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Investigation of red-cockaded woodpeckers in Virginia: 2008 report

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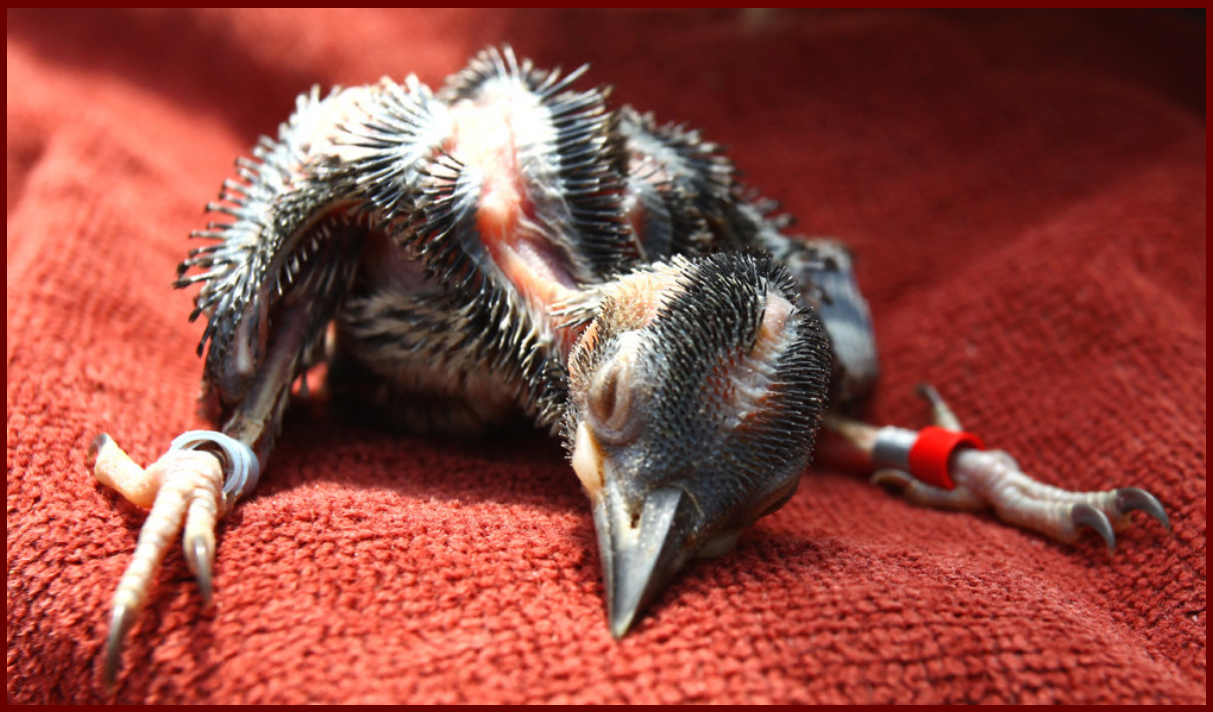

The Center for Conservation Biology
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Investigation of Red-cockaded Woodpeckers in Virginia: 2008 report

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Cover Photo by Bryan Watts: Red-cockaded Woodpecker nestling from Cluster 5

The Center for Conservation Biology is an organization dedicated to discovering innovative solutions to environmental problems that are both scientifically sound and practical within today's social context. Our philosophy has been to use a general systems approach to locate critical information needs and to plot a deliberate course of action to reach what we believe are essential information endpoints.

TABLE OF CONTENTS

Executive Summary

During the calendar year of 2008, 39 Red-cockaded Woodpeckers were identified within Piney Grove preserve. This included 23 birds that were hatched at Piney Grove from previous years, 9 chicks/fledglings produced during the 2008 breeding season, 5 birds translocated to Piney Grove in previous years, 1 bird that emigrated from the Peartree-Palmetto Preserve in Tyrell County, North Carolina in winter 2007, and 1 un-banded bird detected during winter survey that was captured and banded. This un-banded bird may have been a hatch year bird produced in C10 that escaped detection during the breeding season. During the winter of 2008, birds were roosting in 9 different cluster areas including C-1, C-3, C-4, C-5, C-6, C-7, C-8, C10, and C15.

There were 6 potential breeding clusters in 2008 however breeding was only known to occur in 4 of these clusters. Young birds were produced at C-1, C-3, C-5, and C-8. These clusters produced a total of 8 nestlings that survived to fledging. The breeding pair in C-7 nested but failed after all eggs were lost in the cavity and the adults did not re-nest. Cluster 8 successfully re-nested after failing once. It is possible that there was one additional breeding pair that produced young at C-10 but was not documented in 2008. Although we monitored the known cavity trees of C-10 during the breeding season, the adult male was discovered using a cavity tree located 450 m from C-10 during the winter survey. Also during the winter, one un-banded bird was detected for the first time using an artificial cavity in C-10. It is possible that this un-banded bird was a hatch year bird from the C-10 breeding pair. If so, it is likely that the birds nested in the cavity that was only discovered in the winter. There were new breeding females at C-1 and C-3 while the males at each of these clusters remained the same. Both members of the breeding pair were replaced at C-8 while the both breeders remained the same at C-5 and C-7.

During the 2008 calendar year, the number of known Red-cockaded Woodpecker cavities and cavity trees increased. In December 2007, Piney Grove contained 117 cavities in live trees including 25 start cavities, 34 completed cavities, and 58 artificial inserts. There were no loses to know cavity trees in 2008. In December 2008, Piney Grove contained 136 cavities in live trees including 35 start cavities, 43 completed cavities, and 58 artificial inserts. Of the 101 available natural cavities or inserts, 31 had fresh or recent chipping and sap flow from resin wells in December 2008. There were 43 instances of cavity competitors in RCW cavities during the 2008 calendar year. Southern flying squirrels accounted for 63% of other occupant species. A total of 39 individual flying squirrels were removed on 26 occasions from 20 of the 101 available cavity trees. C1 and C10 combined accounted for 51% of the total number of flying squirrels removed.

BACKGROUND

Context

The Red-cockaded Woodpecker (*Picoides borealis*) is a federally endangered species. 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 the recent loss of habitat in Kentucky, Virginia has supported the only population north of the Carolinas. 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 1977, 23 clans were known scattered across 5 counties. In 1980, all clusters determined to be active in 1977 were surveyed in preparation for an investigation of habitat use (Bradshaw 1990). Of the 23 original clusters, only 9 were still forested. In the 4 years from 1977 to 1980, more than half of the known state population had been lost. By 1990, only 5 of the original 23 clusters detected in 1977 were still active. By 2000, this number had declined to only 2 clusters. During the breeding season of 2002, Virginia supported only 2 breeding pairs and 2 clusters with solitary males.

The Red-cockaded Woodpecker remains in eminent danger of extinction within Virginia. However, in 1998 a multi-organizational partnership was formed under the primary mission of stabilizing the population and restoring it back to pre-1980 levels. During that year, The Nature Conservancy negotiated a deal with Hancock Timber to purchase 1,100 ha of land supporting the last 3 known Red-cockaded Woodpecker breeding groups. The site has since been expanded and now includes 1,270 ha of pine land. The tract, located in Sussex County is named the Piney Grove Preserve and lies in the heart of the species former Virginia range. The site has become the nucleus for restoration work in Virginia.

Restoration of the Red-cockaded Woodpecker population in Virginia will require a long-term commitment and the use of aggressive techniques that have proven successful further south. Dramatic habitat management, population monitoring and management, and translocation of birds into the population have been ongoing since 2000 and are beginning to show promising results.

Objectives

The primary objective of this ongoing project is to monitor the population of Red-cockaded Woodpeckers within the Piney Grove Preserve. A secondary objective is to collect information relevant to the continued management of birds and their habitat in Virginia. Specific objectives include

1) To determine the number and identification of all birds resident within Piney Grove during the 2007 calendar year.
2) To monitor breeding activity in order to document productivity and allow for the unique banding of all individuals within the population.

3) To monitor and manage nest trees and cavity condition.

METHODS

Description

Piney Grove Preserve contains an old-growth loblolly, pond pine, 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 140 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 understory. 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. Since 1999, there have been 12 recruitment clusters established by The Nature Conservancy through the installation of artificial cavities. There are now 15 independent cluster sites with either natural or artificial cavities.

Banding

Being able to identify individual birds is an essential element of the monitoring program. Banding individuals with unique combinations of color bands allows for their identification and, for this reason, has been one of the project goals.

Adults – Adult birds are captured using a specialized net mounted on a telescopic pole shortly after they roost at dusk. The birds are "roosted" and the net is raised in place and the bird is enticed out into the net. Net poles are only effective on cavities below 50 feet in height. In 1998, Don Schwab banded 10 Red-cockaded Woodpeckers within the Piney Grove complex. In 2000, 7 of these birds were still resident within Piney Grove. During 2000, Bryan Watts banded an additional 4 adult birds, leaving only 2 unbanded birds in the population (1 each in clusters 3 and 5). The 2 remaining unbanded adults within clusters 3 and 5 were lost during 2004 and 2005 respectively. Since this time, all birds within the population have been individually identified by unique, color-band combinations.

Nestlings – For logistical and safety reasons, banding of Red-cockaded Woodpecker nestlings is restricted to an age window of 5-10 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. Where cavity height permits, breeding status is determined via the use of a miniature

video camera mounted on an extendable pole. The pole can accommodate cavity heights to 50 ft. For cavities exceeding that height, breeding status was determined by visual monitoring of activity at the cavity. 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.

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 weighed at the time of banding using a Pesola spring scale. In the first 2 weeks after fledging, birds were identified and sex was determined by crown plumage.

