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CONGAREE SWAMP NATIONAL MONUMENT

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K5417

November 9, 1989

Memorandum

To: Deputy Associate Regional Director, Science and Natural Resources

From: Resource Management Specialist, Congaree Swamp NM

Subject: Park Science Article Pertaining to Hurricane Hugo Damage
at Congaree Swamp National Monument.

As promised, enclosed is the revised Damage Assessment Report on Hurricane Hugo's effect on Congaree Swamp National Monument. The report was recently completed by Dr. Rebecca Sharitz of the Savannah River Ecology Laboratory. It supersedes the draft report previously submitted to you. I am in the process of preparing an introduction to the report and will mail it to you on Tuesday, November 14. Hopefully this will allow enough time to include the report in the next issue of Park Science. An article for the Courier is also nearing completion.

Also enclosed is a report prepared by John Cely, Wildlife Biologist, South Carolina Wildlife and Marine Resources Department. John established a 20-acre Breeding Bird Census Plot in 1980. Part of his research included vegetative analysis. The report is an appraisal of Hurricane Hugo damage to this plot. I think you will find his analysis of interest.

I enjoyed talking with you on the telephone and look forward to meeting you sometime soon.


RICHARD A. CLARK

Enclosures



*South Carolina
Wildlife & Marine
Resources Department*

James A. Timmerman, Jr., Ph.D.
Executive Director
W. Brock Conrad, Jr.
Director of
Wildlife and Freshwater Fisheries

November 2, 1989

Mr. Rick Clark
Congaree Swamp National Monument
P. O. Box 11938
Columbia, SC 29211

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Dear Rick:

Here are the results of the Hurricane Hugo damage to my 20 acre Breeding Bird Census Plot. A total of 68 live canopy trees and 6 dead ones were blown down or snapped off. I arbitrarily chose 12 inches dbh as the lower limit of a canopy tree; I put a tree in the "snapped off" category if the top was missing, and I felt there was no chance for the tree to live - in some cases this was a subjective call. In Congaree some canopy trees are so large that a fallen limb can be larger than 12 inches, and have major impacts on the surrounding vegetation by increasing sunlight penetration. However, these were not counted if some of the top still remained.

Based on my original vegetation measurements on this plot in 1980 (six .1 acre circular plots), I extrapolated a total of 1,232 canopy trees (> 12 in.) present on this 20 a. plot (a few of these trees have died and fallen down over the 9-year interval, but nothing to significantly alter the percentages). Therefore, the percent canopy loss is 5.5%. However, when comparing the larger size classes, e.g. anything greater than 25 in. dbh, a 7.6% canopy loss was found (33 down versus 433 available). When comparing the largest canopy trees, (> 36 in. dbh), a 16% canopy loss was found (16 down versus 100 available). This latter figure is more in line with some of the figures I've heard mentioned. It represents a significant alteration to the swamp forest and highlights the estimated 1 in 200 year event of the storm. A similar storm could have also accounted for the establishment of the large sweetgums present in the swamp today; I assume we will see lots of sweetgum regeneration in the near future.

The storm seemed to select against hackberry (sugarberry), American elm, and to some extent, green ash (Fig. 1). Even though sweetgum represented 35% of the canopy trees on the plot, only 20% were blown down or snapped off (Fig. 1). The storm definitely selected against the largest age class (> 36 in. dbh) - 24% of downed trees were in this category, yet they represented only 8% of the available trees (Fig. 2). These large size classes were usually completely uprooted while many of the canopy trees in the 12-24 in. class were snapped off 20-40 feet above the ground.

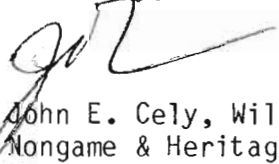
Mr. Rick Clark
November 2, 1989
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You should have in your files Breeding Bird Census data from 1980, 1981, 1982, and 1984 (we skipped 1983), as well as one winter bird census from the same plot in 1987.

In regard to the Red-cockaded Woodpecker, most of our intensive monitoring was done between 1981 and 1985. The birds were nesting on G-P property at this time. In 1983 we counted 4 active cavity trees and 4 inactive cavity trees on Park Service property and 4 active and 3 inactive cavity trees on G-P property. However, we never found more than 1 breeding pair, along with their offspring, on both tracts (it is not unusual to find a large number of active and inactive cavity trees at 1 colony site). Between 1985 and 1989, we did less intensive monitoring but found no significant changes except that in 1989 Red-cockadeds nested for the first time on Park property since our surveys began (the G-P tract was abandoned as a nesting site, still leaving a total of 1 breeding pair on the 2 properties). For Red-cockaded management, I would recommend annual monitoring of the nest site; all inactive and active trees should be marked and numbered; a volunteer survey team should walk in transects through the area each winter or early spring, before leaf-out, to identify and mark any new start trees or cavity trees. A prescribed burning program should be initiated and conducted every 2 to 3 years. All cavity trees need to be raked at the base prior to burning to prevent ignition of the sap (sometime, however, stray sparks will still ignite the sap). The S. C. Forestry Commission can assist with a burning program, including establishing fire lines; we could probably get some manpower from our office to assist with the burning also.

