

EXAMINATION OF NEST BOXES - ESTACADA SEED ORCHARD
OCTOBER, 1989

Abigail Kennedy

On October 28, 1989, Charlotte Corkran and I examined and cleaned out the nest boxes at the Estacada Seed Orchard. With her assistance, I interpreted the data and summarized it in this report, as a biology project at the Catlin Gabel School.

Study Area and Methods

The Estacada Seed Orchard is located on a broad ridge between Memaloose Creek and the South Fork of the Clackamas River, about 11 miles southeast of Estacada, at an elevation of 3200 feet.

The total number of boxes is 57 which have been placed on 8 foot posts of the fence that surrounds 3 sections of the orchard. The boxes are suitable for bluebirds (*Sialia spp.*) and swallows (*Tachycineta spp.*).

We classified the nests into different categories by complying with the following criteria. Nests containing large feathers and grasses were thought to have been made by swallows and nests composed merely of grasses were thought to have been made by bluebirds. When one or two undeveloped, unhatched eggs were found, the nest was thought to have been abandoned. Egg predation was one conclusion when partly developed eggs were found, implying that some incubation must have occurred. Only a nest covered with droppings, packed flat, and containing feather sheath "dandruff" was considered to have successfully fledged one or more nestlings.

Results

Of the 57 boxes examined, 19 were used by birds in 1989. Swallows were known to use 11 of the boxes, of which one was identified as Tree Swallow (*Tachycineta bicolor*). Bluebird use of the boxes took place in 12 boxes, of which two could be identified as Western Bluebird (*Sialia mexicana*). Two boxes were used by an unidentified bird species. Chipmunks (*Eutamias spp.*) and/or mice (*Peromyscus spp.*) used two of the boxes.

Five bluebird nests were found to be successful at fledging one or more nestlings, while seven swallow nests were also found to be successful, (although one of the latter might have been abandoned). One additional swallow and one bluebird nests might have fledged one or two nestlings but the likelihood that they were abandoned is just as great. The most common reason for nest failure was abandonment and/or starvation, although

predation did occur in one of the boxes and possibly in one other. Table 1 summarizes the most likely interpretations.

Discussion

The number of successful nests rose considerably in 1989 from the previous year. In 1988 there were 2 successful bluebird nests and 1 swallow while in 1989 there were 5 and 7 respectively. One can only speculate at the reason for this increase, but it is most likely attributed to better weather in 1989 which in turn allowed for more insects, even though the orchard was plowed sometime during the year (which might reduce the number of insects due to loss of habitat). Periods in April and May were very cold, yet not as cold as in 1988. As was found in 1988, there was a nest full of droppings with blackberry seeds in them, showing that at least one family was having trouble feeding on insects alone. This also shows that it was very late in the year, mid to late August.

In two boxes, #19 and #21, dead adult Violet Green Swallows were found below unsuccessful nests. In box #23b, a dead male Tree Swallow was found below a nest start. There are two possible reasons for these three odd occurrences. Since the dead adult birds were on the bottom of the nest boxes it is possible that the cold spell in April and May might have caused them to run out of both energy and a food supply. They then might have chosen the boxes for the site of their deaths because they provided the most shelter from the weather. Another reason for these three deaths might be that a disease in the vicinity might have only affected the swallows. A combination of these two reasons is just as likely.

Due to the time of year that we checked the boxes and with the knowledge that most of the nesting had been completed one or two months prior to this date, we found the contents in many of the boxes already in the early stages of decay and rot. This lessened the likelihood of our getting an accurate account of the situation in the boxes. Cleaning out the boxes a few weeks earlier, as the group the previous year did, might have allowed for a more accurate account of the contents.

Most of the empty boxes had broken lids so that only half of the openings were covered. Fixing these boxes might increase the use of the Seed Orchard by both bluebirds and swallows, just as plowing the orchard after the birds have gone South might increase the number of successful nests due to more available food. Without a doubt, though, these boxes are acceptable to both bluebirds and swallows.