General Observations

As in previous years, 2 systematic surveys of all birds within Piney Grove were conducted to identify individuals and to determine distribution. Surveys were conducted in the early spring prior to the expected breeding window and in early winter after the expected dispersal period. All clusters were visited before dawn to count the number of individuals emerging from roost cavities and/or joining emerging birds to determine clan size. Birds were followed while foraging so that color band combinations could be read with spotting scopes. Biologists systematically worked through all sites over a period of days until all individuals were identified. Once clutches were laid, observations were made at the nest cavity to identify the breeding male and female for each site.

Cavity Monitoring and Management

Cavity tree status – Data on the status of each cavity tree were collected during March and April 2008. Each cavity tree was visited once for 2008 to evaluate tree characteristics and characteristics for each cavity on the tree. Tree condition was categorized into the following: live or dead; standing, broken, or fallen; beetles; lightning strike; and red heart disease. Characteristics of each cavity were collected to describe its condition, entrance, plate, and activity status (Appendix I). All cavity trees were reevaluated in December 2007 to determine if active or inactive. Cavity characteristics were categorized as follows:

Cavity stage/ 06 Condition:

1-Complete – Natural cavity
2-Complete (New) – Newly completed since last update
3-Advanced Start: > 10 cm centimeter depth
4-Start: 1-10 cm depth
5-Sub-start: Less than one centimeter depth
6-Insert – Artificial cavity

Entrance enlargement:

0-Gone
1-Normal size entrance
2-Enlarged less than twice the normal diameter
3-Enlarged two to four times the normal diameter
4-Enlarged more than four times the normal diameter
R-Restrictor plate reducing entrance to normal size
H-Healing over

Activity:

1-Active: Chipping on resin wells to some degree with fresh sap flow
2-Possibly active: Slight but inconclusive evidence of RCW activity
3-Inactive: No recent RCW activity
4-Relic: No RCW activity for 4 years

Plate size:

5-Unstarted: No plate
4-Started: 0-15 cm diameter plate
3-Completed: 15-30 cm diameter plate
2-Completed: 30-45 cm diameter plate
1-Completed: Greater than 45 cm diameter plate

Chipping on resin wells:

4-Old: No recent RCW activity
3-Recent: Few resin wells have little chipping with little to no sap flow
2-Fresh: Most of resin wells have chipping and bark scaled slightly
1-Fresh: All resin wells have chipping and bark scaled extensively

Sap (applies to fresh and dry):

4-None
3-Less than 1 m of sap flow above and below the cavity
2-One to 2 m of sap flow above and below the cavity
1-Greater than 2m of sap flow above and below cavity around circumference of tree at cavity height

Cavity competitor inspection and removal – All active, completed inactive cavities, and artificial cavity inserts within 50 ft from the ground were checked on a one-month cycle using a camera and monitor mounted on a telescoping pole. Relic cavities were only revisited in December 2007. When cavity competitors were located, the tree was climbed

to remove the competitor or nest material. Amphibians, wasps and bird nests with a tending adult, fresh eggs, or nestlings were not removed.

Historic Sites

Historic sites were not visited this season since most have been degraded and no longer have the potential to support RCWs.

RESULTS

Population Monitoring

During the calendar year of 2008, 39 Red-cockaded Woodpeckers were identified within Piney Grove preserve (Table 1). This included 23 birds that were hatched at Piney Grove from previous years, 9 chicks/fledglings produced during the 2008 breeding season, 5 birds translocated to Piney Grove in previous years, 1 bird that emigrated from the Peartree-Palmetto Preserve in Tyrell County, North Carolina and detected first during the winter 2007, and 1 un-banded bird detected during winter 2008 survey that was captured and banded. This un-banded bird may have been a hatch year bird produced in C-10 that escaped detection during the breeding season.

Among the 23 birds detected in 2008 that were originally hatched at Piney Grove, 2 of these were hatched in 2000, 1 hatched in 2003, 3 hatched in 2004, 5 hatched in 2005, 5 hatched in 2006, and 7 were hatched in 2007. The group of translocated birds included 1 bird moved here from Gates County, NC in the spring of 2002, 1 bird moved here from Carolina Sandhills National Wildlife Refuge (NWR) in the winter of 2002, 1 bird moved from the Carolina Sandhills NWR in the winter 2003, and 2 birds moved here from the Carolina Sandhills NWR in the winter of 2005.

There were 7 birds detected in 2007 that were not detected in 2008. This includes 2 birds hatched at Piney Grove in 2001, 1 bird hatched at Piney Grove in 2006, 2 birds hatched at Piney Grove in 2007, and 2 birds translocated to Piney Grove from the Carolina Sandhills NWR in 2003.

Twenty-six adult birds were believed to be present within the Piney Grove preserve going into the breeding season of 2008 (Table 1). This compares to 23, 21, 22, 21, 19, and 16 birds going into the breeding seasons of 2007, 2006, 2005, 2004, 2003, and 2002 respectively.

Thirty birds were detected during the winter survey. This includes 19 birds hatched at Piney Grove before 2007, 7 of the 8 birds that fledged earlier in the year, 3 translocated birds, and 1 un-banded bird. There were 7 birds that were not observed in the winter survey but seen in the spring survey. Some notable losses between seasons include 1) a breeding female from 2007 that moved from its breeding site of C-3 to C-1 between winter 2007 and spring 2008; 2) the immigrant female that came naturally to

Piney Grove from Tyrell County, NC in 2007. This female was observed in C-8 during the spring survey but was not observed taking part in any breeding activity in C-8 and was not observed again; 3) The 2007 breeding female from C-10; 4) the 2008 breeding female from C-7 (pair lost eggs and never renested; and 5) the 2008 breeding female from C-8.

In the winter assessment, birds were roosting in 9 different cluster areas including C-1, C-3, C-4, C-5, C-6, C-7, C-8, C-10, and C-15 (Table 2). Considerable interaction was observed between these locations. As in the past, the single bird roosting in C-4 was part of the C-3 clan. Also, a single bird roosting in C-15 joined the C-8 group to forage.

Breeding Observations

Four successful breeding attempts were documented during the 2007 season at C-1, C-3, C-5, and C-8 producing a combined total of 8 chicks to fledging age. The birds at C-7 also nested but failed during the egg phase and the adults never re-nested. It is possible that C-10 nested in a new, isolated tree but escaped documentation.

Cluster 1 – The breeding male (AL/OR, DB/DB/WH) remained the same as in 2007. This was only the second year this male assumed reproductive duties. This male was translocated from Carolina Sandhills NWR in 2002. The breeding female from 2003-2007 was replaced by a new female (LB/WH/LB, AL/YE) in 2008. The new female was originally hatched in C-5 in 2005 and first detected in C-1 this year. Incubation duties were also augmented by at least one helper male (DG/YE/DG, WH/AL) that was originally hatched in C-1 in 2006 and has remained at this cluster since that time. The first egg was detected in tree #45 on 28 April and on 2 May a full clutch of 3 eggs was being incubated. This was the first year this tree was used for breeding. On May 16 the adults were observed brooding two young estimated at 5-6 days old. It is not known if the third egg did not hatch or the brood was reduced by this date. The 2 nestling birds were banded on 19 May at an estimated age of 7-8 days. Both of these nestlings successfully fledged and were both identified as females on June 6th. Both of these fledglings were observed again during the winter survey.

Cluster 3 – The breeding male (RE/DB, WH/AL) remained the same as in 2007. This was only the second year this male held breeding status. The breeding female was replaced for the second consecutive year by a new female (LB/WH/LB, RE/AL) that was observed in 2007 incubating in both C-3 and C-5. Incubation duties were also augmented by a helper male (DB/RE/DB, AL/DB) that was hatched in C-3 in 2005 and has remained there since that time. The birds nested in tree #8 for the third consecutive year. This cavity is too high to be examined by peeper scope. Incubation was first observed on 29 April. On 21 May, we banded 3 nestlings estimated to be 8-9 days old. One bird fledged on 4 June and identified as a male while the other nestlings remained in the nest. The two remaining nestlings were observed to successfully fledge by 9 June and additionally identified as 1 male and 1 female. One male and 1 female were subsequently observed during the winter survey whereas the third fledgling (DB/RE/DB, RE/AL) was not detected

Table 1. Occurrence of individual Red-cockaded Woodpeckers at Piney Grove Preserve (1998-2008).

