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Investigation of red-cockaded woodpeckers in Virginia: 2000 report

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**INVESTIGATION OF RED-COCKADED WOODPECKERS
IN VIRGINIA: YEAR 2000 REPORT**



**CENTER FOR CONSERVATION BIOLOGY
COLLEGE OF WILLIAM AND MARY**

Investigation of Red-cockaded Woodpeckers in Virginia: 2000 report

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TABLE OF CONTENTS

Executive Summary	iii
BACKGROUND	1
Context	1
Objectives.....	1
METHODS	2
Piney Grove	2
Banding.....	3
General Observations.....	7
Historic Sites.....	7
RESULTS	7
Piney Grove.....	7
Population Size.....	7
Breeding Observations	
Cavity Trees.....	9
Measurements.....	9
Patterns of Use.....	9
Competitors.....	14
Banding.....	14
Interclan Movements.....	16
Historic Sites.....	16
ACKNOWLEDGEMENTS	20
APPENDIX I	21
APPENDIX II	40
APPENDIX III	61

EXECUTIVE SUMMARY

The Red-cockaded Woodpecker is in eminent danger of extinction within Virginia. Over the past 30 years, this species has declined from 23 known clans scattered across 5 counties to 3 active clans within a single county. In an attempt to reverse this trend, The Nature Conservancy has purchased just over 1060 ha of old growth pineland that supports the core of the remaining population. This land has been designated as the Piney Grove Preserve. The primary mission of this new reserve is the restoration of the pine savannah habitat required by Red-cockaded Woodpeckers and other declining species. Management of the remaining woodpecker population within Piney Grove will be most effective if coupled with an intensive monitoring program. Monitoring will be most effective if all birds in the population are individually marked. The primary objective of this project was to mark all individuals within the Piney Grove Preserve. A secondary objective was to record observations that may be of value both to the future management of this endangered population and to our understanding of this species in Virginia.

A total of 20 different Red-cockaded Woodpeckers were identified during the 2000 breeding season. These birds included 13 different adults and 7 nestlings. Six of these birds disappeared over the course of the season including 3 adults and 3 nestlings. The known population included 13 individuals in April and 14 individuals in October (plus 1 individual remaining outside of Piney Grove). All three woodpecker clans within Piney Grove produced young during the breeding season. Two clans raised 3 young to the nestling stage and the remaining clan fledged a single young. Estimated clutch initiation dates ranged from approximately 23 April to 28 May.

Fifteen of the natural cavities still standing within Piney Grove were used for roosting by Red-cockaded Woodpeckers. Frequency of use varied considerably between cavity trees. Four cavity competitors including Red-bellied Woodpecker, Common Flicker, White-breasted Nuthatch, and southern flying squirrel also used cavities excavated by Red-cockadeds. Collectively, cavity competitors were observed to use 8 different cavities. These cavities account for approximately 25% of the useable cavities within Piney Grove. Fourteen cavities showed evidence of enlargement by competitors.

Every precaution was taken to minimize risk to birds during banding operations. Breeding activity was monitored closely and all nestlings were extracted from cavities and banded at approximately 7 days of age. Every effort was also made to minimize handling of adult birds. This was accomplished by monitoring bird activity and targeting birds for capture that were known to be unbanded. Eleven birds were banded during 2000. These include 7 nestlings and 4 adults. Two adult birds remain unbanded within Piney Grove. These include one bird each in clusters 3 and 5. These birds have been monitored closely and have utilized cavities that are beyond the height reachable with the telescopic net. Monitoring is ongoing to determine when, or if, these birds relocate to situations that would allow for safe capture.

BACKGROUND

Context - The Red-cockaded Woodpecker (*Picoides borealis*) is a federally endangered species that has recently been given the highest conservation concern score by the national Partners-in-Flight program of any species within the mid-Atlantic region. This species excavates cavities within live, mature (80+ years) pine trees and requires pine stands with open park-like understories. A single family group may require 100 ha of pine forest or more depending on site quality. Within the past 100 years Red-cockaded Woodpeckers have disappeared completely from the northern portion of their breeding range. Historically, this species was recorded north into New Jersey and Pennsylvania. As recently as the 1930's and 1940's resident birds were known from the open maritime forests of Maryland. Since that time, the range has contracted to southeastern Virginia as northern breeding sites have been lost. In Virginia, breeding has continued to the present time but the number of both sites and birds has declined dramatically over the past 40 years. As recently as the late 1970's, 23 clans were known scattered across 5 counties. Currently, 3 clans with 14 individuals exist in a single county, plus a single bird at another site in southwestern Sussex County.

The Red-cockaded Woodpecker is in eminent danger of extinction within Virginia. A recent survey of the entire southeastern portion of Virginia has failed to locate any additional active breeding sites. Approximately 15 sites including approximately 3,500 ha of old growth pine remain that seem to be adequate to meet the breeding requirements of the species if restored. Within the past 2 years, The Nature Conservancy has purchased just over 1060 ha of old growth pineland that supports the core of the remaining population. This land has been designated as the Piney Grove Preserve. The primary mission of this new reserve will be the restoration of pine savannah habitat. If successful, this project may be expanded to other sites.

Restoration of the Red-cockaded Woodpecker population in Virginia will require the aggressive use of techniques that have been successful further south. Intensive management of extant clans along with extensive habitat restoration is needed to stabilize the population and bring it back to pre-1980 levels. Ultimately, this will require the translocation of birds either to increase the small gene pool or to establish clans on new sites. Management activities will be most effective if coupled with an intensive monitoring program. Monitoring will be most effective if all birds in the population are individually marked.

Objectives – The primary objective of this project was to mark all individuals within the Piney Grove Preserve. A secondary objective was to record observations that may be of value both to the future management of this endangered population and to our understanding of this species in Virginia. Specific objectives include:

- 1) to individually mark all adults in the population
- 2) to individually mark all young produced in the population
- 3) to record observation made during the course of banding operations
- 4) to provide an update on historic Red-cockaded Woodpecker breeding sites other than those contained within Piney Grove.

METHODS

Piney Grove

Description

Piney Grove Preserve contains an old-growth loblolly and short-leaf pine community in Sussex County, Virginia. The site supports a complex of moderate-age pine stands interspersed with pockets of older trees ranging from 80 to 130 years. Historically, the site was managed for saw timber on a relatively long rotation by Gray Lumber Company. The site was purchased by Hancock Timber Resource Group in 1993. Under Hancock Timber's management, site quality was improved by removing the dense hardwood understorey. The Nature Conservancy purchased the tract from Hancock Timber in 1998. The Nature Conservancy has developed an aggressive management program designed to restore the disturbance regime necessary to return the site to an open pine savannah.

A single clan of Red-cockaded Woodpeckers was discovered within this site in 1985. A second clan was discovered in 1994 and a third in 1995. These 3 clans still remain active. Each cluster area contains numerous cavity trees (See maps in Fig. 1 and 2). In 1999, 11 artificial cavity inserts were installed within the preserve as recruitment clusters (Fig. 1 and 2).

Figure 1. Piney Grove Preserve RCW clusters 1 and 2. Numbers indicate trees with natural and artificial cavities.

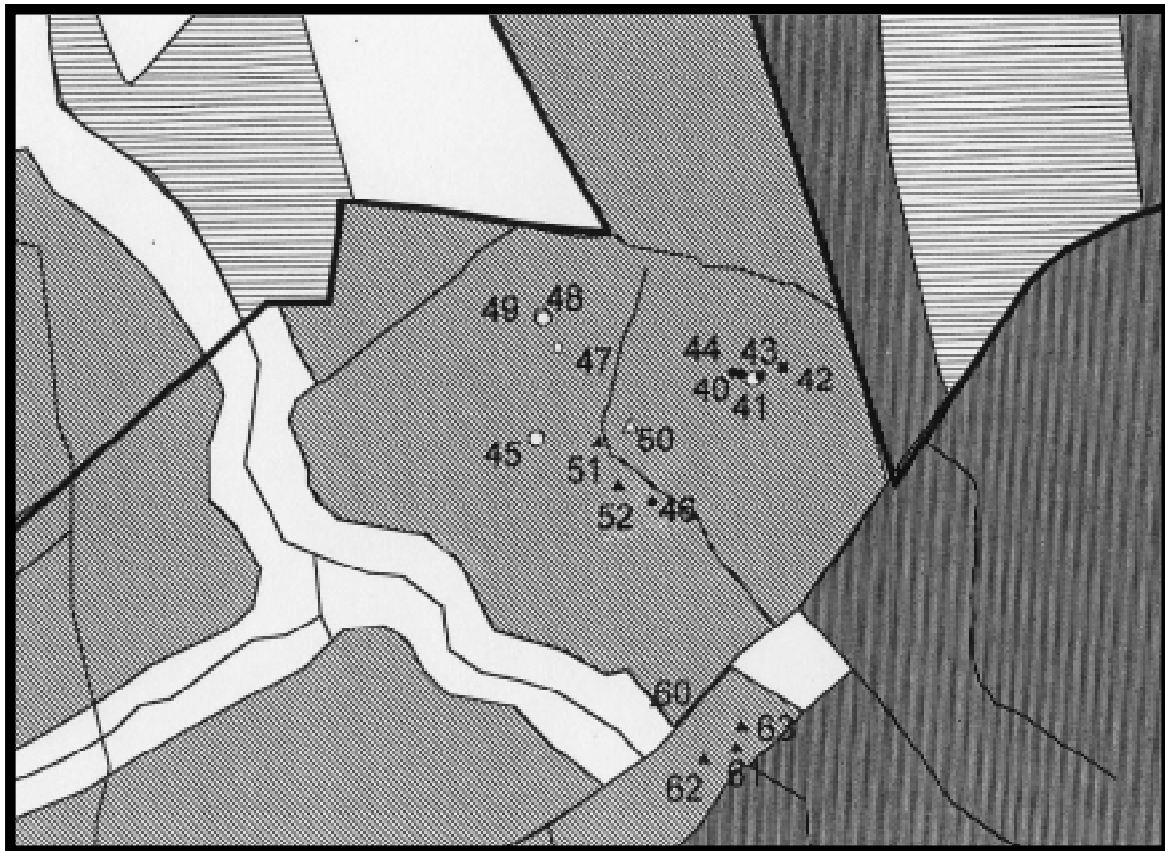
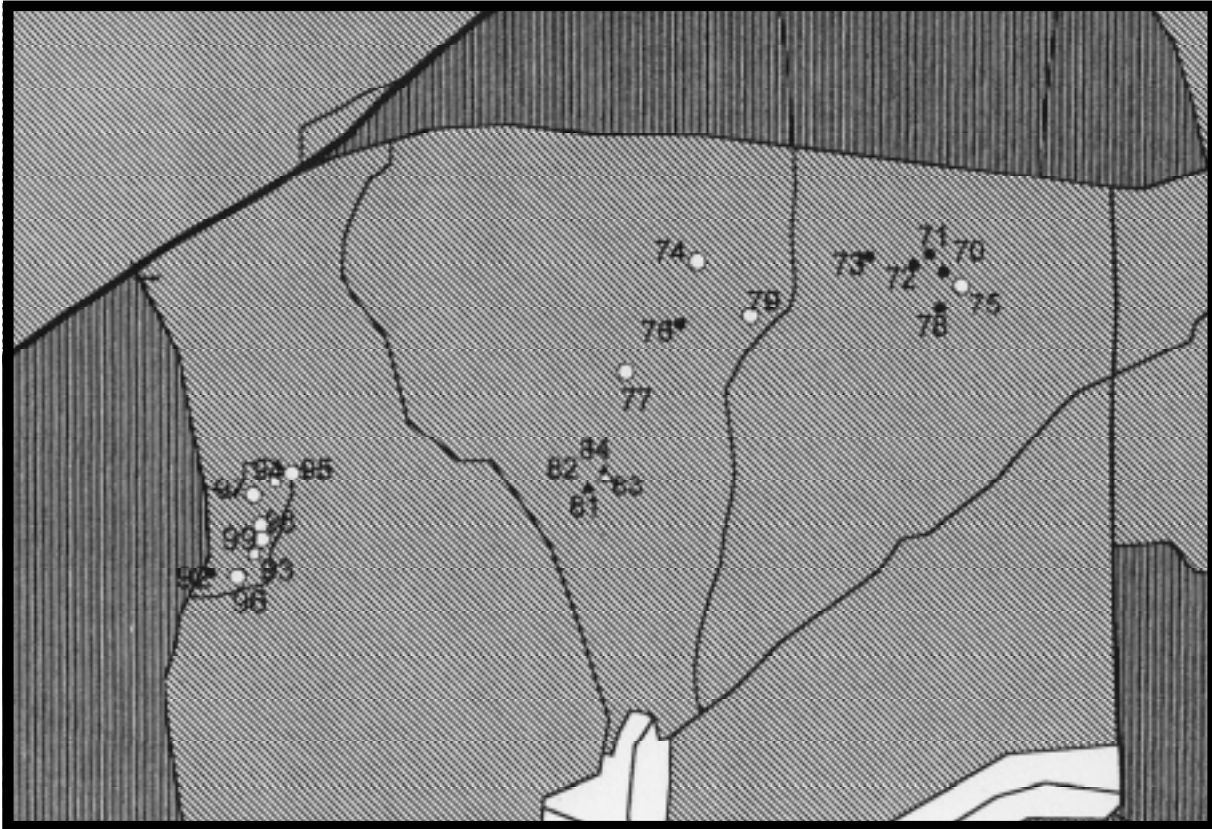


Figure 2. Piney Grove Preserve RCW clusters 3, 4, and 5. Numbers indicate trees with natural and artificial cavities.



Banding

Adults - In 1998, Don Schwab banded 10 Red-cockaded Woodpeckers within the Piney Grove complex. Preliminary observations made during the spring of 2000 indicated that several of these birds were still present within the population (see results section below). Although completion of the color-marking program is a priority with clear management benefits, the capture and banding of wild birds is not risk free. For this reason, caution was used in the execution of the capture program. Every effort was made to target specific individuals that were known to be unbanded. This approach ensured that the handling of banded birds was kept to a minimum. Because individuals frequently exchange cavities for roosting, this approach required extensive monitoring. Birds were identified and located in specific cavities as they returned to the cluster areas to roost. Known birds were then targeted for capture shortly after roosting in the evening or before emerging the following morning.

