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INVESTIGATION OF RED-COCKADED WOODPECKERS IN VIRGINIA: 2022 REPORT

THE CENTER FOR CONSERVATION BIOLOGY

WILLIAM & MARY

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William & Mary

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Front Cover Image: Chance Hines extracting nestlings from nest cavity at Cluster 10 where prescribed fire had recently burned. Photo by Laura Duval.

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.

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EXECUTIVE SUMMARY

The Virginia population of red-cockaded woodpeckers is the northernmost throughout the species range and has been in eminent danger of extinction for more than 30 years. The Piney Grove Preserve represents a nucleus for recovery in the state and the focus of a multi-organizational partnership designed to increase the population to a sustainable level. The partnership has executed a program of aggressive habitat management, cavity-tree management and woodpecker population monitoring and management that has resulted in a quadrupling of the breeding population since the early 2000s.

During the 2022 breeding season, Piney Grove Preserve supported 16 potential breeding groups (including one in the Big Woods) that produced 33 fledglings. All potential breeding groups made breeding attempts except for cluster 8. The population as a whole had a reproductive rate of 2.50 ±0.26 (mean ± SE) young/breeding group with a success rate of 93.8% (15 of 16). Fledging rate for the 15 productive pairs was 2.20±0.59. Of the 56 eggs monitored in 2022, 42 (75.0%) hatched, 39 (69.6%) survived to banding age, and 33 (58.9%) fledged (Table 1). Birds that fledged included 20 females and 13 males (Table 2). Twenty-two of these birds were retained and detected during the winter count.

During the calendar year of 2022, 120 individual red-cockaded woodpeckers were identified within Piney Grove Preserve and Big Woods including 87 birds that were hatched at Piney Grove during previous years and 33 nestlings that fledged during the 2022 breeding season. Forty birds (33%) were in their fourth year (fifth calendar year) or more and fourteen birds (12%) were at least in their tenth year (eleventh calendar year). One bird was sixteen years old (17th calendar year).

Moving into the breeding season there were 80 birds identified within Piney Grove Preserve and Big Woods distributed among 16 clusters. This is the most birds Piney Grove has carried heading into the breeding season (14 more than in 2021). The number of birds per cluster varied from three to ten with a mean of 5.00±0.47 (mean±SE). Eighty-nine birds were detected during the 2022 winter survey. This represents a 10% increase over the winter of 2021 and an 11% increase over the winter of 2020. Birds present during the winter survey included 22 of the 33 birds fledged in 2022 and 67 adult birds hatched in previous years. Group size in winter ranged from three to nine birds and averaged 5.56±0.45 (mean±SE) birds per group.

BACKGROUND

Context

The red-cockaded woodpecker (*Dryobates borealis*) is endemic to the southeastern pine ecosystem breeding from Texas and Oklahoma east to Florida and north to Virginia (Jackson 1994). Highly specialized, the species requires old-growth, fire-maintained pine savannas. Throughout the twentieth century advances in transportation, wood processing, and silvicultural practices shifted the emphasis from long-rotation lumber production to maximum-yield fiber production and resulted in catastrophic declines in habitat availability for this species. Breeding distribution contracted from the edges of the range and became localized within the core of the historic range where remnant old growth remained. The red-cockaded woodpecker was listed as endangered in 1970 and received protection with the passage of The Endangered Species Act in 1973 (16 U.S.C. 1531 et seq).

The historic status and distribution of the red-cockaded woodpecker in Virginia is poorly known because no systematic survey of the species was completed prior to dramatic habitat losses. Early accounts of red-cockaded woodpeckers were made from all physiographic provinces of Virginia. Jurisdictions with records include the counties of Giles (Bailey 1913), Albemarle (Rives 1890), Brunswick (Murray 1952), Dinwiddie (Murray 1952), Chesterfield (Murray 1952), Southampton (Steirly 1949), Sussex (Steirly 1950), Prince George (Steirly 1957), Greensville (Steirly 1957), Isle of Wight (Steirly 1957) and the current independent cities of Norfolk (Bailey 1913), Suffolk (Steirly 1957), Virginia Beach (Sykes 1960), and Chesapeake (van Eerden and Bradshaw, unpublished observation). The first systematic survey of the species was initiated in 1977 and resulted in the documentation of 43 clusters within 5 counties (Miller 1978). By 1980, only 9 of these clusters were still forested (Bradshaw 1990). During the 20-year period between 1980 and 2000, the decline of the Virginia population is well documented (Watts and Bradshaw 2005). By 1990, only 5 of the original 23 clusters detected in 1977 were still active. During the breeding season of 2002, Virginia supported only 2 breeding pairs and 2 clusters with solitary males.

The red-cockaded woodpecker was recommended for endangered status within the state of Virginia in 1978 (Byrd 1979) and 1989 (Beck 1991) and was listed as a Tier I Species of Greatest Conservation Need in the 2005 Virginia Wildlife Action Plan (VDGIF 2005). The stated rationale for recommendations was the extremely low and declining population in Virginia, continued loss and degradation of required old-growth forests and the fact that all remaining breeding sites existed on private lands making appropriate management unfeasible. Following these recommendations, the Virginia Department of Wildlife Resources and partners have mounted extensive monitoring and management efforts for the past 30 years. Acquisition of the Piney Grove Preserve in 1998 by The Nature Conservancy was a critical turning point in the species' recovery (Watts and Bradshaw 2005). Intensive habitat and population management on this last remaining site in Virginia has resulted in a population increase from 2 breeding groups in 2002 to 13 breeding groups by 2014 (Wilson et al. 2015). A three-phase conservation plan is in place for the Virginia population that includes the establishment of additional breeding locations (Watts and Harding 2007). Translocation of birds into the Great Dismal Swamp National Wildlife Refuge has been executed during the falls of 2015-2021 with the intent of establishing a second breeding population within the state (Watts et al. 2018). The first successful breeding in the refuge was documented during the spring of 2017 (Watts et al. 2018).

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 2021 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

Site 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 cluster of red-cockaded woodpeckers was discovered within this site in 1985. A second clan was discovered in 1994 and a third in 1995. These three clusters still remain active. Since 1999, there have been 12 recruitment clusters established by The Nature Conservancy through the installation of 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 or during emergence in the morning. Shortly after the birds are "roosted", 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, seven

of these birds were still resident within Piney Grove. During 2000, Bryan Watts banded an additional four adult birds, leaving only two unbanded birds in the population (one each in clusters 3 and 5). The two remaining unbanded adults within clusters 3 and 5 were lost during 2004 and 2005 respectively. Since this time, nearly all birds within the population have been individually identified by unique, color-band combinations. The only birds that remain unbanded are nestlings that could not be removed from nest cavities and have not been captured after fledging.

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, we monitored both the breeding pair and the nest cavity from each cluster area to determine clutch initiation dates. We used a miniature video camera mounted on a telescopic, extendable pole to monitor breeding status. The pole can accommodate cavity heights to 50 feet (15.2 m). For cavities exceeding that height, we determined breeding status by monitoring adult activity around the cavity entrance or by climbing nest trees. We estimated hatching dates from egg dates and closely monitored nest cavities around the time of expected hatching to verify hatch dates. We projected the banding window for nestlings from estimated hatching dates.

We banded all nestlings within the recommended age window. We climbed nest trees with Swedish climbing ladders and extracted nestlings from cavities using a noose apparatus. We lowered nestlings to the ground, banded, weighed and measured them and returned them to cavities. 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. We determined the sex of nestlings either by examining crown plumage while in the cavity or during fledge checks. We confirmed fledging of all birds in the first two weeks after the projected fledge date.

General Observations

As in previous years, we conducted two systematic surveys of all birds within Piney Grove Preserve to identify individuals and to determine distribution. We conducted surveys in the early spring prior to the expected breeding window and in early winter after the expected dispersal period. We visited all clusters before dawn to count the number of individuals emerging from roost cavities and/or joining emerging birds to determine cluster size. We followed birds while they were foraging to read combinations of color bands with spotting scopes. We 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.

RESULTS

Breeding Observations

Piney Grove supported 16 potential breeding groups (including one in Big Woods) in 2022 that produced 33 fledglings (Table 1). All potential breeding groups made breeding attempts except for cluster 8. Cluster 6 made two breeding attempts (see details below). The population as a whole had a reproductive rate of

2.50 ±0.26 (mean ± SE) young/breeding group with a success rate of 93.8% (15 of 16). Fledging rate for the 15 productive pairs was 2.20±0.59. Of the 56 eggs monitored in 2022, 42 (75.0%) hatched, 39 (69.6%) survived to banding age, and 33 (58.9%) fledged (Table 1). Birds that fledged included 20 females and 13 males (Table 2). Twenty-two of these birds were retained and detected during the winter count.

