



Kestrel in box, Pat Ready

Kestrel Nest Box Monitoring Program



madisonaudubon.org/kestrels

About our Kestrel Nest Box program

Supporting kestrel reproduction in south-central Wisconsin

- 228 nest boxes in 12 counties (2nd largest program reporting to AKP!)
- 111 volunteers (1st largest!)
- Fledged 294 nestlings in 2023
- Fledged 1,906 kestrels since 2012!



Kestrel in box, Pat Ready

Kestrel data to date

Kestrel data	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	TOTAL
Boxes available	228	221	208	178	171	156	143	135	116	70	38	34	
Boxes occupied	78	72	65	56	55	49	57	46	35	21	18	6	
Percent occupation	34%	33%	31%	31%	32%	31%	40%	34%	30%	30%	47%	18%	
Successful occupied boxes	67	67	57	49	57	41	47	40	29	16	15	3	
Percent nest success	86%	93%	88%	88%	95%	84%	82%	87%	83%	76%	83%	50%	
Number of eggs	377	346	300	247	?	224	257	201	143	98	76	14	
Average # of eggs per nest	4.8	4.8	4.6	4.4	?	4.6	4.5	4.4	4.1	4.7	4.2	2.3	
Brood size at banding	4.3	3.9											
Number unhatched eggs	75	62	10	10	?	18	25	34	?	?	?	?	
Percent unhatched eggs	20%	18%	3%	4%	?	12%	10%	17%	?	?	?	?	
Estimated # fledged	294	279	236	211	150	156	190	166	98	61	57	8	1906

Kestrel banding success to date

* Covid season

**Kurt Reed became our 2nd banding team

***Brand Smith became our 3rd banding team

#Emma Raasch became our 4th banding team

Kestrel banding success	#2023	***2022	**2021	*2020	2019	2018	2017	2016	Total
Chicks banded	297	264	160	72	89	54	102	93	1131
Adults banded	59	45	33	1	19	7	26	3	193
Total newly banded	356	309	193	73	108	61	128	96	1324
Total recaptured adults	21	20	9	0	7	12	4	0	73
Recaptured adults not originally <u>banded</u> by MAS	1	2	2	0	0	0	1	0	6

Why do this program?

Kestrel populations are down by 50%+ in the last 60 years

- Pesticides, fewer grasslands, climate change, predators??
 - Naturally would use tree cavities
- Take readily to boxes – we can reverse the trend!
 - Allows for banding



A kestrel nest box in Columbia County, Madison Audubon



Male and Female ID

Note the breast feathers. The male is spotted while the female is streaked.



Fig 1. A comparison of a female American Kestrel (left) to a male (right). Smith, Kevin (photographer). 2014

Note the female tail is barred and the male is solid with a black band and blue wings.