Adult birds were captured using a fine-mesh net mounted on a telescopic pole. The net was attached to a wire frame that was formed to estimate the curvature of a tree trunk. The telescopic pole was used to raise the net in position while the target bird was roosting in the cavity. The net was placed over the cavity entrance and flush against the tree trunk. The cavity tree was then tapped to encourage the woodpecker to emerge into the net. Once in the net, the bird was lowered for removal. The telescopic pole is 50 feet long. Because several roost cavities are well over 50 feet high (see results section below), birds roosting within these cavities could not be trapped.

Captured birds were banded, measured, sexed, and released. Each bird was fitted with a unique combination of color bands. A series of three color bands were used on the left leg to signify the clan affiliation. A single color band in combination with the aluminum Fish and Wildlife band was used on the right leg to identify the individual within each clan. Individual birds were measured using standard protocols. Unflattened wing chord was measured using a wing ruler. Length from the “shoulder” to the tip of the longest primary was measured to the nearest 1 mm. Exposed culmen was measured from the tip of the bill to the edge of feathers at the base of the bill with dial calipers to the nearest 0.1 mm. Weight was measured to the nearest 0.1 g using a Pesola spring scale. Birds



Adult woodpecker captured in the evening just after roosting and fitted with a unique combination of color bands.

Nestlings - For logistical and safety reasons, banding of Red-cockaded Woodpecker nestlings is restricted to an age window of 5-9 days. Because of this restriction, close monitoring of breeding activity is essential to successful banding. During the early portion of the breeding season, both the breeding pair and the nest cavity from each cluster area were monitored closely to determine clutch initiation dates. The nest cavity within cluster one was monitored regularly by inserting a video camera into the cavity entrance and inspecting the cavity for the presence of eggs. Due to the height of the nest cavities within clusters three and five, video monitoring was not possible. Within both of these clusters, breeding status was determined by observation of breeding birds. After dates of incubation were determined, an estimated hatching date was calculated. Nest cavities were monitored closely around the time of expected hatching to verify hatch dates. The window for banding was determined from estimated hatching dates.

Nest cavities were monitored for condition and the presence of eggs using a video monitor. A video camera mounted on a telescopic pole was raised and inserted into cavity entrance to view contents. Contents could be viewed on a video monitor mounted at the base of the pole.



All nestlings were banded during the recommended age window. Nest trees were climbed with ladders and nestlings were extracted from cavities using a noose apparatus. Nestlings were then lowered to the ground, banded, and returned to the cavity. Each nestling received a unique combination of color bands as described above. Nestlings were also weighed using a Pesola spring scale.



Rex Badgett climbs tree 79 in cluster 3 to extract nestlings. Nestlings are then lowered to the ground to be banded.

Brian Van Eerden and Lisa Richman prepare to band nestlings in cluster 3.



Lisa Richman applies Fish and Wildlife Service band to nestling from cluster 5.

Nestlings from cluster 3 after application of bands.



General Observations

During the course of banding operations, numerous observations of birds within the three cluster areas were made and recorded. Most of these observations were made around the time that birds went to roost in the evening or emerged in the morning. These observations were used to construct patterns of occurrence for individual birds, estimates of population size, patterns in cavity use, patterns in the presence and distribution of cavity competitors, etc. It should be noted that these observations do not fully represent systematic monitoring. For example, no systematic efforts were mounted to determine the complete distribution of flying squirrels. Flying squirrels were merely noted when observed.

Following the end of the normal breeding season, all known, natural cavity trees within Piney Grove were examined to determine condition and to measure some physical parameters. The cavity plate and resin wells were examined for evidence of recent work by Red-cockaded Woodpeckers. The cavity entrance was examined for evidence of enlargement. Cavities that had an enlarged entrance were graded according to degree of enlargement relative to normal size. Several measurements were made of cavity trees including age, diameter at breast height, height to first live limb, height of cavity, height of tree crown, and crown depth. Age was determined using an increment borer. Diameter was measured using a standard DBH tape. All height measurements were estimate using a clinometer at a distance of 100 feet (30.5 m).

Historic Sites

All historic sites in Virginia known to be used by Red-cockaded Woodpeckers for breeding in the past 15 years were visited to determine status. For those sites still standing, notes were taken on the condition of canopy and understory vegetation. All Red-cockaded Woodpecker cavity trees still standing within these sites were examined and measured as described above.

RESULTS

Piney Grove

Population Size

Over the course of the 2000 breeding season, 20 different woodpeckers were identified within the Piney Grove complex (Table 1). These birds included 13 different adults and 7 birds that were banded as nestlings. During the season, 6 birds were lost to the population including 3 adults and 3 young of the year. Of the 10 woodpeckers banded in 1998, 7 were present in the early spring of 2000. However, 2 of these birds disappeared over the course of the season and were not present by the fall of 2000. In addition, an adult bird banded during the early spring of 2000 was not present during the fall. The known population included 13 individuals in April and 14 individuals in October.

Table 1. Summary of occurrence information compiled from periodic observations. Codes are as follows: Y – presence confirmed, N – not detected and believed to be absent, A – assumed to be present but not confirmed, and ? – no information.

Location	Individual Bird	Early Apr.	Late Apr.	Early May	Late May	Early June	Late June	Early Oct.	Late Oct.
Cluster 1	DB/FWS	Y	A	Y	Y	A	A	Y	Y
	PU/FWS	Y	?	?	N	N	N	N	N
	RE/FWS	Y	A	Y	Y	?	?	N	N
	WH/FWS	N	N	N	Y	A	A	Y	Y
	YE/FWS	Y	Y	Y	Y	A	A	Y	Y
Cluster 3	YE/FWS	Y	Y	Y	Y	A	A	Y	Y
	PU/FWS	N	N	N	N	N	N	N	N
	DG/FWS	Y	Y	Y	Y	A	A	Y	Y
	PK/FWS	N	N	N	N	N	N	N	N
	WH/FWS	N	N	Y	A	A	A	Y	Y
	LG/FWS	N	N	Y	?	?	?	N	N
	RE/FWS	N	N	Y	?	?	?	N	N
	Unbanded	A	Y	Y	Y	A	A	Y	Y
	Cluster 5	RE/FWS	A	Y	N	N	N	N	N
	LG/FWS	A	Y	Y	Y	Y	A	Y	Y
	WH/FWS	A	Y	Y	Y	Y	A	Y	Y
	DB1/FWS	?	N	N	N	N	N	N	N
	YE/FWS	A	Y	Y	Y	A	A	Y	Y
	DB2/FWS	A	Y	Y	Y	Y	A	Y	Y
	PU/FWS	N	N	N	N	Y	Y	N	N
	PK/FWS	N	N	N	N	Y	Y	Y	Y
	FWS/RE	N	N	N	N	Y	Y	Y	Y
	Unbanded	A	Y	Y	Y	Y	A	Y	Y

Breeding Observations

All three woodpecker clans within the Piney Grove complex were productive during the 2000 breeding season. However, clans were not synchronous. Clutch initiation dates ranged over more than 1 month. Detailed breeding observations are presented below for each clan.

Cluster 1 – DB/FWS was observed to copulate with RE/FWS on 7 May. These two birds were determined to be the mated pair for this clan. Three eggs were first detected in cavity 48-1 on 11 May. Three was determined to be the final clutch size for this pair. On 26 May, a single chick 4-5 d old was observed within the cavity along with an unhatched egg and shell fragments. This single chick was banded on 29 May. The chick was suggested to be small for its age. This chick fledged and was observed within the cluster area in October. The breeding female (RE/FWS) was not present in October.

Cluster 3 – DG/FWS and YE/FWS were determined to be the mated pair for this clan. The nest cavity was determined to be 79-1. Incubation was confirmed on 29 April when female and male exchanged incubation duties just before roosting. First observation of birds feeding young was on 5 May. Three chicks were extracted and banded on 12 May. Birds were suggested to be very small for their age. Nestlings were still heard in cavity on 22 May. Birds did not appear to be present in cavity on 6 June. Only 1 of the chicks was present in the cluster area in October.

Cluster 5 – Birds within cluster 5 appeared to have a false start in late April. RE/FWS was observed attempting to copulate with WH/FWS on 17 April and again on 20 April. RE/FWS appeared to be the mated pair and cavity 97-2 was the nest cavity. Female displayed considerable activity within this cavity for several days in late April and early May. Daytime activity suggested incubation activity. However, RE/FWS male disappeared in early May and was never detected within the cluster area again. Eventually LG/FWS and WH/FWS were the breeding pair for this clan. Incubation behavior was observed again on 29 May. Feeding behavior was first observed on 11 June. Three nestlings were extracted and banded on 16 June. Birds appeared to be 7 days old. Only 2 of these 3 chicks were present within the cluster area in October.

Cavity Trees

Measurements – Most of the active cavity trees examined within Piney Grove ranged in age between 90 and 125 years (Table 2). Many of these trees had shallow crowns but were in good health. Cavities were typically placed below the first live limb. Many of the cavities were placed quite high with several exceeding 14 m. Of the 38 natural cavity trees still standing, 26 (68.4%) showed evidence of recent work by Red-cockadedds (Table 3). Of the 11 artificial cavities installed, 7 (63.6%) showed evidence of recent work by Red-cockadedds. One of the trees with an artificial cavity was struck by lightning in the spring and has since died.

Patterns of Use – Fifteen of the natural cavities still standing were used for roosting by Red-cockaded Woodpeckers at some point during the field season (Tables 4 through 6). Frequency of use varied considerably between cavity trees. A small core group of trees were used consistently throughout the season. Several trees were used primarily during the early part of the season and several others during the late season. A portion of this shifting appears to relate to use by competitors during different parts of the season.

Table 2. Summary of Cavity tree measurements. Measurements were taken on all known cavity trees on Piney Gr and within remaining historic sites.

Tree ID	Age	DBH cm(inches)	Cavity Height m(feet)	1st Limb Height m(feet)	Crown Height m(feet)	Crown Depth m(feet)
Piney Grove						
<u>Cluster 1</u>						
44-01	100	52.6(20.5)	8.5(28)	17.1(56)	29.6(97)	15.5(41)
40-01	102	53.8(21.0)	10.4(34)	13.7(45)	30.5(100)	16.8(55)
41-01	90+	46.2(18.0)	14.3(47)	17.7(58)	27.4(90)	9.8(32)
43-01	96	48.7(19.0)	8.2(27)	14.3(47)	28.7(94)	14.3(47)
45-01	91+	35.9(14.0)	5.8(19)	11.9(39)	19.2(63)	7.3(24)
48-01	88	50.0(19.5)	8.8(29)	9.3(30.5)	30.5(100)	21.2(69.5)
49-01	89	52.6(20.5)	13.7(45)	20.7(68)	33.8(111)	13.1(43)
47-01	75	46.2(18.0)	11.6(38)	10.7(35)	33.2(109)	22.6(74)
46-01	97	50.0(19.5)	17.1(56)	18.0(59)	29.9(98)	11.9(39)
<u>Cluster 3</u>						
73-01	-----	43.6(17.0)	9.8(32)	-----	26.5(87)	-----
72-01	93	50.0(19.5)	11.3(37)	12.2(40)	33.8(111)	21.6(71)
71-01	91	55.1(21.5)	13.1(43)	13.7(45)	35.4(116)	21.6(71)
70-01	-----	50.0(19.5)	16.2(53)	-----	27.7(91)	-----
75-01	81	67.9(26.5)	15.8(52)	20.4(67)	32.9(108)	12.5(41)
79-01	-----	55.1(21.5)	18.3(60)	15.5(51)	28.7(94)	13.1(43)
S-01	114	53.8(21.0)	10.7(35)	11.6(38)	23.7(78)	12.2(40)
74-01	109	47.4(18.5)	5.2(17)	11.6(38)	21.3(70)	9.8(32)
76-01	127	51.3(20.0)	7.9(26)	9.1(30)	21.3(70)	12.2(40)
77-01	120	50.0(19.5)	15.8(52)	21.3(70)	30.5(100)	9.1(30)

Table 2. – continued - Summary of Cavity tree measurements. Measurements were taken on all known cavity trees in Piney Grove and within remaining historic sites.

Tree ID	Age	DBH cm(inches)	Cavity Height m(feet)	1st Limb Height m(feet)	Crown Height m(feet)	Crown Depth m(feet)
Piney Grove						
<u>Cluster 5</u>						
97-01	99	53.8(21.0)	14.9(49)	21.3(70)	31.1(102)	9.8(32)
97-02	99	53.8(21.0)	14.9(49)	21.3(70)	31.1(102)	9.8(32)
94-01	101	48.7(19.0)	13.1(43)	18.6(61)	27.4(90)	8.8(29)
95-01	101	53.8(21.0)	9.8(32)	15.5(51)	24.7(81)	9.1(30)
99-01	89	42.3(16.5)	11.0(36)	10.1(33)	27.4(90)	8.2(27)
98-01	98	47.4(18.5)	13.1(43)	14.6(48)	21.9(72)	7.3(24)
93-01	112	41.0(16.0)	14.3(47)	16.5(54)	26.8(88)	10.4(34)
<u>Cluster 5</u>						
96-01	91	61.5(24.0)	14.9(49)	16.5(54)	33.8(111)	17.4(57)
96-02	91	61.5(24.0)	14.6(48)	16.5(54)	33.8(111)	17.4(57)
Old-01	-----	44.9(17.5)	7.9(26)	-----	-----	-----
Grizzard Trct						
GT1-01	96	50.0(19.5)	8.2(27)	14.9(49)	29.9(98)	14.9(49)
GT2-01	93	39.7(15.5)	10.4(34)	-----	-----	-----
Route 35						
R351-01	119	59.0(23.0)	17.7(58)	16.2(53)	31.4(103)	15.2(50)
R352-01	116	48.7(19.0)	10.7(35)	17.1(56)	29.9(98)	12.8(42)
Stoney Creek						
SC1-01	126	59.0(23.0)	15.5(51)	19.8(65)	30.5(100)	10.7(35)
SC201	118	55.1(21.5)	11.6(38)	12.2(40)	27.4(90)	15.2(50)

Table 3. Summary of Red-cockaded Woodpecker maintenance of cavity trees, evidence of enlargement of cavity entrance by competitors, and use of cavity by competitors. Activity codes are as follows: N = no recent activity and Y = recent maintenance. Enlargement multiples refer to normal entrance size. Cavity competitor codes are as follows: RBWO = Red-bellied Woodpecker, COFL = Common Flicker, WBNU = White-breasted Nuthatch, and FLSQ = Flying Squirrel. Y indicates that competitor was observed roosting or nesting in cavity. Note that competitor use observations were not made systematically.