Table 1. Summary of 2022 breeding activity for red-cockaded woodpeckers within Piney Grove Preserve.

Breeding Group	Potential Breeding Group?	Breeding Attempt?	Eggs Laid	Eggs Hatched	Banding Age	Fledged
Cluster 1	Yes	Yes	4	3	3	3
Cluster 3	Yes	Yes	4	3	3	3
Cluster 5	Yes	Yes	4	4	4	4
Cluster 6(a)	Yes	Yes	3	0	0	0
Cluster 6(b)	Yes	Yes	3	1	1	1
Cluster 7	Yes	Yes	3	3	3	3
Cluster 8	Yes	No	0	0	0	0
Cluster 10	Yes	Yes	4	2	2	2
Cluster 11	Yes	Yes	3	3	3	2
Cluster 12	Yes	Yes	3	2	2	2
Cluster 13	Yes	Yes	3	2	2	2
Cluster 15	Yes	Yes	3	2	2	2
Cluster 17	Yes	Yes	4	3	3	2
Cluster 18	Yes	Yes	3	3	3	2
Cluster 19	Yes	Yes	6	5	3	1
Cluster 20	Yes	Yes	3	3	3	3
Big Woods	Yes	Yes	3	3	2	1
Total	**16**	**16**	**56**	**42**	**39**	**33**

Table 2. List of red-cockaded woodpecker nestlings banded within Piney Grove Preserve during the 2022 breeding season. Genders were determined during fledge checks.

Breeding Group	Date	USGS Band	Left	Right	Sex
Cluster 1	2421-01671	DG/YE/DG	AL/OR	5/20/2022	F
Cluster 1	2421-01672	DG/YE/DG	AL/LG	5/20/2022	F
Cluster 1	2421-01673	YE/DG/YE	AL/LB	5/20/2022	F
Cluster 3	2421-01668	AL/LB	RE/DB/RE	5/20/2022	M
Cluster 3	2421-01669	DB/RE/DB	AL/HP	5/20/2022	F
Cluster 3	2421-01670	RE/DB/RE	AL/LG	5/20/2022	F
Cluster 5	2421-01682	AL/DG	BK/LB/BK	5/22/2022	M
Cluster 5	2421-01683	AL/DB	LB/BK/LB	5/22/2022	F
Cluster 5	2421-01684	BK/LB/BK	AL/OR	5/22/2022	M
Cluster 5	2421-01685	AL/RE	WH/LB/WH	5/22/2022	M
Cluster 6	2421-01698	AL/DG	DB/WH/DB	6/30/2022	M
Cluster 9	2421-01676	RE/BK/RE	AL/BK	5/20/2022	F
Cluster 9	2421-01677	BK/RE/BK	AL/LB	5/20/2022	M
Cluster 9	2421-01678	AL/YE	RE/BK/RE	5/20/2022	M
Cluster 10	2421-01674	OR/WH/OR	AL/RE	5/20/2022	F
Cluster 10	2421-01675	AL/YE	WH/OR/WH	5/20/2022	M
Cluster 11	2421-01660	AL/DG	LB/YE/LB	5/16/2022	M
Cluster 11	2421-01661	AL/DB	YE/LB/YE	5/16/2022	U
Cluster 11	2421-01662	YE/LB/YE	AL/RE	5/16/2022	F
Cluster 12	2421-01696	RE/YE/RE	AL/RE	6/3/2022	M
Cluster 12	2421-01697	AL/DG	YE/RE/YE	6/3/2022	M
Cluster 13	2421-01694	AL/YE	YE/OR/YE	6/3/2022	F

Breeding Group	Date	USGS Band	Left	Right	Sex
Cluster 13	2421-01695	OR/YE/OR	AL/DB	6/3/2022	F
Cluster 15	2421-01689	OR/DB/OR	AL/RE	5/22/2022	F
Cluster 15	2421-01690	DB/OR/DB	AL/DB	5/22/2022	F
Cluster 17	2421-01679	AL/RE	DG/BK/DG	5/22/2022	F
Cluster 17	2421-01680	BK/DG/BK	AL/LB	5/22/2022	U
Cluster 17	2421-01681	AL/OR	DG/BK/DG	5/22/2022	F
Cluster 18	2421-01686	AL/YE	DG/RE/DG	5/22/2022	F
Cluster 18	2421-01687	AL/DB	RE/DG/RE	5/22/2022	F
Cluster 18	2421-01688	RE/DG/RE	AL/RE	5/22/2022	U
Cluster 19	2421-01663	WH/YE/WH	AL/HP	5/16/2022	U
Cluster 19	2421-01664	YE/WH/YE	AL/OR	5/16/2022	F
Cluster 19	2421-01665	AL/LG	YE/WH/YE	5/16/2022	U
Cluster 20	2421-01691	LB/DB/LB	AL/OR	6/3/2022	F
Cluster 20	2421-01692	DB/LB/DB	AL/YE	6/3/2022	M
Cluster 20	2421-01693	AL/LB	LB/DB/LB	6/3/2022	F
BW1	2421-01666	PW/YE/PW	DG/AL	5/20/2022	M
BW1	2421-01667	PW/YE/PW	WH/AL	5/20/2022	U

Breeding Details

Cluster 1 – The breeding male (DG/YE/DG, WH/AL) was present for the tenth consecutive breeding season, though no breeding was recorded in 2014 when all birds present were males. Two females (DG/YE/DG,AL/YE and LB/WH/OR,AL/DG) were presumed to have laid eggs during the 2021 season due to the sequence of egg laying and hatching, but only LB/WH/OR,AL/DG was present during the 2022 breeding season and was the presumptive breeding female. Unlike past seasons, only four eggs were laid offering further evidence that this cluster has returned to supporting a typical single egg-laying female. The birds used the same tree that was used during 2020 and 2021 breeding seasons. Four eggs were detected

on 02 May and two of the four eggs had hatched on 13 May. Three nestlings were banded on 20 May at 5.5 days of age (physical age). Fledge checks on 7 June and 9 June identified all three young as female During the 2022 winter head count, one of these birds were identified in cluster 1(DG/YE/DG,AL/LG) and one was identified in cluster 8 (YE/DG/YE,AL/LB).

An advanced start was discovered across Chinquapin Road from cluster 1 >500 m southeast of the nearest cluster 1 cavity tree. Birds originating from cluster 1 have been observed foraging in the area. This area will continue to be monitored in the event that a portion of birds bud off from cluster 1.

Cluster 3 – The breeding male (AL/WH, DB/RE/DB) remained for the seventh consecutive year and the breeding female (YE/(OR)/(YE), AL/YE) nested for the sixth consecutive year. The pair nested in a newly excavated tree (T345) west of the tree that had been used during the 2020 and 2021 breeding seasons. Four eggs were observed on 02 May. Three three-day old nestlings and one unhatched egg were observed on 16 May and we banded three nestlings that were between 6 and 7 days of age (physical age). A fledge check on 9 June identified two young as female and one as male. All three of these birds were identified at cluster 3 during the winter survey.

Cluster 5 – Both breeding adults from the 2019 and 2020 nesting season were still present in 2021. This is the sixth consecutive year at the cluster for the male (LB/WH/LB, AL/DG) and the fifth consecutive year for the female (WH/OR/OR, AL/LB). However, a second female (DB/RE/DB,AL/YE) who likely also laid eggs during the 2021 breeding season continued at the cluster during 2022. The birds nested in a new tree that was too tall to pole (63') so we did not gather the detailed information needed to determine whether both females again laid eggs. Birds were observed entering and exiting the nest cavity multiple time on 5 May. We climbed the tree on 16 May and observed 1 day old nestlings, though we were unable to get an exact count on the number of young. We banded four nestlings on 22 May at day 5.5 physical age. We confirmed that all four nestlings fledged and sexed three as male and one as female. Two of these birds were identified at cluster 5 (BK/LB/BK,AL/OR & AL/RE,WH/LB/WH) during the winter survey.

Cluster 6 – The male (WH/DB/YE,PK/AL) and female (RE/YE/RE,AL/DB) that bred at his cluster in 2021 continued for the second consecutive year in Tree 33. The entrance to this cavity is long and it is difficult to view all of the contents with the peeper. We detected 1 egg on 10 May and ≥3 eggs on 16 may. We climbed the tree on 28 May to potentially band young and the nest was empty. We poled the cavity again on 13 June and three eggs were observed. We climbed the tree on 30 June and banded one nestling at 10 days old (physical age). We identified the fledgling as a male on 21 July. The lone fledgling was identified at cluster 6 during the winter survey.

