

## EXAMINATION OF NEST BOXES - BICKLETON BLUEBIRD TRAIL SEPTEMBER 1989

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On September 23rd and 24th, 1989, a group of students and teachers from the Catlin Gabel and Cleveland high schools examined and cleaned out over 200 bluebird boxes near Bickleton, Washington. Presently there are about 800 bluebird houses in the Bickleton vicinity.

### Study Area and Methods

The Bickleton Bluebird Trail is located in South-Central Washington on a plateau of about 4,000 feet. The climate is characterized by hot, dry summers and relatively cool winters, with most precipitation due to snowfall. The vegetation is prairie land having some big sagebrush (*Artemisia tridentata*), rubber rabbitbrush (*Chrysothamnus nauseosus*), cheatgrass brome (*Bromus tectorum*), and blue bunch wheatgrass (*Argropyron spicatum*). Much of the land is too rocky for productive farming and most of the plant growth stays close to the ground. Racoons (*Procyon lotor*) and other animals that are harmful to the bluebirds do not flourish in Bickleton providing a somewhat safe environment for the birds.

The boxes have been placed on top of fence posts, ranging from 5 to 8 feet above the ground, along the roads surrounding Bickleton. These boxes resembled a small house with a peaked roof. Made of wood, most of these boxes are painted blue on the roof and white on all four sides. It has been found, under previous observation, that the birds that fledged from painted boxes preferred painted boxes the succeeding year, and the same results were found for birds that fledged from non-painted boxes.

Of the four groups that cleaned and examined the boxes, two groups took descriptive notes, one group took notes that only stated if the box had any use at all, and one group took no notes at all. This study is based on the information received from the two groups that took descriptive notes. This means that about 100 of the actual 800 boxes are being considered here.

Nests composed of grasses alone were considered to have been made by bluebirds, either Western Bluebird (*Sialia mexicana*) or Mountain Bluebird (*Sialia currucoides*). Nests made of both grasses and large feathers were thought to have been swallow nests. When the majority of all the space in a box, except for a center cavity, was filled with grass, string, horse or cow hair, and/or plastics it was thought to have been made by English Sparrows (*Passer domesticus*). When a nest box was stuffed full of twigs with a neat nest in one of the corners, usually made out of feathers or hair, it was considered to have been made by a House Wren.

We classified the nests into different categories by complying with the following criteria. Incomplete or unused nests were classed as alternate if they were one or two boxes away from a successful nest of the same species, and nests containing one or more unhatched, undeveloped egg(s) were most likely abandoned. Predation was thought to have occurred when one or two developed eggs remained in a fairly clean nest, or if there was evidence of disturbance. Nests with three or more dead nestlings were considered to have starved and/or been abandoned. Nests were only considered to have successfully fledged one or more young if the nests were packed flat, covered with droppings, contained feather sheath "dandruff", and contained fewer than three dead, fully feathered nestlings.

If, in a box, more than one nest was found, we gave each individual nest an interpretation, and included each one in our final numbers which can be found in table one.

## RESULTS

Of the 104 boxes examined by the two groups that took descriptive notes, 86, or 83%, of the boxes had occupancy in some form or another.

Of the 170 boxes examined by the three groups that took any notes at all, 136 boxes, or 80%, had occupancy in one form or another.

Of the 104 boxes, eleven had more than one nest within their walls, making the total number of nests 100, rather than 86. 68, or 68%, of those nests were made by bluebirds of which none could be identified as either Western or Mountain bluebirds. English Sparrows made 5 of the 100 nests, while swallows were known to have made 5 nests of which none could be identified as to species. A House Wren was found to have made one nest. Rodents were known to have made 2 nests. Eighteen of the nests were made by unknown species. Most of these were probably bluebird nests, simply not recorded in the field notes.

Of the 100 nests, 48, or 48%, successfully fledged one or more bluebird nestlings. If the unknown nests are counted as bluebird, 59, or 59% fledged 1 or more nestlings. The number of nests that fledged at least one nestling by swallows and English Sparrows were 3 and 5 respectively. The one House Wren nest was not successful at fledging nestlings.