Cavity ID	RCWO Recent Activity	Cavity Enlargement	RBWO	COFL	WBNU	FLSQ
Cluster 1						
40-01	N	Y (>4 times)				
41-01	Y	Y (slight)	Y			
43-01	N	Y (<2 times)				
44-01	N	Y (>2 times)				
45-01	Y	N				
46-01	Y	Y (<2 times)	Y			
47-01	Y	N				
48-01	Y	N				
49-01	Y	Y (slight)	Y			
50-01	Y	N				
51-01	Y	N				
52-01	N	N				
Cluster 2						
60-01	N	N				
61-01	Y	N				
62-01	N	N				
63-01	Y	N				Y
Cluster 3						
70-01	N	(Y >2 times)				
71-01	N	Y (slight)				
72-01	N	Y (> 2 times)				
73-01	N	Y (>2 times)				
74-01	Y	N				
75-01	Y	N				
76-01	Y	N			Y	
77-01	N	Y (>4 times)				
79-01	Y	N				
Cluster 4						
81-01	N	N				
82-01	Y	N				
83-01	Y	N				
84-01	Y	N				Y
Cluster 5						
93-01	Y	N		Y		
94-01	Y	N				
95-01	Y	Y (slight)				Y
96-01	Y	Y (slight)				
96-02	Y	Y (slight)				
97-01	Y	N				
97-02	Y	N				
98-01	Y	N				
99-01	Y	N				

Table 6. Pattern of cavity use observations for Cluster 5. Codes are as follows: Y = confirmed use, A = assumed use, N = no evidence of use, and ? = unknown use.

Cavity ID	4/7	4/20	4/30	5/9	5/15	5/26	10/03	10/04
93-01	Y	N	?	N	N	Y	Y	Y
94-01	N	N	N	N	N	N	N	N
95-01	Y	Y	Y	Y	Y	Y	N	N
96-01	N	N	N	N	N	N	Y	Y
96-02	N	N	N	N	N	N	Y	?
97-01	Y	Y	Y	Y	Y	Y	N	N
97-02	Y	Y	Y	Y	Y	Y	Y	Y
98-01	Y	Y	Y	Y	Y	Y	Y	Y
99-01	Y	Y	Y	Y	Y	N	Y	Y

Competitors – Four cavity competitors were observed to use Red-cockaded Woodpecker cavities (Table 3). These included the Red-bellied Woodpecker, Common Flicker, White-breasted Nuthatch, and flying squirrel. Most of this use was for roosting. However, Red-bellied Woodpeckers did nest successfully in cavity 49-1 within cluster 1. White-breasted Nuthatches also nested successfully in cavity 76-01 in cluster 3.

Collectively, cavity competitors were observed to use 8 different cavities (it should be noted that this was not a systematic survey of competitor use. Actual use may be much higher). This includes 6 and 3 in natural and artificial cavities respectively. These cavities account for approximately 25% of the useable cavities within the complex. Fourteen cavities showed evidence of enlargement by competitors (Table 3). This work was primarily associated with Red-bellied and Pileated Woodpeckers.

Banding

Since the spring of 1998, 21 different birds have been banded within the Piney Grove complex (Table 7). This includes 10 birds in 1998 and 11 birds in 2000. Birds banded in 2000 include 4 adults and 7 nestlings. Of the 12 birds banded where sex was determined 7 were females and 5 were males. Hatching-year birds banded in 1998 and nestlings banded in 2000 have not been monitored to determine sex.

Two adult birds remain unbanded within Piney Grove. These include one bird each in clusters 3 and 5. These birds have been monitored closely and have utilized cavities that are beyond the height reachable with the telescopic net. Given the low number of birds within Piney Grove no attempt has been made to take extreme measures to capture these individuals. Monitoring is ongoing to determine when or if these birds relocate to situations that would allow for safe capture.

Table 7. Summary of individual Red-cockaded Woodpeckers banded within Piney Grove (1998-2000).

Date	Cluster	FWS	Left	Right	Age	Sex	Wing	Culm	Wght
02/09/98	5	1581-66201	WH/LB/WH	RE/FWS	AHY	M*	-----	-----	-----
02/10/98	5	1581-66202	WH/LB/WH	LG/FWS	AHY	M	121	18.0	-----
02/12/98	5	1581-66207	WH/LB/WH	WH/FWS	U	F*	-----	-----	-----
08/16/98	5	1581-66210	WH/LB/WH	DB1/FWS	HY	U	-----	-----	-----
04/20/00	5	1581-66212	WH/LB/WH	YE/FWS	AHY	M	118	17.5	46.0
04/30/00	5	1581-66213	WH/LB/WH	DB2/FWS	AHY	F	122	17.0	44.0
06/16/00	5	1581-66220	WH/LB/WH	PU/FWS	~7d	U	-----	-----	30.0
06/16/00	5	1581-66221	WH/LB/WH	PK/FWS	~7d	U	-----	-----	32.0
06/16/00	5	1581-66222	WH/LB/WH	FWS/RE	~7d	U	-----	-----	26.0
02/10/98	3	1581-66203	RE/DB/RE	YE/FWS	AHY	F	117	17.0	47.8
02/11/98	3	1581-66204	RE/DB/RE	PU/FWS	AHY	F	-----	-----	-----
02/11/98	3	1581-66205	RE/DB/RE	DG/FWS	AHY	M	-----	-----	-----
08/10/98	3	1581-66208	RE/DB/RE	PK/FWS	HY	U	-----	-----	-----
05/12/00	3	1581-66214	RE/DB	WH/FWS	~7d	U	-----	-----	11.0
05/12/00	3	1581-66215	RE/DB	LG/FWS	~7d	U	-----	-----	12.0
05/12/00	3	1581-66216	RE/DB	RE/FWS	~7d	U	-----	-----	12.0
01/11/98	1	1581-66206	DG/YE/DG	DB/FWS	AHY	M	-----	-----	-----
08/15/98	1	1581-66209	DG/YE/DG	PU/FWS	AHY	F	-----	-----	-----
04/05/00	1	1581/66211	DG/YE/DG	RE/FWS	AHY	F	122	17.9	47.5
05/29/00	1	1581-66219	DG/YE/DG	WH/FWS	~7-8d	U	-----	-----	24.0
10/02/00	1	1581-66223	DG/YE/DG	YE/FWS	AHY	F	120	16.6	-----

*initially banded as opposite sex but behavioral observations confirm sex.

Interclan Movements

A few instances were documented where a foreign bird was detected within a cluster area. Observations of such interclan movements are as follows

4/22 – While observing 2 birds from cluster 1 that were foraging in pine stand just west of creek, 2 birds banded with cluster 3 colors appeared from further west. These birds approached and interacted with others. Some chasing occurred and cluster 3 birds eventually flew back toward cluster 3 area. These birds were approximately 0.75 mi from center of cluster 3.

4/30 – While using video monitor to examine cavity 48-1 for evidence of nesting activity, a bird appeared on the cavity tree with cluster 5 colors. This bird was identified as WH/LB/WH LG/FWS. This bird foraged around cluster 1 and moved east over to cluster of trees around 41-1. This bird was approximately 1 mi from the center of cluster 5. LG/FWS was observed that same evening roosting in cavity 97-2 of cluster 5. This bird later became the breeding male of that clan.

6/04 – While observing cavity 79-1 in cluster 3, 3 birds were observed foraging in vicinity of cavity tree. One of these birds had clan 3 colors and another had clan 5 colors.

10/06 – While following birds within cluster 1 to get head count on the clan an unbanded bird was mixed in with 3 birds from cluster. This bird was foreign to this clan. The bird must have been one of the two unbanded birds remaining in Piney Grove or a bird from outside the preserve. In subsequent days, there was no evidence that the bird was roosting within the cluster indicating that it must have been visiting.

Historic Sites

Route 635 Site (Southampton County)

Site condition- Pine stands that harbored RCW trees on both sides of Route 635 were harvested in 1999. There is no remaining evidence of Red-cockaded Woodpecker activity at this site, and insufficient habitat to sustain birds. Mature pines remain only as a fringe habitat to the north and west of the site along Rt. 609.

Cavity tree status – None remaining.

Bird status – No evidence of activity present.

Route 608 Site (Sussex County)

Site condition – Remaining historical site was harvested early to mid 2000. There is no remaining evidence of Red-cockaded Woodpecker activity at this site. Although there are remnant borders of older pines still present along wetland edges, there is little in the way of foraging habitat with most of the remaining pine stands in the sapling age class.

Cavity tree status – Non remaining.

Bird status – No evidence of activity present.

Union Camp Site (Sussex County)

Site condition – This site was harvested sometime in 1998. The site has been re-seeded in loblolly pine. There are no mature pines remaining in association with this site or adjacent timber stands.

Cavity tree status – None remaining.

Bird status – No evidence of activity present.

Route 460 Site (Sussex County)

Site condition – This site remains forested with the exception of the several acres that were removed in 1988 in association with the harvesting violation by Gray Lumber Company. In the intervening 12 years the site has succumbed to severe degradation brought on by hardwood encroachment. Although hardwoods are still predominantly confined to the subcanopy, the stand is unsuitable for occupation by Red-cockaded Woodpeckers. An additional detraction to this site is its size. The stand of mature timber is limited to the corridor between Route 460 and the railroad tracks. The harvesting of the large mature pine stand to the north of Route 460 in 1989 removed the last remaining option for suitable foraging habitat in the area. As a result, this site should not be considered viable for re-occupation even if remaining habitat could be improved.

Cavity tree status – None detected

Bird status – No evidence of activity present.

Stony Creek Rt. 40 Site (Sussex County)

Site condition – The core site is still present although hardwoods are a dominant sub-canopy species in the stand. This represents the oldest known Red-cockaded Woodpecker site. Both random and cavity trees have yielded ages exceeding 130 years. While hardwood removal would easily bring this site into suitability for use by Red-cockadedes, the site would likely not have the longevity that other sites exhibit. Most of the mature timber is well into senescence and there is not a prominent age class of younger pines, with the exception of a vigorous sapling stand that dominates the understory over much of the site. An adjacent stand across Rt. 40 harbors a better mix of old and moderate pines although the stand comprises less than 20 hectares. Collectively these two stands harbor less than 40 ha of suitable habitat, contingent on a thorough hardwood removal operation. Evidence of recent activity by pine beetles was observed in at least one tree adjacent to the most recently used cavity trees.

Cavity tree status – Two detected. Although both trees were alive and vigorous, the cavity in each had been enlarged substantially, precluding use by Red-cockadedes. There was no evidence of activity by Red-cockadedes anywhere on the tree. Resin wells and resin were dried and crusted over.

Bird status – Last detection was a vocalizing bird to the southeast of the stand in Spring, 1996.

Route 35 Site (Southampton County)

Site condition – This site harbors a significant pine habitat that exists now in only a remnant stand of less than 120 ha. Site conditions are excellent for Red-cockadedes. A hardwood removal operation in 1996 and 97 greatly improved the habitat leaving a park-like open stand of old-growth pines interspersed with younger trees. In the intervening 3 years, the hardwood habitat has rebounded making pedestrian access difficult. Sprouting hardwood stumps and saplings dominate the understory, but have not yet begun to erode the midstory. If routine management could be undertaken in this stand, it could provide a model habitat for woodpeckers, and be potentially close enough for exchange with the Piney Grove Preserve.

Cavity tree status – Two detected. Both trees contained a useable cavity, although there was no evidence of recent activity. The primary tree was known to have been occupied by a single bird in January 2000, although resin evidence on the tree suggests that the resin wells had not been maintained since before summer. The cavity showed very recent evidence of attempted enlargement, although the damage would not preclude use by Red-cockaded. The second cavity was useable as well, although resin wells were gray and crusted, suggesting abandonment long before the other cavity. It also showed signs of recent work by competitor species to enlarge the cavity.

Bird status – A single bird known to have been present at the site throughout 1999 has apparently abandoned the site or was lost to other causes. Cavity tree evidence, in conjunction with field observations, suggests an absence beginning between January and June 2000.

Route 612 Site (Southampton County)

Site condition – This site represents one of the final stands in an over 600 ha block, the remainder having been harvested within the last 10 years. It constitutes a natural pine stand, with no evidence of historical management for sawtimber. Hardwoods are a codominant in the canopy and comprise most of the subcanopy and midstory component. Pine constitutes a low proportion of the stand basal area. Red-cockaded Woodpeckers occupied the only portion of the stand that was dominated by old growth pines. The current stand boundaries comprise little more than 60 ha and exists as an island within miles of plantation pine.

Cavity tree status – Three detected. The primary cavity tree had broken off at the level of an old cavity. A newer cavity, just below the break showed clear signs of recent maintenance activity and was still producing a fresh resin flow. A second cavity tree showed no recent signs of cavity maintenance. The cavity had been slightly enlarged although still appeared suitable for Red-cockaded use. The third tree harbored a start cavity that showed no evidence of having been completed, with no recent signs of Red-cockaded Woodpecker activity.

Bird status – A lone Red-cockaded woodpecker was known to have been present at this site throughout 1999. A visit in September 2000 during mid-day did not reveal the bird, although very recent maintenance work on resin wells and a freshly maintained plate suggest the bird is still present.

ACKNOWLEDGMENTS

This investigation was made possible with the help of many individuals. We thank Marian Watts and Bart Paxton for assistance with monitoring and capturing adult birds. Lisa Richman and Rex Badgett from J. Carter and Associates conducted the operation to band nestlings. Telescopic nets and video monitoring equipment was provided by the Virginia Department of Game and Inland Fisheries. We thank Brian Van Eerden, Judy Dunscomb, Don Schwab, and Ray Fernald for help during all aspects of this project. Funding for this project was provided by the Virginia Chapter of The Nature Conservancy and the Virginia Department of Game and Inland Fisheries.

APPENDIX 1: Observations made of birds within clusters 1 and 2 during 2000.

