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Investigation of Red-cockaded Woodpeckers in Virginia: Year 2020 Report

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INVESTIGATION OF RED-COCKADED WOODPECKERS IN VIRGINIA: 2020 REPORT



THE CENTER FOR CONSERVATION BIOLOGY
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Investigation of Red-cockaded Woodpeckers in Virginia: 2020 report

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Front Cover Image: Chance Hines extracting woodpecker brood for banding in cluster 1 at Piney Grove Preserve. Photo by Laura Duval.



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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 2020 breeding season, Piney Grove Preserve supported 15 potential breeding groups (including one in the Big Woods) that produced 30 fledglings. All groups made breeding attempts, including the cluster in Big Woods for the second time, though two clusters (cluster 8 and Big Woods) failed to produce fledglings. The population as a whole had a reproductive rate of 2.0 ± 0.31 (mean \pm SE) young/breeding group. The 15 groups that made breeding attempts had a success rate of 86.7% (13 of 15). Fledging rate for the 13 productive pairs was 2.3 ± 0.64 . Of the 63 eggs followed in 2020, 34 (54.0%) hatched, 34 (54.0%) survived to banding age, and 30 (47.6%) fledged. Birds that fledged included 21 females and 9 males. Seventeen of these birds were retained and detected during the winter count and four (two males and two females) were translocated to Great Dismal Swamp, NWR on 07–08 October.

During the calendar year of 2020, 102 individual red-cockaded woodpeckers were identified within Piney Grove Preserve including 72 birds that were hatched at Piney Grove during previous years and 30 nestlings that fledged during the 2020 breeding season. Thirty-one birds (41%) were in their fourth year or more and nine birds (10%) were at least in their tenth year. One bird was 16 years old (17th calendar year).

Moving into the breeding season there were 67 birds identified within Piney Grove Preserve distributed among 15 clusters. This is the most birds Piney Grove has carried heading into the breeding season (two more than in 2017 and 2019). The number of birds per cluster varied from two to seven with a mean of 4.33 ± 0.45 (mean \pm SE). Eighty birds were detected during the 2020 winter survey. This represents a 5% increase over the winter of 2019 and a 13% increase over the winter of 2018. Birds present during the winter survey included 17 of the 30 birds fledged in 2020 and 63 adult birds hatched in previous years. Group size in winter ranged from two to nine birds and averaged 5.04 ± 0.50 (mean \pm SE) birds per group.

BACKGROUND

Context

The red-cockaded woodpecker (*Leuconotopicus 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), Greenville (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 2015-2020 with the intent of establishing a second breeding population within the state (Watts et al. 2020). 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 2020 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.

Translocation

The U.S. Fish and Wildlife Service, the Virginia Department of Wildlife Resources, and The Nature Conservancy, agreed in the springs of 2017–2020 to attempt to move one–two pairs of woodpeckers from Piney Grove Preserve to the Great Dismal Swamp National Wildlife Refuge. This decision was in support of ongoing efforts to establish a second breeding population in Virginia. Following the breeding season, we assessed possible donor clusters based on fledging results. Clusters that produced young were considered potential donors if they met criteria established in the national management plan. Clusters were considered potential donors of a male if 1) the cluster contained a hatching-year male at the time of anticipated translocation and 2) the group supported at least one additional helper male. Clusters were considered to be potential donors of a female if the group supported a hatching-year female at the time of anticipated translocation. Clusters were eliminated from the potential donor pool for logistical reasons if roost cavities were >50 feet. Selection of donor clusters for male and females were determined independently except that the pair would not be taken from the same cluster.

We roosted birds in September within potential donor clusters to determine retention of hatching-year birds and to identify target birds. Target birds and two backup birds were identified for possible translocation. Target and backup birds were roosted again during the first week of October in preparation for captures. We deployed two teams to capture birds prior to roosting during the night of the translocation. Birds were captured after entering cavities using pole nets. Once captured, birds were lowered to the ground and assessed to confirm identification and gender. Birds were placed in transport boxes and driven to the Great Dismal Swamp, NWR for placement.

Birds were placed in artificial cavities, screened in for the night and released at dawn the following morning. We climbed recipient trees using Swedish climbing ladders, placed birds in artificial cavities and tacked screens over the entrance. A release team returned to the recruitment cluster before dawn the following morning. Screens were removed just after dawn and birds were allowed to fly out into their new habitat.

RESULTS

Breeding Observations

Piney Grove supported 15 potential breeding groups (including one in Big Woods) in 2020 that produced 30 fledglings (Table 1). All potential breeding groups made breeding attempts. The Big Woods cluster made two breeding attempts and did not succeed on either. Cluster 8 failed in their breeding attempt and cluster 5 produced two nests, but only one produced young (see details below). The population as a whole had a reproductive rate of 2.0 ± 0.31 (mean \pm SE) young/breeding group. The 15 groups that made breeding attempts had a success rate of 86.7% (13 of 15). Fledging rate for the 13 productive pairs was 2.3 ± 0.64 . Of the 63 eggs monitored in 2020, 34 (54.0%) hatched, 34 (54.0%) survived to banding age, and 30 (47.6%) fledged (Table 1). Birds that fledged included 21 females and 9 males (Table 2). Seventeen of these birds were retained and detected during the winter count and four were translocated to Great Dismal Swamp, NWR.

Table 1. Summary of 2020 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	6	3	3	3
Cluster 3	Yes	Yes	4	2	2	2
Cluster 5(a)	Yes	Yes	2	0	0	0
Cluster 5(b)	Yes	Yes	3	3	3	3
Cluster 6	Yes	Yes	3	2	2	2
Cluster 7	Yes	Yes	4	3	3	3
Cluster 8	Yes	Yes	2	0	0	0
Cluster 10	Yes	Yes	4	2	2	2
Cluster 11	Yes	Yes	4	3	3	3
Cluster 12	Yes	Yes	3	2	2	2
Cluster 13	Yes	Yes	4	4	4	4
Cluster 15	Yes	Yes	4	1	1	1
Cluster 17	Yes	Yes	4	3	3	2
Cluster 18	Yes	Yes	2	1	1	1
Cluster 19	Yes	Yes	5	3	3	2
Big Woods	Yes	Yes	4	2	2	0
Big Woods (c2)	Yes	Yes	3	0	0	0
Total	15	17	63	34	34	30

Table 2. List of red-cockaded woodpecker nestlings banded within Piney Grove Preserve during the 2020 breeding season. Genders were determined during fledge checks.