Clusters 7 & 9 – The breeding male (OR/OR/OR, AL/DG) continued for the tenth consecutive year and the breeding female (OR/AL, WH/RE/WH) for the third consecutive season. The pair nested in Tree 330 for the first time. We observed two eggs on 2 May and 3 eggs on 5 May. All three eggs hatched and 2-3 day old nestlings were observed on 16 May. We banded the three nestlings on 20 May and the young were 5.5-6 days old (physical age). We counted all three fledglings out of the cavity on 07 June including two males and a female. Only one of the young produced was identified during the winter census (BK/RE/BK,AL/LB) and was associated with the portion of birds that successfully bred during the breeding season.

A portion of the birds at this cluster foraged independent of the breeders and their helpers. The two birds that seem to be leading the split are a male (DB/(DB)/YE,AL/LG) hatched at cluster 7 in 2016 and a female (DB/WH/YE,AL/DB) hatched at cluster 5 in 2016. Both of these birds were particularly defensive when I approached tree 349. This tree as well as all other cavity trees on the South and West portion of the cluster were monitored throughout the season, though adults were often seen displaying behavior typical of nesting birds. No eggs were ever observed. The tree that the apparently splitting pair defended most enthusiastically is nearby the breeding pair's nesting tree which may have led to antagonistic interactions with the established breeding pair and a decreased likelihood of nesting. A new cavity has been started further southwest than existing cavities and could lead to successful nesting in 2023.

Cluster 8 – The pair that successfully nested in 2021, including a male (BK/(OR)/DB,HP/AL) that fledged from cluster 3 in 2017 and a female (OR/DB/LB,HP/AL) that fledged from cluster 1 in 2017, failed to produce a nest in 2022. The female was unaccounted for during the 2022 breeding season and the male was observed in the cluster throughout the breeding season with a different adult female (AL/LB,(DB)/YE/(DB)) fledged from cluster 8 in 2019. All cavities were monitored throughout the season and no sign of nesting was observed. Furthermore, no unbanded birds were observed during the winter count so we do not believe that nesting went undetected.

Cluster 10 – The breeding male (OR/WH/OR, AL/DB) was present for the sixth consecutive year and the breeding female (LB/DB/OR, AL/DG) was present for the fourth consecutive year. The pair switched nesting cavities from Tree 214 to Tree 301. We did not locate the nest until 13 May, when we observed two freshly hatched nestlings and two eggs. We banded two six day old (physical age) nestlings on 10 May and observed both fledglings 2 June. One fledgling was male and the other was female. Both of the young were observed at cluster 10 during the winter survey.

Cluster 11 – The breeding male (YE/DB/YE, LB/AL) continued for the eight consecutive year but the female from the past seven years ((OR)/(DB)/(OR), AL/(DB)) was replaced by a female (LB/DB/OR, HP/AL) that was hatched from cluster 5 in 2017. This pair used the same tree as in 2021 (#342) that is too high to pole. We observed a female exit the cavity on 02 May and assumed she was laying or incubating. The tree was climbed on 16 May and three nestlings aged 6-6.5 days old (physical age) were banded. Only two of the fledglings were observed on three visits to the cluster and one was sexed as a male and the other as a female. Both of the young were observed at cluster 11 during the winter survey.

Cluster 12 – The female (GY/DB/LB,HP/AL) for this cluster nested for the second consecutive year. The male (Al/LB,RE/YE/RE) that was identified as nesting in 2021 was not observed during the breeding season. The nesting male from 2018-2020 ((LG)/(LG)/(LG), AL/YE), who was not observed at the cluster during the 2021 breeding season was the breeding male during the 2022 season. This bird likely escaped detection during the 2021 season and this is likely his sixth consecutive year as breeding male. The pair nested in cavity tree #266 for the fourth consecutive year. We observed the female incubating or laying on 10 May but she would not exit the cavity. We observed three eggs on 19 May and banded two nestlings on 03 June. The nestlings were 10 and 11 days old (physical age). The red cockade feathers had started growing in on the older bird, but the younger bird was not sexed as male until 20 June when both fledglings

were observed. One of the two young was observed during the winter survey at cluster 12 (AL/DG,YE/RE/YE), but the other was unaccounted for.

Cluster 13 – The male (WH/RE/WH, AL/DB) that bred here for eleven seasons and the female (AL/LG, WH/(PU)/WH) that bred here for six seasons were not observed during the breeding season or the subsequent winter head count. We were unable to confirm the identity of the breeding pair during the incubation period in 2022 but, based on feeding behavior, suspect the breeding female (AL/(RE),LG/YE/DG) to be a bird hatched in cluster 3 during the 2015 breeding season and the male (OR/YE/OR,AL,YE) to be a bird hatched in cluster 13 during the 2021 breeding season. The breeding pair nested in tree #312 for the fourth year in a row and three eggs were observed on 13 May. We banded two nestlings on 03 June at 7.5 and 9 days old (physical age). Both of these birds were sexed female as fledglings on 20 June. Both of the young were observed at cluster 13 during the winter survey.

Cluster 15 – The male (AL/(RE), (YE)/(DB)/(YE)) and female (LB/WH/WH, (PU)/AL) nested in tree #308 for the fourth consecutive year. This is the sixth breeding season for the male and the eleventh for the female. One egg was observed on 02 May and three eggs were observed on 05 May. We observed two 1 day old nestlings on 16 may and banded the two at 6-6.5 days old (physical age) on 22 May. During a fledge check on 09 June we identified both fledglings as females. Only one of the young was observed during the winter census (OR/DB/OR,AL/YE) and that bird remained at cluster 15.

Cluster 17 –The breeding male (WH/RE/WH,YE/AL) was present for the second consecutive year and the female (AL/(LG),YE/YE/(DB) was present for the fourth consecutive year. They nested in the same cavity as in 2020 and 2021 (Tree 336) and two eggs were observed on 02 May. Four eggs were observed on 05 May and three 1-2 day old nestlings were observed on 15 may. We banded three 5-6 day old nestlings on 22 May. Both of these young were identified as females during a fledge check on 13 June. However, neither of these birds were observed during the winter census.

Cluster 18 – The male (YE/(LG)/(LG), AL/WH) and female (LG/YE/LB, AL/YE) from the past two years nested for the second consecutive year in tree 331. Three eggs were discovered on 23 April and two of these eggs hatched on 6 May and a third nestling hatched after 6 May and before 14 May when all three nestlings were banded at 9 days old (physical age). By 7 June, only two nestlings remained in the cavity and both were identified ad female during a fledge check on 13 June. One female (AL/DB, RE/DG/RE) was observed at cluster 18 during the winter and the other (AL/YE,DG/RE/DG) was observed at cluster 19.

Cluster 19 – The breeding male (OR/(DB)/OR, AL/LG) was present for the seventh consecutive season and the breeding female (AL/DB,OR/OR/OR) continued for the second consecutive season. This pair was the earliest to nest and may have also included a second egg-laying female. After observing 3+ eggs beneath a female that would not exit the cavity during a nest check on 25 April, we observed 6 eggs on 02 May as well as a red-cockaded woodpecker egg on the ground beneath the nest tree. We believe ≥7 eggs were laid in the nest and that the egg found on the ground was likely tossed out from the cavity. However, we only include the six eggs observed within the cavity for analyses. Cluster 19 has produced more than the typical 3-4 eggs for the third consecutive year and we suspect a second laying female (AL/LB,LG/OR/WH) to be a bird hatched from cluster 7 in 2016 that has been observed at cluster 19 since spring of 2019. We observed

five hatch-day nestlings on 06 May and banded three 10.5 day old nestlings on 16 May. Only one of these fledglings was observed during four fledge checks in June. Neither the fledgling nor the other unaccounted for nestlings were observed during the winter census.

Cluster 20 – The breeding female (LB/WH/LB, (OR)/AL) for the past thirteen years at cluster 8 and 20 was replaced by a female (YE/LB/YE,AL/DG) hatched at cluster 11 in 2020. The breeding male (LG/YE/WH, AL/LB) continued for the second consecutive year at cluster 20 though he also bred at cluster 8 for one year (2020) prior to cluster 8 splitting. The pair nested in a newly excavated tree further west of cluster 8 than the previous year's nest tree. We discovered three eggs on 13 May when we discovered the nest tree. We banded three 7-8 day old (physical age) nestlings on 02 June. All three fledglings were observed on 20 June and included two females and a male. One of the young remained at cluster 20 (DB/LB/DB,AL/YE) during the winter census, while another was observed nearby at cluster 8 (LB/DB/LB,AL/OR) and the third fledgling was unaccounted for.