Surprisingly, there was no common reason for nest failure which occurred in a little over half of the nests found. Instead, nest failure was evenly accounted for by either abandonment/ starvation of all nestlings, predation of incubated eggs, or abandonment of eggs before incubation (see table 1).

Since some of the boxes had not been cleaned out in 1988, some of the nests were probably from 1988.

## DISCUSSION

Without ever having made any positive species identification of the contents, we assume that all of the bluebird nests were made by either Western or Mountain Bluebirds. The Eastern Bluebird (*Sialia sialis*) is rarely found past the eastern tips of Montana, Wyoming, and New Mexico, which enables us to rule it out. Both the House Wren and English Sparrow were fairly easy assumptions because of their distinctive nests and the likelihood that they would be found in that region.

Unfortunately there were no positive identifications made for any of the five swallow nests. The most likely swallow to be found in that region would be the Violet Green Swallow (*Tachycineta thalassina*) because it is attracted to wide open spaces. We cannot rule out the possibility, though, of some being Tree swallow (*Tachycineta bicolor*) nests, just as we cannot rule out the Purple Martin (*Progne subis*). Although Tree Swallow is very similar to its family member the Violet Green Swallow, the Tree Swallow appreciates more trees and is known to frequently nest in groups, something that is hard to do in wide open spaces. The Purple Martin has been found and is known to nest in arid regions like this one. Besides the 5 unidentifiable swallow nests, there were also 3 or more nests where no species identification could be made. Since no one in the groups knew how a martin nest differs from other swallow nests, the possibility that any of these nests were Purple Martin, Violet Green and/or Tree Swallow nests is rather great and should not be ruled out.

Most of the nests that failed due to abandonment or starvation most likely failed in the months of April and May when there were many patches of cold, wet weather which in turn lowered the number of insects available to be utilized by the birds. Nests that failed due to abandonment of unincubated and partly incubated eggs probably failed during this same time period for the same reason of there not being enough food to keep the parents, alone, going. The effects of weather on bird populations can be drastic. The spring of 1989 took a significant toll on the birds, while still allowing about half of the nests to have success at fledging one or more nestlings.

The data in this study, while most of it is accurate, is scattered. If the documenting and analyzing of the Bickleton Bluebird Trail Boxes is to continue, a more uniform system of recording information must be used.

TABLE 1. Summary of all the nests found in the 104 boxes, probably including a few nests from 1988. Boxes are categorized by the most likely interpretation of the contents.

	Swallow Wren	House Wren	English Sparrow	Bluebird	Unknown*	TOTAL
Successful- fledged 1 or more nestlings	3		5	48	9	67
Failed-all nestlings starved/ abandoned	2			4	2	8
Failed-pred- ation of partly incubated eggs				4	3	7
Failed-eggs abandoned before incubation				6	1	7
Abandoned, unused nest or nest start		1		1	1	2
Unused, alternate				5		5
Rodent use- 2						
	swallow	House Wren	English Sparrow	bluebird	unknown	rodent
Total # of boxes used	5	1	5	68	16	2

\* Probably most are bluebird

INVENTORY OF NEST BOX CONTENTS - FIRST GROUP'S DATA - EAST ROAD  
 BOX#            DESCRIPTION OF CONTENTS            INTERPRETATION

1	Lots of dandruff and droppings. (SUI**)	Fledged 1 or more nestlings
2	1 egg. Big feathers. Lots of droppings. Successful swallow nest.	Fledged 1 or more nestlings
3	1 partly developed egg. Some droppings (SUI)	Fledged 1 or more nestlings/ or predation
4	Empty	
5	Box found on ground. Unidentifiable nest.(SUI)	
6	Bluebird nest start	Abandonment/ alternate
7	Complete but very neat. never been used. Bluebird nest start.	Abandonment/ alternate
8	Empty	
9	Successful swallow nest. Lots of droppings and dandruff.	Fledged 1 or more nestlings
10	Empty. Lid blown open.	
11	Empty	
12	Successful English Sparrow nest.	Fledged 1 or more nestlings
13	Successful English Sparrow nest. Mouse nest on top	Fledged 1 or more nestlings
14a*	Rodent nest	
14b	Abandoned bluebird nest with four undeveloped eggs. No droppings or dandruff.	Abandonment/ starvation
15	Three bluebird nestlings 8-11 days old with primaries just emerging. Lots of droppings. Box on edge of gravel pit. Some feather dandruff.	Starvation and possibly fledged 1 or more nestlings
16	Lots of droppings and dandruff. Successful bluebird nest.	Fledged 1 or more nestlings
17	Empty	
18	Empty	
19	Empty	

\* a is more recent layer, on top of b

\*\*SUI-Species UnIdentified in notes. probably bluebird.