Breeding Group	Date	USGS Band	Left	Right	SEX
Cluster 3	5/8/2020	901-29889	RE/DB/RE	AL/OR	F
Cluster 3	5/8/2020	901-29890	AL/LB	RE/DB/RE	F
Cluster 7	5/8/2020	901-29886	RE/WH/RE	AL/OR	F
Cluster 7	5/8/2020	901-29887	RE/WH/RE	AL/YE	M
Cluster 7	5/8/2020	901-29888	AL/HP	RE/WH/RE	F
Cluster 10	5/11/2020	901-29896	OR/OR/OR	AL/YE	M
Cluster 10	5/11/2020	901-29897	AL/DG	OR/WH/OR	F
Cluster 11	5/11/2020	901-29891	AL/LB	HP/PU	F
Cluster 11	5/11/2020	901-29892	YE/LB/YE	AL/DG	F
Cluster 11	5/11/2020	901-29893	YE/LB/YE	AL/OR	F
Cluster 17	5/11/2020	901-29898	AL/OR	YE/DG/YE	F
Cluster 17	5/11/2020	901-29899	AL/DB	DG/WH	U
Cluster 17	5/11/2020	901-29900	DG/WH/DG	AL/HP	F
Cluster 19	5/11/2020	901-29894	WH/YE/WH	AL/DB	F
Cluster 19	5/11/2020	901-29895	AL/RE	WH/YE/WH	F
Cluster BW1	5/11/2020	1801-67898	PUWH/DB/PUWH	RE/AL	U
Cluster BW1	5/11/2020	1801-67899	PUWH/DB	DB/AL	U
Cluster 1	5/14/2020	2421-01606	AL/DB	YE/DG/YE	F
Cluster 1	5/14/2020	2421-01607	YE/DG/YE	AL/WH	F
Cluster 1	5/14/2020	2421-01608	YE/DG/YE	AL/RE	M
Cluster 6	5/21/2020	2421-01614	DB/WH/DB	AL/RE	F
Cluster 6	5/21/2020	2421-01615	AL/RE	DB/WH/DB	M

Breeding Group	Date	USGS Band	Left	Right	SEX
Cluster 13	5/21/2020	2421-01609	YE/OR/YE	AL/DG	M
Cluster 13	5/21/2020	2421-01610	OR/YE/OR	AL/RE	M
Cluster 13	5/21/2020	2421-01611	AL/DB	OR/YE/OR	F
Cluster 13	5/21/2020	2421-01612	AL/RE	YE/OR/YE	F
Cluster 15	5/21/2020	2421-01613	DB/OR/DB	AL/YE	M
Cluster 18	5/25/2020	2421-01619	RE/DG/RE	AL/OR	F
Cluster 12	6/1/2020	2421-01620	RE/YE/RE	AL/DB	F
Cluster 12	6/1/2020	2421-01621	AL/LB	RE/YE/RE	M

Breeding Details

Cluster 1 – The breeding male (DG/YE/DG, WH/AL) was present for the eighth consecutive breeding season, though no breeding was recorded in 2014 when all birds present were males. The laying female (AL/OR, LG/DB/LG) was present for the fifth consecutive year. Five eggs were detected on 25 April in a recently excavated tree. This was a newly constructed cavity at about 34 feet tall. We documented sixth egg on 4 May and then three nestlings with two unhatched eggs on 7 May. We banded the three nestlings on 14 May at 6.5 and 7 days of age (physical age). Fledge checks on 1 June and 3 June identified the three young as two females and a male. During the 2020 winter head count, all three of these birds were identified in cluster 1, though one of the females (YE/DG/YE, AL/WH) was also observed in cluster 13.

Cluster 3 – The breeding male (AL/WH, DB/RE/DB) remained for the fifth consecutive year and the breeding female (YE/OR/YE, AL/YE) nested for the fourth consecutive year. The pair nested in tree #313. This tree is too tall to pole, but we observed the female exiting the cavity on 1 May and we presumed incubation was occurring. We climbed the nest tree on 7 May and banded two nestlings at 7.5 and 8 days of age (physical age). A fledge check on 25 May identified the two young as females. Both of these birds were identified at cluster 3 during the winter survey, though one of them (AL/LB, RE/DB/RE) was also identified foraging near cluster 5.

Cluster 5 – Both breeding adults from the 2019 nesting season were still present in 2020. This is the fourth consecutive year at the cluster for the male (LB/WH/LB, AL/DG) and the third consecutive year for the female (WH/OR/OR, AL/LB), but two nests were laid in this cluster. The first nest discovered was in cavity tree #260 for the third consecutive year. An adult was observed exiting the cavity on 19 May. This cavity is too tall to pole so we monitored behavior from the ground until the tree was climbed on 29 May when we observed two eggs. Behavioral observations were consistent with incubation on 29 May and 1

June, but no activity was observed on 3 June, 8 Jun and 11 Jun. An adult was observed with food near tree #260, but flew to the north where three day-14 nestlings were observed in tree 323. These young were too developed for banding and the nest was monitored until two females and one male fledged on 22 June.

The two nests were concurrent, but it did not appear that the cluster had split because all birds in the cluster were observed feeding young. The breeding female from 2019 was only seen feeding nestlings once and typically foraged alone further from the new nest cavity, while another female (WH/LB/WH,AL/RE) frequently fed the nestlings and may have been the breeder for this nest. Two of the young unbanded birds were observed at cluster 5 during the winter survey and no unbanded birds were detected anywhere else at Piney Grove Preserve during the winter survey.

Cluster 6 – This is the second year of breeding for the pair in this cluster which includes the breeding male (DB/RE/DB, AL/WH), which has been present since 2011, and the breeding female (AL/RE, LG/YE/DG) from the 2019 nesting season. Three eggs were observed on 7 May in cavity tree #332; this was a new cavity at approximately 35 feet high. Two nestlings and one egg were observed on 14 May. Both nestlings were banded on 21 May at 6.5-7 days of age (physical age). The female (DB/WH/DB, AL/RE) was detected at cluster 6 during the winter survey but the male (AL/RE, DB/WH/DB) was not detected.

Clusters 7 & 9 – The breeding male (OR/OR/OR, AL/DG) continued for the ninth consecutive year and the breeding female for the second consecutive season was (OR/AL, WH/RE/WH). The nest cavity was in the same tree (#297) as in 2019. Four eggs were observed on 23 April and all three eggs hatched on 1 May. The three young were banded on 7 May at 6.5-7 days (physical age; keyed to 7 days for one young and 6.5 days for two young). During a fledge check on 25 May, all birds were identified and sexed as females. One of the young females (RE/WH/RE, AL/YE) was translocated to GDSNWR during autumn, another young female (AL/HP, RE/WH/RE) was observed at cluster 8 during the winter survey, and the third female (RE/WH/RE, AL/OR) was identified at cluster 7 during the winter survey.

Cluster 8 – The breeding female (LB/WH/LB, (OR)/AL) returned for the twelfth consecutive year and the breeding male (LG/YE/WH, AL/LB) returned for the second consecutive year. Two eggs were discovered in tree #809 on 19 May, but the nest was empty on 29 May. Aggressive interactions were observed at this cluster throughout the breeding season, which may have contributed to the relatively late start for their nest. The aggressive interactions continued after their failed attempt, which included the constant chasing of the breeding female from the cluster. We monitored this cluster through 18 June and we observed no further behavior associated with nesting or feeding young.

Cluster 10 – The breeding male (OR/WH/OR, AL/DB) was present for the fourth consecutive year and the breeding female (LB/DB/OR, AL/DG) was present for the second consecutive year. The nest cavity was in tree #214, which was also used in 2017. Four eggs were observed on 1 May and two nestlings were observed on 7 May. The two nestlings were banded at 6.5 days old (physical age) on 11 May. One male and one female fledged on 1 June. The female (AL/DG, OR/WH/OR) was translocated to GDSNWR and the male (OR/OR/OR, AL/YE) was not located during the 2020 winter survey.

Cluster 11 – The breeding pair, including male (YE/DB/YE, LB/AL) and female (OR/DB/OR, AL/DB), were the same for the seventh consecutive year. This pair used a newly excavated tree for nesting, #291,

and we observed four eggs on 23 Apr. Three eggs hatched on 4 May and three nestlings were banded on 11 May at 5-6 days old (physical age). During a fledge check on 1 June all three of the young were determined to be female. We observed all three fledglings within the cluster during the 2020 winter survey.