FWS	Left Leg	Right Leg	Sex	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008 Spr	2008 Winter
1581-66201	WH/LB/WH	RE/AL	M	X	X									
1581-66202	WH/LB/WH	LG/AL	M	X	X	X	X	X	X	X				
1581-66203	RE/DB/RE	YE/AL	F	X	X	X	X	X						
1581-66204	RE/DB/RE	PU1/AL	F	X										
1581-66205	RE/DB/RE	DG/AL	M	X	X	X	X	X						
1581-66206	DG/YE/DG	DB/AL	M	X	X									
1581-66207	WH/LB/WH	WH/AL	F	X	X	X	X	X	X	X	X			
1581-66208	RE/DB/RE	PK1/AL	U	X										
1581-66209	DG/YE/DG	PU/AL	F	X	X									
1581-66210	WH/LB/WH	DB1/AL	U	X										
1581-66211	DG/YE/DG	RE1/AL	F		X									
1581-66212	WH/LB/WH	YE/AL	M		X	X	X	X	X	X				
1581-66213	WH/LB/WH	DB2/AL	F		X									
1581-66214	RE/DB	WH/AL	M		X	X	X	X	X	X	X	X	X	X
1581-66215	RE/DB	LG1/AL	U		X		X	X	X					
1581-66216	RE/DB	RE1/AL	U		X									
1581-66219	DG/YE/DG	WH/AL	M		X	X	X							
1581-66220	WH/LB/WH	PU/AL	U		X				X	X		X	X	X
1581-66221	WH/LB/WH	PK1/AL	U		X									
1581-66222	WH/LB/WH	AL/RE	U		X	X								
1581-66223	DG/YE/DG	YE/AL	F		X									
1581-66224	DG/YE/DG	RE2/AL	M			X	X	X	X	X	X			
1581-66225	RE/DB/RE	RE2/AL	M			X								
1581-66226	RE/DB/RE	LG2/AL	F			X								
1581-66227	RE/DB/RE	PK2/AL	M			X	X							
1581-66228	RE/DB/RE	PU2/AL	M			X	X	X	X					
1581-66229	WH/LB/WH	DG/AL	F			X	X							
1581-66230	WH/LB/WH	AL/YE	F				X	X	X	X	X	X		
1581-66231	WH/LB/WH	PK2/AL	M			X	X	X	X	X	X	X		
1581-66232	WH/LB/WH	AL/DB	M				X	X						
1581-66233	WH/LB/WH	AL/LB	F				X	X						
1581-66234	RE/DB/RE	AL/YE	F				X	X						
1581-66235	RE/DB/RE	AL/RE	F				X	X		X				
1581-66236	RE/DB/RE	AL/DB	M				X							
1581-66237	WH/LB/WH	AL/RE	M					X		X				
1581-66238	WH/LB/WH	AL/PU	F					X	X				X	
1581-66239	WH/LB/WH	AL/DG	U					X						
1581-66240	WH/LB/WH	AL/LG	M					X						
1581-66241	DG/YE/DG	AL/LG	F						X					

Table 1 continued

FWS	Left Leg	Right Leg	Sex	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008	2008
													Spr	Winter
1581-66242	RE/DB/RE	AL/LB	F					X	X					
1581-66243	RE/DB/RE	AL/PK	F					X						
1581-66244	RE/DB/RE	AL/DG	M					X	X					
1581-66245	DG/YE/DG	AL/LB	M					X	X	X	X			
1581-66246	DG/YE/DG	AL/PU	U					X						
1581-66247	DG/YE/DG	AL/WH	U						X					
1581-66248	DG/YE/DG	AL/PU	M						X					
1581-66249	DG/YE/DG	AL/DB	U						X					
1581-66250	LB/WH/LB	AL/PK	M						X	X				
1581-66251	LB/WH/LB	AL/DB	M						X	X	X	X	X	X
1581-66252	LB/WH/LB	AL/LB	F						X	X				
1581-66253	DB/RE/DB	AL/WH	F						X	X	X	X	X	X
1581-66254	DB/RE/DB	AL/RE	M						X	X		X	X	
1581-66256	LB/WH/LB	AL/OR	F							X				
1581-66257	LB/WH/LB	AL/RE	M							X	X	X	X	X
1581-66258	LB/WH/LB	AL/YE	F							X	X	X	X	X
1581-66259	DG/YE/DG	AL/DG	F							X				
1581-66260	DG/YE/DG	AL/OR	F							X				
1581-66261	DB/RE/DB	AL/DB	M							X	X	X	X	X
1581-66262	DB/RE/DB	AL/YE	F							X				
1581-66263	DB/RE/DB	AL/PU	F							X	X		X	X
1581-66264	WH/RE/WH	AL/DG	F							X	X	X		X
1581-66265	LB/WH/LB	AL/WH	F								X	X	X	X
1581-66266	LB/WH/LB	RE/AL	F								X	X	X	X
1581-66267	WH/RE/WH	AL/RE	F								X			
1581-66268	WH/RE/WH	AL/YE	M								X	X	X	
1581-66269	DG/YE/DG	YE/AL	M								X	X		
1581-66270	DG/YE/DG	WH/AL	M								X	X	X	X
1581-66271	DB/RE/DB	YE/AL	F								X	X	X	X
1581-66272	OR/OR/OR	RE/AL	M								X			
1581-66273	WH/RE/WH	AL/WH	M									X	X	X
1581-66274	WH/RE/WH	AL/DB	M									X	X	X
1581-66275	OR/AL	DB/RE/DB	F									X		
1581-66276	DG/YE/DG	OR/AL	F									X	X	X
1581-66277	LB/WH/LB	YE/AL	F									X		
1581-66278	LB/WH/LB	OR/AL	F									X	X	
1581-66279	YE/DB/YE	AL/RE	F									X	X	X
1581-66280	YE/DB/YE	AL/YE	M									X		X
1581-66281	OR/OR/OR	YE/AL	F									X		X
1581-66282	YE/DG/YE	DB/AL	F										X	X
1581-66283	WH/AL	YE/DG/YE	F										X	X
1581-66284	DB/RE/DB	WH/AL	F										X	X

Table 1 continued

FWS	Left Leg	Right Leg	Sex	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008	2008
													Spr	Winter
1581-66285	DB/RE/DB	DB/AL	M										X	X
1581-66286	DB/RE/DB	RE/AL	F										X	
1581-66287	LB/WH/LB	AL/PU	F										X	X
1581-66288	LB/WH/LB	AL/DG	M										X	X
1581-66289	YE/DB/YE	AL/WH	U											
1581-66290	YE/DB/YE	AL/PU	M										X	X
C-3 Unbanded	Unbanded	Unbanded	U		X	X	X	X	X					
C-5 Unbanded	Unbanded	Unbanded	M		X	X	X	X	X	X				
Translocated Birds														
1751-83047	AL/LG	DB/DB/YE	M			X								
1681-89697	AL/LB	ST/ST/OR	F			X								
1681-89743	AL/DG	WH/WH/PU	F			X	X							
1751-42837	YE/DB/YE	WH/AL	M				X							
1751-42838	YE/DB/YE	LG/AL	M				X							
801-40249	BK/YE/DB	RE/AL	F				X	X	X	X	X	X	X	
1751-83163	AL/OR	DG/DG/OR	F				X							
1751-83133	AL/WH	ST/ST/OR	F				X							
1751-83208	AL/OR	WH/WH/MV	M				X							
1681-89800	AL/LG	PU/PU/LG	M				X							
1751-82968	AL/WH	OR/OR/DB	F				X							
1751-83201	AL/OR	WH/WH/LB	F				X							
1751-83213	AL/OR	OR/OR/LG	M				X							
1751-83142	AL/OR	DB/DB/WH	M				X	X	X	X	X	X	X	X
1751-83234	AL/YE	WH/WH/WH	F					X						
951-26443	AL/YE	DG/DG/LG	F					X						
951-26448	AL/YE	DG/DG/MV	M					X		X	X	X		
1751-83183	AL/OR	YE/YE/WH	M					X	X	X	X	X		
951-26305	AL/YE	YE/YE/WH	M					X	X	X	X	X	X	X
1581-66262	WH/WH/WH	AL/WH	M							X				
941-92246	AL / ST	OR/OR/YE	M											
1951-05035	AL / PU	WH/WH/MV	M							X				
1951-05086	AL/MV	MV/MV/WH	F							X	X	X	X	X
941-92233	AL / ST	WH/WH/LG	F							X	X	X	X	
941-92268	AL / ST	PU/PU/WH	F							X				
Foreign Birds														
Unknown	MV/LG	LG/AL	U							X				
1841-53714	RE/YE/RE	AL/OR	F									X	X	
1581-66291	WH/WH/WH	RE/AL	F											X

Table 2. Roost clusters for Red-cockaded Woodpeckers detected within Piney Grove Preserve during the 2008 winter assessment.

Roost Cluster	FWS Band #	Left Leg	Right Leg	Sex	Age
C-1	1581-66258	LB/WH/LB	AL/YE	F	3
C-1	1581-66265	LB/WH/LB	AL/WH	F	2
C-1	1581-66270	DG/YE/DG	WH/AL	M	2
C-1	1581-66281	OR/OR/OR	YE/AL	F	1
C-1	1581-66282	YE/DG/YE	DB/AL	F	0
C-1	1581-66283	WH/AL	YE/DG/YE	F	0
C-1	1751-83142	AL/OR	DB/DB/WH	M	6
One of the birds listed below in the C-3 clan was roosting in C-4 but individual not identified					
C-3	1581-66253	DB/RE/DB	AL/WH	F	5
C-3	1581-66214	RE/DB	WH/AL	M	8
C-3	1581-66261	DB/RE/DB	AL/DB	M	3
C-3	1581-66266	LB/WH/LB	RE/AL	F	2
C-3	1581-66284	DB/RE/DB	WH/AL	F	0
C-3	1581-66285	DB/RE/DB	DB/Al	M	0
C-5	1951-05086	AL/MV	MV/MV/WH	F	3
C-5	1581-66220	WH/LB/WH	PU/AL	M	8
C-5	1581-66257	LB/WH/LB	AL/RE	M	3
C-5	1581-66287	LB/WH/LB	AL/PU	F	0
C-5	1581-66288	LB/WH/LB	AL/DG	M	0
C-6	1581-66263	DB/RE/DB	AL/PU	F	3
C-7	1581-66261	DB/RE/DB	AL/DB	M	3
C-7	1581-66264	WH/RE/WH	AL/DG	F	3
C-7	1581-66271	DB/RE/DB	YE/AL	F	2
C-7	1581-66273	WH/RE/WH	AL/WH	M	1
C-7	951-26305	AL/YE	YE/YE/WH	M	5
C-7	1581-66279	YE/DB/YE	AL/RE	F	1
C-8	1581-66251	LB/WH/LB	AL/DB	M	4
C-8	1581-66279	YE/DB/YE	AL/RE	F	1
C-8	1581-66290	YE/DB/YE	AL/PU	M	0
C-10	1581-66264	WH/RE/WH	AL/DG	M	3
C-10	1581-66276	DG/YE/DG	OR/AL	F	1
C-10	1581-66291	WH/WH/WH	RE/AL	F	U
C-15	1581-66280	YE/DB/YE	AL/YE	M	1

Cluster 5 – The breeding pair remained the same as in 2007. The breeding male (WH/LB/WH, PU/AL) was originally banded as a nestling at C-5 in 2000 and the breeding female (AL/MV, MV/MV/WH) was translocated to Piney Grove from Carolina Sandhills, NWR in 2005. This is the only the second year these pair have assumed reproductive duties after replacing two former breeders in 2007. The pair used tree # 26 for a second consecutive year. This nest cavity that is too high be examined with the peeper scope. Incubation was detected for the first time on 2 May. Two nestlings were banded on 21 May and estimated to be 5-6 days old. One un-hatched egg remained in the nest. The hatch year birds were successfully fleged by 9 June when they were identified as 1 male and 1 female. Both fledglings were observed again in C-5 during the winter survey.