I think it would be appropriate to resurvey the bird census plot this spring in light of the hurricane. I would expect to see some significant changes in the species composition there. Let me know if you have any questions.

Sincerely,



John E. Cely, Wildlife Biologist
Nongame & Heritage Trust Section

/k
Attachments

c: Tom Kohlsaat

Figure 1.

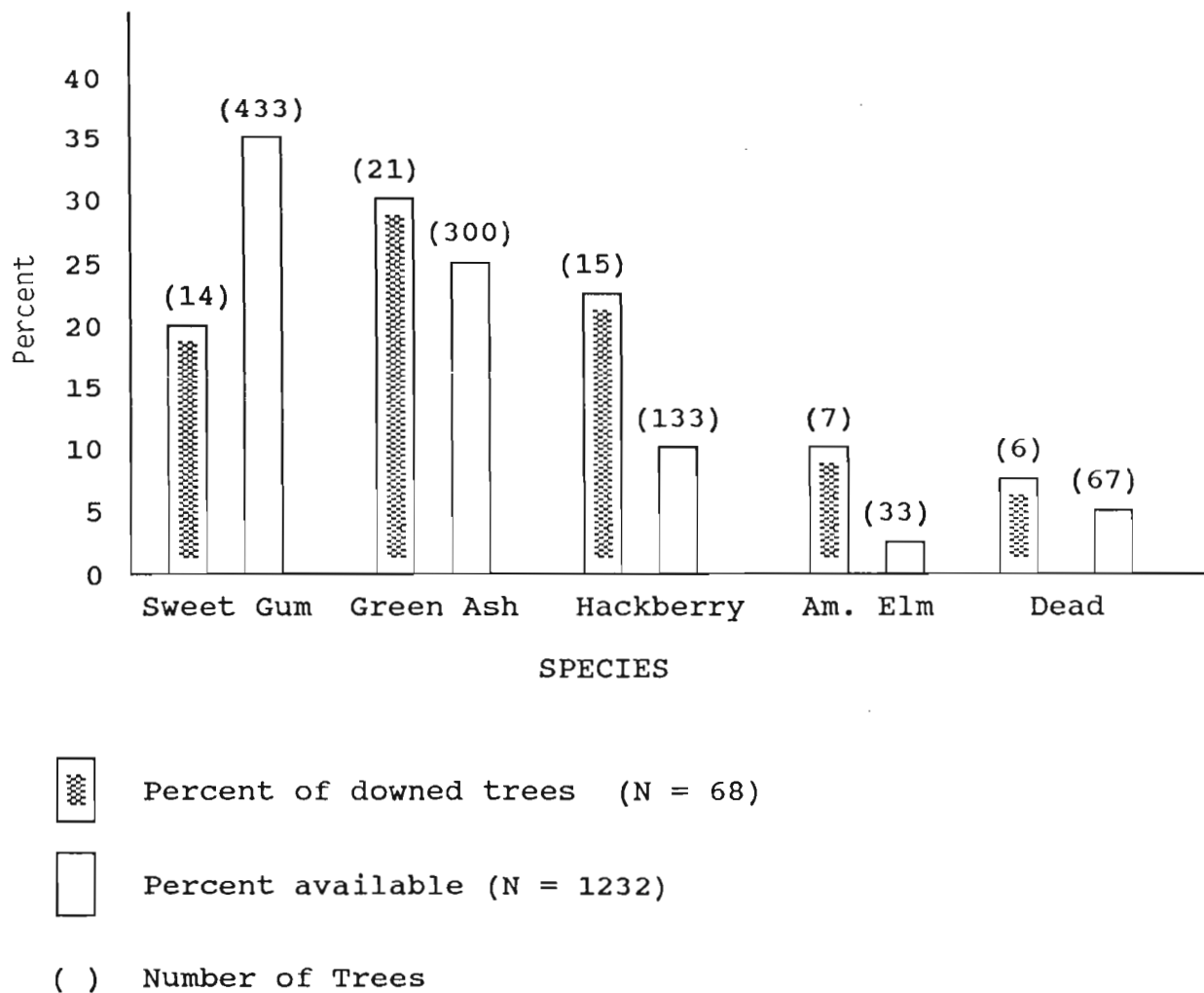


Figure 1. Canopy trees (≥ 12 in. dbh) by species, blown down or snapped off by Hurricane Hugo, Congaree Swamp National Monument, 1989. Comparisons are made with trees lost to those available. Affected trees were based on a complete count of a 8.1 ha (20 a.). Breeding Bird Census Plot; available trees based on six .04 ha (.1 a.) plots on the same tract.