20	Nest with 4 eggs. Not successful.(SUI)	Abandonment/ starvation
21	Bluebird nest start.	Abandonment/ alternate
22	1 dead baby pinfeather stage, 8-11 days old. Lots of pupae. Lots of droppings.(SUI)	Fledged 1 or more nestlings
23a	Successful bluebird nest with masses of droppings. Possible that fledglings from first nest were roosting with 2nd nestlings.	Fledged 1 or more nestlings
23b	Successful bluebird nest, with lots of scat and dandruff.	Fledged 1 or more nestlings
24a	Bluebird nest with 1 egg, no droppings.	Possible predation/ Abandonment
24b	Successful bluebird nest.	Fledged 1 or more nestlings
25	Successful bluebird nest.	Fledged 1 or more nestlings
26a	Successful nest, on top.(SUI)	Fledged 1 or more nestlings
26b	Successful bluebird nest.	Fledged 1 or more nestlings
27	Successful English Sparrow nest w/ front porch.	Fledged 1 or more nestlings
28	Lots of dandruff and droppings. Successful bluebird nest.	Fledged 1 or more nestlings
29	Empty	
30	1 dead bluebird nestling. Lots of droppings.	Fledged 1 or more nestlings
31	1 bluebird egg. Lots of droppings and dandruff	Fledged 1 or more nestlings
32a	Successful nest. (SUI)	Fledged 1 or more nestlings
32b	Nest with 1 undeveloped egg and 1 dead nestling, 8-11 days old. Some droppings. (SUI)	Fledged 1 or more nestlings
32c	Old nest. Situation unidentifiable. (SUI)	
33a	Successful nest with lots of droppings.(SUI)	Fledged 1 or more nestlings
33b	Bluebird nest with 7 unhatched eggs.	Abandonment
34	1 nestling 8-11 days old. Lots of droppings. Successful bluebird nest.	Fledged 1 or more nestlings

35	Rodent nibbles on the box opening. The remains of 1 egg inside. Box found on the ground.(SUI)	Predation
36a	3 baby skeletons and 1 egg. (SUI)	Predation
36b	Successful bluebird nest with one egg.	Fledged 1 or more nestlings
37	Lots of droppings and dandruff. Successful bluebird nest.	Fledged 1 or more nestlings
38	Successful bluebird nest	Fledged 1 or more nestling

INVENTORY OF NEST BOX CONTENTS- SECOND GROUP'S DATA - SIX PRONGS AND HALE RDS.

BOX#	DESCRIPTION OF CONTENTS	INTERPRETATION
39a	Unsuccessful bluebird nest.	Abandonment/ starvation
39b	Unsuccessful swallow nest.	Abandonment/ starvation
39c	Unsuccessful bluebird nest.	Abandonment/ starvation
40	Successful bluebird nest with lots of droppings.	Fledged 1 or more nestlings
41	Very thick dandruff, and some droppings. Successful bluebird nest.	Fledged 1 or more nestlings
42	Bluebird nest start.	Abandonment/ alternate
43	Successful Bluebird nest.	Fledged 1 or more nestlings
44	Bluebird nest with lots of droppings with two eggs remaining.	Fledged 1 or more nestlings
45	Successful bluebird nest with lots of dandruff.	Fledged 1 or more nestlings
46	Successful bluebird nest with horse hair.	Fledged 1 or more nestlings
47	<u>Lots</u> of droppings. Successful bluebird nest.	Fledged 1 or more nestlings
47	Empty	
48	1 egg, no droppings in bluebird nest.	Possible Predation, or abandonment