Cluster 7 – The breeding male (AL/YE, YE/YE/WH) remained the same since 2005. This bird was translocated to C-7 from Carolina Sandhills, NWR in 2003 and has been present within this cluster since that time. To date, it has been the only male to breed at this cluster. The breeding female (WH/LB/WH, AL/PU) was the same as in 2007. This female was originally banded at C-5 as a nestling in 2003 and was only the second year it held breeding status in this cluster. Four eggs were observed in tree #106 on 25 April. This was the second consecutive year this tree was used for nesting. The nest was rechecked on 2 May and found to be empty. The pair never re-nested so no young were produced from this cluster in 2008.

Cluster 8 – This was only the second year of breeding at C-8. The breeding pair was replaced from 2007. The breeding male (LB/WH/LB, AL/DB) was originally banded in C-5 in 2004. In 2007, this male was observed intruding at the C-8 nest on several occasions and was chased off by that season's breeding male. The breeding female in 2008 (LB/WH/LB, OR/AL) was originally banded at C-5 in 2007. There is some chance that the breeding female from 2007 (DG/YE/DG, AL/WH) may have taken part in early breeding activities. Cluster 8 failed on its first nesting attempt. The first egg of the year was observed in tree # 179 on 2 May and 3 eggs were observed being incubated on 5 May. On 11 May the nest was empty. On this day, all three aforementioned birds were observed foraging near the nest tree. The nest remained empty on two separate day-checks until 3 eggs were found on 30 May. Only the male was observed incubating the recycled nest. He would leave the nest during incubation, forage nearby, and return to the nest to incubate without replacement by a breeding female. Three eggs were observed again on 4 June and on 9 June two nestlings estimated as 1-2 days old were found in the nest. The third egg was missing. During brooding, the new female (LB/WH/LB, OR/AL) appeared to assume feeding duties along with the breeding male. However, this female also appeared very inexperienced at feeding young. During six separate occasions she brought food to the nest but failed to place it into the cavity to feed the young and flew off without delivery. She was observed again on 16 June and only delivered the food into the nest on 1 of 4 visits with food to the cavity entrance. The two nestlings were banded on 21 June and estimated to be 10 days old. Only 1 of the 2 nestlings was observed to successfully fledge and on 23 June this bird was identified as a male. The hatch year male was observed again at clusters 8 and 7 during the winter survey.

Cluster 10 – Breeding was not officially documented in 2008. However, it is possible, or even likely that young were produced in the vicinity of C-10 that went undocumented. During the spring survey, the two C10 breeders from 2007 were present (male; WH/RE/WH, AL/DG and female; AL/ST, WH/WH/LG). The artificial trees in C-10 were regularly monitored throughout the summer and RCWs were seen in the vicinity and followed. No breeding activity was detected within these artificial trees and the adults never traveled to a new tree so C-10 was presumed not to breeding. During the winter survey, we found an un-banded bird roosting in tree #63 and a new adult female (DG/YE/DG, OR/AL) roosting in tree #64. Both of these birds exited their cavities in the morning and met the male (WH/RE/WH, AL/DG) in an area away from the artificial cluster of trees. We captured the un-banded bird and identified it as a female (WH/WH/WH, AL/RE [Table 1]). We then found that the adult male was roosting in a new cavity over 450 m away from the C-10 trees. It is possible that the un-banded bird was the product of a mating between the 2007 breeding male (WH/RE/WH, AL/DG) and either female. The 2007 female (AL/ST, WH/WH/LG) was not detected in the winter. No other un-banded birds were discovered at Piney Grove.

Table 3. Red-cockaded Woodpecker nestlings banded in 2007 on Piney Grove Preserve.

Cluster	Date	FWS	Lft	Rt	Age	Wgt (g)	Sex
1	5/19	1581-66282	YE/DG/YE	DB/AL	8	28.0	F
1	5/19	1581-66283	WH/AL	YE/DG/YE	7	27.0	F
3	5/21	1581-66284	DB/RE/DB	WH/AL	8-9	29.5	F
3	5/21	1581-66285	DB/RE/DB	DB/AL	9	35.0	M
3	5/21	1581-66286	DB/RE/DB	RE/AL	8-9	36.0	F
5	5/21	1581-66287	LB/WH/LB	AL/PU	5-6	25.5	F
5	5/21	1581-66288	LB/WH/LB	AL/DG	5-6	20.5	M
8	6/16	1581-66289	YE/DB/YE	AL/WH	10	37.5	*
8	6/16	1581-66289	YE/DB/YE	AL/PU	10	34.0	M

*nestling did not fledge

Translocations

No translocations were made during 2008.

Cavity Trees

In 2008, Piney Grove contained 136 cavities in live trees including 35 start cavities, 43 completed cavities, and 58 artificial inserts. Twelve trees were found in 2008 containing seven newly completed natural cavities and 6 starts. One newly completed cavity and 5 starts were discovered in previously tagged cavity trees. No known cavity

trees died in 2008. Tree number 47 at C-11 has a broken top. Tree number 164 at C-1 is leaning at a 65% angle onto another tree. Of the 101 available natural cavities or inserts, 37 had fresh or recent chipping and sap flow from resin wells in spring 2008. Thirty-one available natural cavities or inserts had fresh or recent chipping and sap flow from resin wells in December 2008 (Table 4). Of the 58 inserts in live trees, 11 (19%) had fresh or recent resin work. Of the 43 natural cavities, 26 (60%) had fresh or recent resin work.

The 19 new cavities and starts were added in the following cluster areas (Table 5): one completed natural cavity in a known cavity tree, one new tree with completed natural cavity and one new tree with two starts at C-1; one new completed natural cavity in a new tree and one new start in a new tree at C-5; one new start in a known cavity tree at C-6; one start in a known cavity tree, two new trees with completed natural cavities and three new trees with starts at C-7; three starts in known cavity trees, and one new tree with completed natural cavity at C-8; and two new trees with completed natural cavities at C-10.

Table 4. Active Red-cockaded Woodpecker cavity counts in each cluster area on Piney Grove Preserve in December 2008.

Cluster area	Artificial insert	Completed natural cavity
C-1	0	7
C-2	0	0
C-3	1	4
C-4	1	0
C-5	0	5
C-6	1	0
C-7	1	4
C-8	2	2
C-9	0	0
C-10	2	0
C-11	0	0
C-12	0	0
C-13	0	0
C-14	0	0
C-15	1	0

Table 5. Red-cockaded Woodpecker cavity changes in each cluster area on Piney Grove Preserve during 2008.

Cluster area	Tree tag number	Cavity condition	2008Activity status
C-1	45a	Natural Complete	Active
C-1	59a	Start	Active
C-1	59b	Start	Active
C-1	164	Natural Complete	Active
C-5	18	Start	Active
C-5	18	Natural Complete	Active
C-6	135a	Start	Active
C-7	106b	Start	Active
C-7	107	Natural Complete	Active
C-7	108	Start	Active
C-7	109	Start	Active
C-7	190	Start	Active
C-7	194	Natural Complete	Active
C-8	174b	Start	Active
C-8	175	Natural Complete	Active
C-8	176e	Start	Active
C-8	176f	Start	Active
C-10	68	Natural Complete	Active
C-10	154	Natural Complete	Active

Cavity competitor inspection and removal— There were 43 instances of cavity competitors in RCW cavities during the 2008 calendar year (Table 6). Multiple cavity competitors occurring simultaneously in a cavity were counted as separate occurrences. Multiple individuals of one species found together in a cavity were counted as one occurrence. Southern flying squirrels accounted for 26 of the 43 occurrences (63%). A total of 39 individual flying squirrels were removed on 26 occasions from 20 of the 101 available cavity trees. Occupants were found in about one fifth (20%) of available RCW cavities in 2008. Eighty percent of the 20 cavities affected by flying squirrels were artificial inserts. C1 and C10 combined accounted for 51% of the total number of flying squirrels removed (Table 7).

Table 6. Red-cockaded Woodpecker cavity competitor occurrences on Piney Grove Preserve in 2008.

Cavity Occupant	Number of cavities	Number of occurrences
Southern Flying Squirrels removed	20	26
Flying squirrel and nest material	29	47
Unidentified other bird nest	6	6
White-breasted nuthatch	3	3
Great-crested flycatcher	1	1
Brown-headed nuthatch	1	1
Snake species	2	2
Wasp	4	4

Table 7. Number of Southern flying squirrels found in Red-cockaded woodpecker cavity trees on Piney Grove Preserve in 2008.