Big Woods – A pair of birds bred for the fourth year in a row at the Big Woods cluster during 2021. The male (DG/WH/DG, AL/OR) has been with the cluster since 2020 and the female (DB/DB/WH, AL/(LB)) has remained since 2019. Emma Belling and other DWR staff monitored this three-egg clutch, with all three eggs confirmed hatched on 12 May, and CCB banded two nestlings at day 6 (physical age) on 20 May. DWR observed a single soon-to-fledge nestling with a red cockade in the nest cavity on 9 June. This fledgling was again observed in the cavity on two subsequent visits but the second nestling was never observed inside or outside a cavity after banding. The young male (PW/YE/PW:AL/DG) was accounted for at the Big Woods Cluster during the winter head count.

Population Monitoring

During the calendar year of 2022, 120 individual red-cockaded woodpeckers were identified within Piney Grove Preserve/Big Woods (Tables 2,3,4). This included 87 birds that were hatched at Piney Grove during previous years and 33 nestlings that fledged during the 2022 breeding season. Twenty-two birds that were produced during the 2021 breeding season were still present in the population. Forty birds (33%) were in their fourth year (fifth calendar year) or more and fourteen birds (12%) were at least in their tenth year (eleventh calendar year). One bird was sixteen years old (seventeenth calendar year).

There were 23 birds detected in 2021 that were not detected in 2022. This includes the loss of 13 adults hatched prior to 2021 and 10 birds hatched in 2021. Five of the breeding adults from 2021 were lost or replaced in 2022 including the female from cluster 8 (did not produce a nest), the female from cluster 11, the female and male from cluster 13, and the female from cluster 20. Additionally, a bird that was presumed to be a second laying female at cluster 1 in years past was lost.

Moving into the breeding season there were 80 birds identified within Piney Grove Preserve and Big Woods WMA distributed among 16 clusters including C-1, C-3, C-5, C-6, C-7/C-9, C-8, C-10, C-11, C-12, C-13, C-15, C-17, C-18, C-19, C-20, and Big Woods. This is 14 more than the number of adults that Piney Grove carried into the breeding season in 2021 and 13 more than in 2020. The number of birds per cluster varied from three to ten with a mean of 5.00±0.47 (mean±SE). Clusters 8, 17, and 18 had only three individuals present moving into the breeding season. The cluster with the most birds was cluster 7/9 (total of ten birds),

followed by cluster 1 with 8 birds. The complex of Clusters 7 and 9 appears to be splitting and is composed of two groups of birds that forage independently including a group of 4 birds (Cluster 7) that forages west and south of the drainage that runs through the cluster and a group of 6 birds (Cluster 9) that primarily forages north and east of the drainage. One bird that primarily forages with Cluster 7 was also observed foraging with cluster 9 birds. If we treat the Cluster 7/9 complexes independently, the mean number of birds heading into the breeding season was 4.71±0.33.

Eighty-nine birds were detected during the 2022 winter survey (Table 4). This represents a 10% increase over the 2020 winter survey and an 11% increase over the 2019 winter survey (89 vs 81 vs 80). Birds present include 22 of the 33 birds fledged in 2022 and 67 adult birds hatched in previous years. There were 17 adult birds detected during the spring survey that were not detected during winter survey.

During the winter survey, birds were associated with 17 different cluster areas including C-1, C-3, C-5, C-6, C-7, C-9, C-8, C-10, C-11, C-12, C-13, C-15, C17, C-18, C-19, C-20, and Big Woods. In years past, the birds roosting in cluster 9 actively foraged with the birds from cluster 7 so were treated as one functional group. This unit appears to be splitting and all birds appeared to be exclusively associated with one of the two clusters during the breeding season and winter census (no mixing) so we are treating these clusters independently. Group size in winter ranged from two to nine birds and averaged 5.56±0.45 (mean ± SE) birds per group. Cluster 5 supported the most birds (9) and Cluster 17 supported the fewest birds (2).

Table 3. Individual red-cockaded woodpecker sightings during the 2022 spring survey within Piney Grove Preserve. Bold band colors between parentheses represent bands lost.

USGS Band #	Left Leg	Right Leg	Sex	Hatch Year	Spring Cluster
1581-66270	DG/YE/DG	WH/AL	M	2006	1
2421-01608	YE/DG/YE	AL/RE	M	2020	1
2421-02944	AL/RE	DG/YE/DG	M	2021	1
2421-01636	DG/(YE)/DG	DB/AL	M	2018	1
901-29856	RE/WH/RE	AL/OR	F	2020	1
2421-01604	LB/WH/OR	AL/DG	F	2016	1
2421-01638	DG/YE/DG	AL/YE	F	2019	1
901-29886	AL/LB	DG/YE/DG	F	2021	1
821-70952	YE/(OR)/(YE)	AL/YE	F	2012	3
901-29859	RE/AL	DB/RE/DB	F	2019	3

USGS Band #	Left Leg	Right Leg	Sex	Hatch Year	Spring Cluster
2421-02910	AL/WH	DB/RE/DB	M	2014	3
2421-01640	DB/RE/DB	AL/DG	F	2021	3&5
2421-01641	RE/DB/RE	AL/LB	F	2021	3&5
2421-01602	AL/(LG)	LB/(WH)/LB	M	2018	5
2421-02999	DB/RE/DB	AL/YE	F	2018	5
2421-02903	WH/OR/OR	AL/LB	F	2014	5
2421-02993	LB/YE/LB	AL/LG	F	2018	5
1581-66288	LB/WH/LB	AL/DG	M	2008	5
UNBANDED	UNBANDED	UNBANDED	U	2020	5
2421-01614	DB/WH/DB	AL/RE	F	2020	6
2421-01620	RE/YE/RE	AL/DB	F	2020	6
2421-02975	WH/DB/YE	PK/AL	M	2017	6
2421-01655	WH/DB/WH	AL/DG	F	2021	6
901-29854	DG/AL	WH/RE/WH	F	2019	7
2421-02943	DB/(LG)/YE	AL/DB	M	2016	7
2421-02948	DB/WH/YE	AL/DB	F	2016	7
2421-01657	RE/BK/RE	AL/RE	M	2021	7&9
2421-02966	BK/(OR)/DB	HP/AL	M	2017	8
2421-02977	OR/DB/LB	HP/AL	F	2017	8
2421-01646	AL/DG	DB/YE/DB	M	2021	8
2421-01659	AL/RE	RE/BK/RE	M	2021	9
2421-02914	AL/(DB)	WH/(PU)/WH	M	2015	9
2421-02982	YE/OR/YE	HP/AL	F	2019	9
821-70901	OR/AL	WH/RE/WH	F	2018	9

USGS Band #	Left Leg	Right Leg	Sex	Hatch Year	Spring Cluster
901-29877	OR/OR/OR	AL/DG	M	2009	9
821-70953	OR/YE/YE	AL/LG	F	2012	9
2421-02929	OR/WH/(OR)	AL/DB	M	2015	10
2421-02941	LB/DB/OR	AL/DG	F	2016	10
901-29896	OR/OR/OR	AL/YE	M	2020	10
2421-01651	AL/RE	OR/OR/OR	F	2021	10
2421-01606	AL/DB	YE/DG/YE	F	2020	10
2421-02970	LG/DB/LB	HP/AL	M	2017	11
821-70919	YE/DB/YE	LB/AL	M	2011	11
2421-01631	AL/LB	YE/LB/YE	M	2021	11
2421-02981	LB/DB/OR	HP/AL	F	2017	11
901-29890	AL/LB	(RE)/DB/RE	F	2020	11
2421-02931	(LG)/(LG)/(LG)	AL/YE	M	2015	12
2421-01621	AL/LB	RE/YE/RE	M	2020	12
2421-01643	AL/OR	YE/RE/YE	M	2021	12
821-70988	WH/LB/(WH)	AL/(YE)	F	2014	12
821-70929	AL/(OR)	WH/YE/WH	F	2021	13
901-29876	(OR)/YE/(YE)	AL/WH	M	2011	13
2421-01654	OR/YE/OR	LB/AL	M	2019	13
1581-66297	OR/YE/OR	AL/YE	M	2021	13
1581-66274	AL/(RE)	LG/YE/DG	F	2009	13
2421-01628	WH/RE/WH	AL/DB	M	2007	13
821-70906	AL/(RE)	(YE)/(DB)/(YE)	M	2010	15
821-70933	LB/WH/WH	(PU)/AL	F	2011	15