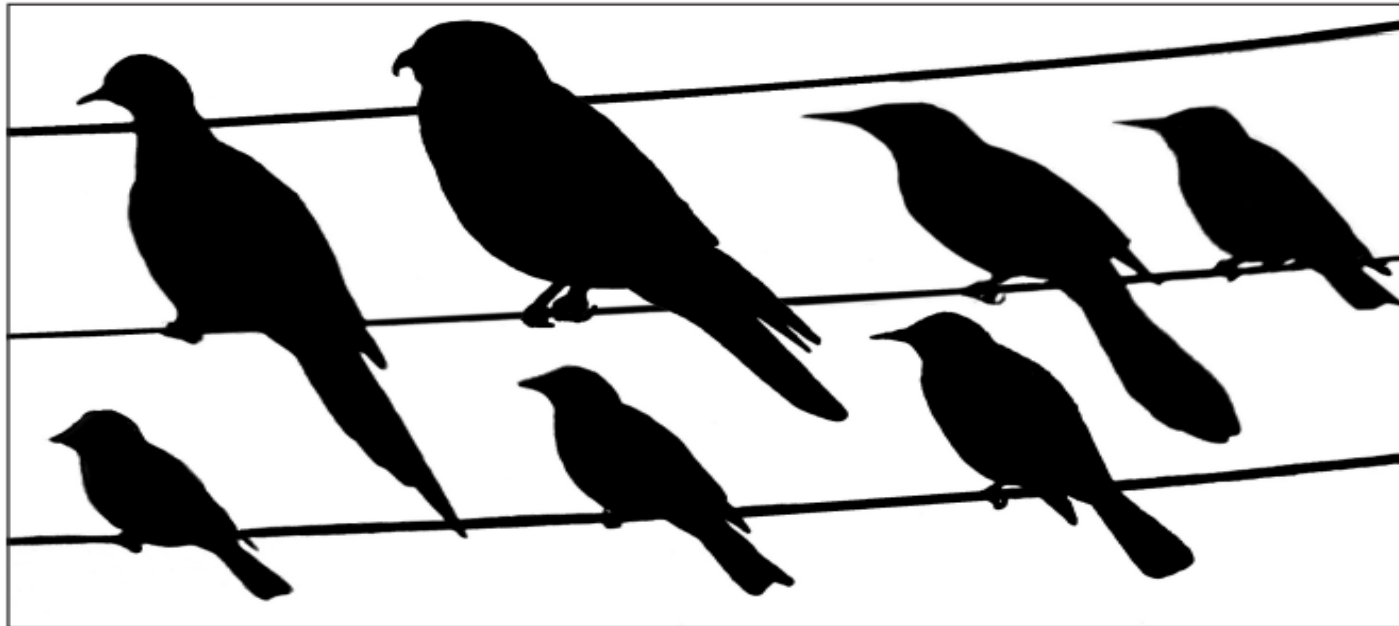
© Rob Palmer
falconphotos.com



Chick wing comparison, Madison Audubon

Spend time learning silhouettes to spot specific birds from a distance.

Guide to bird shapes



Top row: Mourning Dove, American Kestrel, Common Grackle, Starling.
Bottom: House Sparrow, Cowbird, Red-wing Blackbird.

What is a citizen scientist.

When the public voluntarily helps conduct scientific research.

Three universities have used our data in their research projects.



The difference between screwing
around and science is writing it
down.

— *Adam Savage* —

AZ QUOTES

MythBusters



BBA typical nest box structure. Do not fold down to check the nest box.



When to tip down box:

1. Clean out starlings or sparrows (spring) – perhaps multiple times
2. Clean out box for winter (fall)

Items to take with you each time you visit the nest box

1. Adjustable wrenches
2. Scraper (puddy knife)
3. Punch (for bolt removal)
4. Hammer
5. Solo cups
6. Wood chips



Wood chips

Pine, aspen, **not cedar!**
Chips or shavings, **not sawdust!**

Tractor Supply

Mounds

Brand (free)

Goose Pond Sanctuary (free)



Good to have handy

1. Split washers (Brand has a bunch)
2. Extra wire (12 gauge)



How to look inside the box

- Spy-cam suggestions: [Depstech Wireless Endoscope](#) (approximately \$40)



DEPSTECH
app for
phone

Camera

On/off switch and
charging port



How to look inside the box

- [Telescopic Camera with Light and Gooseneck Borescope \(\\$120\)](#)



Guide to Kestrel Box species

Madison Audubon's Kestrel Nest Box Monitoring Program

KESTRELS IN NESTBOXES



Wood chips with brown speckled eggs means Kestrel nest! Eggs will hatch in 30-35 days.



Kestrel chicks that are a few days old. Huddled together to stay warm & feel safe.



Kestrel chicks about 2 weeks old. Developing true feathers to replace downy feathers.



Kestrel chicks about to fledge. All brown = females, Blue-grey wings = males. **Do not disturb!**

INTRUDER ALERT! REMOVE



European Starling. Nest is made of rough grasses & feathers. Eggs are larger than robins. **Remove nest!**



House Sparrow. Nest is made of rough grasses, feathers, & debris that fill the box. Eggs are grey with speckles. **Remove nest!**

SHARING SPACE: LEAVE THEM BE



A. Tree Swallow. Nest is made of fine grasses & feathers. Eggs are white & elongated. Native. **Do not remove.**

B. House Wren. Nest is made of sticks & twigs. Wrens will fill entire box with sticks. Native. **DO NOT REMOVE.**

C. Screech Owl. Owls will use kestrel boxes over winter to roost in. Regurgitated pellets are sign of owl use. **CLEAN OUT IN SPRING.**



D. Eastern Bluebird. Nest is made of fine grasses and often cover wood chips. Eggs are light blue. Native. **DO NOT REMOVE.**



B



D



Bluebirds make nests of fine grass; will build their nest on top of the wood chips.

Tree Swallow have nests made of feathers

The starling will remove all the wood chips then start bringing in rough grasses.