Cluster area	Number of available cavities	Southern flying squirrels removed	Occurrences of flying squirrels	Average occurrence per cavity tree (OTC)
15	4	4	3	0.75
9	4	2	3	0.75
14	4	2	2	0.50
1	16	12	7	0.43
10	7	8	3	0.43
6	5	2	2	0.40
3	11	4	2	0.18
5	13	3	2	0.15
13	7	1	1	0.14
7	8	1	1	0.13
4	3	0	0	0.00
8	8	0	0	0.00
11	4	0	0	0.00
12	4	Not checked	Not checked	N/A
2	3	Not checked	Not checked	N/A

Historic Sites

Historic sites were not visited this season since most have been degraded and no longer have the potential to support RCWs. Descriptions of each site are based on 2006 visits.

Route 460 Site (Sussex County)

Site Condition – This site remains intact but is severely degraded from midstory encroachment and limited size. Habitat on both sides of this tract has been harvested in the last 20 years leaving this island of mature timber too insignificant to consider for management purposes.

Cavity tree status – None detected.

Bird status – No evidence of activity present.

Route 35 Site (Southampton County)

Site Condition – The site was purchased by Ashton Lewis Lumber Company in late 2001 and harvested in winter 2002. Remaining timber on this tract is relegated to two small stands (less than 20 ha each) primarily in the 40 -60 year age class. Next nearest stand of mature timber is a small 15 ha block approx. 3 km away.

Cavity tree status – All were harvested or knocked down in the harvest.

Bird status – No recent evidence of birds.

Route 612 Site (Southampton County)

Site Condition – With the exception of 135 acres that surrounds the cluster area, this site was harvested in the summer of 2003 by Virginia-Carolina Properties. Harvest was carried out under agreement with the Virginia Department of Game & Inland Fisheries and the U.S. Fish and Wildlife Service. Under a Habitat Conservation Plan developed in cooperation with the U.S. Fish and Wildlife Service, the Virginia Department of Game & Inland Fisheries, The Nature Conservancy, and the Center for Conservation Biology, the lone, male Red-cockaded Woodpecker was moved to the Piney Grove Preserve and the remaining 135 acres were harvested in the late spring of 2005.

Rt. 40 Site (Sussex County)

Site Condition – The core site between Rt 40 and old Rt 40 is still intact, although hardwood encroachment and a dense pine subcanopy have all but removed access

to any potential cavity trees. Ashton Lewis Lumber Company purchased this site from Gray Family Trust in 2002. They have since harvested all of the mature timber around this site, leaving only the historic triangle of old-growth timber still standing. This remaining tract is less than 25 ha and is too degraded to be of any use to red-cockaded woodpeckers. Ashton Lewis has received authority to harvest the remaining acreage as soon as the site dries out enough to get equipment in.

Cavity tree status – All historic cavity trees are dead or have been enlarged to the point of excluding red-cockaded as users.

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

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Appendix I. Status of Red-cockaded Woodpecker cavities on Piney Grove in 2008.

CLUSTER	Tree	Species	Condition	Cavity	Status	Condition	Entrance	Plate	Resin Work
1	35	Loblolly	Live	Natural	Active	Start (Ad)	Normal	Unstarted	Fresh
1	36	Loblolly	Live	Artificial	Inactive	Insert	Normal	>15 cm	Old
1	37	Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Old
1	38	Shortleaf	Dead	Natural	Unavailable	Complete	Unavailable	Unavailable	Unavailable
1	39	Loblolly	Live	Natural	Inactive	Complete	Normal	> 45 cm	Old
1	40	Loblolly	Dead	Natural	Unavailable	Complete	Unavailable	Unavailable	Unavailable
1	41	Loblolly	Dead	Natural	Unavailable	Complete	Unavailable	Unavailable	Unavailable
1	42	Loblolly	Live	Natural	Unavailable	Start	Healing	Unavailable	Unavailable
1	43	Loblolly	Live	Natural	Relic	Complete	>4X	15-30 cm	Old
1	44	Loblolly	Live	Natural	Relic	Complete	>4X	15-30 cm	Old
1	45a	Loblolly	Live	Natural	Active	Complete (New)	Normal	15-30 cm	Fresh
1	45b	Loblolly	Live	Natural	Active	Complete	Normal	30-45 cm	Recent
1	46	Loblolly	Live	Natural	Relic	Complete	>2X	>15 cm	Old
1	47	Loblolly	Live	Natural	Inactive	Start (Ad)	Restrictor	Unstarted	Old
1	48	Loblolly	Live	Natural	Active	Complete	Normal	> 45 cm	Fresh
1	49	Loblolly	Live	Natural	Relic	Complete	>4X	15-30 cm	Old
1	50	Shortleaf	Dead	Artificial	Unavailable	Insert	Unavailable	Unavailable	Unavailable
1	51	Loblolly	Dead	Artificial	Unavailable	Insert	Unavailable	Unavailable	Unavailable
1	52	Loblolly	Live	Artificial	Relic	Insert	Normal	Unstarted	Old
1	53	Loblolly	Live	Natural	Active	Complete	<2X	30-45 cm	Fresh
1	54	Loblolly	Live	Natural	Active	Start	Normal	Unstarted	Fresh
1	55	Loblolly	Live	Natural	Active	Complete	<2X	Unstarted	Recent
1	57	Loblolly	Live	Natural	Active	Complete	Normal	30-45 cm	Fresh
1	102	Loblolly	Live	Natural	Relic	Complete	<2X	>15 cm	Old

Appendix I continued

CLUSTER	Tree	Species	Condition	Cavity	Status	Condition	Entrance	Plate	Resin Work
1	117	Loblolly	Live	Artificial	Inactive	Insert	Normal	>15 cm	Old
1	58	Unknown	Live	Natural	Active	Start (Ad)	Normal	Unstarted	Fresh
1	59a	Loblolly	Live	Natural	Active	Start	Normal	Unstarted	Recent
1	59b	Loblolly	Live	Natural	Active	Start	Normal	Unstarted	Recent
1	164	Loblolly	Live	Natural	Active	Complete (New)	Normal	15-30 cm	Fresh
2	60	Loblolly	Live	Artificial	Relic	Insert	Normal	Unstarted	Old
2	61	Loblolly	Dead	Artificial	Unavailable	Insert	Unavailable	Unavailable	Unavailable
2	62	Loblolly	Live	Artificial	Relic	Insert	Normal	Unstarted	Old
2	63	Loblolly	Live	Artificial	Relic	Insert	Normal	Unstarted	Old
3	1	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Recent
3	2	Loblolly	Live	Artificial	Inactive	Insert	Restrictor	>15 cm	Old
3	4	Loblolly	Live	Natural	Active	Complete	Restrictor	30-45 cm	Recent
3	5	Loblolly	Live	Natural	Relic	Start	Normal	Unstarted	Old
3	6	Loblolly	Live	Natural	Relic	Complete	<2X	Unstarted	Old
3	7	Loblolly	Live	Natural	Active	Start (Ad)	Normal	Unstarted	Fresh
3	8	Loblolly	Live	Natural	Active	Complete	<2X	>15 cm	Fresh
3	71	Loblolly	Dead	Natural	Unavailable	Complete	Unavailable	Unavailable	Unavailable
3	72	Loblolly	Live	Natural	Relic	Complete	>4X	>15 cm	Old
3	74	Loblolly	Dead	Natural	Unavailable	Complete	Unavailable	Unavailable	Unavailable
3	75	Loblolly	Live	Natural	Relic	Complete	>4X	>15 cm	Old
3	76	Loblolly	Live	Artificial	Inactive	Insert	Normal	>15 cm	Old
3	77	Loblolly	Dead	Natural	Unavailable	Complete	Unavailable	Unavailable	Unavailable
3	80	Loblolly	Live	Natural	Active	Start (Ad)	Normal	Unstarted	Recent
3	177	Loblolly	Live	Artificial	Inactive	Insert	Normal	>15 cm	Old
3	178	Loblolly	Live	Natural	Active	Start	<2X	Unstarted	Recent
3	3a	Loblolly	Live	Natural	Active	Complete	Restrictor	15-30 cm	Fresh
3	3b	Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Old

