

REVIEW AND APPROVALS

**PIEDMONT AND BOND SWAMP
NATIONAL WILDLIFE REFUGES**

Round Oak, Georgia

ANNUAL NARRATIVE REPORT

Calendar Year 1992

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5-21-93
Date

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Refuge Supervisor Review Date

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Regional Office Approval Date

INTRODUCTION

Because of the moth balling of Bond Swamp National Wildlife Refuge and staff vacancies, the Piedmont and Bond Swamp narratives are being combined for 1992.

Piedmont National Wildlife Refuge, located in Jones and Jasper Counties in Central Georgia, is 25 miles north of Macon on the east side of the Ocmulgee River. The refuge is typical of the Piedmont Plateau Physiographic Region with rolling hills interspersed with small, clear streams. Elevations range from 360 feet above sea level along Falling Creek and Caney Creek to 640 feet in Compartment 25 near headquarters.

Indian occupation of this area can be traced back thousands of years and ranges from nomadic hunters to cultures depending primarily on farming. The original forest was a climax oak-hickory-chestnut, hardwood association interspersed with stands of pine. The area was settled in 1806 through land lotteries, with most of the land cleared for farming by 1820. Cotton became the primary crop. By 1840, Jones County was the most populous county in the state and had a booming economy. General Sherman marched through the area and destroyed the economy during the Civil War so that it never recovered. Cotton farming continued after the war with increasing loss of fertility and decreasing crop yields. Severe erosion of the hills took place with all the top soil washing away. The Great Depression, coupled with the boll weevil, brought about massive abandonment of the land. The Resettlement Administration purchased the area in the mid 1930's to retire the submarginal land from agriculture.

Piedmont Refuge was officially established on January 18, 1939, with an original objective of demonstrating that wildlife could be restored on worn out eroded lands. The land was indeed worn out with several major wildlife species having disappeared from the area. Initial activities included erosion control through the use of check dams and conservation plantings, limited tree planting, the restocking of some wildlife species, and protection. Since 1939, through the process of management working with ecological succession, the refuge has again become forested and supports diverse wildlife populations.

Today the refuge is covered with upland pine forests supporting the endangered red-cockaded woodpecker and associated wildlife, upland and bottomland hardwoods, small impoundments, beaver ponds, and clear flowing streams.

Management is carried out for endangered species, migratory birds, native wildlife, environmental education, interpretation and wildlife oriented recreation and FmHa Conservation easement and private lands programs.

Bond Swamp National Wildlife Refuge, located approximately seven miles southeast of Macon, Georgia, is in Bibb and Twiggs Counties and currently consists of 4,596 acres. The refuge is situated along the fall line separating the Piedmont from the Coastal Plains Regions and is comprised primarily of wetlands and bottomland forest associated with the Ocmulgee

River flood plain. A strip of uplands and two large limestone bluffs border the wetlands. The refuge contains a unique diversity of habitat types ranging from mixed upland hardwood/pine ridges to bottomland hardwoods and swamp forests interspersed with creeks, beaver swamps, and oxbow lakes. These habitats include: year round wood ducks; wintering waterfowl-especially mallards; nesting bald eagles; nesting colonies of herons, egrets, and anhingas; songbirds including neotropicals; black bears; alligators; deer; otter; and a rather large feral hog population.

There is much local interest in the refuge. The primary reason for acquisition and inclusion of the area into the National Wildlife Refuge System was to protect and enhance its unique and rich natural resources which lie near an urban area

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L. INFORMATION PACKET

Inside back cover - The general leaflet is not available at this time.

A. HIGHLIGHTS

A major tornado caused damage to refuge habitats and facilities (section B, section F.3, section I.2).

Heavy rains and subsequent river flooding kept Bond Swamp under water most of the winter (section B).

The Bond Swamp office was closed and the refuge was moth balled (section K).

Important research projects continued with 2 new ones initiated (section C.5).

The refuge worked with vacancies, frozen positions and several off station staff details during the year (section E.1, section K).

Refuge staff installed red-cockaded woodpecker cavity inserts at 9 sites on the refuge (section G.2).

Two more bald eagles were produced at Bond Swamp (section G.2).

Refuge personnel worked with off-refuge exhibits that were seen by over 200,000 people (section H.6).

The refuge was active in EE setting up a "Nature Network" in the local school system, putting on several teacher workshops, and taking a leading role in a statewide educators week long workshop (section E.7).

Hunting programs went well. Hunt fees received only 1 or 2 public complaints, but fee administration took a lot of staff time (section H.8).

Our disabled deer hunt was outstanding (section H.8).

After the tornado hit, contract work on Quarters 38 became a problem (section I.2).

B. CLIMATIC CONDITIONS

Piedmont is located near the geographic center of Georgia and does not normally experience climatic extremes. Temperatures usually range from the low teens in the winter to 100°F in the summer. Precipitation during the year averages 44 inches, with an average 246-day growing season. Snow normally occurs in January or February, but typically does not accumulate to any significant amounts. Autumn is generally the dry period, with the wet season beginning in November. Rain occurs during the winter with the passage of weekly cold fronts, while spring and summer rains usually come during thunderstorms.

The year started off with January being a wet month which canceled January's prescribed burning plans. In fact, for the entire year except for May above adequate rainfall was received. Usually, autumn is dry but November had over 9 inches of rain. The total rainfall for the year was 59.73 inches - 16 inches above normal. On January 18 and 19 four inches of snow fell.

Temperatures were above normal for the months of January and February. Except for July the rest of the year temperatures were cooler than normal. The low of 20 degrees occurred on January 17 and the high of 99 degrees occurred on July 10.

Table 1. Recorded Rainfall & Temperatures - 1992

MONTH	Avg.* High °F	Avg. Low °F	Avg. Monthly °F	Departure from Normal	Range of Temp	Rainfall**
January	58.1	36.5	47.3	+0.7	20-67	6.25
February	64.4	40.9	52.7	+3.4	23-75	4.89
March	68.5	42.8	55.7	-0.8	27-83	2.74
April	75.4	48.1	61.8	-3.5	31-88	2.73
May	82.2	56.9	69.6	-3.1	45-93	1.20
June	87.4	67.5	77.5	-1.4	56-95	7.57
July	92.6	72.2	82.4	+1.0	68-99	7.03
August	87.9	69.4	78.7	-2.3	59-95	8.22
September	84.4	66.7	75.6	-0.4	55-92	4.84
October	74.8	50.5	62.7	-2.5	38-82	2.15
November	65.7	44.7	55.2	-0.1	30-79	9.11
December	56.6	38.3	47.5	-1.2	28-76	3.00

	<u>High Temperature</u>	<u>Low Temperature</u>	<u>Rainfall</u>
1991	99	20	59.73"
Normal	98	17	44.00"

*Temperatures - Macon National Weather Service

**Rainfall - Piedmont National Wildlife Refuge

Bond Swamp's weather was very similar to Piedmont's during the year. Because of the above normal rainfall, the Ocmulgee River flooded early during the fall with much of Bond Swamp under water during November through year's end in December.