Cluster 12 – Both the male (LG/LG/LG, AL/YE) and female (WH/LB/WH, AL/YE) were paired for the fourth consecutive year and nested in cavity tree #266 for the third consecutive year. We recorded one egg on 7 May and 3 eggs on 11 May. We observed two nestlings on 25 May and banded two day 6.5 nestlings (physical age) on 1 June. On 17 June we sexed one bird as male and the other as female. The female (RE/YE/RE, AL/DB) was observed within the cluster, but the male (AL/LB, RE/YE/RE) was not observed during the winter survey.

Cluster 13 – The breeding male (WH/RE/WH, AL/DB) was present for the tenth consecutive breeding season and the female (AL/LG, WH/(PU)/WH) was present for her fifth consecutive breeding season. They used tree #312 and four eggs were observed on 1 May. Four nestlings were observed on 14 May and all four nestlings were banded on 19 May at 5.5-6.5 days old (physical age; one keyed at 5.5, 2 at 6, and one at 6.5). All of these birds fledged on 8 June were identified as two males and two females. One of the hatch year males (OR/YE/OR,AL/RE) was translocated to the Great Dismal Swamp National Wildlife Refuge. The other young male (YE/OR/YE, AL/DG) was observed at the cluster, but neither of the females (AL/DB,OR/YE/OR and AL/RE,YE/OR/YE) were observed during the 2020 winter survey.

Cluster 15 – The male (AL/RE, YE/(DB)/(YE)) and female (WH/LB/WH, (PU)/AL) from 2019 were present in 2020 and nested in tree #308 for the second consecutive year. This is the fourth breeding season for the male and the ninth for the female. Two eggs were observed on 4 May and four eggs were observed on 8 May. Only one of these eggs hatched on 14 May and this nestling was banded at 6.5 days (physical age) on 19 May. During a fledge check on 8 July this bird was identified as a female and was also located within the cluster during the 2020 winter survey.

Cluster 17 –The breeding male (AL/YE,WH/RE/WH) returned for the second consecutive year, but the female (AL/LB, LG/OR/WH) bred here for her first year. They nested in a newly excavated cavity in a tree that was approximately 23 feet high. Four eggs were observed on 23 April and four nestlings were observed on 4 May. We banded three nestlings at 5-6 days old (physical age; one keyed out to 5, one to 5.5, and the other to 6) on 13 May. All of these nestlings were developmentally younger than their chronological age and the smallest was particularly underdeveloped. We only detected two fledglings, both female; during fledge checks on 29 May and 1 June; the fledgling we failed to detect was the underdeveloped nestling. Neither of the fledglings were detected during the 2020 winter survey.

Cluster 18 – The male (YE/(LG)/(LG), AL/WH) and female (LG/YE/LB, AL/YE) that attempted to nest in 2019 were the same in 2020, but used a more recently excavated cavity in tree 331 that was approximately 27 feet high. During the 2019 breeding season, this pair produced two clutches of eggs, but failed to hatch nestlings. During the 2020 breeding season, we observed two eggs on 4 May and one nestling on 19 May. That nestling was banded as an eight day old (physical age) nestling on 25 May. The young bird fledged on 11 June and was sexed as a female. The lone fledgling was not observed during the 2020 winter survey.

Cluster 19 – The breeding male (OR/DB/OR, AL/LG) was present for the fifth consecutive season and the female (DB/DB/WH, AL/LB) was present for the second consecutive season. The pair nested in the same cavity as in 2018 and 2019, tree #232. Five eggs were observed on 23 April. Three nestlings were observed on 4 May and two of these nestlings were banded at 6.5 days old (physical age) on 11 May. A fledge check on 29 May identified the one male and one female fledgling. The male (AL/RE,WH/YE/WH) was translocated to the GDSNWR and the female (WH/YE/WH,AL/DB) was observed at cluster 19 during the winter survey.

Big Woods – A pair of birds bred for the second year in a row at the Big Woods cluster during 2020. The male from 2019 (AL/OR, YE/OR/YE) was replaced by a male that was fledged from cluster 17 in 2018 (DG/WH/DG, AL/OR), but the female (DB/DB/WH, AL/(LB)) remained the same as in 2019. Matt Kline from DWR monitored this nest, and CCB banded 2 nestlings at 5 and 5.5 days (physical age) on 11 May. Both of these birds were underdeveloped. The cavity was checked on 26 May and feathers and at least one band was observed in the cavity, suggesting that the nest may have failed due to predation. There appeared to be some debris along the bottom of the cavity and feathers indicating the birds matured at least enough to grow in flight feathers. On 05 June, two eggs were observed in a different cavity, with three eggs on 08 June. The cavity was not checked again until 24 June and zero eggs were observed., This second nest either failed during incubation or with young nestlings.

Population Monitoring

During the calendar year of 2020, 102 individual red-cockaded woodpeckers were identified within Piney Grove Preserve/Big Woods (Tables 2,3,4). This included 72 birds that were hatched at Piney Grove during previous years and 30 nestlings that fledged during the 2020 breeding season. Fourteen birds that were produced during the 2019 breeding season were still present in the population. Thirty-one birds (30%) were in their fourth year (fifth calendar year) or more and nine birds (9%) were at least in their tenth year (eleventh calendar year). One bird was sixteen years old (seventeenth calendar year).

There were 28 birds detected in 2019 that were not detected in 2020. This includes the loss of 15 adults hatched prior to 2019 and 13 birds hatched in 2019. Two of the breeding adults from 2019 were replaced including the female from cluster 17 and the male from Big Woods. Additionally, the female at cluster 5 may have been replaced mid-season despite laying at least 2 eggs in a failed attempt at nesting.

Moving into the breeding season there were 67 birds identified within Piney Grove Preserve distributed among 15 clusters including C-1, C-3, C-5, C-6, C-7, C-8, C-10, C-11, C-12, C-13, C-15, C-17, C-18, C-19 and Big Woods. This is the highest number of adults that Piney Grove has ever carried into the breeding season, two more than the previous two years. The number of birds per cluster varied from two to eight with a mean of 4.47 ± 0.52 (mean \pm SE). Cluster 12, 15, 17, and the Big Woods had only the breeding pair present moving into the breeding season. Clusters 5 carried the most birds (8), followed by clusters 7 and 13 with seven birds apiece.

Eighty birds were detected during the 2020 winter survey (Table 4). This represents a 4% increase over the 2019 winter survey and a 10% increase over the 2018 winter survey (80 vs 77 vs 73). Birds present

include 17 of the 30 birds fledged in 2020 and 63 adult birds hatched in previous years. There were 8 adult birds detected during the spring survey that were not detected during winter survey.

During the winter survey, birds were associated with 15 different cluster areas including C-1, C-3, C-5, C-6, C-7, C-8, C-10, C-11, C-12, C-13, C-15, C-17, C-18, C-19 and Big Woods. As in years past, the birds roosting in C-9 actively foraged with the birds from C-7 so are treated as one functional group. Group size in winter ranged from two to nine birds and averaged 5.04 ± 0.50 (mean \pm SE) birds per group. Cluster five supported nine birds and clusters one, seven, and eight supported seven birds.