5 eggs



0 eggs
0 nestlings



5 eggs

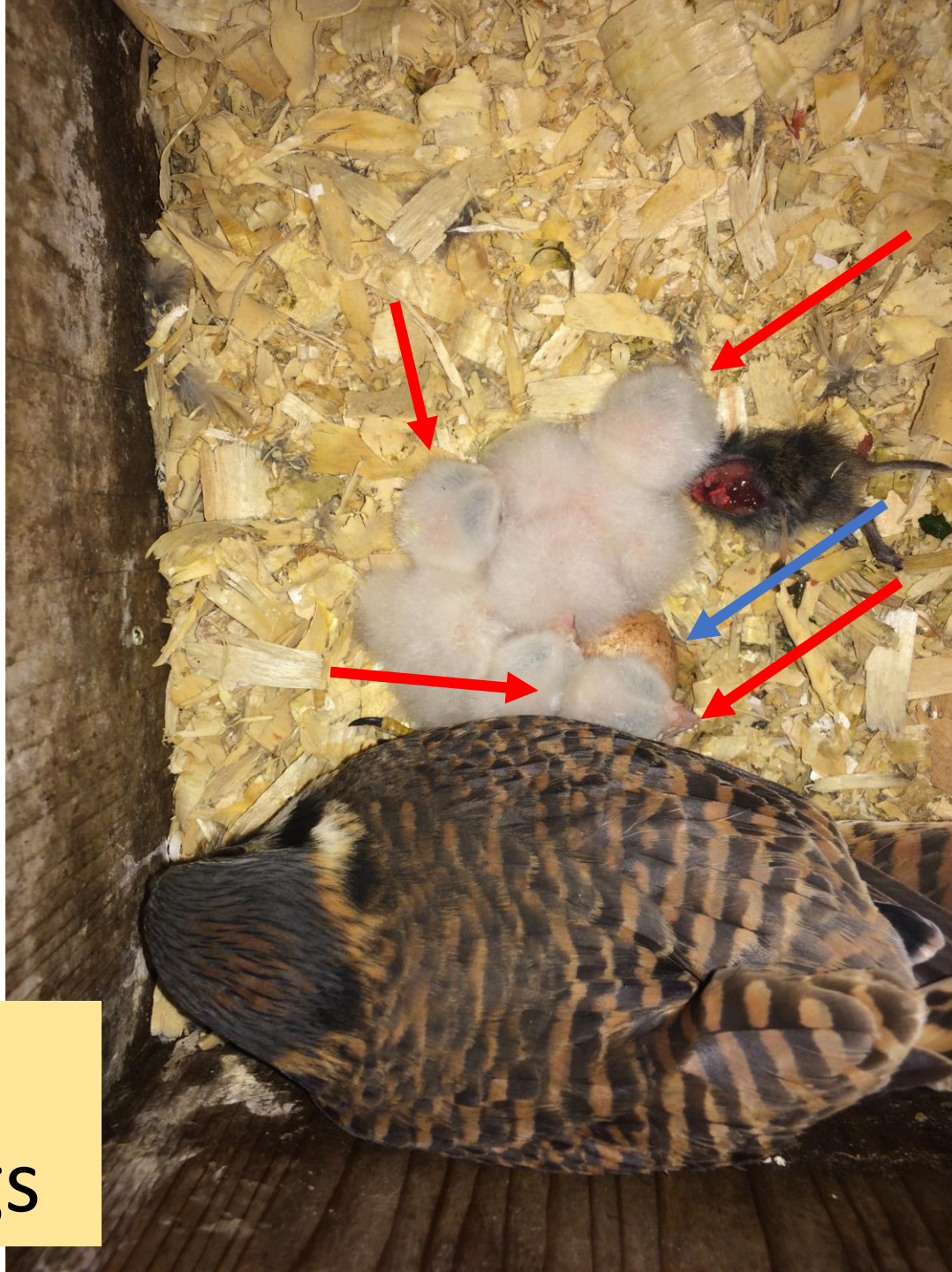


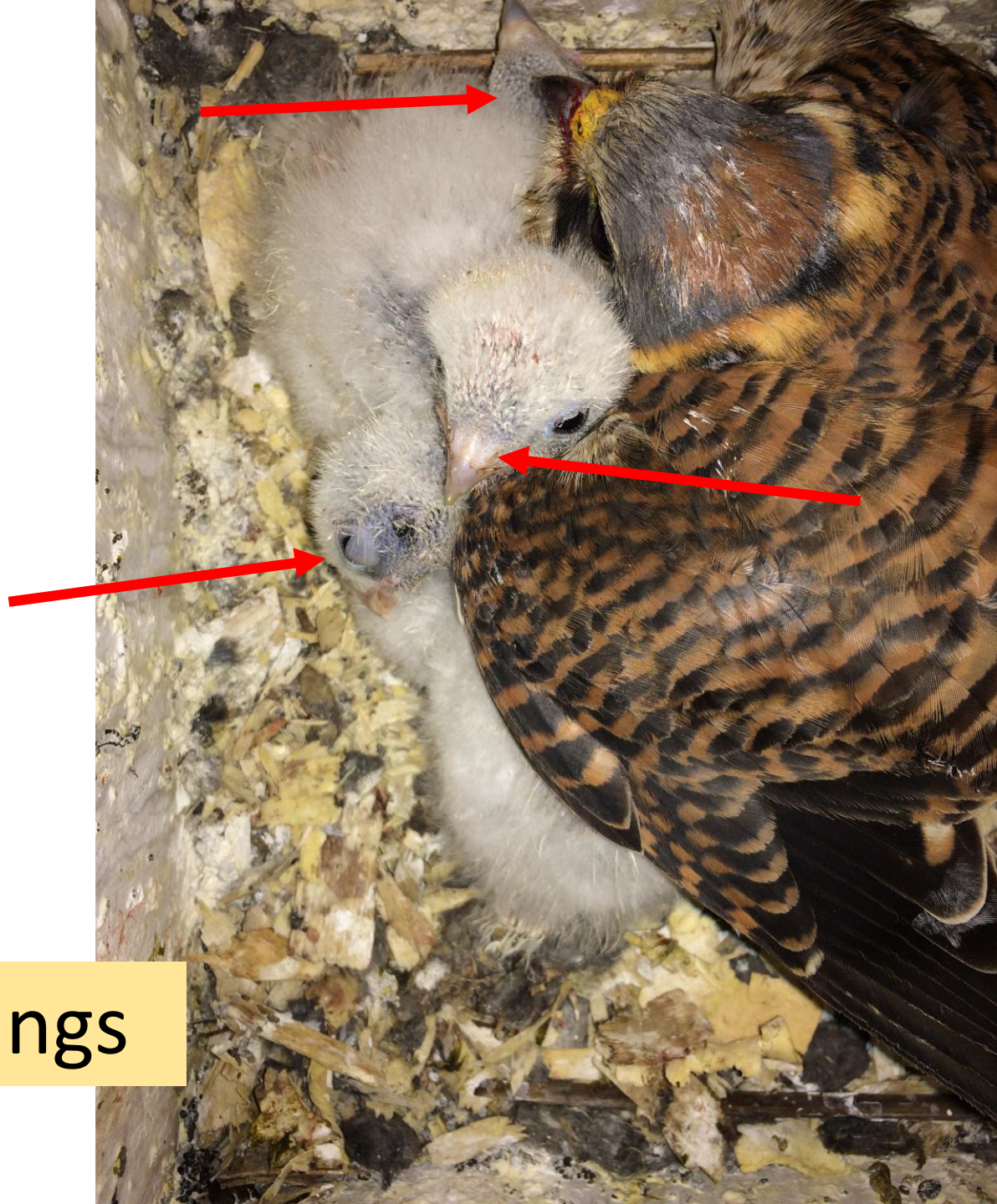
4 nestlings



2 eggs
1 nestling

1 egg
4 nestlings





3 nestlings



5 nestlings

A Photographic Timeline of Hawk Mountain Sanctuary's

American Kestrel Nestlings



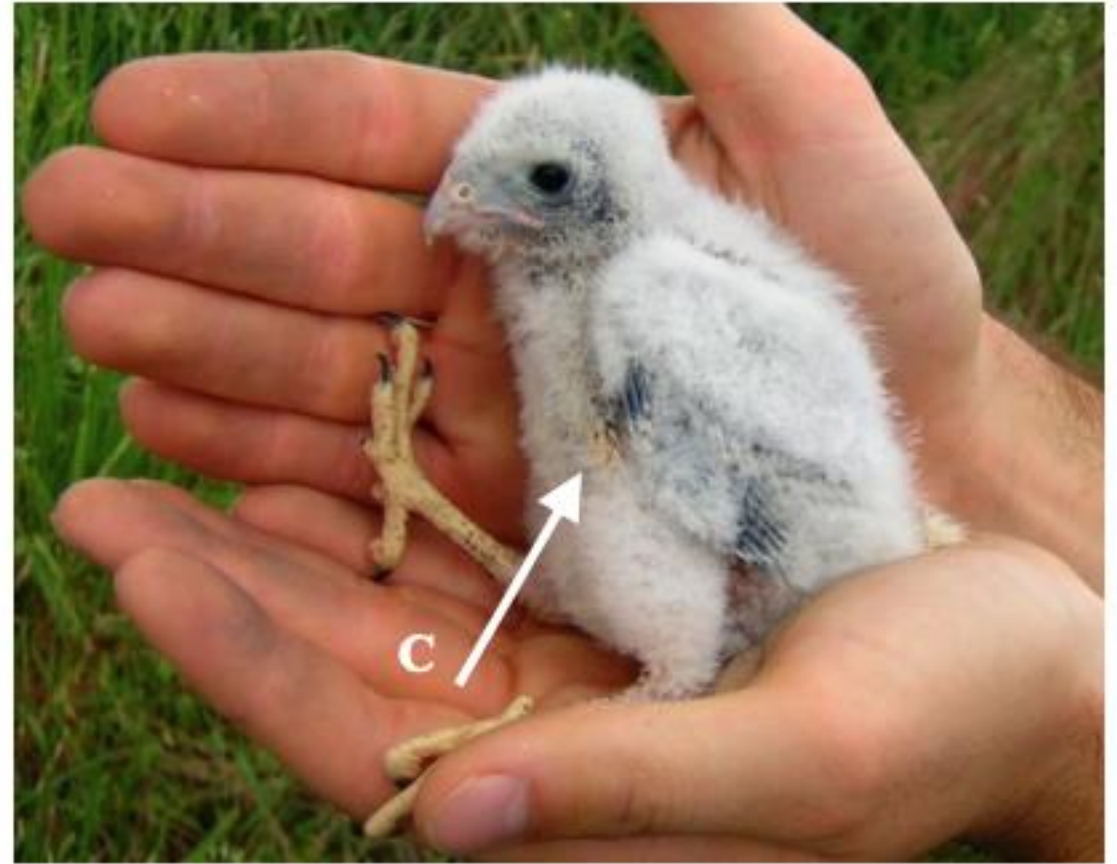
*Co-written by James R. Klucsarits and Joshua J. Rusbuldt
Photography by James and Kelly Klucsarits, and Joshua J. Rusbuldt
Edited by Keith L. Bildstein*



Eleven day old nestlings

Day 11-Day 12:

During this stage of kestrel development, the prominent indicator of age is the exposure of the primary feather sheaths^{B,C}, which are very distinct. Sheaths range at this age from 0.7 to 1.6cm (Mean: 1.14cm). Patches of colored feathers begin to emerge on the exterior regions of the breast. Nestlings' backs remain completely down covered and tail feathers are absent.



Eleven day old Male nestling



Fourteen day old Female nestling

Day 13-Day 14:

After two weeks of growth, sheaths are still the dominant anatomical feature with ranges from 1.4 to 2.0cm (Mean: 1.67cm). However, at this stage of development, other indicators of age also begin to emerge. Most notably, primary feathers begin to erupt after approximately two weeks, although at lengths less than 0.5cm (Mean: 0.28cm)^D. Feathers on the tail^E, flank^F, and back also begin to erupt in this period. The feathers covering the ear opening (auriculars) begin to darken at this age, and constitute another distinctive indicator^G. Depending on the brood, nestling gender may also be determined at this point by observation of blue-gray coloration on the male wing, and brown and black pigmentation on the female.



Eighteen day old Male nestling

Day 17-Day 18:

At this stage, primary feathers continue to lengthen, ranging from 1.1 to 2.1cm (Mean: 1.53cm)^K. Back feathers have filled in almost completely, with female alternating brown-and-black barring and the male rufous-and-black barring^L. Flank and breast feathers continue to increase in density as they develop inwards from the exterior^M. Male breast spotting and female barring increase in intensity. Tail feathers have increased significantly, and terminal banding appears (a white band in males, a dark band in females)^N. Head remains largely down covered, though crown feathers do begin to emerge^O.



Submitting your data

New online form! Volunteers no longer submitting data to AKP

madisonaudubon.org/kestrel-data



2024 Kestrel Nest Box Monitoring Data Form

Photo by Phil Brown

bmarsicek@madisonaudubon.org [Switch account](#)

Not shared

* Indicates required question

Nest Box number *

Just the number, not the AKWI. For example if you have box AKWI 19, put only 19 below.

Your answer

Your first and last name *

Your answer

Date of nest box visit you're reporting data for: *

Date

mm/dd/yyyy

What activities did you conduct at the nest box? *

Occupancy check (early season)

Egg/chick development check