The biggest climatic event that occurred was a major tornado that struck Piedmont during the afternoon of November 22. The twister touched down just east of the refuge boundary along the Ocmulgee River, completely destroyed two of our neighbor's homes and then stayed on the ground cutting an eight mile swath up to one-half mile wide through the refuge. The National Weather Service said that the November storm was a class IV tornado and that a tornado this strong seldom occurs in the southeastern United States. A severe storms

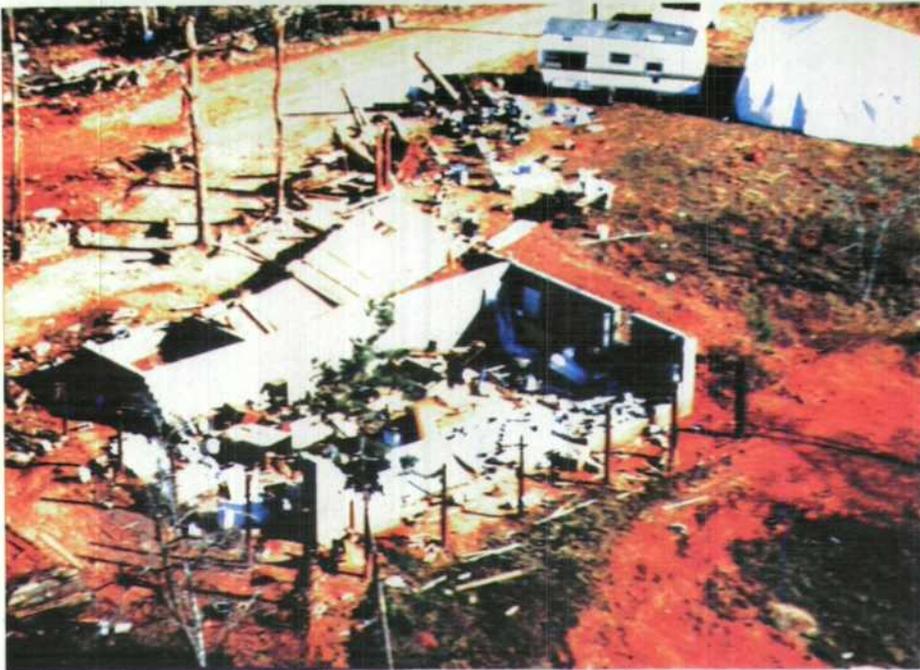


Photo 1. The event with the most impact on the refuge in 1992 was a major tornado that touched down near this former 2 story house at Piedmont's western boundary, destroyed the house and a trailer and then cut an 8 mile swath of damage through the refuge.

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specialist who flew over the storm path in a FWS contract helicopter said this may have been the strongest tornado to ever strike Georgia. From the point it struck the refuge, the twister stayed on the ground for over 60 miles destroying forests, farms, and homes. It damaged 2,000 acres of refuge forest and some refuge facilities. We will discuss these damages in the appropriate part of this narrative.



Photo 2. At the point where it entered the refuge, the tornado which has been the strongest to strike Georgia was 1/2 mile wide. Parts of homes and other items have been found scattered across the refuge.

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C. LAND ACQUISITION

1. Fee Title

Legal title to the 476 acre former Buckeye Cellulose inholding located along both sides of the Round Oak/Juliette Road at the main eastern entrance to the refuge was received late in the year. This acquisition fills in a major hole in the refuge and prevented potential development along one of the main refuge entrances. Homes and house trailers are rapidly springing up along more of the refuge boundary each year bringing some more management challenges with them. This tract was posted.

Acquisition efforts continue for approximately 2,000 additional acres at Bond Swamp. The desire for higher than appraised prices by some landowners has slowed actual acquisition.

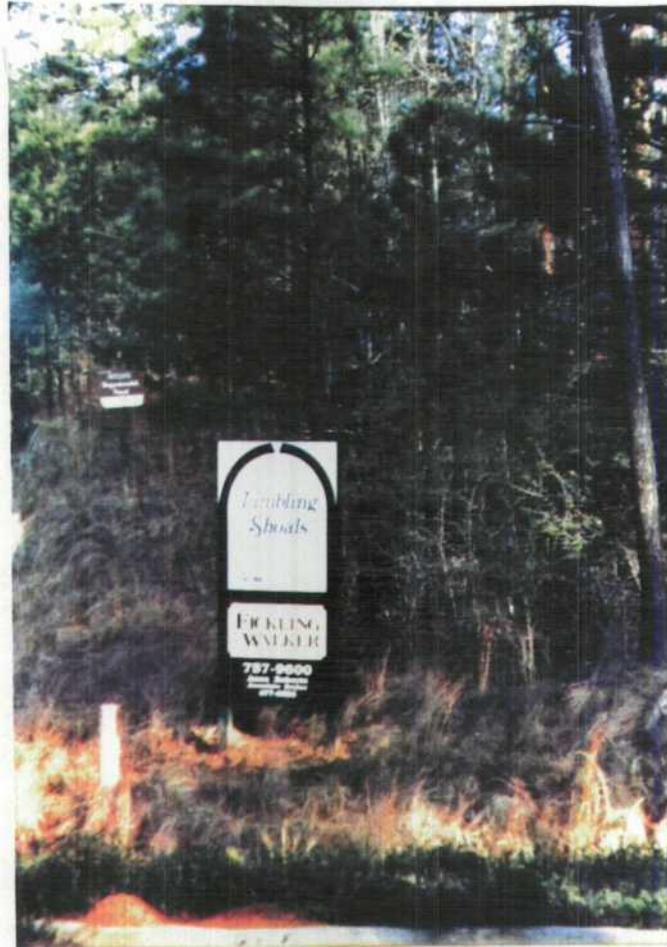


Photo 3. Housing developments are rapidly springing up around both Piedmont and Bond Swamp making acquisitions of inholdings more challenging.

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2. Easements

We reviewed 3 properties with Enhancement to evaluate their potential for conservation easements. We agreed that the tracts were not suitable for easements.

Inspections were made of previously posted easements and several meetings were held with landowners. One potential violation was discovered in Oconee County on an easement next to the Oconee River where the landowner had dug some holes and was preparing to put up pilings and build a summer cabin. Manager Shell and Enforcement Officer Tillman met with the owner on site, and we were able to resolve the situation verbally with no need for further action and made a friend of the landowner who advised that he sincerely appreciated the way we handled the situation.



Photo 4. This potentially serious FmHA easement violation was discovered in Oconee County before the landowner got any further along with building his "fishing cabin". He voluntarily complied with removing the posts.

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Hardwoods planted on 140 acres of easements 2 year ago are not doing well. Deer have been a major factor in keeping them knocked back. The high deer populations in the Piedmont region may cause serious problems with most of our re-establishment efforts.

D. PLANNING

2. Management Plan

Fire management plans for both refuges were rewritten in the new format this year. This turned out to be a major undertaking with weeks of staff time required.

Annual management plans were prepared and implemented for forest management, water management, and fire management.

3. Public Participation

During the year, refuge staff members met with groups and organizations including Ocmulgee Audubon Society, Sierra Club, Georgia Wilderness Society, National Wildlife Federation, Wildlife Society, Chamber of Commerce, civic groups, tourism and development groups, and listened to private individuals through personal conversations, telephone conversations, and letters. The public was able to ask questions and voice input on refuge management programs and operations.

4. Compliance with Environmental and Cultural Resource Mandates

Refuge management activities were either formally or informally evaluated for compatibility.

5. Research and Investigations

To help us do a more effective job of managing our refuges to meet Service objectives and to carry out the purposes for which the refuges were established, we welcome and seek out research opportunities. In 1992, several projects were ongoing from previous years and two new investigations were started.