Table 3. Individual red-cockaded woodpecker sightings during the 2020 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
2421-02916	AL/OR	LG/DB/LG	F	2015	1
2421-02944	LB/WH/OR	AL/DG	F	2016	1
1581-66270	DG/YE/DG	WH/AL	M	2006	1
2421-01604	DG/YE/DG	DB/AL	M	2018	1
901-29856	DG/YE/DG	AL/YE	F	2019	1
2421-02910	AL/WH	DB/RE/DB	M	2014	3
2421-02966	BK/OR/DB	HP/AL	M	2017	3
901-29851	OR/DG/OR	AL/LB	M	2015	3
901-29882	YE/WH/YE	DB/AL	M	2019	3
821-70952	YE/(OR)/(YE)	AL/YE	F	2012	3
2421-02903	WH/OR/OR	AL/LB	F	2014	5
2421-02999	DB/RE/DB	AL/YE	F	2018	5
901-29879	WH/LB/WH	AL/RE	F	2019	5
2421-01602	AL/LG	LB/WH/LB	M	2018	5
2421-02949	LB/YE/(DG)	AL/LG	M	2016	5
2421-02977	OR/DB/LB	HP/AL	F	2017	5
2421-01603	AL/OR	LB/WH/LB	F	2018	5

USGS Band #	Left Leg	Right Leg	Sex	Hatch Year	Spring Cluster
821-70983	AL/WH	WH/(LB)/WH	F	2013	5
1581-66297	AL/(RE)	LG/YE/DG	F	2009	6
1581-66253	DB/RE/DB	AL/WH	M	2004	6
2421-02975	WH/DB/YE	PK/AL	M	2017	6
2421-02948	DB/WH/YE	AL/DB	F	2016	6
821-70946	(PU)/YE/(PU)	AL/LB	M	2012	6
821-70953	OR/YE/YE(rev)	AL/LG	F	2012	7
2421-02943	DB/LG/YE	AL/DB	M	2016	7
821-70901	OR/OR/OR	AL/DG	M	2009	7
2421-02982	OR/AL(rev)	WH/RE/WH	F	2018	7
901-29854	DG/AL	WH/RE/WH	F	2019	7
2421-02914	AL/(DB)	WH/(PU)/WH	M	2015	7
2421-02969	LB/DB/GY	HP/AL	M	2017	7
1581-66278	LB/WH/LB	(OR)/AL	F	2007	8
2421-02942	LG/YE/WH	AL/LB	M	2016	8
2421-02985	LB/AL (rev)	WH/RE/WH	M	2018	8
821-70967	AL/OR	YE/YE/DB	M	2013	8
2421-02965	YE/(WH)/BK*	PK/AL	M	2017	8
901-29864	YE/DB/YE	AL/RE	M	2019	8
2421-02941	LB/DB/OR	AL/DG	F	2016	10
2421-02929	OR/WH/OR	AL/DB	M	2015	10
901-29857	DG/YE/DG	OR/AL	F	2019	10
2421-02981	LB/OR/DB (rev)	HP/AL	F	2017	11

USGS Band #	Left Leg	Right Leg	Sex	Hatch Year	Spring Cluster
821-70935	OR/(DB)/(OR)	AL/(DB)	F	2011	11
2421-02970	LG/DB/LB	HP/AL	M	2017	11
821-70919	YE/DB/YE	LB/AL	M	2011	11
821-70988	WH/LB/WH	AL/YE (2)	F	2014	12
2421-02931	LG/LG/LG	AL/YE	M	2015	12
2421-02905	AL/LG	WH/(PU)/WH	F	2014	13
2421-02907	AL/WH	YE/OR/YE	M	2014	13
821-70994	YE/YE/(DB)	AL/LG	M	2014	13
901-29876	OR/YE/OR	LB/AL	M	2019	13
1581-66274	WH/RE/WH	AL/DB_faded	M	2007	13
2421-02964	WH/DB/OR	(HP)/AL	M	2017	13
2421-02990	YE/OR/YE	AL/OR	M	2018	13
821-70933	LB/WH/WH	(PU)/AL	F	2011	15
821-70906	AL/(RE)	(YE)/(DB)/(YE)	M	2010	15
821-70965	AL/LG	YE/YE/DB	F	2013	17
2421-02984	AL/YE	WH/RE/WH	M	2018	17
2421-02952	LG/YE/LB	AL/YE	F	2016	18
821-70923	YE/(LG)/(LG)	AL/WH	M	2011	18
901-29855	WH/AL	WH/RE/WH	M	2019	18
901-29853	WH/RE/WH	YE/AL	M	2019	18
901-29883	AL/YE	YE/WH/YE	F	2019	19
2421-01605	Al/DB	OR/OR/OR	F	2018	19
2421-02945	AL/LB	LG/OR/WH	F	2016	19
901-29884	YE/WH/YE	AL/RE	F	2019	19

USGS Band #	Left Leg	Right Leg	Sex	Hatch Year	Spring Cluster
821-70936	OR/DB/OR	AL/LG	M	2011	19
2421-02939	(DB)/DB/WH	AL/(LB)	F	2016	BW1 ^a
2421-02987	DG/WH/DG	AL/OR	M	2018	BW1 ^a

^aBig Woods

Table 4. Individual red-cockaded woodpecker sightings during the 2020 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
2421-02916	AL/OR	LG/DB/LG	F	2015	1
2421-02944	LB/WH/OR	AL/DG	F	2016	1
1581-66270	DG/(YE)/DG	WH/AL	M	2006	1
2421-01606	AL/DB	YE/DG/YE	F	2020	1
2421-01608	YE/DG/YE	AL/RE	M	2020	1
2421-01607	YE/DG/YE	AL/WH	F	2020	1 & 13
901-29856	DG/YE/DG	AL/YE	F	2019	1 & 5/17
2421-02910	AL/WH	DB/RE/DB	M	2014	3
901-29851	OR/DG/OR	AL/LB	M	2015	3
821-70952	YE/(OR)/(YE)	AL/YE	F	2012	3
901-29859	RE/AL	DB/RE/DB	F	2019	3
901-29889	RE/DB/RE	AL/OR	F	2020	3
901-29890	AL/LB	RE/DB/RE	F	2020	3 & 5/17
2421-02903	WH/OR/OR	AL/LB	F	2014	5
2421-02949	LB/YE/(DG)	AL/LG	M	2016	5
1581-66288	LB/WH/LB	AL/DG	M	2008	5
821-70983	AL/WH	WH/(LB)/WH	F	2013	5
2421-01602	AL/LG	LB/WH/LB	M	2018	5
2421-02999	DB/RE/DB	AL/YE	F	2018	5
901-29879	WH/LB/WH	AL/RE	F	2019	5
Unbanded	Unbanded	Unbanded	F	2020	5
Unbanded	Unbanded	Unbanded	M	2020	5/17

USGS Band #	Left Leg	Right Leg	Sex	Hatch Year	Winter Cluster
1581-66253	DB/RE/DB	AL/WH	M	2004	6
1581-66297	AL/(RE)	LG/YE/DG	F	2009	6
821-70946	(PU)/YE/(PU)	AL/LB	M	2012	6
2421-02975	WH/DB/YE	PK/AL	M	2017	6
2421-02948	DB/WH/YE	AL/DB	F	2016	6
2421-01614	DB/WH/DB	AL/RE	F	2020	6
2421-02943	DB/LG/YE	AL/DB	M	2016	7
821-70901	OR/OR/OR	AL/DG	M	2009	7
2421-02914	AL/(DB)	WH/(PU)/WH	M	2015	7
2421-02982	OR/AL(rev)	WH/RE/WH	F	2018	7
821-70953	OR/YE/YE(rev)	AL/LG	F	2012	7
901-29854	DG/AL	WH/RE/WH	F	2019	7
901-29886	RE/WH/RE	AL/OR	F	2020	7
1581-66278	LB/WH/LB	(OR)/AL	F	2007	8
2421-02942	LG/YE/WH	AL/LB	M	2016	8
2421-02977	OR/DB/LB	HP/AL	F	2017	8
2421-02966	BK/(OR)/DB	HP/AL	M	2017	8
2421-02985	LB/AL (rev)	WH/RE/WH	M	2018	8
901-29888	AL/HP	RE/WH/RE	F	2020	8
901-29864	YE/DB/YE	AL/RE	M	2019	8 & 5/17
2421-02941	LB/DB/OR	AL/DG	F	2016	10
2421-02929	OR/WH/OR	AL/DB	M	2015	10
901-29857	DG/YE/DG	OR/AL	F	2019	10
901-29877	YE/OR/YE	HP/AL	F	2019	10