Appendix I continued

CLUSTER	Tree	Species	Condition	Cavity	Status	Condition	Entrance	Plate	Resin Work
3	79a	Loblolly	Live	Natural	Relic	Complete	<2X	30-45 cm	Old
3	79b	Loblolly	Live	Natural	Active	Start	Normal	Unstarted	Fresh
3	79c	Loblolly	Live	Natural	Inactive	Start	Restrictor	Unstarted	Old
3	9a	Loblolly	Live	Natural	Relic	Start	<2X	Unstarted	Old
3	9b	Loblolly	Live	Natural	Active	Start (Ad)	Normal	Unstarted	Fresh
3	9c	Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Old
4	81	Loblolly	Dead	Artificial	Unavailable	Insert	Unavailable	Unavailable	Unavailable
4	82	Loblolly	Live	Artificial	Active	Insert	Normal	>15 cm	Fresh
4	83	Loblolly	Dead	Artificial	Unavailable	Insert	Unavailable	Unavailable	Unavailable
4	84	Loblolly	Live	Artificial	Relic	Insert	Normal	Unstarted	Old
4	186	Loblolly	Live	Artificial	Relic	Insert	Normal	Unstarted	Old
5	18	Loblolly	Live	Natural	Active	Start	Normal	Unstarted	Fresh
5	19	Loblolly	Live	Natural	Active	Complete (New)	Normal	Unstarted	Fresh
5	20	Loblolly	Live	Natural	Inactive	Complete	Restrictor	> 45 cm	Old
5	21	Loblolly	Dead	Natural	Unavailable	Complete	Unavailable	Unavailable	Unavailable
5	22	Loblolly	Live	Natural	Inactive	Complete	Normal	> 45 cm	Old
5	23	Loblolly	Live	Natural	Active	Complete	Restrictor	> 45 cm	Fresh
5	24	Loblolly	Live	Natural	Active	Complete	Restrictor	>15 cm	Fresh
5	25	Loblolly	Live	Natural	Active	Complete	Normal	15-30 cm	Fresh
5	26	Loblolly	Live	Natural	Active	Complete	Restrictor	>15 cm	Fresh
5	27	Loblolly	Live	Natural	Active	Complete	<2X	>15 cm	Fresh
5	28	Loblolly	Live	Natural	Active	Complete	Normal	>15 cm	Recent
5	29	Loblolly	Dead	Natural	Unavailable	Complete	Unavailable	Unavailable	Unavailable
5	30	Loblolly	Live	Natural	Active	Start (Ad)	Normal	Unstarted	Recent
5	92	Loblolly	Live	Natural	Unavailable	Start	Healing	Unavailable	Unavailable
5	93	Loblolly	Dead	Natural	Inactive	Complete	Normal	30-45 cm	Recent
5	94	Loblolly	Live	Natural	Relic	Complete	Restrictor	>15 cm	Old

Appendix I continued

CLUSTER	Tree	Species	Condition	Cavity	Status	Condition	Entrance	Plate	Resin Work
5	95	Loblolly	Live	Natural	Relic	Complete	Restrictor	15-30 cm	Old
5	96	Loblolly	Dead	Natural	Unavailable	Complete	Unavailable	Unavailable	Unavailable
5	97	Loblolly	Dead	Natural	Unavailable	Complete	Unavailable	Unavailable	Unavailable
5	98	Loblolly	Dead	Natural	Unavailable	Complete	Unavailable	Unavailable	Unavailable
5	99	Loblolly	Dead	Natural	Unavailable	Complete	Unavailable	Unavailable	Unavailable
5	127	Loblolly	Live	Artificial	Relic	Insert	Normal	Unstarted	Old
5	138	Loblolly	Dead	Artificial	Unavailable	Insert	Unavailable	Unavailable	Unavailable
5	191	Loblolly	Live	Artificial	Relic	Insert	Normal	Unstarted	Old
6	10	Loblolly	Live	Artificial	Inactive	Insert	Normal	>15 cm	Old
6	11	Loblolly	Dead	Artificial	Unavailable	Insert	Unavailable	Unavailable	Unavailable
6	12	Loblolly	Dead	Artificial	Unavailable	Insert	Unavailable	Unavailable	Unavailable
6	13	Loblolly	Dead	Artificial	Unavailable	Insert	Unavailable	Unavailable	Unavailable
6	116	Loblolly	Live	Artificial	Inactive	Insert	Normal	>15 cm	Old
6	135a	Loblolly	Live	Natural	Active	Start	Normal	>15 cm	Recent
6	135b	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Recent
6	137	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
6	139	Loblolly	Live	Artificial	Active	Insert	Normal	Unstarted	Fresh
6	136a	Loblolly	Live	Natural	Active	Start	Normal	Unstarted	Fresh
6	136b	Loblolly	Live	Natural	Active	Start	Normal	Unstarted	Fresh
7	105	Loblolly	Live	Artificial	Active	Insert	Normal	Unstarted	Fresh
7	106a	Loblolly	Live	Natural	Active	Complete	<2X	>15 cm	Fresh
7	106b	Loblolly	Live	Natural	Active	Start	Normal	Unstarted	Fresh
7	107	Loblolly	Live	Natural	Active	Complete	<2X	15-30 cm	Fresh
7	108	Loblolly	Live	Natural	Active	Start	Normal	Unstarted	Fresh
7	109	Loblolly	Live	Natural	Active	Start	Normal	Unstarted	Fresh
7	110	Loblolly	Live	Artificial	Inactive	Insert	Normal	>15 cm	Old
7	111	Loblolly	Live	Artificial	Active	Insert	Normal	>15 cm	Fresh

7	112	Loblolly	Dead	Artificial	Unavailable	Insert	Unavailable	Unavailable	Unavailable
7	113	Loblolly	Dead	Artificial	Unavailable	Insert	Unavailable	Unavailable	Unavailable
7	114	Loblolly	Dead	Artificial	Unavailable	Insert	Unavailable	Unavailable	Unavailable
7	115	Loblolly	Live	Natural	Active	Complete	<2X	30-45 cm	Recent
7	190	Loblolly	Live	Natural	Active	Start	Normal	Unstarted	Fresh
7	194	Loblolly	Live	Natural	Active	Complete (New)	Normal	Unstarted	Fresh
7	195	Loblolly	Live	Artificial	Inactive	Insert	Normal	>15 cm	Old
8	170	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
8	171	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
8	172	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
8	173	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
8	174a	Loblolly	Live	Natural	Active	Complete	Restrictor	Unstarted	Fresh
8	174b	Loblolly	Live	Natural	Active	Start	Normal	Unstarted	Recent
8	175	Loblolly	Live	Natural	Active	Complete (New)	Normal	Unstarted	Fresh
8	176a	Loblolly	Live	Natural	Inactive	Start (Ad)	<2X	Unstarted	Old
8	176b	Loblolly	Live	Natural	Inactive	Complete	>4X	Unstarted	Old
8	176c	Loblolly	Live	Natural	Inactive	Start	<2X	Unstarted	Old
8	176d	Loblolly	Live	Natural	Inactive	Complete	>2X	Unstarted	Old
8	176e	Loblolly	Live	Natural	Active	Start	Normal	Unstarted	Fresh
8	176f	Loblolly	Live	Natural	Active	Start	Normal	Unstarted	Fresh
9	85	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
9	86	Loblolly	Live	Artificial	Active	Insert	Normal	Unstarted	Fresh
9	87	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
9	88	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
10	64	Loblolly	Live	Artificial	Active	Insert	Normal	>15 cm	Fresh
10	65	Loblolly	Live	Artificial	Active	Insert	Normal	30-45 cm	Fresh
10	66	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
10	67	Loblolly	Live	Natural	Inactive	Complete	>4X	Unstarted	Old
10	68	Loblolly	Live	Natural	Active	Complete (New)	Normal	Unstarted	Fresh

Appendix I continued

CLUSTER	Tree	Species	Condition	Cavity	Status	Condition	Entrance	Plate	Resin Work
10	150	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
10	151	Loblolly	Dead	Artificial	Unavailable	Insert	Unavailable	Unavailable	Unavailable
10	152	Loblolly	Dead	Artificial	Unavailable	Insert	Unavailable	Unavailable	Unavailable
10	153	Loblolly	Dead	Artificial	Unavailable	Insert	Unavailable	Unavailable	Unavailable
10	154	Loblolly	Live	Natural	Active	Complete (New)	Normal	Unstarted	Fresh
11	140	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
11	141	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
11	142	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
11	143	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
12	130	Loblolly	Dead	Artificial	Unavailable	Insert	Unavailable	Unavailable	Unavailable
12	131	Loblolly	Live	Artificial	Relic	Insert	<2X	Unstarted	Old
12	132	Loblolly	Live	Artificial	Relic	Insert	Normal	Unstarted	Old
12	133	Loblolly	Live	Artificial	Relic	Insert	>4X	Unstarted	Old
12	189	Loblolly	Live	Artificial	Relic	Insert	Normal	Unstarted	Old
13	118	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
13	119	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
13	120	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
13	121	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
13	122	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
13	123	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
13	124	Loblolly	Live	Artificial	Relic	Insert	Normal	Unstarted	Old
14	88	Loblolly	Live	Natural	Active	Start (Ad)	Normal	Unstarted	Recent
14	89	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
14	90	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
14	91	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old
14	100	Loblolly	Live	Natural	Active	Start	Normal	Unstarted	Recent
14	101	Loblolly	Live	Natural	Active	Complete	Normal	Unstarted	Recent

Appendix I continued

CLUSTER	Tree	Species	Condition	Cavity	Status	Condition	Entrance	Plate	Resin Work
15	160	Loblolly	Live	Artificial	Active	Insert	Normal	Unstarted	Recent
15	161	Loblolly	Live	Artificial	Active	Insert	Normal	Unstarted	Recent
15	162	Loblolly	Live	Artificial	Active	Insert	Normal	Unstarted	Fresh
15	163	Loblolly	Live	Artificial	Active	Insert	Normal	Unstarted	Recent
0	0	0	0	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable

Appendix II. Characteristics of Red-cockaded Woodpecker cavities on Piney Grove in 2008.