Study: Piedmont NR 82 - Red-Cockaded Woodpecker (41680-6)

This long term cooperative study between the Fish and Wildlife Service and the U.S. Forest Service is designed to determine red-cockaded woodpecker habitat use and needs, population dynamics, the effects of hardwood encroachment on colony sites, and other limiting factors. Cavity trees and RCW reproduction are monitored regularly. Nestlings are banded with colored leg bands. Volunteers assist researchers by monitoring behavior patterns and movement of banded woodpeckers.

The study has been expanded this year to include monitoring population response to artificial cavity inserts placed in 9 scattered locations on the refuge.



Photo 5. Long term red-cockaded woodpecker research continues on Piedmont. John Hollingsworth/'92

Study: Piedmont NR 88 - Abundance, Habitat Selection and Ecology of a Piedmont Region Southern Fox Squirrel Population (41680-4).

Field work on this Phd. study was finished in early 1992. We are waiting on a written report.

Through radio tracking and trap-retrap techniques, movement patterns, habitat use, and population size of the refuge fox squirrel population. It was found that refuge fox squirrels occurred in denser than expected numbers and utilized the older burned pine forest interspersed with hardwoods and hardwood coves and bottoms. This was an important study because of concern for fox squirrel populations throughout parts of the Southeastern United States.

Study: Piedmont NR 89 - Habitat Selection by the Southern Flying Squirrel

The southern flying squirrel appears to be a major competitor of the red-cockaded woodpecker for tree cavities and may present a predation problem on RCW eggs. The objective of this project with principal researcher Dr. Susan Loeb of the U.S. Forest Service/Clemson University is to determine habitat selection factors, flying squirrel range, movement patterns and reproductive parameters. Flying squirrels in a 36 ha. study grid are fitted with radio collars. Movement is monitored by radio-telemetry.

Study: Piedmont NR 90 - Lymes Disease/EHD/Blue Tongue in a Piedmont Deer Population (41680-8).

Veterinarians and students from Fort Valley State University collect blood tissue samples and external parasites from refuge deer to try to determine the presence or absence of various diseases in deer. To date, no Lymes Disease has been found in refuge deer.

Study: Piedmont NR 90 - Maintaining Red-Cockaded Woodpecker Habitat (41680-9).

Researchers from the U.S. Forest Service Southeastern Fire Lab are in the second year of a study to determine optimum treatment for understory control in RCW colonies. The use of chemical control, warm and cool season fire, mechanical control and a combination of these methods are being tested to determine which best suppress understory encroachment.

Study: Piedmont NR 91 - Bachman's Sparrow Habitat Use (41680-10).

This graduate study by a University of Georgia student was designed to evaluate habitat use and habitat suitability for the Bachman's Sparrow.

Field work was finished and a thesis was written in 1992. The investigation found Bachman's Sparrows on the refuge were most abundant in and preferred open, burned stands managed for the red-cockaded woodpecker. This was an important study because of growing rangewide concern about the status of Bachman's Sparrow.

Study: Piedmont NR 91 - Age of Surface and Subsurface Water on Piedmont NWR (41680-11).

This study by Dr. Seth Rose of Georgia State University measured the type and age of tritium from nuclear fallout to determine the age of surface and subsurface water on the refuge and to test his techniques. This could be important information in determining how quickly aquifers recharge once water is withdrawn and in case of a pollution spill to determine how long it might take it to reach the upper aquifers. Subsurface water on the refuge was an average of 35 years old.

Study: The Effects of Fire Management for RCW on Prairie Warblers (41680-92-1).

This is a Fish and Wildlife study by Don White from Patuxent Athens Field Station. Study design was finalized and approved in 1992 with field work to begin in early 1993.

Study: Wood Thrush Populations and Habitat Use in Relation to Forest Management (41680-92-2).

This is another Fish and Wildlife Service study in coordination with the Service's Co-op Unit at the University of Georgia. Field work will begin in April, 1993.

In addition to these research projects, refuge personnel annually conduct over 20 scheduled evaluations and as needed do special evaluations and investigations.

E. ADMINISTRATION

1. Personnel

We had several staff changes during the year including:

- In February, Assistant Manager Donna Powell transferred to Togiak NWR in Alaska. Donna did a great job here and is the type of employee that will successfully lead the refuge system into the next century.
- During December, Assistant Manager Paul Tritaik transferred to Pelican Island NWR. Paul's position was frozen.
- In November, William Guthrie transferred from the U.S. Forest Service to refill Donna's vacancy.

A forestry position vacancy created by a 1991 retirement remains frozen. This position had been active on Piedmont for 32 years before it was frozen. Forest management has become more complicated with added endangered species requirements and new concerns for species such as neotropical migrants. Because of the vacancy, we are falling further behind on habitat evaluation and management each month.

After our secondary assistant position was frozen, we in coordination with the Regional Office closed out the Bond Swamp office in Macon and stopped all but essential operations on the area. Law enforcement and basic environmental protection will be carried out on the area as best our limited staffing will allow. Because of local expectations for the area, we also have to remain somewhat active in public relations on the area.

The good news that we received this year was that a University of Georgia graduate student, Carolyn Rogers, is being assigned to Piedmont NWR. We have worked with Carolyn for several years and think the Refuge System is fortunate to have her as an employee.

Table 2. Piedmont's 1992 Staffing

<u>POSITION TITLE</u>	<u>EMPLOYEE NAME</u>	<u>GRADE</u>	<u>APPT.</u>
Refuge Manager	Ronnie L. Shell	GS-12	PFT
Assistant Refuge Manager	Donna Powell (transferred 2/92)	GS-11	PFT
Assistant Refuge Manager	William Guthrie (COD 11/92)	GS-11	PFT
Assistant Refuge Manager	Paul Tritaik (transferred 12/92) (Position Frozen)	GS-09	PFT
Senior Forester	Dean Metteauer	GS-11	PFT
Forester	Vacant (Frozen)	GS-09	PFT
Forestry/Wildlife Tech	Bill Lacy	GS-07	PFT
Park Ranger (Interpretive)	Julie King	GS-09	PFT
Refuge LE Officer	Walter Tillman	GS-08	PFT
Office Assistant	Patricia Jackson	GS-06	PFT
Clerk Typist (Computer)	Julie Bailey	GS-03	CS
Eng. Equip. Operator	Oswaldo Castro-Poveda	WG-10	PFT
Eng. Equip. Operator	Glenn McMichael	WG-08	PFT
Tractor Operator	John Vinson	WG-06	PFT
Forestry Tech	Tom Payne	GS-04	Temp
YCC	Robbie Payne		Temp
YCC	Brian Rainey		Temp
YCC	Christy McKinney		Temp



Photo 6. (Back Row) Walt Bill Paul Glenn Dean William Tom
 (Front Row) Julie K. John Pat Julie B. Ronnie Ozzie
 King/'92

2. Youth Programs

Three enrollees were hired this year - two males and one female. The YCC program started June 15 and ended August 7.

The YCC program provided vital assistance on a variety of work projects. Accomplishments by the enrollees included the following: (1) Two miles of boundary lines were repainted. (2) Helped TSI'ed parts of two red-cockaded woodpecker colonies which had become overgrown with a hardwood understory. (3) Pick up litter at the lakes open for fishing. (4) Processed about 12,000 deer hunt applications for mailing to hunters. (5) Helped the foresters to locate southern pine beetle spots. (6) Assisted in building a duck trap at Bond Swamp NWR. (7) And completed several facility maintenance projects which included keeping the office and shop areas mowed, washing vehicles, and other odd jobs.