USGS Band #	Left Leg	Right Leg	Sex	Hatch Year	Winter Cluster
2421-02981	LB/OR/DB (rev)	HP/AL	F	2017	11
821-70935	OR/(DB)/(OR)	AL/(DB)	F	2011	11
821-70919	YE/DB/YE	LB/AL	M	2011	11
2421-02970	LG/DB/LB	HP/AL	M	2017	11
901-29892	YE/LB/YE	AL/DG	F	2020	11
901-29891	AL/LB	HP/PU	F	2020	11
901-29893	YE/LB/YE	AL/OR	F	2020	11
2421-02931	LG/LG/LG	AL/YE	M	2015	12
821-70988	WH/LB/WH	AL/YE (2)	F	2014	12
RE/YE/RE	RE/YE/RE	AL/DB	F	2020	12
2421-02905	AL/LG	WH/(PU)/WH	F	2014	13
2421-02907	AL/WH	YE/OR/YE	M	2014	13
1581-66274	WH/RE/WH	AL/DB_faded	M	2007	13
2421-02964	WH/DB/OR	(HP)/AL	M	2017	13
901-29876	OR/YE/OR	LB/AL	M	2019	13
2421-01609	YE/OR/YE	AL/DG	M	2020	13
821-70933	LB/WH/WH	(PU)/AL	F	2011	15
821-70906	AL/(RE)	(YE)/(DB)/(YE)	M	2010	15
901-29852	WH/RE/WH	DG/AL	F	2019	15
2421-01613	DB/OR/DB	AL/YE	M	2020	15
821-70965	AL/LG	YE/YE/DB	F	2013	17
2421-02984	AL/YE	WH/RE/WH	M	2018	17
901-29883	AL/YE	YE/WH/YE	F	2019	17

USGS Band #	Left Leg	Right Leg	Sex	Hatch Year	Winter Cluster
901-29853	WH/RE/WH	YE/AL	M	2019	17
821-70923	YE/(LG)/(LG)	AL/WH	M	2011	18
901-29855	WH/AL	WH/RE/WH	M	2019	18
2421-02952	LG/YE/LB	AL/YE	F	2016	18
2421-01605	Al/DB	OR/OR/OR	F	2018	19
2421-02945	AL/LB	LG/OR/WH	F	2016	19
821-70936	OR/DB/OR	AL/LG	M	2011	19
901-29884	YE/WH/YE	AL/RE	F	2019	19
901-29894	WH/YE/WH	AL/DB	F	2020	19
2421-02987	DG/WH/DG	AL/OR	M	2018	BW1 ^a
2421-02939	(DB)/DB/WH	AL/(LB)	F	2016	BW1 ^a

^aBig Woods

Translocation

One female and one male were captured in Piney Grove Preserve on 7 October 2020 and another male and female were captured on 8 October 2020 and taken to Great Dismal Swamp NWR for release. The birds were transported in holding boxes, placed in artificial cavities and screened in for the night. Both birds were released just after dawn on 8 and 9 October by removing the cavity screens. Both birds emerged successfully from cavities and foraged in the surrounding canopy.

Table 5. Summary of translocation activities for red-cockaded woodpeckers from Piney Grove Preserve to Great Dismal Swamp NWR during 2020.

USGS Band	Left Leg	Right Leg	Sex	Date Moved	Origin	Destination
901-29895	AL/RE	WH/YE/WH	M	9/7/2020	C-19	C3-1
901-29887	RE/WH/RE	AL/YE	F	9/7/2020	C-7	C3-1
2421-01610	OR/YE/OR	AL/RE	M	9/8/2020	C-13	C2-1
901-29897	AL/DG	OR/WH/OR	F	9/8/2020	C-10	C2-1

Tree and Cavities

A total of 310 woodpecker cavities trees supporting 360 cavities were known and still standing during 2020 at Piney Grove Preserve and another 11 cavities in 8 trees at Big Woods (Appendix I). The total at Piney Grove includes 281 natural cavities and 84 artificial inserts. Of the 281 natural cavities 106 (37.7%) were starts in various stages of completion. Of the 150 completed natural cavities, 81 (54.0%) were considered active in December. The total at Big Woods includes five 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 2020.

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
1	32		Loblolly	Live	Natural	Inactive	Complete	>2x	Complete	Recent
1	34		Loblolly	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
1	35		Unknown	Dead	Natural	N/A	N/A	Normal	N/A	N/A
1	36		Loblolly	Live	Natural	Unknown	Complete	Normal	Complete	Old/None
1	37		Loblolly	Live	Natural	Inactive	Start	<2x	Unstarted	Old/None
1	42		Loblolly	Live	Natural	Relic	Healed	N/A	N/A	Old/None
1	43		Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Old/None
1	44	a	Loblolly	Live	Natural	Inactive	Complete	>2x	Unstarted	Old/None
1	44	b	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
1	46	a	Loblolly	Live	Natural	Inactive	Complete	>2x	Unstarted	Old/None
1	48	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
1	49	a	Loblolly	Live	Natural	Inactive	Unavailable	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	>2x	Complete	Old/None
1	55	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
1	55	b	Loblolly	Live	Natural	Relic	Complete	>2x	None	Old/None
1	55	c	Loblolly	Live	Natural	Relic	Complete	>2x	None	Old/None
1	57		Loblolly	Live	Natural	Active	Complete	>4x	Complete	Recent
1	58	a	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Fresh
1	58	b	Loblolly	Live	Natural	Unknown	Complete	Normal	Complete	Fresh
1	58	c	Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Fresh

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
1	59	a	Loblolly	Live	Natural	Inactive	Start (Adv)	<2x	Unstarted	Old/None
1	59	b	Loblolly	Live	Natural	Inactive	Start (Adv)	<2x	Unstarted	Old/None
1	117	a	Loblolly	Live	Artificial	Inactive	Insert	Healing	Unstarted	Old/None
1	117	b	Loblolly	Live	Natural	Active	Insert	Normal	Complete	Fresh
1	212		Shortleaf	Live	Natural	Active	Complete	<2x	Incomplete	Fresh
1	213		Loblolly	Live	Natural	Inactive	Complete	>4x	Unstarted	Old/None
1	225		Shortleaf	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
1	241		Loblolly	Live	Natural	Inactive	Complete	>2x	Incomplete	Recent
1	242		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
1	257	a	Loblolly	Live	Natural	Inactive	Complete	>4x	Incomplete	Fresh
1	257	b	Loblolly	Live	Natural	Inactive	Start (Adv)	<2x	Unstarted	Old/None
1	273		Shortleaf	Live	Natural	Active	Complete	>2x	Unstarted	Fresh
1	304		Loblolly	Live	Natural	Active	Complete	Normal	Unstarted	Fresh
1	305		Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
1	307		Loblolly	Live	Natural	Unknown	Start (Adv)	Normal	Incomplete	Recent
1	1NT1		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
1	1NT2		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
1	1NT3		Loblolly	Live	Natural	Active	Complete	Normal	Unstarted	Fresh
1	1NT4		Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
1	1NT6		Shortleaf	Live	Natural	Inactive	Start (Adv)	<2x	Unstarted	Old/None
1	Unknown		Loblolly	Live	Natural	Inactive	Complete	>2x	Complete	Old/None
2	60		Loblolly	Live	Artificial	Relic	Insert	N/A	None	Old/None
2	63		Loblolly	Live	Artificial	Relic	Insert	N/A	None	Old/None
3	2		Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
3	6		Loblolly	Live	Natural	Relic	Start (Adv)	Normal	None	Old/None
3	7		Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Old/None