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTERS 1&2)**

DATE: 4/5/00

TIME: 17:30 – 19:55

OBSERVERS: B. Watts, D. Bradshaw, M. Watts

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1	N	---	---	---	---	---
41	1	N	---	---	---	---	---
42	1	N	---	---	---	---	---
43	1	N	---	---	---	---	---
44	1	N	---	---	---	---	---
45	1	RCWO	---	19:00	Captured	DG/YE/DG	RE/FWS
46	1	RCWO	---	19:20	?	---	---
47	1	N	---	---	---	---	---
48	1	RCWO	---	19:03	Y	DG/YE/DG	DB/FWS
49	1	N	---	---	---	---	---
50	1	RCWO	---	19:15	?	---	---
51	1	N	---	---	---	---	---
52	1	N	---	---	---	---	---
60	1	?	---	---	---	---	---
61	1	?	---	---	---	---	---
62	1	?	---	---	---	---	---
63	1	?	---	---	---	---	---

COMMENTS: Male RBWO investigated cavity 49-1 but did not roost. DB/FWS arrived alone, foraged briefly and roosted. Three birds came into tree adjacent to tree 50 and foraged for 10 minutes. One bird apparently roosted in cavity 50-1. Another bird flew to tree 46 and after 5 minutes went into cavity 46-1. Captured female in 45-1 and banded. Attempted to capture bird in 50-1 but no response.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTERS 1&2)**

DATE: 4/6/00

TIME: 17:30-20:30

OBSERVERS: B. Watts, D. Bradshaw, B. Paxton

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1	N	---	---	---	---	---
41	1	RBWO	---	---	Captured	---	---
42	1	N	---	---	---	---	---
43	1	N	---	---	---	---	---
44	1	N	---	---	---	---	---
45	1	RCWO	---	18:55	Y	DG/YE/DG	RE/FWS
46	1	RCWO	---	19:35	Y	DG/YE/DG	PU/FWS
47	1	N	---	---	---	---	---
48	1	RCWO	---	19:15	Y	DG/YE/DG	DB/FWS
49	1	N	---	---	---	---	---
50	1	RCWO	---	19:06	N	---	---
51	1	N	---	---	---	---	---
52	1	N	---	---	---	---	---
60	1	?	---	---	---	---	---
61	1	?	---	---	---	---	---
62	1	?	---	---	---	---	---
63	1	?	---	---	---	---	---

COMMENTS: PU/FWS seemed to lead unbanded bird into 50-1. PU/FWS then made the rounds of all of the cavities eventually going back and roosting at 46-1. Attempted to capture bird in 50-1 but would not respond. Trapped female RBWO from 41-1. Attempted to trap birds from 40-1 but nothing responded. Apparently nothing roosting there. Cavity 46-1 too high to reach with pole net.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTERS 1&2)**

DATE: 4/7/00

TIME: 6:10 – 9:15

OBSERVERS: B. Watts, M. Watts

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1	N	_____	_____	_____	_____	_____
41	1	N	_____	_____	_____	_____	_____
42	1	N	_____	_____	_____	_____	_____
43	1	N	_____	_____	_____	_____	_____
44	1	N	_____	_____	_____	_____	_____
45	1	RCWO	6:50	_____	Y	DG/YE/DG	RE/FWS
46	1	RCWO	6:45	_____	Y	DG/YE/DG	PU/FWS
47	1	N	_____	_____	_____	_____	_____
48	1	RCWO	7:00	_____	Y	DG/YE/DG	DB/FWS
49	1	N	_____	_____	_____	_____	_____
50	1	RCWO	8:05	_____	N	_____	_____
51	1	N	_____	_____	_____	_____	_____
52	1	N	_____	_____	_____	_____	_____
60	1	?	_____	_____	_____	_____	_____
61	1	?	_____	_____	_____	_____	_____
62	1	?	_____	_____	_____	_____	_____
63	1	?	_____	_____	_____	_____	_____

COMMENTS: PU/FWS emerged first from 46-1 and was foraging toward 45-1. Bird emerged from 45-1 about 5 minutes later and joined PU/FWS. These 2 birds foraged around cluster making circuit to tree group at 41 and then at 48. Birds foraged around the area for over 1 hour and then came to tree 50. Despite repeated calls, bird roosting in 50-1 would not emerge. Attempted to trap unbanded bird in cavity 50-1. Set up pole net from 6:30 to 8:00. Bird would not emerge. Bird emerged when net was removed and foraged in immediate area.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

RED-COCKADED WOODPECKER CAVITY ACTIVITY FORM (CLUSTERS 1&2)

DATE: 4/7/00

TIME: ??

OBSERVERS: TNC et al.

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1		---	---	---	---	---
41	1		---	---	---	---	---
42	1		---	---	---	---	---
43	1		---	---	---	---	---
44	1		---	---	---	---	---
45	1		---	---	---	---	---
46	1		---	---	---	---	---
47	1		---	---	---	---	---
48	1	RCWO	---	?	?	---	---
49	1		---	---	---	---	---
50	1		---	---	---	---	---
51	1		---	---	---	---	---
52	1		---	---	---	---	---
60	1		---	---	---	---	---
61	1		---	---	---	---	---
62	1		---	---	---	---	---
63	1	RCWO	---	?	?	---	---

COMMENTS: Observers reported having 5 birds in area of cluster 1 and 1 bird in area of cluster 2. Reliability of bird totals uncertain. Do not have information on which specific cavities were monitored.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTERS 1&2)**

DATE: 4/16/00

TIME: 16:30 – 20:30

OBSERVERS: B. Watts, D. Bradshaw, M. Watts

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1	N	---	---	---	---	---
41	1	N	---	---	---	---	---
42	1	N	---	---	---	---	---
43	1	N	---	---	---	---	---
44	1	N	---	---	---	---	---
45	1	RCWO	---	---	Y	---	---
46	1	RCWO	---	---	Y	---	---
47	1	N	---	---	---	---	---
48	1	L	---	---	---	---	---
49	1	N	---	---	---	---	---
50	1	N	---	---	---	---	---
51	1	N	---	---	---	---	---
52	1	N	---	---	---	---	---
60	1	N	---	---	---	---	---
61	1	N	---	---	---	---	---
62	1	N	---	---	---	---	---
63	1	FLSQ	20:15	---	---	---	---

COMMENTS: No birds appeared at cluster 2. All 4 birds present at cluster 1 at 18:00. Birds foraged and made circuit working on cavities 50-1, 46-1, 45-1 and spent time around group at 41 and group at 48. Spent 20 minutes working on cavity 46-1. Group made final circuit and dropped off individuals at respective cavities with 46-1 roosting last. Unbanded bird approached and stood at entrance 4 times but would not roost. Bird had not roosted at 20:30. Bird's behavior consistent with squirrel in cavity. Knocked on tree 63 and flying squirrel emerged from cavity 63-1 and ran up tree to crown. Considerable RCW work has been done to tree 63 since 4/7/00. Appears to be some preliminary work on tree 62.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

RED-COCKADED WOODPECKER CAVITY ACTIVITY FORM (CLUSTERS 1&2)

DATE: 4/26/00

TIME: 18:20-20:20

OBSERVERS: B. Watts, B. Paxton

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1	N	---	---	---	---	---
41	1	N	---	---	---	---	---
42	1	N	---	---	---	---	---
43	1	N	---	---	---	---	---
44	1	N	---	---	---	---	---
45	1	RCWO	---	~19:00	?	---	---
46	1	N	---	---	---	---	---
47	1	N	---	---	---	---	---
48	1	RCWO	---	19:03	Y	DG/YE/DG	?
49	1	RBWO	---	---	---	---	---
50	1	N	---	---	---	---	---
51	1	N	---	---	---	---	---
52	1	N	---	---	---	---	---
60	1	N	---	---	---	---	---
61	1	N	---	---	---	---	---
62	1	N	---	---	---	---	---
63	1	FLSQ	---	---	---	---	---

COMMENTS: Single bird moved into central cluster area around 18:43. Bird foraged around tree 45, 50 and over around tree 41. Eventually this bird flew over to tree 48. Bird arrived on tree 48 at 19:02 and roosted in 48-1 at 19:03. Second bird called just west of tree 45 at 18:55. Heard only 2-3 times and apparently roosted in 45-1 around 19:00. No other birds detected in cluster. Male RBWO heard working on inside nest chamber of 49-1. Tapped on tree 63 at around 19:30. Four flying squirrels emerged from 63-1. Tapped on tree 61 with no response.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

RED-COCKADED WOODPECKER CAVITY ACTIVITY FORM (CLUSTERS 1&2)

DATE: 4/27/00

TIME: 18:30 – 19:20

OBSERVERS: D. Bradshaw, B. Paxton

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1	N	---	---	---	---	---
41	1	N	---	---	---	---	---
42	1	N	---	---	---	---	---
43	1	N	---	---	---	---	---
44	1	N	---	---	---	---	---
45	1	RCWO	---	19:02	?	---	---
46	1	N	---	---	---	---	---
47	1	N	---	---	---	---	---
48	1	RCWO	---	19:05	?	---	---
49	1	RBWO	---	---	---	---	---
50	1	N	---	---	---	---	---
51	1	N	---	---	---	---	---
52	1	N	---	---	---	---	---
60	1	?	---	---	---	---	---
61	1	?	---	---	---	---	---
62	1	?	---	---	---	---	---
63	1	?	---	---	---	---	---

COMMENTS: Both birds came into area just southwest of tree 45 around 18:45 and foraged for a short period. One bird flew over near inserts and went over near tree 41 eventually flying over to tree 48. This bird roosted in cavity 48-1. Second bird remained around tree 45 eventually roosting in 45-1. RBWO heard pecking inside of 49-1. This bird eventually looked out of cavity, emerged and flew to the west.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTERS 1&2)**

DATE: 4/30/00

TIME: 9:00 – 10:15

OBSERVERS: B. Watts, D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1		---	---	---	---	---
41	1		---	---	---	---	---
42	1		---	---	---	---	---
43	1		---	---	---	---	---
44	1		---	---	---	---	---
45	1	N	---	---	---	---	---
46	1		---	---	---	---	---
47	1		---	---	---	---	---
48	1	N	---	---	---	---	---
49	1		---	---	---	---	---
50	1	N	---	---	---	---	---
51	1		---	---	---	---	---
52	1		---	---	---	---	---
60	1		---	---	---	---	---
61	1		---	---	---	---	---
62	1		---	---	---	---	---
63	1		---	---	---	---	---

COMMENTS: Used peeper to scope cavities for evidence of nesting activity. Cavities 45, 48, and 50 were easily reachable. Cavity 49-1 was approximately 53 feet and was not scoped. Cavities in good condition but no evidence of eggs. While peeping cavity 48-1 a bird appeared in the immediate area. This bird was identified as WH/LB/WH lft, LG/FWS rt. from cluster 5. The bird flew down south of tree 45 and was foraging.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

RED-COCKADED WOODPECKER CAVITY ACTIVITY FORM (CLUSTERS 1&2)

DATE: 5/1/00

TIME: ~14:00 – 16:30

OBSERVERS: B. van Eerden, J. Dunscomb

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1		---	---	---	---	---
41	1		---	---	---	---	---
42	1		---	---	---	---	---
43	1		---	---	---	---	---
44	1		---	---	---	---	---
45	1		---	---	---	---	---
46	1		---	---	---	---	---
47	1		---	---	---	---	---
48	1		---	---	---	---	---
49	1		---	---	---	---	---
50	1		---	---	---	---	---
51	1		---	---	---	---	---
52	1		---	---	---	---	---
60	1		---	---	---	---	---
61	1		---	---	---	---	---
62	1		---	---	---	---	---
63	1		---	---	---	---	---

COMMENTS: No birds detected within the cluster area.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTERS 1&2)**

DATE: 5/5/00

TIME: 9:30-10:30

OBSERVERS: B. Watts, D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1		---	---	---	---	---
41	1		---	---	---	---	---
42	1		---	---	---	---	---
43	1		---	---	---	---	---
44	1		---	---	---	---	---
45	1		---	---	---	---	---
46	1		---	---	---	---	---
47	1		---	---	---	---	---
48	1	RCWO	---	---	Y	---	---
49	1		---	---	---	---	---
50	1		---	---	---	---	---
51	1		---	---	---	---	---
52	1		---	---	---	---	---
60	1		---	---	---	---	---
61	1		---	---	---	---	---
62	1		---	---	---	---	---
63	1		---	---	---	---	---

COMMENTS: Peeper was used to scope cavity 48-1. Adult was in cavity and appeared to be incubating. Bird was banded but could not determine color with black and white monitor. Bird did not flush or seem agitated. Assumed that bird was on eggs but never flushed bird to confirm. Later determined that bird was preparing cavity but not on eggs.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

RED-COCKADED WOODPECKER CAVITY ACTIVITY FORM (CLUSTERS 1&2)

DATE: 5/7/00

TIME: 9:45-11:15

OBSERVERS: B. Watts, D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1		---	---	---	---	---
41	1		---	---	---	---	---
42	1		---	---	---	---	---
43	1		---	---	---	---	---
44	1		---	---	---	---	---
45	1	N	---	---	---	---	---
46	1		---	---	---	---	---
47	1		---	---	---	---	---
48	1	N	---	---	---	---	---
49	1		---	---	---	---	---
50	1	N	---	---	---	---	---
51	1		---	---	---	---	---
52	1		---	---	---	---	---
60	1		---	---	---	---	---
61	1		---	---	---	---	---
62	1		---	---	---	---	---
63	1		---	---	---	---	---

COMMENTS: Used peeper to check for incubating bird. Cavity 48-1 was completely empty. No birds were present around the cavity site. Two birds were detected just east of entry gate along road. Birds were calling and foraging together. After some time, one bird flew up to horizontal limb and stood erect like a perching bird. Other bird flew in from a distance and perched beside the first. Second bird (DB/FWS) mounted first (RE/FWS) and copulated for several seconds. Bird dropped off of limb still joined and separated in mid air. Birds flew off in different directions.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

RED-COCKADED WOODPECKER CAVITY ACTIVITY FORM (CLUSTERS 1&2)

DATE: 5/11/00

TIME: 18:30-19:30

OBSERVERS: B. Watts

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1		---	---	---	---	---
41	1	N	---	---	---	---	---
42	1		---	---	---	---	---
43	1	N	---	---	---	---	---
44	1		---	---	---	---	---
45	1	N	---	---	---	---	---
46	1		---	---	---	---	---
47	1		---	---	---	---	---
48	1	EGGS	---	---	---	---	---
49	1	RBWO	---	---	---	---	---
50	1	N	---	---	---	---	---
51	1		---	---	---	---	---
52	1		---	---	---	---	---
60	1		---	---	---	---	---
61	1		---	---	---	---	---
62	1		---	---	---	---	---
63	1		---	---	---	---	---

COMMENTS: Upon entry, two birds were around trees 48 and 49. One bird (DB/FWS) was working on resin wells around tree 48. Other bird (RE/FWS) was foraging in nearby tree. Both birds later flew off toward trees 40-43. RBWO was hanging around on tree 49 calling. Second bird emerged from cavity 49-1. Birds interacted for a while and flew up into canopy. Used peeper to examine cavity 48-1. Three eggs present in cavity. Tapped on trees 45, 41, 43, and 50. No birds emerged.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTERS 1&2)**