Photo 7. Brian Robbie Christy
 We had a small in number, but big in heart 1992 YCC crew that
 accomplished a lot for us and appeared to have fun at the same time.
 King/'92

4. Volunteer Programs

Our volunteer program is very important and possibly the only way we accomplish many projects. The volunteer hours for 1992 were up to 3480.

One of our most valuable volunteers this year was Drew Cook, a 13 year old Eagle Scout from Macon, GA. Drew contacted the Refuge asking for a project for his Eagle Scout badge. Along with his scout troop, Drew planted almost all the plants for the Backyard Wildlife Habitat behind the visitor center. He also built and hung several blue bird houses and bat boxes for the area. He was given a volunteer award and T-shirt for his efforts.



Photo 8. Volunteers helped with refuge projects throughout the year . . .
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Photo 9. Ranging from bluebird and bat boxes . . .

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Photo 10. To backyard habitat demonstrations . . .

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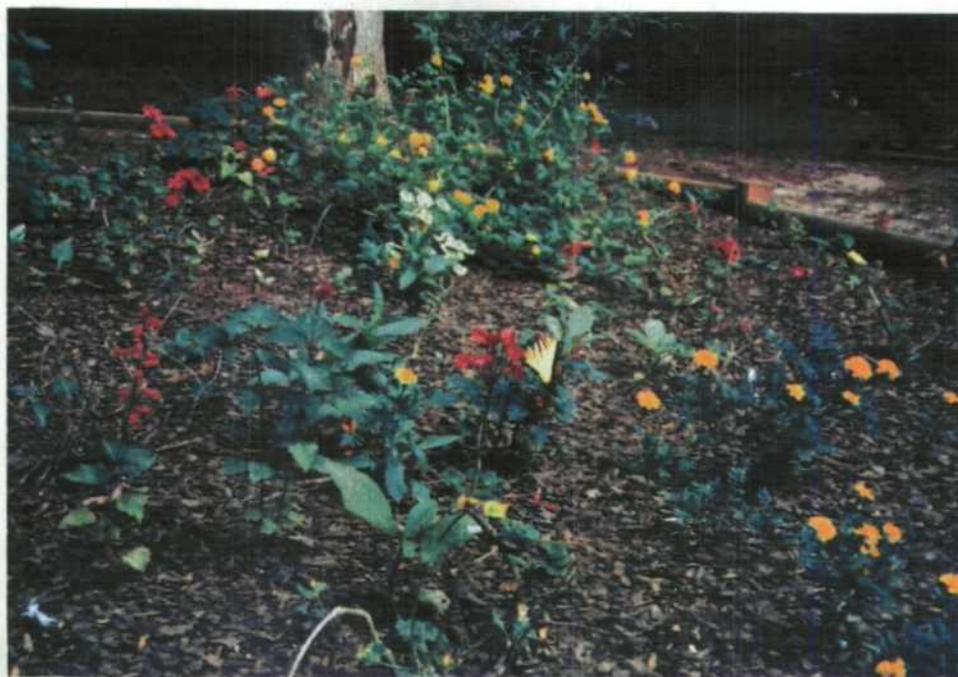


Photo 11. And butterfly gardens.

King/'92

Several boy and girl scout troops volunteered on various weekends to do trail maintenance, litter clean-up and cemetery maintenance. These are thankless jobs but a great help to the Refuge staff.

We have several turkey hunters who helped with our quota hunt drawing and then alphabetized the applications.

During the Red-cockaded woodpecker nesting in April, May and June, volunteers helped gather essential data. The volunteers were stationed at different colony sights to collect data concerning color of bands on the RCW's legs, foods brought in and overall characterization of the birds. This was the fifth year of the project. Volunteers from Macon and Atlanta participated with the observations.

In August, deer hunters volunteered with our deer hunt application drawing. Many stayed on to help alphabetize the over 10,000 applications received.

During our deer gun hunts in October and November, we have a large number of volunteers who come from University of Georgia and Fort Valley State College to help us collect deer data. These students work long hours to help collect hunter information and deer statistics. It would be very difficult for the check station to function without these volunteers.

Our final volunteer project was the Piedmont NWR/Rum Creek WMA Christmas Bird Count held this year on December 21. We ended up with a record number of bird species sighted. The weather was perfect and volunteers in good spirits. It was a good day for the count.

We are constantly thankful to our volunteers. As many other Refuges can attest, without their help many projects would not be completed.

5. Funding

Tight funding (a problem shared by all refuges) couples with staffing problems to leave us stretched very thin in our efforts to meet the varied objectives and public demands for the refuges.

Table. 3 Piedmont/Bond Swamp Fund Comparison

FY	TOTAL	OPERATION MAINT		EXPENSES FOR SALE	FIRE	FmHA	DRUG	FOREST	SPECIAL
		1261	1262						
1992	658,100	320,000	147,000	88,000	48,100	---	5,000	35,000	(15,000)
1993	636,700	320,700	125,100	88,000	36,900	1,000	---	35,000	(30,000)



Photo 12. We emphasize both employee and public safety in an effort to prevent accidents, but still have a few to contend with each year. This fisherman left his truck on the Lake 2A boat ramp out of gear without the parking brake set and launched his truck as well as his boat.

Tillman/'92

6. Safety

Safety was emphasized in all refuge activities. The annual safety program audit and safety self inspection were completed and deficiencies were corrected.

Regular safety meetings were conducted. We were especially pleased with the good safety performance of the year when the tornado and cleanup operations are considered.



Photo 13. The tree was debarked by a vehicle that missed a curve on the Round Oak-Juliette Road. The driver luckily escaped with only a broken leg. She was also DUI at 8:15am. We are catching more people DUI each year.

Tillman/'92

7. Technical Assistance

Refuge staff provided technical assistance at the local, state, and regional level during the year. Julie King helped the Jones County School System set up an environmental education program, was the planning coordinator for a county wildlife festival to be held in early 1993, helped organize and put on a statewide teachers workshop in coordination with the Georgia DNR, Georgia Wildlife Federation, and Wildlife Society, and spent several months on detail to the Regional Office planning for the Atlanta Home Show and the Service Earth Day exhibit at Atlanta stadium. Julie also did a great job of singing the National Anthem at the Braves game on Earth Day. Our staff also took leading role in planning, preparing for and staffing the Olympic flag exhibit as it toured cities in Georgia.

Ronnie Shell represented the Regional Director throughout the year on a committee established by Georgia Governor Miller to review DNR forest management and make recommendations, served as an instructor for the Service's FMLO course and an Extension Service prescribed fire course, and served as coordinator for the Region's in-service LE training. He also provided technical advice for several landowners on both waterfowl and forest management.

Walt Tillman served as the Region's Refuge Firearms Coordinator. Ronnie Shell and Dean Metteauer assisted Georgia DNR in searching B.F. Grant Forest for red-cockaded woodpeckers.



Photo 14. Technical assistance was provided to landowners for waterfowl and forest management.

Shell/'92



Photo 15. Manager Shell represented the Regional Director as part of a review team of conservation groups and university personnel that reviewed DNR forest management on state lands at the request of the governor.
Shell/'92

8. Other

Refuge Revenue Sharing checks were distributed to counties our refuges are located in. Amounts were: Jones County - \$189,684; Jasper County - \$42,615; Twiggs County - \$11,382; and Bibb County - \$5,349.

