pole. Below: checking a box for eggs on May 12



Nest Box Monitoring (cont.)

checking same site for chicks on May 26



Kestrel Nest Box Use Results

- 2013 Season (37 nest boxes checked)
 - No kestrels observed near nest box sites
 - Nest box use by other species
 - tree swallow – 1
 - eastern bluebird – 2
 - starling – 2
- 2014 Season (23 nest boxes checked)
 - Kestrels used box at one site (5 eggs)
 - Other species
 - starling – 1
 - house sparrow – 1 (flew from box, no eggs)

Kestrel Nest Box Use Results

- 2015 Season (11 nest box sites checked)
 - No kestrels observed near nest box sites
 - Other species (squirrel – 1)
- 2016 Season (46 nest box sites checked)
 - Kestrel use (NOTE: all were on telephone poles)
 - 3 sites fledged young (total fledged = 13)
 - 2 sites eggs only;
 - kestrel observed near 1 site)
 - Other species (squirrels or squirrel evidence at 4 sites)
 - Nest boxes gone or non-functional at 8 sites

Beyond the Kestrel Results

- >50 Concordia students have learned about and/or been involved in kestrel conservation since 2013
 - Hands-on learning connected to real conservation
 - Students become ambassadors for kestrels and conservation
 - Students interact with landowners, community, businesses, government
 - Students present their work at university symposium
- Program Limitations
 - Semester ends before kestrels finish nesting
 - Balancing student academic and co-curricular schedules with field work



Acknowledgements

- American Kestrel Partnership
- Professor Jen Freund, Concordia University
- Nebraska Game & Parks Commission
- Land owners in Seward County
- Seward Public Power District
- Thayer Birding Software (Photo)
- Student volunteers
- Home Depot
- Seward Lumber



Thayer Birding Software, photo by Ron Austin

**Thank you for your time
Questions?**