DATE: 5/15/00

TIME: 06:00 – 0:7:30

OBSERVERS: B. Watts, D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1	N	---	---	---	---	---
41	1	N	---	---	---	---	---
42	1	N	---	---	---	---	---
43	1	N	---	---	---	---	---
44	1	N	---	---	---	---	---
45	1	RCWO	06:02	---	?	---	---
46	1	N	---	---	---	---	---
47	1	N	---	---	---	---	---
48	1	RCWO	~6:20	---	---	---	---
49	1	RBWO	---	---	---	---	---
50	1	N	---	---	---	---	---
51	1	N	---	---	---	---	---
52	1	N	---	---	---	---	---
60	1	?	---	---	---	---	---
61	1	?	---	---	---	---	---
62	1	?	---	---	---	---	---
63	1	?	---	---	---	---	---

COMMENTS: Bird emerged from 45-1 just after arrival, flew to turn around and foraged on tree for several minutes. This bird then flew over to area around trees 41, 42 and was there for several minutes. Bird eventually flew over to area around trees 48 and 49. Second bird was heard around trees 48 and 49 around 06:20. Bird flew out of cavity 48-1 when we walked up to tree. Bird initially stayed around cavity but then flew off. Cavity was scoped and determined to have 3 eggs. Two RBWO were in the area around trees 48 and 49 and were observed attending cavity.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTERS 1&2)**

DATE: 5/26/00

TIME: 07:15 – 07:45

OBSERVERS: D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1		---	---	---	---	---
41	1		---	---	---	---	---
42	1		---	---	---	---	---
43	1		---	---	---	---	---
44	1		---	---	---	---	---
45	1		---	---	---	---	---
46	1		---	---	---	---	---
47	1		---	---	---	---	---
48	1	RCWO	---	---	---	---	---
49	1		---	---	---	---	---
50	1		---	---	---	---	---
51	1		---	---	---	---	---
52	1		---	---	---	---	---
60	1		---	---	---	---	---
61	1		---	---	---	---	---
62	1		---	---	---	---	---
63	1		---	---	---	---	---

COMMENTS: Walking in to cavity 3 birds were observed. One bird was at cavity tree and two other birds flew from cavity area to the southwest. Single bird at cavity site was banded with clan colors. This bird remained at cavity and flew off when peeper was used. This bird returned to cavity tree upon leaving area. Remaining 2 birds were foraging down toward rt 604. Identity of remaining birds was undetermined.

Cavity 48-1 scoped to determine brood size. A single chick was present in cavity along with an un-hatched egg and shell fragments from a second egg. Chick appeared to be 4-5 days old.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTERS 1&2)**

DATE: 5/29/00

TIME: 13:15 – 13:45

OBSERVERS: B. Watts, L. Richman, M. Webber

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1		---	---	---	---	---
41	1		---	---	---	---	---
42	1		---	---	---	---	---
43	1		---	---	---	---	---
44	1		---	---	---	---	---
45	1		---	---	---	---	---
46	1		---	---	---	---	---
47	1		---	---	---	---	---
48	1	CHICK	---	---	---	---	---
49	1	RBWO	---	---	---	---	---
50	1		---	---	---	---	---
51	1		---	---	---	---	---
52	1		---	---	---	---	---
60	1		---	---	---	---	---
61	1		---	---	---	---	---
62	1		---	---	---	---	---
63	1		---	---	---	---	---

COMMENTS: Upon arrival to the nest tree a single RCW was foraging and calling in surrounding trees. Second adult not seen during visit. L. Richman climbed tree and observed 1chick, 1 unhatched egg, and some egg shell fragments. Chick was noosed out for banding. Chick was approximately 7 days old. Lisa indicated that bird was small for this age. Chick was banded DG/YE/DB lft, WH/FWS rt. FWS band 1581-66219. Chick weighed 24 g. Both RBWO adults were feeding young in cavity 49-1. Chicks were very loud in cavity.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTERS 1&2)**

DATE: 10/02/00

TIME: 18:10 – 19:20

OBSERVERS: B. Watts and D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1	?	---	---	---	---	---
41	1	L	---	---	---	---	---
42	1	?	---	---	---	---	---
43	1	?	---	---	---	---	---
44	1	?	---	---	---	---	---
45	1	RCWO	---	18:12	Captured	DG/YE/DG	YE/FWS
46	1	RBWO	---	18:22	---	---	---
47	1	N	---	---	---	---	---
48	1	RCWO	---	18:17	?	---	---
49	1	N	---	---	---	---	---
50	1	N	---	---	---	---	---
51	1	N	---	---	---	---	---
52	1	N	---	---	---	---	---
60	1	?	---	---	---	---	---
61	1	?	---	---	---	---	---
62	1	?	---	---	---	---	---
63	1	?	---	---	---	---	---

COMMENTS: Birds appeared in central area just after arrival. At least 3 birds were present. One bird flew off toward NE corner and trees 40-44. Bird was banded and appeared to be chick of the year WH/FWS. This bird apparently roosted in that tree cluster likely in 41-1. Second bird roosted in 48-1 at around 18:17. Identity and status of this bird not determined. Third bird roosted in 45-1 about 18:12. This bird was captured and banded DG/YE/DG YE/FWS. RBWO roosted in 46-1 at 18:22. No birds roosted in 50-52. No birds were heard across road toward other inserts.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTERS 1&2)**

DATE: 10/06/00

TIME: 8:00 – 9:15

OBSERVERS: B. Watts and D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1		---	---	---	---	---
41	1		---	---	---	---	---
42	1		---	---	---	---	---
43	1		---	---	---	---	---
44	1		---	---	---	---	---
45	1		---	---	---	---	---
46	1		---	---	---	---	---
47	1		---	---	---	---	---
48	1		---	---	---	---	---
49	1		---	---	---	---	---
50	1		---	---	---	---	---
51	1		---	---	---	---	---
52	1		---	---	---	---	---
60	1		---	---	---	---	---
61	1		---	---	---	---	---
62	1		---	---	---	---	---
63	1		---	---	---	---	---

COMMENTS: No information on cavity use was collected. We entered site to finalize bird identification for clan. Birds were detected west of creek. Birds moved toward tree 48 and then continued over to trees around 40. Four birds were identified including WH/FWS, YE/FWS, DB/FWS, and unbanded. Unbanded bird was unexpected since the only unbanded bird known for this site was banded on 10/02/00. This unbanded bird must have been one of the two unbanded birds remaining at Piney Grove or must have come from outside Piney Grove. It is not clear whether or not this bird is visiting the clan or if it has actually moved into the clan.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTERS 1&2)**

DATE: 10/17/00

TIME: 6:10 – 8:15

OBSERVERS: B. Watts and D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
40	1	N	_____	_____	_____	_____	_____
41	1	N	_____	_____	_____	_____	_____
42	1	N	_____	_____	_____	_____	_____
43	1	N	_____	_____	_____	_____	_____
44	1	N	_____	_____	_____	_____	_____
45	1	RCWO	7:41	_____	?	_____	_____
46	1	N	_____	_____	_____	_____	_____
47	1	N	_____	_____	_____	_____	_____
48	1	RCWO	7:36	_____	?	_____	_____
49	1	N	_____	_____	_____	_____	_____
50	1	N	_____	_____	_____	_____	_____
51	1	RCWO	7:35	_____	?	_____	_____
52	1	?	_____	_____	_____	_____	_____
60	1	NL	_____	_____	_____	_____	_____
61	1	NL	_____	_____	_____	_____	_____
62	1	NL	_____	_____	_____	_____	_____
63	1	NL	_____	_____	_____	_____	_____

COMMENTS: Bird emerged from insert 51-1 at 7:35. This bird flew to nearby tree calling and foraging in upper crown. Within 1 min a bird flew into same tree from direction of 48-1. These two birds continued calling and foraging for 4 min. Both birds then flew over in the direction of 45-1 and third bird emerged from there. All birds flew to the west down to creek. Birds could be heard occasionally calling and working north along the creek for 20 min. No birds emerged from cluster of trees around 40 or from trees around 51. No birds were heard calling down toward inserts 60-63.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

APPENDIX II: Observations of birds within cluster 3 during 2000.

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 4/7/00

TIME: ???

OBSERVERS: TNC et al.

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1		_____	_____	_____	_____	_____
71	1		_____	_____	_____	_____	_____
72	1		_____	_____	_____	_____	_____
73	1		_____	_____	_____	_____	_____
74	1	RCWO	_____	??	??	_____	_____
75	1	RCWO	_____	??	??	_____	_____
76	1		_____	_____	_____	_____	_____
77	1		_____	_____	_____	_____	_____
78	1		_____	_____	_____	_____	_____
79	1	RCWO	_____	??	??	_____	_____

COMMENTS: A total of 3 birds reported in the cluster area. Do not have information on which specific cavities were monitored.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 4/9/00

TIME: 18:00 – 19:45

OBSERVERS: D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1		_____	_____	_____	_____	_____
71	1		_____	_____	_____	_____	_____
72	1		_____	_____	_____	_____	_____
73	1		_____	_____	_____	_____	_____
74	1	RCWO	_____	19:20	?	_____	_____
75	1	?	_____	_____	_____	_____	_____
76	1	WBNU	_____	19:25	_____	_____	_____
77	1		_____	_____	_____	_____	_____
78	1		_____	_____	_____	_____	_____
79	1	RCWO	_____	19:22	?	_____	_____

COMMENTS: Positioned between trees 74 and 76, I observed a single RCW arrive from the northwest at 19:10. This bird foraged briefly about 50 m out then flew directly to cavity 74-1 and roosted. Two minutes later, a second RCW flew straight in from the north and roosted in cavity 79-1. A pair of White-breasted Nuthatches had been entering and exiting cavity 76-1 for several minutes. A single bird roosted in 76-1 at 19:25. No additional RCW's were seen or heard, although a RCW roosting in 75-1 would have been possible.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 4/7/00

TIME: ???

OBSERVERS: TNC et al.

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1		_____	_____	_____	_____	_____
71	1		_____	_____	_____	_____	_____
72	1		_____	_____	_____	_____	_____
73	1		_____	_____	_____	_____	_____
74	1	RCWO	_____	??	??	_____	_____
75	1	RCWO	_____	??	??	_____	_____
76	1		_____	_____	_____	_____	_____
77	1		_____	_____	_____	_____	_____
78	1		_____	_____	_____	_____	_____
79	1	RCWO	_____	??	??	_____	_____

COMMENTS: A total of 3 birds reported in the cluster area. Do not have information on which specific cavities were monitored.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 4/9/00

TIME: 18:00 – 19:45

OBSERVERS: D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1		_____	_____	_____	_____	_____
71	1		_____	_____	_____	_____	_____
72	1		_____	_____	_____	_____	_____
73	1		_____	_____	_____	_____	_____
74	1	RCWO	_____	19:20	?	_____	_____
75	1	?	_____	_____	_____	_____	_____
76	1	WBNU	_____	19:25	_____	_____	_____
77	1		_____	_____	_____	_____	_____
78	1		_____	_____	_____	_____	_____
79	1	RCWO	_____	19:22	?	_____	_____

COMMENTS: Positioned between trees 74 and 76, I observed a single RCW arrive from the northwest at 19:10. This bird foraged briefly about 50 m out then flew directly to cavity 74-1 and roosted. Two minutes later, a second RCW flew straight in from the north and roosted in cavity 79-1. A pair of White-breasted Nuthatches had been entering and exiting cavity 76-1 for several minutes. A single bird roosted in 76-1 at 19:25. No additional RCW's were seen or heard, although a RCW roosting in 75-1 would have been possible.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 4/11/00

TIME: 17:30 – 20:00

OBSERVERS: B. Watts, D. Bradshaw, B. Paxton

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1	N	—	—	—	—	—
71	1	N	—	—	—	—	—
72	1	N	—	—	—	—	—
73	1	N	—	—	—	—	—
74	1	RCWO	—	19:00	Y	RE/DB/RE	YE/FWS
75	1	RCWO	—	18:57	?	—	—
76	1	WBNU	—	—	—	—	—
77	1	N	—	—	—	—	—
78	1	N	—	—	—	—	—
79	1	RCWO	—	18:56	?	—	—

COMMENTS: Single bird arrived from south at 18:35. Bird foraged around tree 77 and 76 and worked on resin wells on tree 77 for 15 minutes. Bird was back and forth to tree 74 eventually flying directly into cavity 74-1. A single bird flew directly into cavity 75-1 from the north with no calling or foraging in area. A single bird flew directly into cavity 79-1 from direction of 75-1 with no calling or foraging. Trapped YE/FWS from cavity 74-1. Cavity 79-1 and 77-1 too high to reach with just pole net. White-breasted Nuthatch pair appear to be nesting in cavity 76-1. White-breasted Nuthatch pair also nesting in dead cavity tree across trail from 79-1. COFL and RBWO observed in cluster area.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 4/17/00

TIME: 6:20 – 7:15

OBSERVERS: B. Watts, D. Bradshaw, B. Paxton

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1	N	—	—	—	—	—
71	1	N	—	—	—	—	—
72	1	N	—	—	—	—	—
73	1	N	—	—	—	—	—
74	1	RCWO	6:25	—	Y	RE/DB/RE	YE/FWS
75	1	RCWO	6:45	—	N	—	—
76	1	N	—	—	—	—	—
77	1	N	—	—	—	—	—
78	1	N	—	—	—	—	—
79	1	RCWO	6:25	—	Y	RE/DB/RE	DG/FWS

COMMENTS: Both birds emerged from western cavities at nearly the same time. Birds flew around the general creek area below tree 79 for a few minutes and then over near tree 75. Bird in cavity 75-1 did not respond for several minutes but was later seen peering out of cavity entrance. Bird did not emerge until other birds had flown over to tree 79. All three birds foraged around tree 79 and were observed to work on tree around cavity. Birds remained around this tree when we left around 7:15.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 4/20/00

TIME: 6:10:6:30

OBSERVERS: B. Watts, M. Watts

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1		_____	_____	_____	_____	_____
71	1		_____	_____	_____	_____	_____
72	1		_____	_____	_____	_____	_____
73	1		_____	_____	_____	_____	_____
74	1		_____	_____	_____	_____	_____
75	1	RCWO	6:25	_____	N	_____	_____
76	1		_____	_____	_____	_____	_____
77	1		_____	_____	_____	_____	_____
78	1		_____	_____	_____	_____	_____
79	1		_____	_____	_____	_____	_____

COMMENTS: Attempted to capture unbanded bird roosting in cavity 75-1. Attempted to raise net pole at 6:20. Cavity entrance is almost exactly 50 feet. Bird escaped just as net was being put in place.