Piedmont was responsible for and staffed the Georgia Wildlife Federation Buck-A-Ramas in both Atlanta and Perry, Georgia with over 70,000 people in attendance.

Employees attended several training sessions during the year.

F. HABITAT MANAGEMENT

1. General

One of the primary objectives of the refuge is to provide habitat and manage for the diversity of wildlife that naturally occurs in the Piedmont Region. To provide the niches required by the diversity of wildlife found on the refuge, a diversity of habitat types is required. The habitats that support wildlife populations are products of ecological

succession. Each successional stage has animals that specifically are adapted to it or that use that stage. Management for wildlife on Piedmont basically involves working with nature in manipulating the successional stages to provide diverse wildlife habitats. Dividing the refuge into working units called compartments we apply the sound principles of diversity, interspersion, and juxtaposition of habitat types to meet wildlife needs. The diversity of habitats brings stability to the forest and to the wildlife that use the forest ecosystem, ranging from the species that use older pine habitat to species that utilize the climax hardwood forest.

Active habitat management is not being conducted at Bond Swamp at this time.

2. Wetlands

Wetlands are not a major habitat type on Piedmont. However, they are very important for refuge wildlife. One characteristic of the Piedmont Plateau is the numerous creeks that drain the rolling red clay hills. The refuge contains approximately 35 miles of permanent creeks. Twelve impoundments totaling 129 acres have been made by damming several of these creeks. Other wetlands consist of approximately 225 acres of beaver ponds.

The creeks and beaver ponds have been the traditional acres for waterfowl use. The creation of the impoundments over the years has added habitat for ducks - primarily wood ducks, blue-winged teals, ring-necked ducks, mallards, and black ducks. The construction of Lake Juliette, a 3,000 acre impoundment used for cooking a large coal fired power plant, and a moist soil management unit on the nearby Rum Creek WMA have attracted more waterfowl into this area. These waterfowl species also use refuge wetlands.

The Little Rock Dewatering Area contains a series of four impoundments. The largest, Impoundment 21A, serves as the children's only fishing pond during the summer and provides a water source for flooding the other three basins during the winter. All water management activities are accomplished by gravity flow. Approximately 15 acres of corn were planted in the lower three impoundments. Adequate rainfall this year resulted in a good corn crop as compared to the failure last year. This area and the adjacent GTR was flooded for wintering waterfowl in November.

The refuge creeks play a vital role in providing habitat for wildlife. They are primary habitat used by wood ducks during the winter and by wood duck broods during the summer for brood rearing. Numerous other species use the creeks throughout the year.

A partial drawdown on ponds Allison, 11A, and the Allison dewatering area was conducted during the summer to encourage the growth of moist soil plants.

Bond Swamp contains rich wetland, bottomland habitats that are part of the Alcovy/Ocmulgee Corridor. Much of the refuge's floodplain is under water portions of the year. Numerous oxbow lakes and beaver ponds are present. These wetlands provide a rich haven for a diversity of wildlife and also enhance water resources detaining overflows during floods, serving as storage basins during dry seasons, and filtering water passing through the floodplain.



Photo 16. Bond Swamp Refuge contains a variety of valuable wetland types.

John Hollingsworth/'92

3. Forests

The forest found on Piedmont National Wildlife Refuge today is second growth, adapted to red clay subsoils. The predominately loblolly-shortleaf pine type is not the same forest the Europeans found (oak-hickory climax) and will not be for centuries, if ever again, because of the loss of topsoil and reduced soil fertility. Original objectives of demonstrating that worn out, eroded lands can again be made productive for wildlife have been met. The land has been forgiving of man's past abuses, but we will live with the effects for years to come. We can't forget the lessons of the past as we manage for the future.

Revised refuge objectives including managing for a diversity of native wildlife species. The present forest habitats are a result of management working with natural succession and natural regeneration to meet these objectives. The subsoils that still cover most of the refuge continue to be the key to what will grow where. Some upland sites are still so poor that even loblolly pine will grow only in a stunted condition for 60 to 80 years. Hardwoods are found in bottomlands, coves, a transition zone between the bottoms and ridges, and intermixed with pines on ridges.

As an endangered species, the red-cockaded woodpecker (RCW) received priority consideration in forest management activities. To provide the year-round habitat the RCW and other species of wildlife using the refuge need, management activities are aimed at providing a diversity of successional stages interspersed throughout the forest. Prescribed burning and thinning are the tools used in managing the pine forest. Current management of the hardwood forest is limited to protection from fire. Due to the extensive clearing and farming prior to the establishment of the refuge, hardwoods on the area are relatively young in relation to their lifespan.

Red-cockaded woodpeckers require an open, park-like stand of mature pine for colony sites. Midstory encroachments by young pines and hardwoods make colony sites less attractive to the RCW and may increase predation by flying squirrels and snakes. To remedy the problem of midstory encroachment, YCC labor has been used to control efforts, and in 1987 a commercial contract was awarded to cut the understory at 25 colony sites. Prescribed fire has been able to keep the understory under control at most of the colony sites. But at several colonies the seasonal fire crew have had to cut the understory. This will be an ongoing problem of controlling the understory with fire or mechanical means.

Habitats in each compartment are inventoried and remapped in an eight year cycle. A prescription is written for each compartment cruised, providing a narrative description of the compartment and detailing management treatments that are needed to meet wildlife objectives. Wildlife habitat improvements are done in accordance with the guidelines of the Refuge Habitat Management Plan. Because of frozen staff positions, timber cruises and prescriptions have not been completed for compartments 2, 16, 19, 28, and 31.

The commercial thinning operation left over from 1991 was completed in compartments 17 and 21 with a total of 18.5 cords of pine pulpwood being cut in 1992. The majority of foresters' time was spent searching and marking southern pine beetle spots (Dendroctonus frontalis). The bug spots started showing up in May. Aerial flights with a local flying service were made about once every 10 days to detect the spots. After the spots were located on the ground and marked for cutting, the bug spots were cut by commercial contractors. Removing the infested trees before the beetles emerge to begin new population cycle is the method that was used to try to control the beetles spread. Salvage operations of the infested areas continued on a large scale through September. With the onset of cooler weather, beetle activity has subsided. But it is predicted when

next spring comes, the beetles will begin again. That is why it is important to salvage spots during the winter if they can be found. Spots in pre-commercial stands were marked and pushed down with refuge dozers.

The entomologist from the Forest Pest Management office of U.S. Forest Service in Asheville, N.C. conducted a biological evaluation of the beetle spots in December. The funds that were approved by this team will help in FY 93 for the suppression of the pine beetle to protect red-cockaded colonies and their foraging habitat.

On Sunday afternoon, November 22 about 4:00 pm the management plans for several compartments were drastically changed. A class IV tornado started on the refuge at the Jarrell Plantation Road in Compartment 20 and headed northeasterly through Compartments 21, 22, 26, along the Round Oak-Juliette Road between Compartments 25 and 26-27, and finally into Compartment 18. It left the refuge at Highway 11 (see map on page 23). The path through the refuge is approximately 8 miles long and one-fourth to a half a mile wide. About 2,000 acres of pine and hardwood trees were blown over or snapped off.



Photo 17. The tornado knocked down trees on approximately 2,000 acres of refuge habitat. Salvage operations were started to help lessen fire danger and potential for insect outbreaks.