Figure 2.

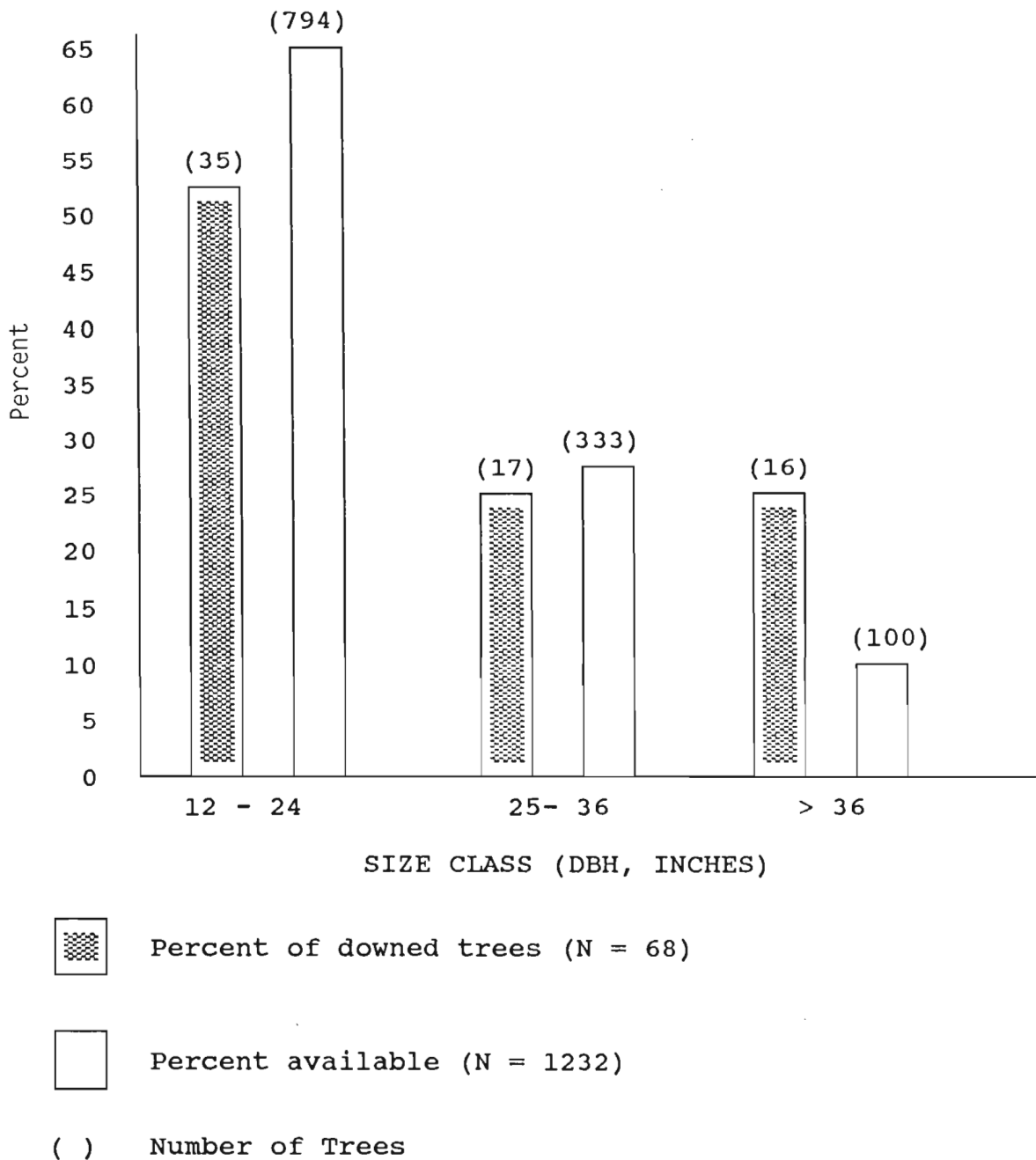


Figure 2. Canopy trees (≥ 12 in. dbh), by size class, blown down or snapped off by Hurricane Hugo, Congaree Swamp National Monument, 1989. Comparisons are made with trees lost to those available. Affected trees were based on a complete count of a 8.1 ha (20.0 a). Breeding Bird Census Plot; available trees based on six .04 ha (.1 a) plots on the same tract.