COLOR ABBREVIATION KEY

- | | |
|------------------|----------------|
| DG – Dark Green | PU - Purple |
| LG – Light Green | WH - White |
| DB – Dark Blue | PK - Pink |
| LB – Light Blue | YE - Yellow |
| RE – Red | FWS – Aluminum |

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 4/29/00

TIME: 18:30 – 19:45

OBSERVERS: B. Watts

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1	N	—	—	—	—	—
71	1	N	—	—	—	—	—
72	1	N	—	—	—	—	—
73	1	N	—	—	—	—	—
74	1	RCWO	—	19:43	Y	RE/DB/RE	YE/FWS
75	1	RCWO	—	19:35	Y	RE/DB/RE	DG/FWS
76	1	N	—	—	—	—	—
77	1	N	—	—	—	—	—
78	1	N	—	—	—	—	—
79	1	RCWO	—	19:17	?	—	—

COMMENTS: Birds were present and foraging around tree 79 upon arrival. YE/FWS went into cavity 79-1 around 18:45 and then emerged at 18:50 when called by second bird. Second bird went into cavity briefly and then emerged. YE/FWS worked on resin wells for about 15 minutes and then foraged in general area. Bird went into 79-1 and roosted at 19:17. YE/FWS foraged around area eventually working over to tree 74. Bird worked on resin wells and foraged until roosting. Other bird foraged around the area and joined YE/FWS near tree 74. Bird appeared to be banded DG/FWS. This bird flew over to tree 79 briefly and then over to roost in 75-1.

Behavior of birds suggests an incubation exchange for the night shift. Cavity 79-1 appears to be the nest cavity.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 4/30/00

TIME: 6:05-6:45

OBSERVERS: B. Watts

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1	N	---	---	---	---	---
71	1	N	---	---	---	---	---
72	1	N	---	---	---	---	---
73	1	N	---	---	---	---	---
74	1	RCWO	6:28	---	Y	RE/DB/RE	YE/FWS
75	1	RCWO	6:24	---	Y	RE/DB/RE	~DG/FWS
76	1	N	---	---	---	---	---
77	1	N	---	---	---	---	---
78	1	N	---	---	---	---	---
79	1	RCWO	6:24	---	N	---	---

COMMENTS: Bird in cavity 79-1 emerged first calling. Bird from 75-1 appeared at tree 79 within 20 seconds and went into cavity 79-1. Bird stayed in cavity for 5 minutes and was called out by YE/FWS. YE/FWS foraged around tree 79 for a few minutes and then went in and out of cavity 79-1 3 times before roosting at 6:35. Unbanded bird flew off out of site to the south. Remaining bird foraged in the area around tree 79.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 5/1/00

TIME: ~14:00 – 18:30

OBSERVERS: B. van Eerden, J. Dunscomb

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1		_____	_____	_____	_____	_____
71	1		_____	_____	_____	_____	_____
72	1		_____	_____	_____	_____	_____
73	1		_____	_____	_____	_____	_____
74	1		_____	_____	_____	_____	_____
75	1		_____	_____	_____	_____	_____
76	1		_____	_____	_____	_____	_____
77	1		_____	_____	_____	_____	_____
78	1		_____	_____	_____	_____	_____
79	1	RCWO	_____	_____	_____	_____	_____

COMMENTS: Five birds reported foraging around tree 79. Several entries and exits of cavity 79-1 were observed. None of the birds entering cavity were observed to be carrying food.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 5/3/00

TIME: 13:00-14:10

OBSERVERS: D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1		_____	_____	_____	_____	_____
71	1		_____	_____	_____	_____	_____
72	1		_____	_____	_____	_____	_____
73	1		_____	_____	_____	_____	_____
74	1		_____	_____	_____	_____	_____
75	1		_____	_____	_____	_____	_____
76	1		_____	_____	_____	_____	_____
77	1		_____	_____	_____	_____	_____
78	1		_____	_____	_____	_____	_____
79	1	RCWO	_____	_____	Y	RE/DB/RE	YE/FWS

COMMENTS: Two birds were present upon arrival foraging within 100 m of tree 79. Birds were YE/FWS and DG/FWS. Both birds foraged around the area and worked on the resin wells on tree 79. At approximately 13:30 YE/FWS went in to cavity and did not emerge. DG/FWS flew over near tree 75. About 15 minutes later he flew over to cavity 79-1 and there was some vocal exchange between the 2 birds. He may have provided food to the female. Does not appear that chicks have hatched at this point.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 5/5/00

TIME: 6:00 – 7:10

OBSERVERS: B. Watts

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1	N	_____	_____	_____	_____	_____
71	1	N	_____	_____	_____	_____	_____
72	1	N	_____	_____	_____	_____	_____
73	1	N	_____	_____	_____	_____	_____
74	1	RCWO	6:20	_____	Y	RE/DB/RE	YE/FWS
75	1	RCWO	6:13	_____	Y	RE/DB/RE	DG/FWS
76	1	N	_____	_____	_____	_____	_____
77	1	N	_____	_____	_____	_____	_____
78	1	N	_____	_____	_____	_____	_____
79	1	RCWO	6:15	_____	N	_____	_____

COMMENTS: Bird from cavity 75-1 emerged first and appeared at tree 79. This bird foraged around the area for a couple of minutes then made a call and flew toward cavity. Bird emerged from cavity and flew off. First bird went into cavity. Bird appeared from 74-1 and foraged in area. About 5 minutes later flew toward cavity calling. Bird emerged and flew off as calling bird entered cavity. This exchange behavior occurred every 6-10 minutes until just after 7:00. At this time the bird in cavity remained. On 2 occasions, birds were confirmed to be carrying food.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 5/9/00

TIME: 6:24 – 6:45

OBSERVERS: D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1		_____	_____	_____	_____	_____
71	1		_____	_____	_____	_____	_____
72	1		_____	_____	_____	_____	_____
73	1		_____	_____	_____	_____	_____
74	1		_____	_____	_____	_____	_____
75	1		_____	_____	_____	_____	_____
76	1		_____	_____	_____	_____	_____
77	1		_____	_____	_____	_____	_____
78	1		_____	_____	_____	_____	_____
79	1	RCWO	_____	_____	_____	_____	_____

COMMENTS: Nest exchanges were observed at 6:30, 6:32, 6:36, and 6:42. Food delivery confirmed on 2 visits.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 5/12/00

TIME: ~ 10:30 – 12:30

OBSERVERS: B. Watts, D. Bradshaw, B. Van Eerden, L. Richman, R. Badgett, C. Nettles

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1		_____	_____	_____	_____	_____
71	1		_____	_____	_____	_____	_____
72	1		_____	_____	_____	_____	_____
73	1		_____	_____	_____	_____	_____
74	1		_____	_____	_____	_____	_____
75	1		_____	_____	_____	_____	_____
76	1		_____	_____	_____	_____	_____
77	1		_____	_____	_____	_____	_____
78	1		_____	_____	_____	_____	_____
79	1	RCWO	_____	_____	_____	_____	_____

COMMENTS: Operation to band chicks. All 3 adults were present around nest tree feeding young upon arrival to site. Tree was difficult to climb. All 3 chicks were extracted from cavity and lowered for banding. Chicks were believed to be 5 days old. Chicks were light pink with very little gray around feather tracts. All chicks weighed 11 g. Chicks were only banded with 2 color bands on lft due to small size. It was not possible to fit 3 color bands at this age. Chicks were banded RE/DB on lft. Individual bands used were : (WH/FWS – 1581-66214), (LG/FWS – 1581-66215), (RE/FWS – 1581-66216).

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 5/22/00

TIME: 06:45 – 07:05

OBSERVERS: D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1		_____	_____	_____	_____	_____
71	1		_____	_____	_____	_____	_____
72	1		_____	_____	_____	_____	_____
73	1		_____	_____	_____	_____	_____
74	1		_____	_____	_____	_____	_____
75	1		_____	_____	_____	_____	_____
76	1		_____	_____	_____	_____	_____
77	1		_____	_____	_____	_____	_____
78	1		_____	_____	_____	_____	_____
79	1	RCWO	_____	_____	_____	_____	_____

COMMENTS: Three adults present including YE/FWS, DG/FWS, and unbanded. Birds were feeding young regularly. Young could barely be heard from the base of the tree.

COLOR ABBREVIATION KEY

DG – Dark Green

LG – Light Green

DB – Dark Blue

LB – Light Blue

RE – Red

PU - Purple

WH - White

PK - Pink

YE - Yellow

FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 5/22/00

TIME: 19:40 – 21:00

OBSERVERS: B. Watts, D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1	N	_____	_____	_____	_____	_____
71	1	N	_____	_____	_____	_____	_____
72	1	N	_____	_____	_____	_____	_____
73	1	N	_____	_____	_____	_____	_____
74	1	RCWO	_____	20:03	Y	RE/DB/RE	YE/FWS
75	1	N	_____	_____	_____	_____	_____
76	1	N	_____	_____	_____	_____	_____
77	1	?	_____	_____	_____	_____	_____
78	1	N	_____	_____	_____	_____	_____
79	1	RCWO	_____	20:15	Y	RE/DB/RE	DG/FWS

COMMENTS: Upon arrival, all 3 adults were around nest cavity area and were feeding young. Young were fairly loud and could be heard from a short distance. Two birds could be heard down around tree 77 just before 20:00. YE/FWS flew up near tree 74 around 7:58 and foraged for approximately 5 min in the immediate area before roosting. At that time a bird could still be heard down toward tree 77. DG/FWS worked on resin wells at 79-1 for approximately 10 min around 20:00. This bird was also seen flying to a tree just to the north of 79. This tree and another next to it has had the loose bark plates removed over the past 2 weeks. This bird foraged around for a short period and roosted in 79-1. No birds appeared in the eastern part of the cluster area. No birds roosted in 75-1. Did not observe any squirrels emerging from this location before dark.

Tree just north of 74 has also had bark plates removed and a start cavity initiated in the past 3 weeks. None of this work was present just 3 weeks ago.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 06/04/00

TIME: 05:45 – 06:45

OBSERVERS: D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1		_____	_____	_____	_____	_____
71	1		_____	_____	_____	_____	_____
72	1		_____	_____	_____	_____	_____
73	1		_____	_____	_____	_____	_____
74	1		_____	_____	_____	_____	_____
75	1		_____	_____	_____	_____	_____
76	1		_____	_____	_____	_____	_____
77	1		_____	_____	_____	_____	_____
78	1		_____	_____	_____	_____	_____
79	1		_____	_____	_____	_____	_____

COMMENTS: I arrived at Site 3 at 0545 to determine if the young had fledged yet. As I moved along the path toward the nest cavity, I heard two RCW's vocalizing about 60 meters out to the east of the nest cavity. I then immediately heard a third bird calling about 4 meters southwest of the nest cavity, as well as some RCW drumming from the same vicinity. I approached the nest cavity and waited for additional activity. By 0615, there had been no additional activity around the nest cavity suggesting that the young had already fledged. I then went to investigate the two birds I had heard out to the east side of the cavity. I relocated them and discovered a third bird had joined them, all 3 birds now foraging along the slope about 70 meters ENE of the nest cavity. Although I could not identify them as individuals, I was able to determine that one bird bore the Site 3 clan colors, one bird bore the Site 5 clan colors and one bird was unbanded. It was unlikely then that the one local bird was a recently fledged young given the lack of clear presence of other same clan birds. So I moved around to other areas at the site and was unable to locate any additional RCW's, leaving me concerned about the fate of the fledglings. I departed the site at 0645.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 10/03/00

TIME: 06:30 – 08:15

OBSERVERS: B. Watts and D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1	N	—	—	—	—	—
71	1	N	—	—	—	—	—
72	1	N	—	—	—	—	—
73	1	N	—	—	—	—	—
74	1	RCWO	~7:19	—	—	—	—
75	1	RCWO	~7:19	—	—	—	—
76	1	?	—	—	—	—	—
77	1	N	—	—	—	—	—
78	1	N	—	—	—	—	—
79	1	RCWO	07:18	—	Y	—	—
?	?	RCWO	~7:19				

COMMENTS: Bird emerged from 79-1 at 7:18. This bird was banded with the cluster 3 color combination but could not get ID. Birds then emerged from 74-1 and 75-1. All birds worked their way over to just west of 79-1. An additional bird also appeared from unknown origin. A bird could be heard calling in the distance from inserts. It was not known whether this bird was associated with cluster 3 or 5. At least 4 birds were confirmed at cluster 3. Three of these birds were banded with cluster 3 combinations. Only 1 bird (WH/FWS) could be identified. Birds eventually flew toward the inserts and then to the SE.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 10/06/00

TIME: 6:00 – 7:45

OBSERVERS: B. Watts and D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1	N	—	—	—	—	—
71	1	N	—	—	—	—	—
72	1	N	—	—	—	—	—
73	1	N	—	—	—	—	—
74	1	RCWO	6:32	—	Y	RE/DB/RE	YE/FWS
75	1	RCWO	6:10	—	N	—	—
76	1	N	—	—	—	—	—
77	1		—	—	—	—	—
78	1	N	—	—	—	—	—
79	1	RCWO	6:31	—	Y	RE/DB/RE	DB/FWS
?	?	RCWO	6:32		Y	RE/DB	WH/FWS

COMMENTS: We walked into cavity 75-1 to trap bird before dawn. We had difficulty reaching cavity with pole. Bird emerged from cavity before net could be placed. Bird stayed in location east of entry road. Walked over to observe emergence from other cavities. YE/FWS emerged from cavity 74-1 shortly after DB/FWS emerged from 79-1. YE/FWS foraged around area near 74-1 and was joined by a second bird that approached from up toward 604. These two birds then went east to join other 2 birds along entry road near creek. Four birds were present including YE/FWS, WH/FWS, DB/FWS, and unbanded.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 3)**

DATE: 10/16/00

TIME: 17:00 – 19:15

OBSERVERS: B. Watts and D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
70	1	N	_____	_____	_____	_____	_____
71	1	N	_____	_____	_____	_____	_____
72	1	N	_____	_____	_____	_____	_____
73	1	N	_____	_____	_____	_____	_____
74	1	RCWO	_____	~17:15	_____	_____	_____
75	1	RCWO	_____	17:40	_____	_____	_____
76	1	?	_____	_____	_____	_____	_____
77	1	?	_____	_____	_____	_____	_____
78	1	N	_____	_____	_____	_____	_____
79	1	RCWO	_____	~17:15	_____	_____	_____
?	?	RCWO					

COMMENTS: Birds were present in cluster area upon arrival. Birds roosted early in 74-1 and 79-1. Bird perched silently east of entry road and then flew directly into cavity 75-1 at 17:40. Attempted to trap this bird after it entered cavity. Height of cavity and irregular trunk has made it difficult to trap this tree. Bird would not leave cavity in spite of tapping on tree and rattling net. Roosting location of 4th bird not determined.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

APPENDIX III: Observations of birds within cluster 5 during 2000.