Shell/'92

Salvage operations began Monday on a limited basis. After determining the extent of the damage, timber bids were sent out to the local loggers and wood products companies. There was a great interest in the salvage sales. Bids were sent out at first on the four compartments that had the most damage - 20, 21, 22, and 18. The bids were opened on December 7 with 11 different bidders. Below are the results of the bidding:

Compartment 20	Owens Southern	Bid Price Pine Sawtimber	\$190.00
Compartment 21	Toles Logging Co.	Bid Price Pine Sawtimber	\$189.00
Compartment 22	Daniels Logging Co.	Bid Price Pine Sawtimber	\$235.00
Compartment 18	Laurens Timber Co.	Bid Price Pine Sawtimber	\$243.20

The other wood products - pine pulpwood, hardwood sawtimber, and hardwood pulpwood were sold at a price of \$15.00/cord, \$85.00/MBF, and \$8.00/cord respectively.

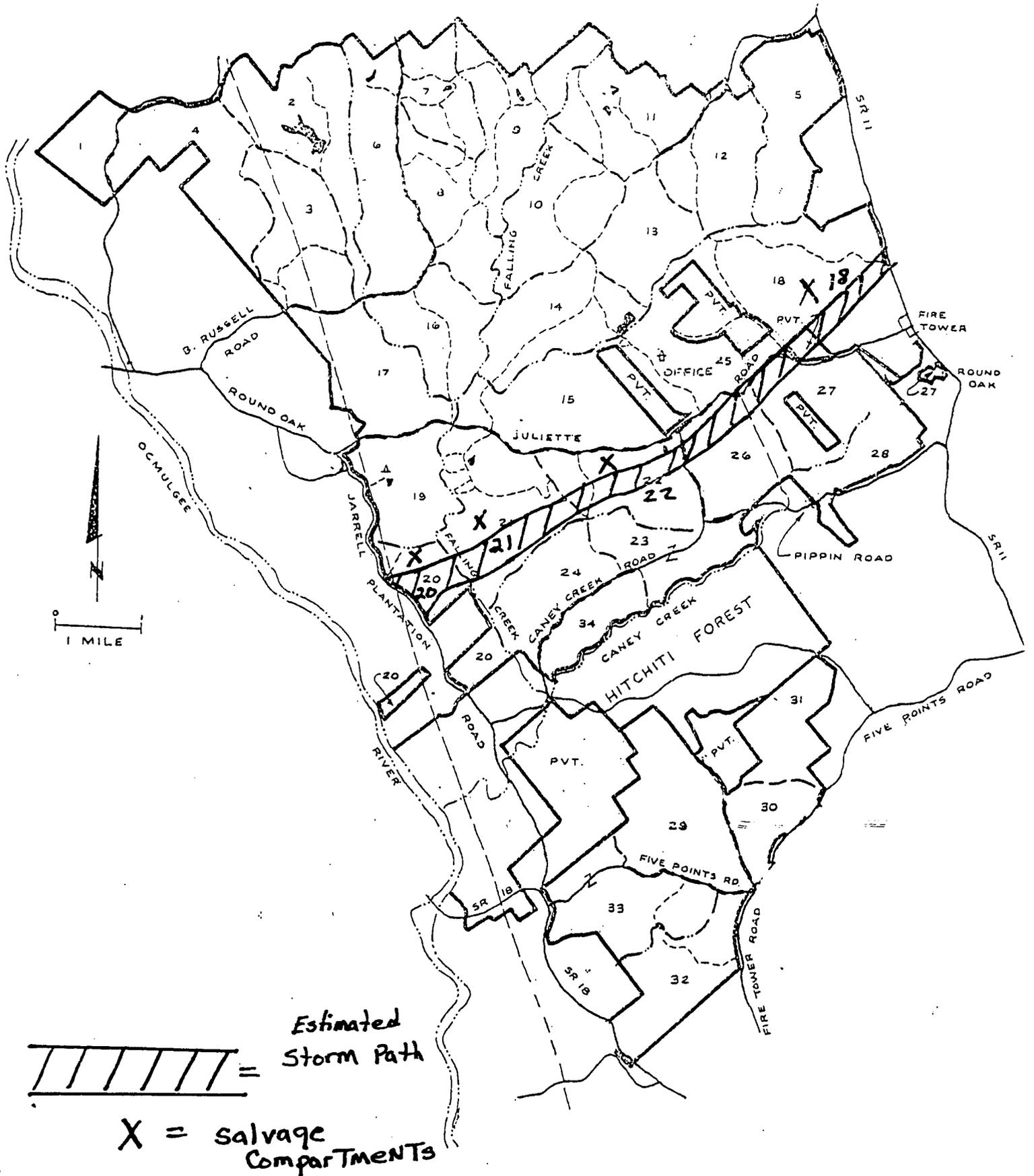


Photo 18. Along with the pines on ridges, hardwood trees in coves and along streams were destroyed by the storm.

Shell/'92

PIEDMONT NATIONAL WILDLIFE REFUGE 23

TORNADO DAMAGE FROM NOVEMBER 22, 1992 STORM



 = Estimated Storm Path

X = salvage Compartments

Outdoors

Fury of the wind



Chuck Thompson/The Macon Telegraph

Piedmont National Wildlife Refuge manager Ronnie Shell walks through part of the eight-mile strip of the refuge hit by last week's tornadoes

Last week's storm flattened 2,000-acre strip through heart of Piedmont Refuge

By Chuck Thompson
The Macon Telegraph

ROUND OAK — At first glance, it appears as if a massive logging effort has gone awry. The trees are down, but someone forgot to haul them away.

But man had no hand in making this clearcut. It was nature demonstrating its awesome, awful might.

These trees have not been neatly cut with chainsaws and logging tractors. They are twisted and shattered. On some, only the tops have been snapped off. Others have broken off far down the trunks. And still others have been plucked from the ground, with great globs of red clay still clinging to their broken roots.

The tornadoes that brought death and destruction to Putnam and Greene counties last Sunday first slammed through the Piedmont National Wildlife Refuge in northern Jones County.

"We were very fortunate that no one was seriously injured or that more buildings weren't damaged," said refuge manager Ronnie Shell. "We were lucky that it hit when we had very few visitors on the refuge."

Even more fortunate was that there were no deer hunters on the refuge at the time.

Piedmont hosts several hunts each fall to help keep the deer population under control. One of those was last weekend, but it ended Saturday afternoon. Had the storm hit a day earlier,

several hundred deer hunters would have been in the path of the twisters. And seeing what the storm did to the massive pines and hardwoods, it is certain that many hunters would have been seriously injured or killed had they been in the woods.

The tornado cut a swath through the heart of the 35,000-acre refuge, laying flat at least 2,000 acres of trees.

The tornado entered the refuge as it crossed Jarrell Plantation Road after demolishing Davie Hunt's house and his son John's mobile home.

"We estimate it was on or near the ground along an eight-mile long strip through the refuge, with the strip varying in width from about a quarter of a mile to a mile," Shell said.

Several other homes and the refuge offices and the visitor's center, just north of the storm's path, were not damaged. But the tornado did cross the area where the shops and other buildings housing the refuge's road equipment are located.

"A couple of the smaller buildings were knocked down, but the main shops and a couple of houses escaped with damage that can be repaired," Shell said.

After passing over the shop area, the storm followed Juliette Road, the main road through the refuge, for about a mile before moving out of the refuge as it crossed Highway 11 just north of Round Oak.