USGS Band #	Left Leg	Right Leg	Sex	Hatch Year	Spring Cluster
2421-01652	AL/DG	DB/OR/DB	M	2021	15
2421-01613	DB/OR/DB	AL/YE	M	2020	15
821-70965	DG/BK/DG	AL/DB	F	2021	17
901-29853	AL/(LG)	YE/YE/(DB)	F	2013	17
2421-01630	WH/RE/WH	YE/AL	M	2019	17
901-29855	WH/AL	WH/RE/WH	M	2019	18
2421-02952	LG/YE/LB	AL/YE	F	2016	18
2421-01624	RE/DG/RE	AL/LB	F	2021	18
2421-02945	AL/LB	LG/OR/WH	F	2016	19
821-70936	OR/(DB)/OR	AL/LG	M	2011	19
2421-01645	DB/YE/DB	AL/DB	M	2021	19
2421-01605	AL/DB	OR/OR/OR	F	2018	19
2421-02942	LG/YE/WH	AL/LB	M	2016	20
901-29864	YE/LB/YE	AL/DG	F	2020	20
901-29892	YE/DB/YE	AL/RE	M	2019	20
2421-02985	LB/AL	WH/RE/WH	M	2018	20
2421-02939	(DB)/(DB)/WH	AL/(LB)	F	2016	BW1
2421-02964	WH/DB/OR	(HP)/AL	M	2017	BW1
2421-01607	YE/DG/YE	AL/WH	M	2020	BW1
2421-01648	AL/YE	LB/DB/LB	F	2021	BW1
2421-02987	DG/WH/DG	AL/OR	M	2018	BW1
UNBANDED	UNBANDED	UNBANDED	U	2020	BW1

Table 4. Individual red-cockaded woodpecker sightings during the 2022 winter survey within Piney Grove Preserve. Bold band colors between parentheses represent bands lost.

USGS BAND #	LEFT LEG	RIGHT LEG	SEX	HATCH YEAR	WINTER CLUSTER
1581-66270	DG/YE/DG	WH/AL	M	2006	1
2421-01608	YE/DG/YE	AL/RE	M	2020	1
2421-01636	AL/RE	DG/YE/DG	M	2021	1
2421-01604	DG/(YE)/DG	DB/AL	M	2018	1
901-29886	RE/WH/RE	AL/OR	F	2020	1
2421-01672	DG/YE/DG	AL/LG	F	2022	1
821-70952	YE/(OR)/(YE)	AL/YE	F	2012	3
901-29859	RE/AL	DB/RE/DB	F	2019	3
2421-02910	AL/WH	DB/RE/DB	M	2014	3
901-29851	OR/DG/OR	AL/LB	M	2015	3
2421-01669	DB/RE/DB	AL/HP	F	2022	3
2421-01670	RE/DB/RE	AL/LG	F	2022	3
2421-01668	AL/LB	RE/DB/RE	M	2022	3
2421-01602	AL/(LG)	LB/(WH)/LB	M	2018	5
2421-02999	DB/RE/DB	AL/YE	F	2018	5
2421-02903	WH/OR/OR	AL/LB	F	2014	5
2421-02993	LB/YE/LB	AL/LG	F	2018	5
1581-66288	LB/WH/LB	AL/DG	M	2008	5
UNBANDED	UNBANDED	UNBANDED	U	2020	5
901-29879	WH/LB/WH	AL/RE	F	2019	5
2421-01684	BK/LB/BK	AL/OR	M	2022	5
2421-01685	AL/RE	WH/LB/WH	M	2022	5

USGS BAND #	LEFT LEG	RIGHT LEG	SEX	HATCH YEAR	WINTER CLUSTER
2421-01614	DB/WH/DB	AL/RE	F	2020	6
RE/YE/RE	RE/YE/RE	AL/DB	F	2020	6
2421-01650	WH/OR/WH	AL/OR	F	2021	6
2421-01698	AL/DG	DB/WH/DB	M	2022	6
901-29854	DG/AL	WH/RE/WH	F	2019	7
2421-02943	DB/(LG)/YE	AL/DB	M	2016	7
2421-02948	DB/WH/YE	AL/DB	F	2016	7
2421-01657	RE/BK/RE	AL/RE	M	2021	7
2421-02966	BK/(OR)/DB	HP/AL	M	2017	8
901-29865	AL/LB	(DB)/YE/(DB)	F	2019	8
2421-01673	YE/(DG)/YE	AL/LB	F	2022	8
2421-01691	LB/DB/LB	AL/OR	F	2022	8
2421-01659	AL/RE	RE/BK/RE	M	2021	9
2421-02914	AL/(DB)	WH/(PU)/WH	M	2015	9
901-29877	YE/OR/YE	HP/AL	F	2019	9
2421-01677	BK/RE/BK	AL/LB	M	2022	9
2421-02929	OR/WH/(OR)	AL/DB	M	2015	10
2421-02941	LB/DB/OR	AL/DG	F	2016	10
901-29896	OR/OR/OR	AL/YE	M	2020	10
2421-01651	AL/RE	OR/OR/OR	F	2021	10
2421-01606	AL/DB	YE/DG/YE	F	2020	10
2421-01674	OR/WH/OR	AL/RE	F	2022	10
2421-01675	AL/YE	WH/OR/WH	M	2022	10
2421-02970	LG/DB/LB	HP/AL	M	2017	11

USGS BAND #	LEFT LEG	RIGHT LEG	SEX	HATCH YEAR	WINTER CLUSTER
821-70919	YE/DB/YE	LB/AL	M	2011	11
2421-01631	AL/LB	YE/LB/YE	M	2021	11
2421-02981	LB/DB/OR	HP/AL	F	2017	11
2421-01662	YE/LB/YE	AL/RE	F	2022	11
2421-01660	AL/DG	LB/YE/LB	M	2022	11
2421-02931	(LG)/(LG)/(LG)	AL/YE	M	2015	12
2421-01621	AL/LB	RE/YE/RE	M	2020	12
2421-01643	AL/OR	YE/RE/YE	M	2021	12
2421-01628	AL/(OR)	WH/YE/WH	F	2021	12
2421-01630	DG/BK/DG	AL/DB	F	2021	12
2421-01697	AL/DG	YE/RE/YE	M	2022	12
821-70929	(OR)/YE/(YE)	AL/WH	M	2011	13
901-29876	OR/YE/OR	LB/AL	M	2019	13
2421-01654	OR/YE/OR	AL/YE	M	2021	13
1581-66297	AL/(RE)	LG/YE/DG	F	2009	13
2421-01694	AL/YE	YE/OR/YE	F	2022	13
2421-01695	OR/YE/OR	AL/DB	F	2022	13
821-70906	AL/(RE)	(YE)/(DB)/(YE)	M	2010	15
821-70933	LB/WH/WH	(PU)/AL	F	2011	15
2421-01652	AL/DG	DB/OR/DB	M	2021	15
2421-01613	DB/OR/DB	AL/YE	M	2020	15
2421-01689	OR/DB/OR	AL/RE	F	2022	15
2421-01640	DB/RE/DB	AL/DG	F	2021	15&3
821-70965	AL/(LG)	YE/YE/(DB)	F	2013	17

USGS BAND #	LEFT LEG	RIGHT LEG	SEX	HATCH YEAR	WINTER CLUSTER
901-29853	WH/RE/WH	YE/AL	M	2019	17
901-29855	WH/AL	WH/RE/WH	M	2019	18
2421-02952	LG/YE/LB	AL/YE	F	2016	18
2421-01687	AL/DB	RE/DG/RE	F	2022	18
2421-01625	AL/OR	RE/DG/RE	M	2021	18
2421-01624	RE/DG/RE	AL/LB	F	2021	18
2421-02945	AL/LB	LG/OR/WH	F	2016	19
821-70936	OR/(DB)/OR	AL/LG	M	2011	19
2421-01645	DB/YE/DB	AL/DB	M	2021	19
2421-01605	AL/DB	OR/OR/OR	F	2018	19
2421-01686	AL/YE	DG/RE/DG	F	2022	19
2421-02942	LG/YE/WH	AL/LB	M	2016	20
901-29892	YE/LB/YE	AL/DG	F	2020	20
2421-01692	DB/LB/DB	AL/YE	M	2022	20
2421-02939	(DB)/(DB)/WH	AL/(LB)	F	2016	BW1
2421-02964	WH/DB/OR	(HP)/AL	M	2017	BW1
2421-01607	YE/DG/YE	AL/WH	M	2020	BW1
2421-02987	DG/WH/DG	AL/OR	M	2018	BW1
2421-01666	PW/YE/PW	DG/AL	M	2022	BW1

Trees and Cavities

A total of 320 woodpecker cavity trees supporting 371 cavities were known and still standing during 2022 at Piney Grove Preserve and another 12 cavities in 9 trees at Big Woods (Appendix I). The total at Piney Grove includes 290 natural cavities and 81 artificial inserts. Of the 290 natural cavities 111 (38.3%) were starts in various stages of completion and 6 (2.1%) had healed over the cavity entrance. Of the 163 completed natural cavities, 80 (27.6%) were considered active in December. Of the 81 artificial inserts, 6 (7.4%) were considered active in December. The total at Big Woods includes six natural cavities, five inserts, and one drilled cavity. Two of the Big Woods natural cavities were complete and one of those cavities was active.