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 4/7/00

TIME: ??

OBSERVERS: TNC et al.

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1	N	---	---	---	---	---
93	1	RCWO	---	??	??	---	---
94	1	N	---	---	---	---	---
95	1	RCWO	---	??	??	---	---
96	1	N	---	---	---	---	---
96	2	N	---	---	---	---	---
97	1	RCWO	---	??	??	---	---
97	2	RCWO	---	??	??	---	---
98	1	RCWO	---	??	??	---	---
99	1	RCWO	---	??	??	---	---

COMMENTS: A total of 6 birds reported in the cluster area and all 6 were observed to roost. Assume that other cavities were not used.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 4/17/00

TIME: 7:30 – 8:15

OBSERVERS: B. Watts, D. Bradshaw, B. Paxton

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1		_____	_____	_____	_____	_____
93	1		_____	_____	_____	_____	_____
94	1		_____	_____	_____	_____	_____
95	1		_____	_____	_____	_____	_____
96	1		_____	_____	_____	_____	_____
96	2		_____	_____	_____	_____	_____
97	1		_____	_____	_____	_____	_____
97	2		_____	_____	_____	_____	_____
98	1		_____	_____	_____	_____	_____
99	1		_____	_____	_____	_____	_____

COMMENTS: No information collected on cavity use. Several birds were in the cluster area or in regenerating stand to the south when we arrived. Three birds were observed at close range. Two birds were banded including 1) WH/LB/WH lft: RE/FWS rt, and 2) WH/LB/WH lft: WH/FWS rt. The third bird was unbanded. Observed RE/FWS attempt copulation with WH/FWS. RE/FWS repeatedly chased unbanded bird.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 4/20/00

TIME: 6:40-8:00

OBSERVERS: B. Watts, M. Watts

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1		_____	_____	_____	_____	_____
93	1		_____	_____	_____	_____	_____
94	1		_____	_____	_____	_____	_____
95	1		_____	_____	_____	_____	_____
96	1		_____	_____	_____	_____	_____
96	2		_____	_____	_____	_____	_____
97	1		_____	_____	_____	_____	_____
97	2		_____	_____	_____	_____	_____
98	1		_____	_____	_____	_____	_____
99	1		_____	_____	_____	_____	_____

COMMENTS: Birds were just emerging from cavities when we arrived. We did not have opportunity to collect information on cavity use. Several birds were present in the cluster area and were flying and vocalizing. Within 10 minutes all birds were down along the south edge of the cluster area over regenerating stand. Three birds were observed to remain within the cluster area. Other birds left the area and flew to the south. Remaining birds were RE/FWS, WH/FWS, and an unbanded bird. Birds were observed to forage throughout the immediate cluster area until we left around 8:00. Both banded birds periodically flew to cavity 97-2 and worked on resin wells. RE/FWS relentlessly pursued unbanded bird with aerial chases, displacements from trees, and chases around trees. Bird was aggressive and appeared to be mate guarding. RE/FWS appears to be dominant male and was observed several times giving the limb display. WH/FWS was not involved in interactions. PIWO, COFL, and DOWO were all observed foraging within the cluster.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 4/20/00

TIME: 18:30-20:30

OBSERVERS: B. Watts, D. Bradshaw, B. Paxton

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1	N	---	---	---	---	---
93	1	N	---	---	---	---	---
94	1	N	---	---	---	---	---
95	1	RCWO	---	~19:35	Y	WH/LB/WH	LG/FWS
96	1	N	---	---	---	---	---
96	2	N	---	---	---	---	---
97	1	RCWO	---	19:22	N	---	---
97	2	RCWO	---	19:30	Y	WH/LB/WH	WH/FWS
98	1	RCWO	---	19:32	N	---	---
99	1	RCWO	---	19:21	Y	WH/LB/WH	YE/FWS

COMMENTS: Birds foraged off in the distance toward inserts for a long period. First birds appeared in cluster site after 19:15. Birds foraged and went into respective cavities. Unbanded bird was near entrance to cavity 93-1 and was chased off by RE/FWS. Unbanded bird apparently roosted in cavity 98-1. RE/FWS was not observed to roost in cluster. This bird was heard moving away from cluster toward recruitment cluster 4. Attempted to capture unbanded birds in cavities 98-1 and 99-1 simultaneously. Captured bird in 99-1 and banded YE/FWS. Bird in 98-1 flew into net upon hearing YE/FWS. Bird eventually escaped from net. Captured LG/FWS from cavity 95-1.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 4/30/00

TIME: 6:00 – 7:00

OBSERVERS: D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1	N	_____	_____	_____	_____	_____
93	1	?	_____	_____	_____	_____	_____
94	1	N	_____	_____	_____	_____	_____
95	1	RCWO	6:25	_____	?	_____	_____
96	1	N	_____	_____	_____	_____	_____
96	2	N	_____	_____	_____	_____	_____
97	1	RCWO	6:21	_____	?	_____	_____
97	2	RCWO	6:05	_____	?	_____	_____
98	1	RCWO	~6:08	_____	?	_____	_____
99	1	RCWO	6:15	_____	?	_____	_____

COMMENTS: A single bird had emerged upon arrival at 6:05. This bird was calling and foraging. A second bird appeared a short time later and went into cavity 97-2 for less than 1 min. then emerged again. Birds emerged from various cavities between 6:05 and 6:25 and foraged in general area. Bird that emerged from cavity 97-1 did not interact with other birds but flew directly out over regenerating stand to the west and out of sight. WH/FWS went back and forth to cavity 97-2 4 times and eventually went in for good at 6:55. Bird behavior indicates that 97-2 is the nest cavity and that the female appears to be incubating eggs.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 4/30/00

TIME: 18:30-20:45

OBSERVERS: B. Watts, D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1	N	_____	_____	_____	_____	_____
93	1	N	_____	_____	_____	_____	_____
94	1	N	_____	_____	_____	_____	_____
95	1	RCWO	_____	19:17	?	_____	_____
96	1	N	_____	_____	_____	_____	_____
96	2	N	_____	_____	_____	_____	_____
97	1	RCWO	_____	19:38	N	_____	_____
97	2	RCWO	_____	19:38	Y	WH/LB/WH	LG/FWS
98	1	RCWO	_____	19:20	?	_____	_____
99	1	RCWO	_____	19:21	CAPT	WH/LB/WH	DB/FWS

COMMENTS: Bird arrived on cluster site around 19:15 and foraged along eastern edge. Single bird roosted in 95-1 almost immediately. Remaining birds foraged and chased around cluster area. WH/FWS was observed foraging with birds but is believed to have emerged shortly after they arrived. Birds went to roost over a 20-min period. WH/FWS did not appear to roost within the cluster area. This bird was observed to leave the site to the east and heard approximately 100 m toward inserts.

Unbanded bird in 99-1 was trapped and banded WH/LB/WH, DB/FWS. Cavity 97-1 was checked for height. This cavity is approximately 52 feet and is not directly reachable.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 5/3/00

TIME: 10:45 – 12:55

OBSERVERS: D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1		_____	_____	_____	_____	_____
93	1		_____	_____	_____	_____	_____
94	1		_____	_____	_____	_____	_____
95	1		_____	_____	_____	_____	_____
96	1		_____	_____	_____	_____	_____
96	2		_____	_____	_____	_____	_____
97	1		_____	_____	_____	_____	_____
97	2	RCWO	_____	_____	Y	WH/LB/WH	WH/FWS
98	1		_____	_____	_____	_____	_____
99	1		_____	_____	_____	_____	_____

COMMENTS: Three birds were foraging in cluster site upon arrival. Birds were WH/FWS, YE/FWS, and DB/FWS. WH/FWS went into 97-2 at 10:55 and came back out within 1 min. This bird rejoined other birds and foraged around for another short period before going back into 97-2 for 30 seconds. Birds foraged down toward 604 (but not out of sight) then WH/FWS came back to 97-2 for a short period. Another banded bird (appeared to be LG/FWS) joined group. Group of birds foraged to the east and out of sight. WH/FWS is believed to have returned to cavity site around 12:45.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 5/7/00

TIME: 6:00 – 8:50

OBSERVERS: B. Watts, D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1		_____	_____	_____	_____	_____
93	1		_____	_____	_____	_____	_____
94	1		_____	_____	_____	_____	_____
95	1		_____	_____	_____	_____	_____
96	1		_____	_____	_____	_____	_____
96	2		_____	_____	_____	_____	_____
97	1		_____	_____	_____	_____	_____
97	2		_____	_____	_____	_____	_____
98	1		_____	_____	_____	_____	_____
99	1		_____	_____	_____	_____	_____

COMMENTS: Three birds were out upon entry. Birds were very quiet and did not call. Finally went off site to the east and returned around 7:30. DB/FWS, WH/FWS, and YE/FWS were together. Birds foraged on north edge of cluster near tree 97. WH/FWS went to cavity 97-2 several times, gave excited call and stood at entrance. Went in one time for less than 1 min. Unclear what the status is here. Apparently no eggs present at this time.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 5/9/00

TIME: 5:30 – 6:24, 6:50 – 7:30

OBSERVERS: D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1		_____	_____	_____	_____	_____
93	1		_____	_____	_____	_____	_____
94	1		_____	_____	_____	_____	_____
95	1	RCWO	5:56	_____	_____	_____	_____
96	1		_____	_____	_____	_____	_____
96	2		_____	_____	_____	_____	_____
97	1	RCWO	5:52	_____	_____	_____	_____
97	2	RCWO	5:45	_____	_____	_____	_____
98	1	RCWO	5:46	_____	_____	_____	_____
99	1	RCWO	5:52	_____	_____	_____	_____

COMMENTS: Bird emerged silently from 97-2, flew short distance to southwest and gave some quiet calls. Other birds emerged over a few minutes and congregated around tree 94 with greeting calls and drumming. Birds WH/FWS and DB/FWS were present. All birds moved to the southeast out of hearing range toward cluster 4. After returning to cluster site at 6:50, WH/FWS arrived at cavity 97-2 and landed at entrance. Bird peered into entrance 3 times and then flew off. Two additional birds arrived shortly and the three birds foraged within the cluster site. At 7:25, WH/FWS flew to cavity again, peered in a couple of times and flew off. Behavior same as seen before. Apparently, no eggs present at this time.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 5/11/00

TIME: 18:30 – 19:15

OBSERVERS: D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1		_____	_____	_____	_____	_____
93	1	NOFL	_____	_____	_____	_____	_____
94	1		_____	_____	_____	_____	_____
95	1		_____	_____	_____	_____	_____
96	1		_____	_____	_____	_____	_____
96	2		_____	_____	_____	_____	_____
97	1		_____	_____	_____	_____	_____
97	2	RCWO	_____	_____	Y	WH/LB/WH	WH/FWS
98	1		_____	_____	_____	_____	_____
99	1		_____	_____	_____	_____	_____

COMMENTS: Arrived at 18:30, an unbanded bird was present working on resin wells on tree 99. Shortly a second unbanded bird arrived and began working on resin wells around trees 98, 99. Second unbanded bird flew over to tree 97 and began working on resin wells. Bird flew out of cavity 97-2 and attacked unbanded bird. Birds battled for a considerable time. WH/FWS went back into cavity 97-2. Male NOFL observed emerging from cavity 93-1. Female arrived when male emerged and they exhibited what appeared to be courtship behavior.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 5/12/00

TIME: 12:40 – 14:15

OBSERVERS: B. Watts, D. Bradshaw, B. Van Eerden, L. Richman, R. Badgett, C. Nettles

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1		_____	_____	_____	_____	_____
93	1		_____	_____	_____	_____	_____
94	1		_____	_____	_____	_____	_____
95	1	N	_____	_____	_____	_____	_____
96	1		_____	_____	_____	_____	_____
96	2		_____	_____	_____	_____	_____
97	1	N	_____	_____	_____	_____	_____
97	2	N	_____	_____	_____	_____	_____
98	1	N	_____	_____	_____	_____	_____
99	1	N	_____	_____	_____	_____	_____

COMMENTS: Stopped by to check status of nest cavity. Rex climbed to cavity 97-2 and looked inside. Cavity was in good breeding condition with ample wood chips in place. No eggs present. Cavities 95, 98, and 99 were scoped to determine condition. These cavities did not contain eggs and were not in good nesting condition. No adequate lining of wood chips was present. No adults were present in the cluster area during visit.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 5/15/00

TIME: 05:30-07:00

OBSERVERS: D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1		---	---	---	---	---
93	1		---	---	---	---	---
94	1		---	---	---	---	---
95	1	RCWO	06:00	---	?	---	---
96	1		---	---	---	---	---
96	2		---	---	---	---	---
97	1	RCWO	05:55	---	Y	---	---
97	2	RCWO	05:45	---	Y	---	---
98	1	RCWO	05:47	---	Y	---	---
99	1	RCWO	05:46	---	?	---	---

COMMENTS: Bird emerged first from 97-2, flew to the central area of the cluster, and perched quietly. Second bird emerged from 99-1. Both birds perched quietly on side of tree a few feet apart and remained motionless. Bird then emerged from 97-2 and began vocalizing which seemed to entice social behavior from other two. The three birds began foraging and were joined by bird from 95-1. At 06:05 WH/FWS approached 97-2 and peered in but did not enter. Five minutes later she returned and entered cavity for 3 min. DB/FWS arrived and worked on resin wells, once stopping to peer into cavity. WH/FWS returned at 06:20 and re-entered cavity for 1 minute. LG/FWS arrived and flew off with WH/FWS when she emerged. YE/FWS flew up and replaced DB/FWS working on resin wells at 06:22. All bird then departed and foraged ESE toward inserts. At 06:45 WH/FWS returned and visited the cavity again, entering for just over two minutes. LG/FWS returned minutes later and the two birds foraged in the area for a few minutes before departing.