Two motorists were stranded on Juliette Road by the falling trees but nei-

ther vehicle was struck. Juliette Road was cleared the night of the storm, but many of the interior roads on the refuge remain blocked and will be closed for some time, Shell said.

Included among those is the Wildlife Drive, which has a section several hundred yards long buried beneath fallen trees. "That will probably be the first one we get cleared," Shell said.

"We still don't know the full extent of the damage, because there a lot of places we haven't been able to get into yet," he added. "We're going to fly over the area Monday and try to assess the damage a little better and come up with a plan to salvage what timber we can."

Trying to collect money for the timber is not the most important reason for calling in loggers, however, Shell said. "We need to remove as much as we can to reduce the fire hazard and cut down on the possible insect infestations."

The biggest concern is with pine beetles, which have damaged small portions of the refuge in the past. The downed trees provide a ready host habitat for the beetles.

What about the wildlife?

"We really don't know," Shell said. "The only dead animals we've found so far are songbirds. I imagine they were hit pretty hard. We haven't come across any deer or other larger animals that were killed yet, but there's still a lot of places we haven't been able to check. I wouldn't be surprised

if a few were killed."

Next to the songbirds, probably the animals affected the most were the squirrels and others that nest in the trees. And if they survived the storm, those that had nests in the trees that were knocked down could be in for a hard winter after losing their homes and food stockpiles.

Of particular concern was a colony of endangered red-cockaded woodpeckers, which live in cavities in mature pines. "The storm just missed the active sites, but it did go through an adjacent area where we had put a number of artificial cavities in trees, hoping to increase the colony by providing more habitat," Shell said. "We know for certain we lost four of those trees, which isn't too bad, but worst of all is that the area may no longer be suitable habitat because of the absence of mature pines."

But even at its most destructive, nature has a way of bringing about a rebirth of life. Shell said refuge personnel have observed that a type of sparrow that prefers open areas rather than dense forest is already moving into the stricken places.

And it will be interesting, Shell said, to see how the forest regenerates itself. "We won't regret. We'll just let it regenerate naturally. I expect we'll lose some hardwood acreage because the pines will come back first. And it will be interesting to see how the wildlife adapts to the changed habitat."

Table 4. Commercial Sales on Piedmont

<u>Permittee</u>	<u>Compartment</u>	<u>Total Volume</u>	<u>Total Receipts</u>
Curtis Jackson	17 (Thinning)	18.51 cds	\$310.04
Southern Pine Beetle Salvage		2,475.97 cds	\$23,639.77
Andrew Goolsby	Thinning of Pulpwood Stands	132.53 cds	\$927.71
Storm Damaged Salvage	482,122 BF - Pine Sawtimber 635.87 cds - Pine Pulpwood 16.51 cds - Hardwood Pulp		<u>\$84,086.89</u>
	TOTAL:		\$108,964.41

4. Croplands

Cropland management is limited on the refuge to 15 acres of farming at the Little Rock Dewatering Area. The 15 acres were planted to corn. The planting of the corn at Little Rock serves as a feeding and roosting area for migratory waterfowl. The good stand of corn provided food for the ducks as well as for other animals such as deer and raccoons.

5. Grasslands

Openings play an important role in habitat management, providing the primary stages of succession needed by certain wildlife species. The acreage of permanent openings consists of 565 acres in fields, 322 acres in road shoulders, and 177 acres in power line right of ways. This total acreage represents approximately three percent of the refuge. The fields are mostly one to two acres in size, irregularly shaped and interspersed throughout the refuge. Diversity is maintained through the use of strips of natural cover, lespedezas, bahia grass, clover, wheat, and fescue.

An additional two percent of the refuge is in temporary openings. Logging roads and loading docks created during logging operations are reseeded in bahia and lespedezas to prevent erosion to and provide food and cover. Succession is allowed to proceed and these openings eventually become part of the forest.

A number of wildlife openings were disked and planted with a mixture of clover and winter wheat in November and December. These fields will provide browse and forage areas for several wildlife species.

Road shoulders and dike slopes were mowed in the summer. These mowed areas are used by many wildlife species and are a favorite browsing area for fox squirrels. Several strips were mowed in scattered fields to provide bugging areas for turkey poults.

9. Fire Management

Prescribed burning is one of the primary tools in managing refuge habitats. Prescribed fires are used to reduce the severity of wildfire, create park-like stands required by the red-cockaded woodpecker, and enhance herbaceous growth for wildlife escape cover and food requirements. Results ranging from forest floor grasses and herbaceous plants the first year following a burn to a mid-story of shrubs and trees by the third or fourth year in the objective of prescribed burning. Excluding regeneration areas of pine less than 15 feet tall, prescribed fires are confined to the pine forest. The number of days with suitable prescribed burning conditions is limited each year.

Prescribed fire is a critical part of successful long term red-cockaded woodpecker management. Fire rotations in Piedmont habitats ideally need to be three years to control understory encroachment in colony sites.

Prescribed burning results are summarized in Table below. During 1992 only four burns were conducted. Because of the heavy rainfall in November and December, no burning was done. In March, we were able to use the Service's helicopter stationed in Atlanta for burning 300 acres in Compartment 4. Only 925 acres were burned this year because of weather and smoke limitations.

Table 5. 1991 Prescribed Burning Summary

<u>Compartment</u>	<u>Date</u>	<u>Acres</u>	<u>Ignition</u>	<u>Cost/acre</u>
10	2-20-92	300	ground	2.10
10	2-21-92	215	ground	2.10
28	3-02-92	110	ground	3.11
4	3-03-92	<u>300</u>	aerial	6.71
TOTAL:		925		



Photo 19. A major limiting factor for the red-cockaded woodpecker is hardwood understory encroachment.

John Hollingsworth/'92



Photo 20. Prescribed fire is the primary and most effective tool for controlling the hardwood understory.

King/'92

The refuge had two wildfires in 1992. The first fire occurred in Compartment 3 on January 16. The fire started from a high-voltage power line. The fire was controlled by the Georgia Forestry Commission to 10 acres. The area of the burn was RCW colony site 3-2. The fire could be classified as a good habitat burn.

The second fire started about May 1 on private land at a hunt camp near Compartments 30 and 31. The fire was not detected until Saturday morning, May 2. Smoke was seen on the Round Oak-Juliette Road late Friday, but the fire location was not found after searching. Georgia Forestry Commission dispatched two of their dozers and the refuge one to the fire. The State's airplane was used to direct the dozers during the control operations. The refuge furnished a three man mop-up crew and some personnel from the U.S. Forest Service were also used as the Hitchiti Experimental Forest also borders this private land. The fire was controlled about 6 pm Saturday at approximately 280 acres with 160 acres on the refuge. A building and an ATV were destroyed at the hunt camp. A few acres were burned on the Hitchiti. The area on the refuge had not been prescribed burned for many years. The fire did burn hot in some locations as the pine sapling and hardwood understory were killed. Overall, the fire turned out to be a good growing season fire.

Bill Lacy and Tom Payne were sent to the Payette Fires in Idaho in August. Their tour of duty as members of a helicopter crew lasted from August 21 to September 4.

Several personnel completed fire related training during the year as follows:

Bill Lacy - OAS-S-7 Helicopter in April at the Everglades
Helibase Manager Training in May at Mississippi Sandhill Crane Refuge

Julie King - I-403 Incident Information Officer in June
I-220 Basic ICS in May

Tim Fowler - Water pump and chain saw course in December at Cleveland,
TN

Co-op Student Royal Tyler - S-190 & S-130 at Merritt Island NWR

10. Pest Control

No chemicals were applied by the refuge this year.