TABLE 1. Summary of nest box use in 1989. Boxes are categorized by the most likely interpretation of the contents.

	swallow	bluebird	unknown bird species	Total # of boxes
Successful nest- fledged 1 or more nestlings	2,3,8,26 51,10*,22*	6,23,35, 46, 53		12
Failed nest- all nestlings starved/ abandoned	1,19,20	21,18*		5
Failed nest- predation of partly incubated eggs		16*,50		2
Failed nest- eggs abandoned before incubation		23		1
Abandoned, unused nest or nest start	41	7, 14		3
Unused, alternate nest or nest start		23b,24		2
Roost			9, 34	2
Rodent-unused nest or nest start:	36			
Rodent- used, latrine present:	44			

* One of two interpretations that are equally possible

	swallow	bluebird	unknown bird	rodent
Total numbers of boxes used	11	14	2	2

INVENTORY OF NEST BOX CONTENTS

BOX#	DESCRIPTION OF CONTENTS	INTERPRETATION
Unit 1		
1	4 dead swallow (species unidentified) nestlings in pinfeather stage, 5-7 days old.	Abandonment/ starvation
2	1 dead swallow (species unidentified) in pinfeather stage. Many droppings.	Fledged 1 or more nestlings
3	1 dead swallow (species unidentified) with feathers out 3/4 of the way.	Fledged 1 or more nestlings
4	Empty	
5	Empty	
6	2 dead bluebird nestlings (species unidentified) 12-18 days old, tail length 1/8	Fledged 1 or more nestlings
7	Unused bluebird (species unidentified) nest	Abandonment/ alternate
8	1 dead Tree Swallow fully feathered, 12-18 days old. Many droppings and dandruff.	Fledged 1 or more nestlings
9	A few bird droppings. (species unknown)	Roost
10	2 dead swallow (species unidentified) nestlings fully feathered, tail 1/8. 12-18 days old. Some droppings. 1 egg.	Abandonment/ starvation. Possible fledge of 1 or more
11	Empty	
12	Empty	
13	Empty	
14	Blue bird nest start (species unidentified)	Abandonment/ Alternate
15	Empty	
16	Bluebird nest. 1 egg with possible slight development. Remains of one hatchling. No droppings. (species unidentified)	Abandonment/ starvation. Possible predation
17	Empty	
18	Bluebird nest. 3 eggs with no development. 1 dead nestling 8-11 days old. Some droppings. Pointed eggs (species unknown)	Abandonment/ starvation, possible fledge of 1 or 2
19	1 dead Violent Green Swallow male On top, 5 dead swallow nestlings (SUI*)	Abandonment/ starvation
20	6 dead swallow nestlings, 8-11 days old. (SUI)	Abandonment/ starvation

21	1 dead adult male Violet Green Swallow. On top, 3 dead fully feathered bluebird nestlings with 3 eggs in a thick nest (SUI)	Abandonment / starvation
22	3 dead fully feathered swallow nestlings. Droppings and dandruff were plentiful. (SUI)	Abandonment/ starvation, possible fledge of 1 or 2
23	5 partly developed bluebird eggs. On top, a successful Western Bluebird nest. Several feathers.	Abandonment/ starvation. Fledged 1 or more.
23b	Dead adult male Tree Swallow. On top, bluebird nest start (SUI)	Alternate/ Abandonment
24	Bluebird nest start.(SUI)	Abandonment/ Alternate
25	Empty	
26	Successful swallow nest with lots of small feathers.(SUI)	Fledged 1 or more nestlings
27	Empty	
28	Wasp nest	
29	Wasp nest	
30	Empty	
31	Empty	
32	Empty	
33	Empty	
34	Bird droppings.(species unknown)	Roost
35	Successful bluebird nest.(SUI)	Fledged 1 or more
36	Rodent nest start of moss and wood shavings.	
37	Empty	
38	Empty	
39	Empty	
40	Empty	
41	Swallow nest never used. (SUI)	Abandonment/ Alternate
42	Empty	
43	Empty	
44	Rodent nest with latrine. Bluebird feathers on ground near by. Hole chewed open.	Predation
45	Empty	
46	2 fully feathered Western Bluebird nestlings. Lots of droppings.	Fledged 1 or more nestlings.
47	Empty	
48	Empty	
49	Empty	

50	Bluebird nest with 1 partly developed egg.	Abandonment / starvation or predation
51	3 dead fully feathered swallow nestlings. (Probably Tree Swallow)2-18 days old. Lots of droppings.	Fledged 1 or more nestlings
52	Empty	
53	3 dead fully feathered bluebird nestlings 12-18 days old. Lots of droppings consisting of blackberry seeds.(SUI)	Fledged 1 or more nestlings
54	Empty	
55	Empty	
56	Empty	
57	Not present	

* SUI- Species unidentified.