49	We put up a new box.	
50	5 unhatched eggs in bluebird nest.	Abandonment/
51	Nest start with grass and black plastic.(SUI)	Abandonment
52	2 bluebird eggs with lots of droppings too.	Fledged 1 or more nestlings
53	2 eggs (SUI) one of which is broken. Very few droppings.	Abandonment or predation.
54	Successful bluebird nest.	Fledged 1 or more nestlings
55	Successful, probably English Sparrow nest with fur,plastic, and hair.	Fledged 1 or more nestlings
56	Lots of droppings and dandruff. Successful bluebird nest.	Fledged 1 or more nestlings
57	5 dead bees, otherwise empty	
58a	1 dead bluebird nestling, and 1 broken egg Lots of droppings.	Fledged one or more nestlings
58b	Two or three dead nestlings.	Starvation/ abandonment
59a	Successful swallow nest.	Fledged 1 or more nestlings
59b	Swallow nest with 3 dead nestlings, and no droppings.	Starvation/ Abandonment
59c	Successful bluebird nest. Lots of droppings.	Fledged 1 or more nestlings
60a	Rodent nest. Used.	
60b	Nest with 3 dead nestlings. (SUI) No droppings.	Abandonment/ starvation
61	Unknown	
62	Successful nest with lots of droppings.(SUI)	Fledged 1 or more nestlings
63	1 dead nestling in a nest with lots of dandruff (SUI)	Fledged 1 or more nestlings
64	Successful bluebird nest.	Fledged 1 or more nestlings
65	Successful nest (SUI), with 1 dead dead nestling.	Fledged 1 or more nestlings
66	Lots of droppings and dandruff and 1 bluebird egg.	Fledged 1 or more nestlings
67	Tightly packed nest with white walls and nest. Successful bluebird nest.	Fledged 1 or more nestlings
68a	Successful bluebird nest.	Fledged 1 or



68b	Bluebird nest with 4 unhatched eggs. No droppings	more nestlings Abandonment
69	Successful bluebird nest.	Fledged 1 or more nestlings
70	Successful bluebird nest.	Fledged 1 or more nestlings
71	Successful bluebird nest.	Fledged 1 or more nestlings
72	Successful bluebird nest.	Fledged 1 or more nestlings
73	Successful bluebird nest.	Fledged 1 or more nestlings
74	2 dead bluebird nestlings and 2 eggs.	Abandonment/ starvation
75	Successful bluebird nest.	Fledged 1 or more nestlings
76	Blue bird nest never used. Clean.	Alternate/ abandonment
77	No droppings. 5 bluebird eggs.	Abandonment
78	We put up one. NEW	
79	Successful bluebird nest with lots of droppings and 1 egg.	Fledged 1 or more nestlings
80	5 bluebird eggs, no droppings.	Abandoned
81	Empty	
82	3 dead nestlings (SUI) No droppings	Abandonment/ starvation
83	Successful bluebird nest.	Fledged 1 or more nestlings
84	Successful bluebird nest.	Fledged 1 or more nestlings
85	Clean bluebird nest with one egg.	Possible predation or abandonment
86	Successful bluebird nest with 1 egg in it.	Fledged 1 or more nestling
87	Successful bluebird nest.	Fledged 1 or more nestlings
88	Lots of droppings and dandruff, bluebird.	Fledged 1 or more nestlings
89	Successful bluebird nest with one egg	Fledged 1 or more nestlings

90	Lots of droppings and dandruff and two bluebird eggs.	Fledged 1 or more nestlings
91a	Unused House Wren nest.	Abandonment/ alternate
91b	Successful bluebird nest.	Fledged 1 or more nestlings
92	Successful bluebird nest.	Fledged 1 or more nestlings
93	Clean bluebird nest.	Alternate/ abandonment
94	Empty	
95	1 broken egg but lots of droppings. Bluebird nest.	Fledged 1 or more nestlings
96	Empty	
97	Empty	
98	We put one up. NEW	
99	1 dead bluebird nestling. Some droppings.	Fledged 1 or more nestlings
100	We put one up. NEW	
101	1 dead bluebird nestling. Some droppings.	Fledged 1 or more nestlings
102	Empty	
103	Empty	
104	We put one up. NEW	