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
3	8		Loblolly	Live	Natural	Unknown	Complete	>2x	Complete	Old/None
3	9		Loblolly	Live	Natural	Inactive	Complete	>2x	Complete	Old/None
3	72		Loblolly	Live	Natural	Relic	Complete	Healing	Unstarted	Old/None
3	75		Loblolly	Live	Natural	Relic	Unavailable	Healing	None	Old/None
3	76		Loblolly	Live	Natural	Inactive	Complete	Normal	Unstarted	Old/None
3	79		Loblolly	Live	Artificial	Inactive	Insert	Healing	Unstarted	Old/None
3	80		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
3	128		Loblolly	Live	Natural	Active	Complete	<2x	Incomplete	Fresh
3	177		Loblolly	Live	Natural	Relic	healed over	N/A	None	Old/None
3	178		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
3	179		Loblolly	Live	Natural	Unknown	Complete	<2x	Complete	Fresh
3	180		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
3	208		Loblolly	Live	Natural	Relic	Complete	Normal	None	Old/None
3	258		Loblolly	Live	Natural	Unknown	Complete	>2x	Complete	Fresh
3	259		Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
3	289		Loblolly	Live	Natural	Relic	Start (Adv)	<2x	None	Old/None
3	313		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
3	3NT2	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
3	3NT2	b	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
3	3NT3		Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Old/None
3	3NT4		Loblolly	Live	Natural	Active	Start (Adv)	Normal	Unstarted	Fresh
4	82		Loblolly	Live	Artificial	Unknown	Insert	Normal	Complete	Old/None
4	84		Loblolly	Live	Artificial	Relic	Insert	Healing	Unstarted	Old/None
4	186		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
5	14		Loblolly	Live	Natural	Unknown	Complete	>2x	Complete	Recent
5	15		Loblolly	Live	Natural	Active	Complete	>2x	Complete	Recent

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
5	17		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
5	18		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
5	19	a	Loblolly	Live	Natural	Inactive	Unavailable	Normal	Unstarted	Old/None
5	19	b	Loblolly	Live	Natural	Inactive	Unavailable	Normal	Unstarted	Old/None
5	19	c	Loblolly	Live	Natural	Inactive	Unavailable	Normal	Unstarted	Old/None
5	20		Unknown	Dead	Natural	N/A	N/A	N/A	N/A	N/A
5	22		Loblolly	Live	Artificial	Relic	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		Loblolly	Live	Natural	Inactive	Complete	>2x	Complete	Old/None
5	26		Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Old/None
5	28	a	Loblolly	Live	natural	Relic	Complete	N/A	None	Old/None
5	28	b	Loblolly	Live	Natural	Inactive	Complete	Normal	Unstarted	Old/None
5	30		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
5	92		Loblolly	Live	Natural	Inactive	Start	Healing	Unstarted	Old/None
5	94		Loblolly	Live	Artificial	Relic	Insert	N/A	Complete	Old/None
5	95		Loblolly	Live	Artificial	Relic	Insert	N/A	Unstarted	Old/None
5	127		Loblolly	Live	Natural	Inactive	healed over	Healing	Unstarted	Old/None
5	191		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
5	217		Loblolly	Live	Natural	Inactive	Complete	Normal	Incomplete	Old/None
5	218		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
5	236		Loblolly	Live	Natural	Active	Complete	<2x	Complete	Fresh
5	237		Loblolly	Live	Natural	Inactive	Complete	Normal	Unstarted	Recent
5	248		Loblolly	Live	Natural	Inactive	Complete	Normal	Incomplete	Old/None
5	260		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
5	261		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
5	262		Loblolly	Live	Natural	Active	Complete	<2x	Incomplete	Recent
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		Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
5	340		Loblolly	Live	Natural	Unknown	Complete	Normal	incomplete	Fresh
5	341		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
5	5NT1		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
5	5NT11		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
5	5NT13		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Incomplete	Old/None
6	10		Loblolly	Live	Artificial	Relic	Insert	Healing	Incomplete	Old/None
6	33	a	Loblolly	Live	Natural	Inactive	Start	>2x	Unstarted	Old/None
6	33	b	Loblolly	Live	Natural	Inactive	Start	>2x	Unstarted	Old/None
6	33	c	Loblolly	Live	Natural	Inactive	Start	>2x	Unstarted	Old/None
6	116		Loblolly	Live	Artificial	Active	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)	Normal	Unstarted	Old/None
6	135	c	Loblolly	Live	Artificial	Unknown	Insert	Normal	Unstarted	Old/None
6	136	a	Loblolly	Live	Natural	Inactive	Start (Adv)	>2x	Complete	Old/None
6	136	b	Loblolly	Live	Natural	Inactive	Start	>2x	Complete	Old/None
6	136	c	Loblolly	Live	Natural	Inactive	Start	>4x	Complete	Old/None
6	137		Loblolly	Live	Artificial	Active	Insert	Normal	Complete	Fresh
6	139	a	Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
6	139	b	Loblolly	Live	Natural	Inactive	Start	Normal	Complete	Recent
6	166	a	Loblolly	Live	Artificial	Unknown	Insert	Normal	Incomplete	Old/None
6	199		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Fresh

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
6	200		Loblolly	Live	Artificial	Unknown	Insert	<2x	Incomplete	Old/None
6	206		Loblolly	Live	Natural	Inactive	Start (Adv)	>4x	Incomplete	Old/None
6	233		Loblolly	Live	Natural	Inactive	Complete	Normal	Unstarted	Recent
6	234	a	Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Old/None
6	234	b	Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Old/None
6	234	c	Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Old/None
6	234	d	Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Old/None
6	234	e	Loblolly	Live	Natural	Inactive	Start	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	Normal	Unstarted	Old/None
6	235		Loblolly	Live	Natural	Inactive	Start (Adv)	<2x	Unstarted	Recent
6	256	a	Loblolly	Live	Natural	Inactive	Start	Normal	Complete	Recent
6	256	b	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Recent
6	268		Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Recent
6	315		Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
6	318		Loblolly	Live	Natural	Active	Complete	Normal	Unstarted	Fresh
6	332		Loblolly	Live	Natural	Unknown	Complete	Normal	Unstarted	Fresh
6	6NT1		Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Old/None
6	6NT2		Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Old/None
6	6NT3		Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Fresh
6	6NT4		Loblolly	Live	Natural	Inactive	Start (Adv)	>2x	Unstarted	Fresh
7	105		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
7	106	a	Loblolly	Live	Natural	Relic	Complete	>4x	Complete	Old/None
7	106	b	Loblolly	Live	Natural	Relic	Start	Normal	Complete	Old/None
7	106	c	Loblolly	Live	Natural	Relic	Start	Normal	Complete	Old/None
7	107	a	Other	Dead	Natural	Relic	N/A	N/A		N/A