Noticeable increase in cavity-oriented behavior by most of the birds. No evidence of eggs at this time.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 5/26/00

TIME: 5:30-6:45

OBSERVERS: D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1		_____	_____	_____	_____	_____
93	1	RCWO	_____	_____	?	_____	_____
94	1		_____	_____	_____	_____	_____
95	1	RCWO	5:45	_____	?	_____	_____
96	1		_____	_____	_____	_____	_____
96	2		_____	_____	_____	_____	_____
97	1	RCWO	5:40	_____	?	_____	_____
97	2	RCWO	5:35	_____	?	_____	_____
98	1	RCWO	5:37	_____	?	_____	_____
99	1		_____	_____	_____	_____	_____

COMMENTS: First bird emerged from 97-2 at 5:35. This bird flew up into adjacent tree calling and foraging. Second bird emerged from 98-1 at 5:37. A third bird emerged from 97-1 at 5:40. Bird emerged from 95-1 at 5:45. An additional bird appeared with the group from unknown cavity. Birds foraged in the cluster area calling frequently for approximately 15 minutes. WH/FWS and DB/FWS were identified while foraging. Identity of other birds not determined.

All birds flew off into forest to the southeast.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 5/29/00

TIME: 05:30 – 06:45

OBSERVERS: D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1		---	---	---	---	---
93	1		---	---	---	---	---
94	1		---	---	---	---	---
95	1	RCWO	05:45	---	?	---	---
96	1		---	---	---	---	---
96	2		---	---	---	---	---
97	1	RCWO	05:40	---	?	---	---
97	2	RCWO	05:35	---	Y	WH/LB/WH	?
98	1	RCWO	05:38	---	Y	WH/LB/WH	?
99	1	RCWO	05:38	---	?	---	---

COMMENTS: Bird emerged from 97-2 first, flying into the center of the cluster then perching quietly. Two min later bird emerged from 98-1, and joined the first bird, both now vocalizing. A third bird emerged immediately after from somewhere within the cluster (probably 99-1) and joined the first two. Then at 05:40 a bird emerged from 97-1 and joined the group, all calling frequently. All 4 birds now convened in the center of the cluster area. A review of the birds however yielded 5 birds, one of which had not been detected joining the group. Then a sixth bird emerged from 95-1 and joined the others. At 05:55, WH/FWS approached the cavity (97-2), perched on the rim and peered in for 30 sec or so, then departed. She was back within two min with LG/FWS and entered the cavity for 30 seconds. Upon emerging, the LG/FWS entered for at least 1 min, then emerged. Following this, DB/FWS entered the cavity for 15 sec or so, and emerged, with both WH/FWS and LG/FWS still on the tree exterior. An unbanded bird then arrived and peered into the hole but did not enter. YE/FWS then began working on resin wells around the cavity, and also approached and peered into the hole. Two other birds were working on resin wells as well. There was an unusual amount of vocalizing throughout this period. Finally all birds departed and began foraging at about 0610. At 0618, WH/FWS approached the cavity and entered with LG/FWS flying to an adjacent tree. At 0625, the LG/FWS approached the cavity with WH/FWS still inside. There were muted vocalizations, and LG/FWS remained poised on the lip of the cavity for 8 min. During this time, he would periodically dip into the cavity, with only his tail visible out of the entrance, and actually appeared to be possibly feeding the female, based on the almost convulsive movements of his body when leaning in. He departed the cavity at 06:33, foraging in the area for a few min, then rejoined the remainder of the group foraging north along the trail out to Rt. 604. WH/FWS remained in the cavity and was still present when I departed at 0650. My feeling is that they are very recently on one or more eggs.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 06/04/00

TIME: 06:55-07:45

OBSERVERS: D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1		_____	_____	_____	_____	_____
93	1		_____	_____	_____	_____	_____
94	1		_____	_____	_____	_____	_____
95	1		_____	_____	_____	_____	_____
96	1		_____	_____	_____	_____	_____
96	2		_____	_____	_____	_____	_____
97	1		_____	_____	_____	_____	_____
97	2		_____	_____	_____	_____	_____
98	1		_____	_____	_____	_____	_____
99	1		_____	_____	_____	_____	_____

COMMENTS: Upon arrival, immediately went to the nest cavity tree and waited, but did not see or hear any RCW's on the way. At 07:15, after no activity in the colony area for 20 min I departed the area around the nest cavity and walked along the forest trail toward the cavity inserts to the southeast. In the vicinity of the inserts I encountered two birds, the DB/FWS of Site 5 and an unbanded bird. The birds moved off to the west as I approached. I stood around the area for about 10 more min but saw nor heard any additional birds. I then moved back out to the colony site and monitored the nest cavity for another 15 min, but no activity was observed. I departed the site at 07:45, assuming that the female was now well into the incubation phase, and the remaining birds were simply away foraging.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**\RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 06/07/00

TIME: 06:10-07:30

OBSERVERS: D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1		_____	_____	_____	_____	_____
93	1		_____	_____	_____	_____	_____
94	1		_____	_____	_____	_____	_____
95	1		_____	_____	_____	_____	_____
96	1		_____	_____	_____	_____	_____
96	2		_____	_____	_____	_____	_____
97	1		_____	_____	_____	_____	_____
97	2	RCWO	_____	_____	Y	WH/LB/WH	WH/FWS
98	1		_____	_____	_____	_____	_____
99	1		_____	_____	_____	_____	_____

COMMENTS: 3 birds were present together at the northeast corner of the colony site upon arrival. 1 or 2 additional birds could be heard vocalizing from 50 m across the young pine stand to the west. Upon arrival birds began departing one by one toward vocalizing birds. Within 2 min they could not be seen or heard. 2 birds including LG/FWS and unbanded were identified.

By 07:00 there had been no further activity. Returning from vehicle to retrieve a tool from truck, an unidentified bird was observed on a tree adjacent to nest cavity. This bird departed to the north. WH/FWS emerged silently from cavity when tree was tapped and perched silently on adjacent tree. Shortly, the bird quietly returned to the cavity.

The departure of the light green male from the colony area for an extended time period, in conjunction with the quiet departure of the female from the cavity and then immediate return at my departure strongly suggests that incubation is still ongoing.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 06/11/00

TIME: 05:45-06:30

OBSERVERS: D. Bradshaw, E. Mitchell

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1		_____	_____	_____	_____	_____
93	1		_____	_____	_____	_____	_____
94	1		_____	_____	_____	_____	_____
95	1		_____	_____	_____	_____	_____
96	1		_____	_____	_____	_____	_____
96	2		_____	_____	_____	_____	_____
97	1		_____	_____	_____	_____	_____
97	2		_____	_____	_____	_____	_____
98	1		_____	_____	_____	_____	_____
99	1		_____	_____	_____	_____	_____

COMMENTS: 4 birds were present and out upon arrival. At 05:50 WH/FWS approached nest cavity (97-2) with a small prey item. She entered and remained within the cavity. At 05:56 LG/FWS arrived with prey and WH/FWS departed. LG/FWS entered and remained within the cavity until DB/FWS arrived some 4 minutes later with another small prey item. This bird displaced LG/FWS and remained inside as well. An unbanded bird then arrived at the tree and made its way down to the lower cavity. It entered and remained inside for approximately 1 minute, then departed. Throughout this time all 4 birds were remaining within the immediate vicinity of the nest cavity, not more than 20 to 30 meters away at all times.

WH/FWS returned at 06:03, displacing DB/FWS, and entering the nest cavity with clearly observable prey. She once again remained in the cavity until 0610 when LG/FWS returned and took her place. The unbanded bird then returned once again and entered the lower cavity, this time staying approximately 3 minutes before emerging and departing. We departed the site shortly after this, at 0630, following three more food deliveries to the nest cavity.

Given the unwillingness to leave the chicks unattended and the attendance of 4 of the birds in the immediate vicinity of the cavity tree suggested to me that the chicks were probably not more than a day or two old.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 06/15/00

TIME: 05:30-06:30

OBSERVERS: D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1		_____	_____	_____	_____	_____
93	1		_____	_____	_____	_____	_____
94	1		_____	_____	_____	_____	_____
95	1	RCWO	05:48	_____	_____	_____	_____
96	1		_____	_____	_____	_____	_____
96	2		_____	_____	_____	_____	_____
97	1	N	_____	_____	_____	_____	_____
97	2	RCWO	05:48	_____	_____	_____	_____
98	1	??	_____	_____	_____	_____	_____
99	1	??	_____	_____	_____	_____	_____

COMMENTS: Arrived at Site 5 at 0530. First bird out from 95-1 at 05:48. Second bird out less than one min later from nest cavity (97-2). A third bird emerged from either tree 98 or 99 and joined the first two near tree #95. From there the birds flew to the south end of the colony site and were joined by a 4th bird of unknown origin. No bird emerged from cavity #97-1. The birds foraged, drummed, and were very vocal for another 6 min at which time WH/FWS returned to the nest cavity with a small caterpillar. She entered the cavity completely and remained inside for 3 min. At that point LG/FWS arrived with a prey item and the female emerged and was replaced by the male entering the cavity. He remained inside until the female returned after two min with additional prey. This time the female emerged and departed without a replacement. She returned five min later with food and entered the cavity. After 6 min LG/FWS returned with a sphinx moth of about 1cm and waited outside the cavity. An unbanded bird then landed on the tree as well and was immediately displaced by the light green bird. The unbanded bird then moved down to the lower cavity and entered it, emerging two min later. With the emergence of the unbanded bird, WH/FWS also emerged and was replaced by LG/FWS.

I changed positions briefly to ascertain the location of the other two birds but could not find them. During this time the unbanded bird returned to the lower cavity and entered for a period of 3 min before departing again. There were also two additional visits to the nest cavity with visible prey items, but the identity of the deliverers could not now be confirmed at my location. A total of 7 food deliveries were observed between 0555 and 0625. Both the complete entry of adults into the cavity and the continuing tendency to remain in the cavity until the next food delivery suggest that the chicks are still safely below the 10 day age banding threshold.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 06/16/00

TIME: 10:00 – 11:30

**OBSERVERS: B. Watts, M. Byrd, D. Schwab, B. Van Eerden, L. Richman, VDGIF et al.,
TNC et al.**

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1		_____	_____	_____	_____	_____
93	1		_____	_____	_____	_____	_____
94	1		_____	_____	_____	_____	_____
95	1		_____	_____	_____	_____	_____
96	1		_____	_____	_____	_____	_____
96	2		_____	_____	_____	_____	_____
97	1		_____	_____	_____	_____	_____
97	2	RCWO	_____	_____	_____	_____	_____
98	1		_____	_____	_____	_____	_____
99	1		_____	_____	_____	_____	_____

COMMENTS: Upon arrival to site, 3 adult birds were in vicinity attending nest cavity. Adults including WH/FWS and LG/FWS were observed to feed young. Lisa Richman climbed tree and extracted 3 chicks. These birds were banded 1581-66220 PU/FWS, 1581-66221 PK/FWS, and 1581-66222 FWS/RE. Birds were estimated to be 7 days old and weighed between 26 and 32 g. Banded birds were returned to cavity and feeding resumed shortly after.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 10/03/00

TIME: 08:20 - 09:15

OBSERVERS: B. Watts and D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1		_____	_____	_____	_____	_____
93	1		_____	_____	_____	_____	_____
94	1		_____	_____	_____	_____	_____
95	1		_____	_____	_____	_____	_____
96	1		_____	_____	_____	_____	_____
96	2		_____	_____	_____	_____	_____
97	1		_____	_____	_____	_____	_____
97	2		_____	_____	_____	_____	_____
98	1		_____	_____	_____	_____	_____
99	1		_____	_____	_____	_____	_____

COMMENTS: No information on cavity use collected. Birds were out and foraging around nest cavity upon arrival. Birds foraged south toward regenerating stand and then flew east toward inserts. Six birds were present including YE/FWS and WH/FWS. Other birds not identified.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 10/03/00

TIME: 17:45 – 19:15

OBSERVERS: B. Watts and D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1	N	---	---	---	---	---
93	1	RCWO	---	18:24	Y	WH/LB/WH	FWS/RE
94	1	N	---	---	---	---	---
95	1	FLSQ	---	---	---	---	---
96	1	RCWO	---	18:39	Y	WH/LB/WH	PK/FWS
96	2	RCWO	---	18:23	Y	WH/LB/WH	DB/FWS
97	1	N	---	---	---	---	---
97	2	RCWO	---	18:18	Y	WH/LB/WH	WH/FWS
98	1	RCWO	---	18:33	Y	WH/LB/WH	LG/FWS
99	1	RCWO	---	18:32	Y	WH/LB/WH	YE/FWS
?	?	RCWO			N		

COMMENTS: Birds were foraging in cluster area upon arrival. WH/FWS worked on plate and resin wells of 94-1 for 15 min. Bird foraged around cluster area for long period of time calling and interacting. Birds roosted over a fairly long period of time (20 min). A number of squabbles over cavity access occurred. Bird approached cavity 97-1 and stuck head in but did not enter or roost. 7 different birds were present and identified. Unbanded bird that previously roosted in 97-1 roosted in unknown location. Bird heard toward inserts may have been unbanded individual. Attempted to capture bird in 93-1 but it came out as net was being placed. Flying squirrel emerged from 95-1 after tree was tapped.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum

**RED-COCKADED WOODPECKER CAVITY
ACTIVITY FORM
(CLUSTER 5)**

DATE: 10/04/00

TIME: 17:30 – 18:45

OBSERVERS: B. Watts and D. Bradshaw

TREE	CAV	USE	EMRG	RST	BANDED	LFT LEG	RT LEG
92	1	N	—	—	—	—	—
93	1	RCWO	—	18:18	Y	WH/LB/WH	FWS/RE
94	1	N	—	—	—	—	—
95	1	N	—	—	—	—	—
96	1	?	—	—	—	—	—
96	2	?	—	—	—	—	—
97	1	N	—	—	—	—	—
97	2	RCWO	—	18:18	Y	WH/LB/WH	WH/FWS
98	1	RCWO	—	18:24	Y	WH/LB/WH	LG/FWS
99	1	RCWO	—	18:19	Y	WH/LB/WH	YE/FWS

COMMENTS: One bird present and foraging in cluster area upon arrival. Bird shortly flew off toward southeast and out of cluster area. 15:40 3 birds came into cluster from the north and stayed only short period of time before flying toward southeast. Birds all flew in around 18:17 to 18:19 and roosted very quickly. After birds roosted within cluster area one bird still heard down toward inserts. Tree 97 tapped earlier in afternoon to see if flying squirrel was present in 97-1. No squirrel emerged.

COLOR ABBREVIATION KEY

DG – Dark Green	PU - Purple
LG – Light Green	WH - White
DB – Dark Blue	PK - Pink
LB – Light Blue	YE - Yellow
RE – Red	FWS – Aluminum