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APPENDICES

Appendix I. Status of red-cockaded woodpecker cavity trees at the Piney Grove Preserve in 2021.

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
1	34	a	Loblolly	Live	Natural	Inactive	Complete	2-4x	Complete	Old/None
1	36	a	Loblolly	Live	Natural	Active	Complete	Normal	None	Fresh
1	37	a	Loblolly	Live	Natural	Relic	Healed Over	Healed	None	Old/None
1	42	a	Loblolly	Live	Natural	Relic	Healed Over	Healed	None	Old/None
1	43	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
1	46	a	Loblolly	Live	Natural	Inactive	Start (Adv)	>4x	Unstarted	Old/None
1	48	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
1	49	a	Loblolly	Live	Natural	Inactive	Complete	Normal	Unstarted	Old/None
1	52	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
1	54	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
1	54	b	Loblolly	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
1	55	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
1	55	b	Loblolly	Live	Natural	Relic	Start (Adv)	>4x	Unstarted	Old/None
1	55	c	Loblolly	Live	Natural	Relic	Start (Adv)	>4x	Unstarted	Old/None
1	57	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
1	58	a	Loblolly	Live	Natural	Inactive	Start (Adv)	2-4x	Unstarted	Old/None
1	58	b	Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Recent
1	58	c	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Fresh
1	59	a	Loblolly	Live	Natural	Inactive	Start (Adv)	2-4x	Unstarted	Old/None
1	59	b	Loblolly	Live	Natural	Inactive	Start (Adv)	1-2x	Unstarted	Recent
1	117	a	Loblolly	Live	Artificial	Relic	Insert	Healing	None	Old/None

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
1	117	b	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
1	212	a	Shortleaf	Dead	Natural	Relic	Complete	1-2x	incomplete	Old/None
1	213	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Unstarted	Old/None
1	225	a	Shortleaf	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
1	241	a	Loblolly	Live	Natural	Inactive	Complete	2-4x	Incomplete	Old/None
1	242	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
1	257	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Incomplete	Old/None
1	257	b	Loblolly	Live	Natural	Inactive	Start (Adv)	1-2x	Unstarted	Old/None
1	273	a	Shortleaf	Live	Natural	Inactive	Complete	2-4x	Complete	Old/None
1	304	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
1	305	a	Loblolly	Live	Natural	Active	Complete	Normal	incomplete	Fresh
1	307	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Fresh
1	1NT1	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
1	1NT2	a	Loblolly	Live	Natural	Active	Complete	Normal	incomplete	Fresh
1	1NT3	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Fresh
1	1NT4	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
1	1NT5	a	Loblolly	Live	Natural	Active	Complete	Normal	incomplete	Fresh
1	1NT6	a	Shortleaf	Live	Natural	Inactive	Start (Adv)	1-2x	Unstarted	Old/None
2	60	a	Loblolly	Live	Artificial	Relic	Insert	Healed	None	Old/None
2	63	a	Loblolly	Live	Artificial	Relic	Insert	Healed	None	Old/None
3	2	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
3	6	a	Loblolly	Live	Natural	Relic	Start (Adv)	Normal	Unstarted	Old/None
3	7	a	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Old/None
3	8	a	Loblolly	Live	Natural	Inactive	Complete	1-2x	Complete	Old/None
3	9	a	Loblolly	Live	Natural	Inactive	Complete	2-4x	Complete	Old/None

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
3	72	a	Loblolly	Live	Natural	Relic	Complete	Healed	Unstarted	Old/None
3	75	a	Loblolly	Live	Natural	Relic	Healed Over	Healed	None	Old/None
3	76	a	Loblolly	Live	Natural	Inactive	Complete	Normal	Unstarted	Old/None
3	79	a	Loblolly	Live	Artificial	Inactive	Insert	Healing	Unstarted	Old/None
3	80	a	Loblolly	Live	Natural	Unknown	Complete	Normal	Unstarted	Recent
3	128	a	Loblolly	Live	Natural	Active	Complete	1-2x	Incomplete	Fresh
3	177	a	Loblolly	Live	Natural	Relic	Healed Over	Healed	None	Old/None
3	178	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
3	179	a	Loblolly	Live	Natural	Active	Complete	1-2x	Complete	Fresh
3	180	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
3	208	a	Loblolly	Live	Natural	Relic	Complete	Normal	None	Old/None
3	258	a	Loblolly	Live	Natural	Unknown	Complete	2-4x	Complete	Recent
3	259	a	Loblolly	Live	Natural	Unknown	Complete	1-2x	incomplete	Recent
3	289	a	Loblolly	Live	Natural	Relic	Start (Adv)	1-2x	Unstarted	Old/None
3	313	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
3	314	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
3	314	b	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
3	345	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
3	3NT1	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
3	3NT2	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
3	3NT3	a	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Old/None
4	82	a	Loblolly	Live	Artificial	Inactive	Insert	Healing	None	Old/None
4	84	a	Loblolly	Live	Artificial	Relic	Insert	Healing	None	Old/None
4	186	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
5	14	a	Loblolly	Live	Natural	Inactive	Complete	2-4x	Complete	Recent

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
5	15	a	Loblolly	Live	Natural	Active	Complete	1-2x	Complete	Fresh
5	17	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
5	18	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
5	19	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
5	19	b	Loblolly	Live	Natural	Inactive	Complete	Normal	Unstarted	Old/None
5	19	c	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
5	22	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
5	22	a	Loblolly	Live	Artificial	Inactive	Insert	Healing	Unstarted	Old/None
5	24	a	Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Old/None
5	24	b	Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Old/None
5	24	c	Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Old/None
5	25	a	Loblolly	Live	Natural	Inactive	Complete	2-4x	Complete	Old/None
5	26	a	Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Old/None
5	28	a	Loblolly	Live	Natural	Relic	Complete	Healing	None	Old/None
5	28	b	Loblolly	Live	Natural	Inactive	Complete	Normal	Unstarted	Old/None
5	30	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Healing	Unstarted	Old/None
5	92	a	Loblolly	Live	Natural	Inactive	Start (Fr)	Healing	Unstarted	Old/None
5	94	a	Loblolly	Live	Artificial	Relic	Insert	Healing	None	Old/None
5	95	a	Loblolly	Live	Artificial	Relic	Insert	N/A	Unstarted	Old/None
5	127	a	Loblolly	Live	Natural	Inactive	Healed Over	Healed	None	Old/None
5	191	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
5	217	a	Loblolly	Live	Natural	Unknown	Complete	2-4x	Incomplete	Old/None
5	218	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
5	236	a	Loblolly	Live	Natural	Active	Complete	1-2x	Complete	Fresh
5	237	a	Loblolly	Live	Natural	Relic	Complete	Normal	Unstarted	Old/None