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
7	107	b	Other	Dead	Natural	Relic	N/A	N/A	N/A	N/A
7	108		Loblolly	Live	Natural	Inactive	Complete	>2x	Complete	Old/None
7	109	a	Loblolly	Live	Natural	Active	Complete	<2x	Complete	Fresh
7	109	b	Loblolly	Live	Natural	Active	Start (Adv)	Normal	Unstarted	Fresh
7	110		Loblolly	Dead	Artificial	Relic	Insert	Normal	Incomplete	Old/None
7	111		Unknown	Dead	Artificial	Relic	Insert	Normal	N/A	Old/None
7	195		Loblolly	Live	Artificial	Relic	Healed	Healing	Unstarted	Old/None
7	216		Loblolly	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
7	243		Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Old/None
7	253		Loblolly	Live	Natural	Inactive	Complete	>2x	Complete	Fresh
7	272		Loblolly	Live	Natural	Inactive	Complete	>2x	Incomplete	Old/None
7	275		Loblolly	Live	Natural	Active	Start (Adv)	Normal	Complete	Fresh
7	276		Loblolly	Live	Natural	Inactive	Complete	>2x	Complete	Recent
7	277		Loblolly	Live	Natural	Inactive	Complete	Normal	Incomplete	Fresh
7	284		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
7	297		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
7	298		Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
7	299		Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
7	300		Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
7	330		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
7	7NT1		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
7	7NT3		Loblolly	Live	Natural	Unknown	Start	Normal	Unstarted	Fresh
7	7NT4		Loblolly	Live	Natural	Unknown	Start (Adv)	Normal	Unstarted	Fresh
7	7NT5		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Fresh
7	7NT6		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
8	129		Loblolly	Live	Natural	Inactive	Complete	<2x	Unstarted	Recent

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
8	155		Loblolly	Live	Natural	Inactive	Complete	Normal	Unstarted	Old/None
8	170		Loblolly	Live	Artificial	Relic	Insert	Normal	Complete	Old/None
8	171		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
8	173		Loblolly	Live	Natural	Inactive	Complete	Normal	Unstarted	Old/None
8	175		Loblolly	Live	Natural	Inactive	Complete	>2x	Incomplete	Old/None
8	176	a	Loblolly	Live	Natural	Inactive	Complete	>2x	Incomplete	Old/None
8	176	b	Loblolly	Live	Natural	Inactive	Complete	>2x	Incomplete	Old/None
8	209	a	Loblolly	Live	Natural	Relic	Complete	>2x	Complete	Old/None
8	209	b	Loblolly	Live	Natural	Relic	Start (Adv)	Healing	Complete	Old/None
8	210		Loblolly	Live	Natural	Inactive	Complete	>4x	Unstarted	Old/None
8	211		Loblolly	Live	Artificial	Unknown	Insert	<2x	Unstarted	Old/None
8	219		Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
8	220		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
8	226		Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
8	227		Loblolly	Live	Natural	Inactive	Complete	Healing	Unstarted	Old/None
8	228		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
8	229		Loblolly	Live	Natural	Relic	Start (Adv)	<2x	None	Old/None
8	230		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
8	231		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
8	263		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
8	286		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
8	287		Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
8	288		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Incomplete	Recent
8	310		Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
8	320		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Recent
8	321		Loblolly	Live	Natural	Active	Complete	<2x	Incomplete	Fresh

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
8	325		Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
8	339		Loblolly	Live	Natural	Unknown	Start (Adv)	Normal	Complete	Recent
8	809		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
8	8NT1		Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Old/None
8	8NT2		Loblolly	Live	Natural	Unknown	Start (Adv)	<2x	Unstarted	Old/None
8	8NT3		Loblolly	Live	Natural	Inactive	Start	Normal	Complete	Recent
8	8NT4		Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Fresh
8	8NT5		Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Fresh
8	8NT6		Loblolly	Live	Natural	Active	Complete	Normal	Unstarted	Fresh
8	8NT7		Loblolly	Live	Natural	Inactive	Start	Normal	Complete	Recent
9	85		Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
9	86		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
9	87		Loblolly	Live	Artificial	Active	Insert	Normal	Complete	Fresh
9	88		Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
10	64		Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
10	65		Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
10	66		Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
10	67		Loblolly	Live	Natural	Unknown	Insert	Normal	Unstarted	Old/None
10	68		Loblolly	Live	Natural	Inactive	Start	<2x	Unstarted	Old/None
10	150		Loblolly	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
10	154		Loblolly	Live	Natural	Inactive	Complete	>2x	Unstarted	Old/None
10	156		Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Old/None
10	157		Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Old/None
10	214		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
10	247		Loblolly	Live	Natural	Unknown	Complete	Normal	Complete	Old/None
10	274		Loblolly	Live	Natural	Inactive	Complete	>2x	Complete	Old/None

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
10	301		Loblolly	Live	Natural	Active	Complete	Normal	Unstarted	Fresh
10	302		Loblolly	Live	Natural	Active	Complete	Normal	Unstarted	Fresh
10	303		Shortleaf	Live	Natural	Active	Complete	<2x	Incomplete	Fresh
10	329	a	Shortleaf	Live	Natural	Inactive	N/A	Normal	Unstarted	Old/None
10	335		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
10	10NT1		Loblolly	Live	Natural	Unknown	Start	Normal	Unstarted	Old/None
10	10NT2		Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Fresh
10	10NT4	a	Loblolly	Live	Natural	Inactive	Complete	<2x	Unstarted	Old/None
10	10NT4	b	Loblolly	Live	Natural	Relic	N/A	Normal	Unstarted	Old/None
11	140		Loblolly	Live	Artificial	Relic	Insert	Healing	Complete	Old/None
11	141		Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
11	142		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
11	143		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
11	238		Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Fresh
11	239		Loblolly	Live	Natural	Inactive	Complete	>2x	Complete	Old/None
11	240		Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Fresh
11	269		Loblolly	Live	Natural	Unknown	Complete	Normal	Complete	Recent
11	270		Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
11	285		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
11	291		Loblolly	Live	Natural	Active	Complete	Normal	Unstarted	Fresh
11	292		Loblolly	Live	Natural	Unknown	Start (Adv)	Normal	Unstarted	Recent
11	293		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
11	294		Loblolly	Live	Natural	Inactive	Complete	>2x	Unstarted	Recent
11	327		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Fresh
11	328		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Fresh
11	337		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
11	11NT1		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Recent
11	11NT2		Loblolly	Live	Natural	Active	Complete	Normal	Unstarted	Fresh
12	131		Loblolly	Live	Artificial	Inactive	Insert	Healing	Unstarted	Fresh
12	132		Loblolly	Live	Artificial	Inactive	Insert	Healing	Unstarted	Old/None
12	133		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
12	158		Shortleaf	Dead	Artificial	N/A	Insert	Normal	N/A	Old/None
12	159		Loblolly	Live	Artificial	Active	Insert	Normal	Unstarted	Fresh
12	189		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		Shortleaf	Live	Natural	Inactive	Complete	>2x	Incomplete	Old/None
12	267		Loblolly	Live	natural	Active	Complete	Normal	incomplete	Recent
12	295		Loblolly	Live	Natural	Active	Complete	<2x	Incomplete	Fresh
12	296	a	Loblolly	Live	Natural	Inactive	Start (Adv)	>2x	Unstarted	Old/None
12	296	b	Loblolly	Live	Natural	Inactive	Start	>2x	Unstarted	Old/None
12	296	c	Loblolly	Live	Natural	Inactive	Start	>2x	Unstarted	Old/None
12	296	d	Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Old/None
12	316		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
12	317		Loblolly	Live	natural	Inactive	Complete	Normal	Unstarted	Fresh
12	334		Shortleaf	Live	Natural	Active	Complete	Normal	Unstarted	Recent
12	12NT1	a	Loblolly	Live	Natural	Inactive	Start (Adv)	>4x	Incomplete	Old/None
12	12NT2	b	Loblolly	Live	Natural	Inactive	Start (Adv)	>4x	Incomplete	Old/None
12	12NT3	c	Loblolly	Live	Natural	Inactive	Start (Adv)	>2x	Incomplete	Old/None
13	119		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Recent
13	120		Loblolly	Live	Artificial	Unknown	Insert	Normal	Unstarted	Old/None