CLUSTER	Tree	Species	Condition	Direction	Height (feet)	Cavity Stage	Entr. Enlargement	Activity	Depth (inches)	Plate	Chipping	Dry Sap	Fresh Sap	Comments
1	**35**	Loblolly	Live	247	44	3	1	1	6 +	5	2	3	3	4/16/08 Area recently burned
1	**36**	Loblolly	Live	207	32	6	1	3		4	4	3	4	4/16/08 Area recently burned
1	**37**	Loblolly	Live	242	52	4	1	3	3	5	4	3	4	4/16/08 Area recently burned
1	**38**	Shortleaf	Dead	152	32.5	1								Standing; 4/16/08 Area recently burned
1	**39**	Loblolly	Live	150	32	1	1	3		1	4	1	4	4/16/08 Area recently burned
1	**40**	Loblolly	Dead			1								Broke/standing; 4/16/08 Area recently burned
1	**41**	Loblolly	Dead			1								Standing - Broke; 4/16/08 Area recently burned
1	**42**	Loblolly	Live	?	?	4	H							About 10 holes in tree healing or healed - Red heart fruiting body; 4/16/08 Area recently burned
1	**43**	Loblolly	Live	277	35	1	4	4		3	4	3	4	4/22/07 tree is leaning; 4/16/08 Area recently burned
1	**44**	Loblolly	Live	295	35	1	4	4		3	4	3	4	4/16/08 Area recently burned
1	**45a**	Loblolly	Live		38	2	1	1		3	1	2	2	4/16/08 Area recently burned
1	**45b**	Loblolly	Live	83	25	1	1	1		2	3	2	3	Red heart fruiting body; 4/16/08 Area recently burned

Appendix II continued

CLUSTER	Tree	Species	Condition	Direction	Height (feet)	Cavity Stage	Entr. Enlargement	Activity	Depth (inches)	Plate	Chipping	Dry Sap	Fresh Sap	Comments
1	**46**	Loblolly	Live	226	63	1	3	4		4	4	3	4	4/16/08 Area recently burned
1	**47**	Loblolly	Live	251	57	3	R	3	4	5	4	3	4	4/16/08 Area recently burned; 1/29/08 top broke at ~80'; still has live limbs below break
1	**48**	Loblolly	Live	249	34	1	1	1		1	1	1	2	4/16/08 Area recently burned
1	**49**	Loblolly	Live	260	55	1	4	4		3	4	3	4	4/16/08 Area recently burned
1	**50**	Shortleaf	Dead			6								Winteren
1	**51**	Loblolly	Dead	282	39	6								Standing - Broke; 4/16/08 Area recently burned
1	**52**	Loblolly	Live	300	35	6	1	4		5	4	4	4	4/16/08 Area recently burned
1	**53**	Loblolly	Live	292	46.5	1	2	1		2	1	2	2	4/16/08 Area recently burned
1	**54**	Loblolly	Live	247	29	4	1	1	4	5	2	3	3	4/16/08 Area recently burned
1	**55**	Loblolly	Live	347	50	1	2	1		5	3	3	3	4/16/08 Area recently burned
1	**57**	Loblolly	Live	259	49	1	1	1		2	2	2	2	4/16/08 Area recently burned; Base scar burned
1	**102**	Loblolly	Live	264	55	1	2	4		4	4	2	4	Tree leaning at 80 degree onto another tree; 4/16/08 Area recently burned
1	**117**	Loblolly	Live	221	32	6	1	3		4	4	3	4	4/16/08 Area recently burned
1	**58**	Unknown	Live	320	39	3	1	1	5	5	1	3	2	Base scar at 3' & 7'; 4/16/08 Area recently burned
1	**59a**	Loblolly	Live	145	30	4	1	1	1	5	3	3	3	Tree found 8/26/08; Base scar and others; RHFB; Broken top; 4/16/08 Area recently burned
1	**59b**	Loblolly	Live	200	20	4	1	1	1	5	3	3	3	Tree found 8/26/08; Base scar and others; RHFB; Broken top; 4/16/08 Area recently burned
1	**164**	Loblolly	Live	300	30	2	1	1		3	1	3	2	Tree found 8/26/08; Leaning at 65% angle; 4/16/08 Area recently burned
2	**60**	Loblolly	Live	252	34	6	1	4		5	4	4	4	
2	**61**	Loblolly	Dead			6								Not Found
2	**62**	Loblolly	Live	290	35	6	1	4		5	4	3	4	
2	**63**	Loblolly	Live	283	33	6	1	4		5	4	3	4	
3	**1**	Loblolly	Live	234	31	6	1	3		5	3	2	4	4/16/08 Area recently burned
3	**2**	Loblolly	Live	230	32	6	R	3		4	4	2	4	4/16/08 Area recently burned
3	**4**	Loblolly	Live	255	44	1	R	1		2	3	2	3	4/16/08 Area recently burned
3	**5**	Loblolly	Live	170	40	4	1	4	3	5	4	4	4	4/16/08 Area recently burned
3	**6**	Loblolly	Live	262	58	1	2	4		5	4	2	4	4/16/08 Area recently burned

Appendix II continued

CLUSTER	Tree	Species	Condition	Direction	Height (feet)	Cavity Stage	Entr. Enlargement	Activity	Depth (inches)	Plate	Chipping	Dry Sap	Fresh Sap	Comments
3	**7**	Loblolly	Live	287	36	3	1	1	5 +	5	1	3	3	Needs paint (has one band on south side only); 4/16/08 Area recently burned
3	**8**	Loblolly	Live	258	56	1	2	1		4	2	2	2	4/16/08 Area recently burned
3	**71**	Loblolly	Dead	224	45	1								Standing - Broke at cavity; 4/16/08 Area recently burned
3	**72**	Loblolly	Live	217	45	1	4	4		4	4	3	4	4/16/08 Area recently burned
3	**74**	Loblolly	Dead			1								4/16/08 Area recently burned; tree burned to stump; tag still on stump
3	**75**	Loblolly	Live	255	50	1	4	4		4	4	2	4	4/16/08 Area recently burned
3	**76**	Loblolly	Live	306	31.5	6	1	3		4	4	3	4	4/16/08 Area recently burned
3	**77**	Loblolly	Dead			1								Standing/broke at cavity; 4/16/08 Area recently burned
3	**80**	Loblolly	Live	302	30	3	1	1	5	5	3	3	3	4/16/08 Area recently burned
3	**177**	Loblolly	Live	251	30	6	1	3		4	4	3	4	4/16/08 Area recently burned
3	**178**	Loblolly	Live	233	30	4	2	1	4	5	3	3	3	4/16/08 Area recently burned
3	**3a**	Loblolly	Live	250	27	1	R	1		3	2	2	2	4/16/08 Area recently burned
3	**3b**	Loblolly	Live	28	23	4	1	3	1	5	4	3	4	4/16/08 Area recently burned
3	**79a**	Loblolly	Live	238	50	1	2	4		2	4	2	4	4/16/08 Area recently burned
3	**79b**	Loblolly	Live	72	50	4	1	1	4	5	2	3	3	4/16/08 Area recently burned
3	**79c**	Loblolly	Live	272	33	4	R	3	4	5	4	4	4	4/16/08 Area recently burned
3	**9a**	Loblolly	Live	303	58	4	2	4		5	4	4	4	4/16/08 Area recently burned
3	**9b**	Loblolly	Live	343	50	3	1	1	5 +	5	1	3	3	4/16/08 Area recently burned
3	**9c**	Loblolly	Live	224	49	4	1	3	3	5	4	4	4	other holes at 248 deg. 41' 230 deg. 42' and others healed
4	**81**	Loblolly	Dead			6								Winteren - windthrow
4	**82**	Loblolly	Live	240	31.5	6	1	1		4	2	2	2	4/08/08 Area recently burned
4	**83**	Loblolly	Dead	270	32	6								Standing; 4/08/08 Area recently burned
4	**84**	Loblolly	Live	250	33	6	1	4		5	4	4	4	Tree healing around insert; 4/08/08 Area recently burned
4	**186**	Loblolly	Live	230	31.5	6	1	4		5	4	4	4	4/08/08 Area recently burned
5	**18**	Loblolly	Live	250	20	4	1	1	1	5	1	3	3	Found 12/14/08; 4/08/08 Area recently burned
5	**19**	Loblolly	Live	230	40	2	1	1		5	2	2	2	Found 12/14/08; 4/08/08 Area recently burned
5	**20**	Loblolly	Live	230	51	1	R	3		1	4	2	4	4/08/08 Area recently burned
5	**21**	Loblolly	Dead	283	41	1								Dead/broke at cavity; 4/08/08 Area recently burned