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
5	248	a	Loblolly	Live	Natural	Unknown	Complete	Normal	Complete	Fresh
5	260	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
5	261	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
5	262	a	Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
5	290	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
5	290	b	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Fresh
5	323	a	Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
5	338	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Fresh
5	340	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
5	341	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
5	5NT1	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
5	5NT2	a	Loblolly	Live	Natural	Unknown	Complete	2-4x	Incomplete	Fresh
5	5NT3	a	Loblolly	Dead	Natural	Relic	Complete	>4x	None	Old/None
5	5NT4	a	Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
6	10	a	Loblolly	Live	Insert	Relic	Insert	Healing	None	Old/None
6	33	A	Loblolly	Live	Natural	Inactive	Complete	1-2x	Unstarted	Fresh
6	33	B	Loblolly	Live	Natural	Inactive	Start (Fr)	2-4x	Unstarted	Fresh
6	33	C	Loblolly	Live	Natural	Inactive	Start (Fr)	2-4x	Unstarted	Fresh
6	116	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Fresh
6	135	a	Loblolly	Live	Natural	Inactive	Start (Adv)	>4x	Unstarted	Old/None
6	135	b	Loblolly	Live	Natural	Inactive	Start (Adv)	1-2x	Unstarted	Old/None
6	135	c	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
6	136	a	Loblolly	Live	Natural	Inactive	Start (Adv)	2-4x	Unstarted	Old/None
6	136	b	Loblolly	Live	Natural	Inactive	Start (Fr)	2-4x	Unstarted	Old/None
6	136	c	Loblolly	Live	Natural	Inactive	Start (Fr)	>4x	Unstarted	Old/None

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
6	137	a	Loblolly	Live	Artificial	Unknown	Insert	Normal	Complete	Recent
6	139	A	Loblolly	Live	Artificial	Unknown	Insert	Normal	Complete	Fresh
6	139	B	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Recent
6	166	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Incomplete	Old/None
6	199	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Recent
6	200	a	Loblolly	Live	Artificial	Inactive	Insert	1-2x	Incomplete	Old/None
6	206	a	Loblolly	Live	Natural	Inactive	Start (Adv)	1-2x	Unstarted	Old/None
6	233	a	Loblolly	Live	Natural	Inactive	Complete	Normal	Unstarted	Old/None
6	233	b	Loblolly	Live	Natural	Inactive	Complete	>4x	Unstarted	Old/None
6	234	A	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
6	234	B	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Old/None
6	234	C	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Old/None
6	234	D	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
6	234	E	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
6	234	F	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
6	234	G	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
6	235	a	Loblolly	Live	Natural	Inactive	Start (Adv)	1-2x	Unstarted	Recent
6	235	b	Loblolly	Live	Natural	Inactive	Start (Adv)	1-2x	Unstarted	Recent
6	256	a	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Recent
6	256	b	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
6	268	a	Loblolly	Live	Natural	Unknown	Complete	1-2x	Complete	Fresh
6	315	a	Loblolly	Live	Natural	Inactive	Complete	1-2x	Unstarted	Old/None
6	318	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
6	326	a	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	old/none
6	332	a	Loblolly	Live	Natural	Inactive	Complete	2-4x	Unstarted	Recent

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
6	353	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
6	6NT1	a	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Recent
6	6NT2	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
7	105	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	None	Old/None
7	106	a	Loblolly	Live	Natural	Relic	Complete	>4x	Complete	Old/None
7	106	b	Loblolly	Live	Natural	Relic	Start (Fr)	Normal	Unstarted	Old/None
7	106	c	Loblolly	Live	Natural	Relic	Start (Fr)	Normal	Unstarted	Old/None
7	108	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
7	109	A	Loblolly	Live	Natural	Inactive	Complete	1-2x	Complete	Fresh
7	109	B	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Fresh
7	110	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	None	Old/None
7	111	a	Unknown	Dead	Artificial	Relic	Insert	2-4x	None	Old/None
7	195	a	Loblolly	Live	Artificial	Relic	Healed Over	Healed	None	Old/None
7	216	a	Loblolly	Live	Natural	Inactive	Complete	2-4x	Complete	Old/None
7	243	a	Loblolly	Dead	Natural	Relic	Complete	Normal	none	Old/None
7	253	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
7	272	a	Loblolly	Live	Natural	Inactive	Complete	2-4x	incomplete	Old/None
7	275	a	Loblolly	Live	Natural	Unknown	Complete	>4x	Complete	Fresh
7	276	a	Loblolly	Dead	Natural	Relic	Complete	>4x	None	Old/None
7	277	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
7	284	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
7	297	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
7	298	a	Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
7	299	a	Loblolly	Live	Natural	Active	Complete	2-4x	Unstarted	Fresh
7	300	a	Loblolly	Live	Natural	Inactive	Complete	>4x	None	Recent

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
7	330	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
7	348	a	Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
7	349	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
7	356	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
7	7NT1	a	Shortleaf	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Old/None
7	7NT2	a	Loblolly	Live	Natural	Inactive	Start (Adv)	1-2x	Unstarted	Recent
7	7NT3	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
7	7NT4	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
7	7NT5	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Fresh
7	7NT6	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
7	7NT7	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Fresh
8	129	a	Loblolly	Live	Natural	Inactive	Complete	1-2x	Unstarted	Old/None
8	155	a	Loblolly	Live	Natural	Inactive	Complete	2-4x	Unstarted	Old/None
8	170	a	Loblolly	Live	Artificial	Relic	Insert	Normal	Complete	Old/None
8	171	a	Loblolly	Live	Artificial	Inactive	Insert	Healing	Unstarted	Old/None
8	173	a	Loblolly	Live	Artificial	Inactive	Complete	Healing	None	Old/None
8	175	a	Loblolly	Live	Natural	Inactive	Complete	2-4x	Incomplete	Old/None
8	176	A	Loblolly	Live	Natural	Inactive	Complete	2-4x	Incomplete	Old/None
8	176	B	Loblolly	Live	Natural	Inactive	Complete	2-4x	Incomplete	Old/None
8	209	a	Loblolly	Live	Natural	Relic	Complete	2-4x	Complete	Old/None
8	209	b	Loblolly	Live	Natural	Relic	Start (Adv)	Healing	Unstarted	Old/None
8	210	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Unstarted	Old/None
8	211	a	Loblolly	Live	Artificial	Inactive	Insert	1-2x	Unstarted	Old/None
8	219	a	Loblolly	Live	Natural	Inactive	Complete	1-2x	Incomplete	Recent
8	220	a	Loblolly	Live	Natural	Unknown	Complete	1-2x	Complete	Recent

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
8	226	a	Loblolly	Live	Natural	Unknown	Complete	Normal	Incomplete	Recent
8	227	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Healing	Unstarted	Old/None
8	228	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
8	229	a	Loblolly	Live	Natural	Relic	Start (Adv)	1-2x	Unstarted	Old/None
8	230	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
8	231	a	Loblolly	Live	Natural	Unknown	Complete	Normal	Complete	Recent
8	286	a	Loblolly	Live	Natural	Unknown	Complete	Normal	Unstarted	Recent
8	287	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
8	288	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
8	310	a	Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
8	321	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
8	339	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
8	809	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
8	8NT1	a	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Recent
8	8NT2	a	Loblolly	Live	Natural	Inactive	Start (Adv)	1-2x	Unstarted	Old/None
8	8NT3	a	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Recent
8	8NT4	a	Loblolly	Live	Natural	Inactive	Complete	1-2x	Unstarted	Fresh
9	85	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
9	86	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
9	87	a	Loblolly	Live	Artificial	Active	Complete	Normal	Complete	Fresh
9	88	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
10	64	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
10	65	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
10	66	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
10	68	a	Loblolly	Live	Natural	Inactive	Start (Fr)	1-2x	Unstarted	Old/None

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
10	150	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
10	154	a	Loblolly	Live	Natural	Inactive	Complete	2-4x	Unstarted	Old/None
10	156	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Old/None
10	157	a	Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Old/None
10	214	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
10	247	a	Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Old/None
10	274	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
10	301	a	Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
10	302	a	Loblolly	Live	Natural	Active	Complete	2-4x	Complete	Fresh
10	303	a	Shortleaf	Live	Natural	Active	Complete	1-2x	Incomplete	Fresh
10	325	a	Loblolly	Live	Natural	Unknown	Complete	2-4x	Incomplete	Recent
10	329	a	Shortleaf	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
10	335	a	Loblolly	Live	Natural	Inactive	Start (Fr)	2-4x	Unstarted	Old/None
10	355	a	Loblolly	Live	Natural	Active	Complete	Normal	unstarted	Fresh
10	10NT1	a	Loblolly	Live	Natural	Relic	Complete	1-2x	Unstarted	Old/None
10	10NT1	b	Loblolly	Live	Natural	Relic	N/A	Normal	Unstarted	Old/None
10	10NT2	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Fresh
11	140	a	Loblolly	Live	Artificial	Relic	Insert	Healing	None	Old/None
11	141	a	Loblolly	Live	Artificial	Relic	Insert	Healing	None	Old/None
11	142	a	Loblolly	Live	Artificial	relic	Insert	Healing	None	Old/None
11	143	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
11	238	a	Loblolly	Live	Natural	Inactive	Complete	2-4x	Complete	Old/None
11	239	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
11	240	a	Loblolly	Live	Natural	Unknown	Complete	Normal	Complete	Old/None
11	269	a	Loblolly	Live	Natural	Active	Complete	1-2x	Complete	Fresh