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
13	121		Loblolly	Live	Artificial	Active	Insert	Normal	Complete	Fresh
13	122		Loblolly	Live	Artificial	Inactive	Insert	>2x	Unstarted	Old/None
13	123		Loblolly	Live	Artificial	Relic	Insert	Healing	unstarted	Old/None
13	124		Loblolly	Live	Artificial	Inactive	Insert	<2x	Complete	Old/None
13	144		Loblolly	Live	Natural	Active	Complete	Normal	Unstarted	Fresh
13	145		Loblolly	Live	Natural	Inactive	Start (Adv)	>2x	Unstarted	Recent
13	168		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Recent
13	169		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Recent
13	271		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
13	311		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
13	312		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
13	13NT1		Loblolly	Live	Natural	Inactive	Start (Adv)	<2x	Unstarted	Recent
13	13NT3		Loblolly	Live	Natural	Active	Complete	Normal	Unstarted	Fresh
14	88		Loblolly	Live	Natural	Relic	Start	<2x	None	Old/None
14	89		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
14	91		Loblolly	Live	Artificial	Relic	Insert	Healing	None	Old/None
14	100		Loblolly	Live	Natural	Inactive	Start (Adv)	>2x	Unstarted	Old/None
14	101		Loblolly	Live	Natural	Inactive	Complete	<2x	Unstarted	Old/None
15	160		Loblolly	Live	Artificial	Inactive	Insert	Healing	Unstarted	Old/None
15	161		Loblolly	Live	Natural	Inactive	Complete	Normal	Complete	Old/None
15	162		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
15	163		Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
15	187		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
15	198		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
15	205		Loblolly	Live	Natural	Inactive	Complete	>4x	Complete	Recent
15	205	a	Loblolly	Live	natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
15	205	b	Loblolly	Live	Natural	Unknown	Start (Adv)	Normal	Unstarted	Recent
15	205	c	Loblolly	Live	Natural	Unknown	Start	Normal	Unstarted	Recent
15	221		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
15	264		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
15	265	a	Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
15	265	b	Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Fresh
15	308		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
15	309		Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
15	15NT1		Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Old/None
15	15NT4		Loblolly	Live	Natural	Inactive	Start	<2x	Unstarted	Old/None
16	167		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
16	16NT1		Loblolly	Live	Natural	Inactive	Start (Adv)	>2x	Unstarted	Old/None
16	16NT2	a	Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Old/None
16	16NT2	b	Loblolly	Live	Natural	Inactive	Start	>2x	Unstarted	Old/None
17	146		Loblolly	Live	Artificial	Unknown	Insert	Normal	Incomplete	Old/None
17	147		Loblolly	Live	Artificial	Relic	Insert	Healing	Unstarted	Old/None
17	249		Loblolly	Live	Artificial	Unknown	Insert	Normal	Unstarted	Recent
17	250		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
17	251		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
17	252		Loblolly	Live	Artificial	Unknown	Insert	Normal	Unstarted	Old/None
17	283	a	Loblolly	Live	Natural	Inactive	Complete	>2x	Incomplete	Recent
17	283	b	Loblolly	Live	Natural	Inactive	Start (Adv)	Normal	Unstarted	Fresh
17	319		Loblolly	Live	Natural	Active	Complete	>2x	Incomplete	Fresh
17	17NT1		Loblolly	Live	Natural	Active	Complete	Normal	Unstarted	Fresh
18	181		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Recent
18	182		Loblolly	Live	Artificial	Relic	Insert	Healing	Unstarted	Old/None

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
18	183		Loblolly	Live	Artificial	Relic	Insert	Healing	Unstarted	Old/None
18	184		Loblolly	Live	Artificial	Relic	Insert	Healing	Unstarted	Old/None
18	207		Shortleaf	Live	Natural	Inactive	Complete	>4x	Complete	Old/None
18	254	a	Loblolly	Live	Natural	Inactive	Complete	>2x	Complete	Recent
18	254	b	Loblolly	Live	Natural	Inactive	Complete	>2x	Complete	Recent
18	278		Loblolly	Live	Artificial	Active	Insert	Normal	Incomplete	Fresh
18	279		Loblolly	Live	Artificial	Active	Insert	Normal	Unstarted	Recent
18	280		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Fresh
18	281		Loblolly	Live	Artificial	Inactive	Insert	Normal	Unstarted	Old/None
18	324		Shortleaf	Live	Natural	Inactive	Complete	Normal	Complete	Recent
18	331		Loblolly	Live	Natural	Active	Complete	Normal	Incomplete	Fresh
18	18NT1		Loblolly	Live	Natural	Active	Complete	Normal	Unstarted	Fresh
19	322		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Fresh
19	333		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Old/None
19	134		Loblolly	Live	Artificial	Active	Insert	Normal	Incomplete	Fresh
19	148		Loblolly	Live	Artificial	Active	Insert	Normal	Unstarted	Old/None
19	149		Loblolly	Live	Artificial	Active	Insert	Normal	Incomplete	Old/None
19	19NT1		Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Old/None
19	19NT2		Loblolly	Live	Natural	Inactive	Start	Normal	Unstarted	Old/None
19	201		Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
19	203		Loblolly	Live	Artificial	Inactive	Insert	Normal	Complete	Old/None
19	223		Loblolly	Live	Natural	Inactive	Complete	>2x	Complete	Recent
19	224		Unknown	Dead	Natural	Relic	Complete	>4x	Complete	Old/None
19	232		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Recent
19	245		Loblolly	Live	Natural	Unknown	Start (Adv)	>2x	Unstarted	Recent
19	246		Loblolly	Live	Natural	Inactive	Complete	>2x	Unstarted	Old/None

Cluster	Tree	Cavity	Species	Condition	Type	Status	Cavity	Entrance	Plate	Resin Work
19	224		Unknown	Dead	Natural	Relic	Complete	>4x	Complete	Old/None
19	232		Loblolly	Live	Natural	Active	Complete	Normal	Complete	Recent
19	245		Loblolly	Live	Natural	Unknown	Start (Adv)	>2x	Unstarted	Recent
19	246		Loblolly	Live	Natural	Inactive	Complete	>2x	Unstarted	Old/None
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		Loblolly	Live	Artifical	Inactive	Drilled	Normal	Unstarted	Old/None
BW01	4		Loblolly	Live	Artifical	Active	Insert	Normal	Unstarted	Recent
BW02	5		Loblolly	Live	Artifical	Inactive	Insert	Normal	Unstarted	None
BW02	6		Loblolly	Dead	Artifical	Inactive	Insert	Normal	Unstarted	None
BW02	7		Loblolly	Live	Artifical	Inactive	Insert	Normal	Unstarted	None
BW02	8		Loblolly	Live	Artifical	Inactive	Insert	Normal	Unstarted	None