5	**22**	Loblolly	Live	296	52	1	1	3		1	4	2	4	4/08/08 Area recently burned

Appendix II continued

CLUSTER	Tree	Species	Condition	Direction	Height (feet)	Cavity Stage	Entr. Enlargement	Activity	Depth (inches)	Plate	Chipping	Dry Sap	Fresh Sap	Comments
5	**23**	Loblolly	Live	325	49.5	1	R	1		1	2	2	2	4/08/08 Area recently burned
5	**24**	Loblolly	Live	365	55	1	R	1		4	2	1	2	Many Pileated WP holes below cavity, possibly hollow, Red heart fruiting body
5	**25**	Loblolly	Live	273	37.5	1	1	1		3	2	2	2	4/08/08 Area recently burned
5	**26**	Loblolly	Live	200	50	1	R	1		4	2	2	2	4/08/08 Area recently burned
5	**27**	Loblolly	Live	247	24	1	2	1		4	2	2	2	4/08/08 Area recently burned
5	**28**	Loblolly	Live	280	42	1	1	1		4	3	2	3	4/08/08 Area recently burned
5	**29**	Loblolly	Dead			1								Standing - top broke off at ~70'; Red heart fruiting body; 4/08/08 Area recently burned
5	**30**	Loblolly	Live	280	31	3	1	1	5	5	3	3	3	4/08/08 Area recently burned
5	**92**	Loblolly	Live	290	30	4	H							Entrance healed over4/08/08 Area recently burned
5	**93**	Loblolly	Dead	310	55	1	1	3		2	3	2	3	Dead/Broke at cavity; 4/08/08 Area recently burned
5	**94**	Loblolly	Live	304	50	1	R	4		4	4	3	4	4/08/08 Area recently burned
5	**95**	Loblolly	Live	14	42	1	R	4		3	4	3	4	4/08/08 Area recently burned
5	**96**	Loblolly	Dead			1								Standing - Broke at cavity; 4/08/08 Area recently burned
5	**97**	Loblolly	Dead			1								Standing - Broke at cavity; 4/08/08 Area recently burned
5	**98**	Loblolly	Dead	206	45	1								Standing; 4/08/08 Area recently burned
5	**99**	Loblolly	Dead	300	45	1								Standing; 4/08/08 Area recently burned
5	**127**	Loblolly	Live	270	32.5	6	1	4		5	4	4	4	4/08/08 Area recently burned
5	**138**	Loblolly	Dead	320	32	6								4/22/07 Dead standing; 4/08/08 Area recently burned
5	**191**	Loblolly	Live	322	32	6	1	4		5	4	3	4	4/08/08 Area recently burned
6	**10**	Loblolly	Live	206	32	6	1	3		4	4	3	4	Insert opens into hollow center of tree
6	**11**	Loblolly	Dead			6								Winteren - windthrow
6	**12**	Loblolly	Dead			6								Standing - broke at cavity
6	**13**	Loblolly	Dead			6								Not Found
6	**116**	Loblolly	Live	170	31.5	6	1	3		4	4	3	4	
6	**135a**	Loblolly	Live	10	40	4	1	1	1	4	3	3	3	
6	**135b**	Loblolly	Live	195	34.5	6	1	3		5	3	3	4	
6	**137**	Loblolly	Live	207	36	6	1	3		5	4	4	4	
6	**139**	Loblolly	Live	200	31.5	6	1	1		5	2	4	3	

Appendix II continued

CLUSTER	Tree	Species	Condition	Direction	Height (feet)	Cavity Stage	Entr. Enlargement	Activity	Depth (inches)	Plate	Chipping	Dry Sap	Fresh Sap	Comments
6	**136a**	Loblolly	Live	166	48.5	4	1	1	1	5	2	3	3	
6	**136b**	Loblolly	Live	184	47	4	1	1	4	5	2	3	3	
7	**105**	Loblolly	Live	260	32.5	6	1	1		5	2	2	2	4/6/08 Area recently burned
7	**106a**	Loblolly	Live	280	36	1	2	1		4	2	2	2	9/29/06 Red Heart Fruiting Body; 4/6/07 Area recently burned
7	**106b**	Loblolly	Live	115	33	4	1	1	2	5	2	3	2	9/29/06 Red Heart Fruiting Body; 4/6/07 Area recently burned
7	**107**	Loblolly	Live	21	29	1	2	1		3	1	2	2	
7	**108**	Loblolly	Live	274	23	4	1	1	1	5	1	3	1	4/6/08 Area recently burned
7	**109**	Loblolly	Live	275	30	4	1	1	2	5	1	3	3	4/6/08 Area recently burned
7	**110**	Loblolly	Live	265	23	6	1	3		4	4	2	4	4/6/08 Area recently burned
7	**111**	Loblolly	Live	286	22	6	1	1		4	1	2	2	4/6/08 Area recently burned
7	**112**	Loblolly	Dead	253	32	6								Dead/Standing; 4/6/07 Area recently burned
7	**113**	Loblolly	Dead			6								Standing - Broke at cavity; 4/6/07 Area recently burned
7	**114**	Loblolly	Dead			6								Winteren - windthrow; 4/6/07 Area recently burned
7	**115**	Loblolly	Live	274	45	1	2	1		2	3	2	3	4/6/08 Area recently burned
7	**190**	Loblolly	Live	140	44	4	1	1	3	5	1	3	3	4/6/08 Area recently burned
7	**194**	Loblolly	Live	320	34	2	1	1		5	1	2	1	Beetle pitch tubes; 4/6/08 Area recently burned; branch scar at 28'- possible start
7	**195**	Loblolly	Live	223	29	6	1	3		4	4	3	4	4/6/08 Area recently burned
8	**170**	Loblolly	Live	314	33	6	1	3		5	4	3	4	
8	**171**	Loblolly	Live	287	33	6	1	3		5	4	3	4	
8	**172**	Loblolly	Live	300	33	6	1	3		5	4	3	4	
8	**173**	Loblolly	Live	255	33	6	1	3		5	4	3	4	
8	**174a**	Loblolly	Live	352	38.5	1	R	1		5	2	2	2	Southern pine beetle pitch tubes
8	**174b**	Loblolly	Live	82	40	4	1	1	2	5	3	3	3	Southern pine beetle pitch tubes
8	**175**	Loblolly	Live		37	2	1	1		5	1	3	3	
8	**176a**	Loblolly	Live	30	44	3	2	3	5	5	4	3	4	Cavity origin does not appear to be RCW
8	**176b**	Loblolly	Live	8	41	1	4	3		5	4	3	4	Cavity origin does not appear to be RCW; Possible roosting cavity
8	**176c**	Loblolly	Live	60	40	4	2	3	4	5	4	3	4	
8	**176d**	Loblolly	Live	290	40	1	3	3		5	4	3	4	
8	**176e**	Loblolly	Live	110	39	4	1	1	1	5	1	3	3	

Appendix II continued

CLUSTER	Tree	Species	Condition	Direction	Height (feet)	Cavity Stage	Entr. Enlargement	Activity	(inches)	Plate	Chipping	Dry Sap	Fresh Sap	Comments
8	**176f**	Loblolly	Live	280	39	4	1	1	1	5	1	3	3	
9	**85**	Loblolly	Live	255	37	6	1	3		5	4	3	4	4/6/08 Area recently burned
9	**86**	Loblolly	Live	262	39	6	1	1		5	2	2	2	4/6/08 Area recently burned
9	**87**	Loblolly	Live	226	37	6	1	3		5	4	3	4	4/6/08 Area recently burned
9	**88**	Loblolly	Live	230	39	6	1	3		5	4	3	4	4/6/08 Area recently burned
10	**64**	Loblolly	Live	241	34.5	6	1	1		4	1	2	2	
10	**65**	Loblolly	Live	296	36	6	1	1		2	1	2	2	
10	**66**	Loblolly	Live	266	33	6	1	3		5	4	3	4	Pileated damage
10	**67**	Loblolly	Live	305	46	1	4	3		5	4	3	4	
10	**68**	Loblolly	Live	280	27	2	1	1		5	2	3	3	
10	**150**	Loblolly	Live	250	32	6	1	3		5	4	3	4	Pileated damage, 10/31/06 Insert replaced;
10	**151**	Loblolly	Dead			6								Standing - Broke at cavity
10	**152**	Loblolly	Dead			6								Standing - Broke at cavity
10	**153**	Loblolly	Dead			6								Standing - Broke at cavity
10	**154**	Loblolly	Live	275	27	2	1	1		5	2	3	2	
11	**140**	Loblolly	Live	195	31	6	1	3		5	4	4	4	
11	**141**	Loblolly	Live	202	31	6	1	3		5	4	4	4	
11	**142**	Loblolly	Live	264	31	6	1	3		5	4	4	4	
11	**143**	Loblolly	Live	220	31	6	1	3		5	4	4	4	
12	**130**	Loblolly	Dead			6								Winteren - windthrow
12	**131**	Loblolly	Live	320	23	6	2	4		5	4	4	4	Metal front of instert box exposed completely
12	**132**	Loblolly	Live	305	33	6	1	4		5	4	4	4	
12	**133**	Loblolly	Live	280	33	6	4	4		5	4	4	4	Metal front of instert box exposed completely
12	**189**	Loblolly	Live	253	31	6	1	4		5	4	4	4	
13	**118**	Loblolly	Live	212	37	6	1	3		5	4	4	4	
13	**119**	Loblolly	Live	240	36	6	1	3		5	4	4	4	
13	**120**	Loblolly	Live	250	36	6	1	3		5	4	4	4	
13	**121**	Loblolly	Live	210	32	6	1	3		5	4	4	4	
13	**122**	Loblolly	Live	260	22	6	1	3		5	4	4	4	

Appendix II continued

CLUSTER	Tree	Species	Condition	Direction	Height (feet)	Cavity Stage	Entr. Enlargement	Activity	(inches)	Plate	Chipping	Dry Sap	Fresh Sap	Comments
13	**123**	Loblolly	Live	239	32.5	6	1	3		5	4	4	4	
13	**124**	Loblolly	Live		32.5	6	1	4		5	4	4	4	
14	**88**	Loblolly	Live	294	40	3	1	1	5	5	3	3	3	need re-tag #, double tagged w/ C9; 4/8/08 Area recently burned
14	**89**	Loblolly	Live	220	32	6	1	3		5	4	4	4	4/8/08 Area recently burned
14	**90**	Loblolly	Live	227	33	6	1	3		5	4	4	4	4/8/08 Area recently burned
14	**91**	Loblolly	Live	246	31.5	6	1	3		5	4	4	4	4/8/08 Area recently burned
14	**100**	Loblolly	Live	256	44	4	1	1	2	5	3	4	4	4/8/08 Area recently burned
14	**101**	Loblolly	Live	265	43	1	1	1		5	3	3	3	4/8/08 Area recently burned
15	**160**	Loblolly	Live	230	35	6	1	1		5	3	4	3	
15	**161**	Loblolly	Live	240	36	6	1	1		5	3	4	3	
15	**162**	Loblolly	Live	225	37	6	1	1		5	1	4	2	
15	**163**	Loblolly	Live	230	37	6	1	1		5	3	4	3	