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
11	270	a	Loblolly	Live	Natural	Unknown	Complete	Normal	Complete	Recent
11	285	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
11	291	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
11	292	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
11	293	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
11	294	a	Loblolly	Live	Natural	Unknown	Complete	2-4x	Unstarted	Recent
11	327	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Fresh
11	328	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
11	337	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
11	342	a	Loblolly	Live	Natural	Active	Complete	Normal	Unstarted	Fresh
11	11NT1	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Fresh
11	11NT2	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
12	131	a	Loblolly	Live	Artificial	Inactive	Insert	Healing	Unstarted	Fresh
12	132	a	Loblolly	Live	Artificial	Inactive	Insert	Healing	Unstarted	Old/None
12	133	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
12	158	a	Shortleaf	Dead	Artificial	Relic	Insert	Normal	None	Old/None
12	159	a	Loblolly	Live	Artificial	Active	Complete	Normal	Incomplete	Fresh
12	189	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
12	244	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Unstarted	Recent
12	244	b	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
12	244	c	Loblolly	Live	Natural	Inactive	Complete	>4x	Unstarted	Old/None
12	266	a	Shortleaf	Live	Natural	Inactive	Complete	2-4x	Incomplete	Old/None
12	267	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
12	295	a	Loblolly	Live	Natural	Active	Complete	2-4x	Incomplete	Fresh
12	296	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Unstarted	Old/None

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
12	296	b	Loblolly	Live	Natural	Inactive	Start (Fr)	2-4x	Unstarted	Old/None
12	296	c	Loblolly	Live	Natural	Inactive	Start (Fr)	2-4x	Unstarted	Old/None
12	296	d	Loblolly	Live	Natural	Inactive	Start (Fr)	2-4x	Unstarted	Old/None
12	316	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
12	317	a	Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
12	334	a	Shortleaf	Live	Natural	Inactive	Complete	2-4x	Unstarted	Recent
12	351	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
12	12NT1	a	Loblolly	Live	Natural	Inactive	Start (Adv)	>4x	Unstarted	Old/None
12	12NT1	b	Loblolly	Live	Natural	Inactive	Start (Adv)	>4x	Unstarted	Old/None
12	12NT1	c	Loblolly	Live	Natural	Inactive	Start (Adv)	2-4x	Unstarted	Old/None
13	119	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Recent
13	120	a	Loblolly	Live	Artificial	Unknown	Insert	Normal	Unstarted	Old/None
13	121	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
13	122	a	Loblolly	Live	Artificial	Inactive	Insert	2-4x	Unstarted	Old/None
13	123	a	Loblolly	Live	Artificial	Relic	Insert	Healing	None	Old/None
13	124	a	Loblolly	Live	Artificial	Relic	Insert	Healing	None	Old/None
13	144	a	Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
13	145	a	Loblolly	Live	Natural	Inactive	Start (Adv)	2-4x	Unstarted	Recent
13	168	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
13	169	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
13	271	a	Loblolly	Live	Natural	Unknown	Complete	Normal	Complete	Fresh
13	311	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
13	312	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
13	13NT1	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
13	13NT2	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
14	88	a	Loblolly	Live	Natural	Inactive	Start (Fr)	1-2x	Unstarted	Old/None
14	89	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
14	91	a	Loblolly	Live	Artificial	Relic	Insert	Healing	None	Old/None
14	100	a	Loblolly	Live	Natural	Inactive	Start (Adv)	2-4x	Unstarted	Old/None
14	101	a	Loblolly	Live	Natural	Inactive	Complete	1-2x	Unstarted	Old/None
15	160	a	Loblolly	Live	Artificial	Relic	Insert	Healing	None	Old/None
15	161	a	Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Old/None
15	162	a	Loblolly	Live	Artificial	Unknown	Insert	Normal	Unstarted	Recent
15	163	a	Loblolly	Live	Artificial	Unknown	Insert	Normal	Complete	Old/None
15	187	a	Loblolly	Live	Artificial	Inactive	Insert	Healing	Unstarted	Old/None
15	198	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
15	205	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Complete	Recent
15	205	b	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
15	205	c	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Recent
15	221	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
15	264	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
15	265	a	Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Old/None
15	265	b	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Old/None
15	308	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
15	309	a	Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
15	15NT1	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
15	15NT2	a	Loblolly	Live	Natural	Inactive	Start (Fr)	1-2x	Unstarted	Old/None
16	167	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
16	16NT1	a	Loblolly	Live	Natural	Inactive	Start (Adv)	2-4x	Unstarted	Old/None
16	16NT2	a	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Old/None

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
16	16NT2	b	Loblolly	Live	Natural	Inactive	Start (Fr)	2-4x	Unstarted	Old/None
17	146	a	Loblolly	Live	Artificial	Active	Complete	Normal	Incomplete	Old/None
17	147	a	Loblolly	Live	Artificial	Relic	Insert	Healed	Unstarted	Old/None
17	249	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
17	250	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
17	251	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
17	252	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
17	283	a	Loblolly	Live	Natural	Inactive	Complete	2-4x	Incomplete	Recent
17	283	b	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Fresh
17	319	a	Loblolly	Live	Natural	Active	Complete	2-4x	Incomplete	Fresh
17	336	a	Loblolly	Live	Natural	Active	Complete	Normal	Unstarted	Fresh
17	17NT1	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
18	181	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Recent
18	182	a	Loblolly	Live	Artificial	Relic	Insert	Healing	None	Old/None
18	183	a	Loblolly	Live	Artificial	Relic	Insert	Healing	None	Old/None
18	184	a	Loblolly	Live	Artificial	Relic	Insert	Healing	None	Old/None
18	207	a	Shortleaf	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
18	254	a	Loblolly	Live	Natural	Inactive	Complete	2-4x	Complete	Recent
18	254	b	Loblolly	Live	Natural	Inactive	Complete	2-4x	Complete	Recent
18	278	a	Loblolly	Live	Artificial	Active	Complete	Normal	Complete	Fresh
18	279	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Recent
18	280	a	Loblolly	Live	Artificial	Active	Complete	Normal	Unstarted	Fresh
18	281	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
18	324	a	Shortleaf	Live	Natural	Inactive	Complete	2-4x	Complete	Old/None
18	331	a	Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
18	346	a	Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
18	18NT1	a	Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
19	134	a	Loblolly	Live	Artificial	Active	Complete	Normal	Incomplete	Fresh
19	148	a	Loblolly	Live	Artificial	Unknown	Insert	Normal	Incomplete	Recent
19	149	a	Loblolly	Live	Artificial	Inactive	Insert	Healing	Incomplete	Fresh
19	201	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
19	203	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
19	223	a	Loblolly	Live	Natural	Active	Complete	2-4x	Complete	Recent
19	223	b	Loblolly	Live	Natural	Inactive	Start (Adv)	2-4x	Unstarted	Recent
19	232	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
19	245	a	Loblolly	Live	Natural	Inactive	Start (Adv)	2-4x	Unstarted	Old/None
19	246	a	Loblolly	Live	Natural	Active	Complete	2-4x	Unstarted	Fresh
19	322	a	Loblolly	Live	Natural	Inactive	Complete	1-2x	Complete	Fresh
19	333	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
19	350	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
19	358	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
19	19NT1	a	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Old/None
19	19NT2	a	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Recent
20	263	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
20	320	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
20	325	a	Loblolly	Dying	Natural	Active	Complete	Normal	Incomplete	Fresh
20	344	a	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Recent
20	20NT1	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
20	20NT2	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
21	354	a	Loblolly	Live	Natural	Active	Complete	Normal	incomplete	Fresh

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
BW01	1	a	Loblolly	Live	Natural	Active	Complete	Normal	Unstarted	Recent
BW01	1	b	Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Old/None
BW01	1	c	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
BW01	2	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Complete	Old/None
BW01	2	b	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
BW01	3	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
BW01	4	a	Loblolly	Live	Artificial	Active	Insert	Normal	Unstarted	Recent
BW01	BW01NT1	a	Loblolly	Live	Natural	Inactive	Start (Fr)	Normal	Unstarted	Recent
BW02	5	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	None
BW02	6	a	Loblolly	Dead	Artificial	Inactive	Insert	Normal	Unstarted	None
BW02	7	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	None
BW02	8	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	None