12. Wilderness and Special Area

A research natural area of 188 acres is located in Compartment 32. The area is classified as SAF-80, loblolly pine-shortleaf pine type.

G. WILDLIFE

1. Wildlife Diversity

Wildlife management on Piedmont involves working with and manipulating vegetative succession to provide a diversity of habitat types. The ability of wildlife managers to create a mosaic of habitat types rich in wildlife species diversity is dictated by their ability to manipulate habitat through various practices. Service and refuge objectives direct that priority management will be conducted for certain species such as the endangered red-cockaded woodpecker. Management programs must be designed and balanced to meet these special needs, while at the same time providing habitats for other wildlife species. Our current animal lists contain 200+ birds, 45 mammals, 14 amphibians and 41 reptiles.

2. Endangered and/or Threatened Species

The red-cockaded woodpecker (RCW) is a resident endangered species found on the refuge.

The "typical" RCW cavity tree on Piedmont is 76 years old, 89 feet tall, has DBH of 17.7 inches, a N or NW cavity exposure, and is in a stand with a basal area of 59.5 square feet. The youngest red-cockaded cavity tree found on the refuge was 56 years old.

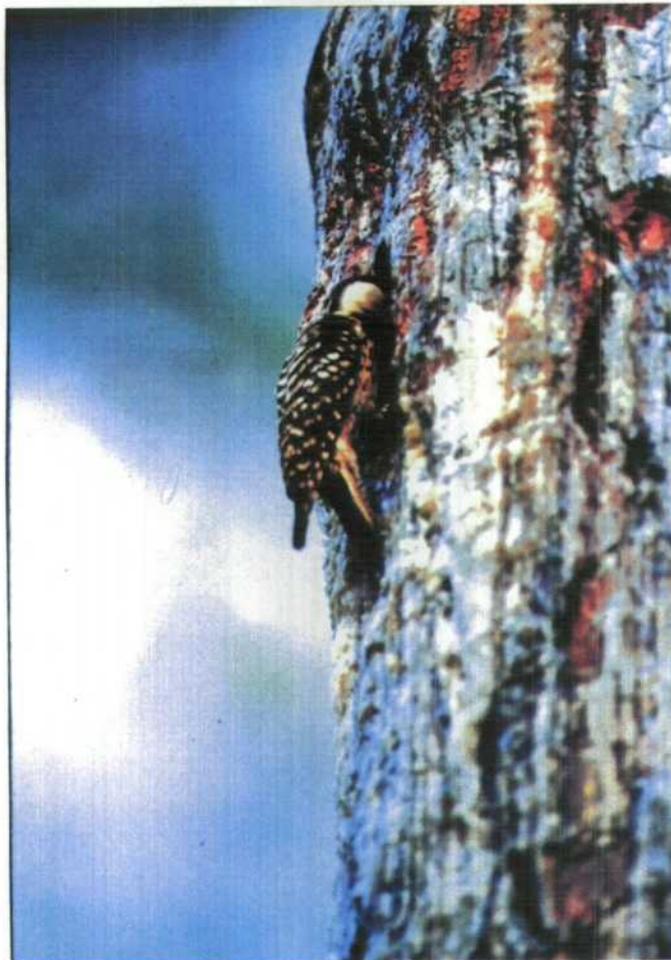


Photo 21. The red-cockaded woodpecker population on Piedmont has been stable for the last decade. John Hollingsworth/'92

The red-cockaded woodpecker is very habitat specific. For nest cavities, the birds require mature, living pine trees. Cavity trees are usually infected with red heart fungus (*Fomes pini*) which attacks and softens the heartwood of the tree. The birds excavate nest cavities in the living trees. The RCW is colonial in nature, living in clans of two to five birds. Each clan contains only one nestling pair. If the cavity tree dies, the birds will abandon it within a year. The red-cockaded woodpecker also prefers open pine stands. If understory grows up around the cavity hole, the birds will abandon the cavity. Insects are the primary food of these woodpeckers.

As with most endangered species, the RCW became threatened because of the loss of habitat. The older pine habitat it needs is not profitable when lands are being managed primarily for an economic return. Much of the southern pine forest is in commercial forest with timber rotations of around 30 years. Today, most of the remaining red-cockaded woodpeckers are found on public lands.

Present RCW management on the refuge is in accordance with the guidelines established by the Red-cockaded Woodpecker Endangered Species Recovery Plan and a Section 7 Endangered Species Evaluation of our management program. The Section 7 evaluation requires that positive steps be taken to manage for the red-cockaded woodpecker. Using recovery guidelines and our management plan, the refuge provides both current and future habitat for a goal of 96 colonies of red-cockaded woodpeckers.

The U.S. Forest Service Southeastern Forest Experiment Station at Clemson University is conducting an extensive long-term study on habitat selection and population dynamics of the red-cockaded woodpecker. The information they are gathering will prove invaluable to us in our attempt to manage for this species.

A total of 37 active RCW nests with young were verified by researchers in the Piedmont/Hitchiti population in 1992.

Personnel from the Savannah River Plant and U.S. Forest Service Endangered Species Unit conducted a red-cockaded woodpecker insert installation training session for our employees during the week of September 21. Bill Lacy and Tom Payne quickly became very skilled at insert installation.

The refuge RCW population has been very stable over the last 10 years. Because much of the refuge pine forest dates back to the 1930's, most of the trees are still too young to support natural RCW cavities. We hope the inserts will supplement natural cavities to maintain the existing population, allow for population expansion, and tie together population segments located on the northeastern and southwestern sections of the refuge.

Inserts were put in 9 sites on the refuge in 1992. By year's end RCW's were using 2 of the insert sites.

The refuge has a cooperative agreement with the adjoining Oconee National Forest to provide habitat and management sufficient to support a recovered population of RCW's. This is the only agreement of its type concerning the RCW.

In August, the refuge hosted a meeting with our cooperators, Oconee National Forest, Hitchiti Experimental Forest, the Forest Service's Nongame and Endangered Species Unit, the Forest Service Experiment Station (Fire Lab) from Macon, the Georgia Department of Natural Resources Nongame and Endangered Species Unit, the University of Georgia, and the Fish and Wildlife Service. We reviewed the 3 years of research and management and made joint plans for the next 2 years. It was an excellent meeting that hopefully helped keep us all focused cooperatively on a common recovery goal.



Photo 22. In an effort to help speed red-cockaded expansion on the refuge, refuge staff installed artificial cavity inserts on 9 sites in 1992.
John Hollingsworth/'92



Photo 23. The high winds in and near the tornado destroyed several red-cockaded woodpecker insert trees and at least 2 natural cavities.
Shell/'92

YEAR	COLONY	TOTAL				TOTAL				ATTEMPT	TOTAL				VERIFIED BROOD	TOTAL				VERIFIED FLEDGING			
		P's	P-m	P-f	P-u	A's	A_m	A-f	A-u		E's	CLUTCH	N's	N-m		N-f	N-u	F's	F-m		F-f	F-u	
1983	H01---	2	1	1	0	.	.	.	.	1	4	YES	3	1	1	1	YES	2	1	1	0	YES
1992	H02---	0	0	0	0	0	0	0	0	YES
1992	H03---	2	1	1	0	2	2	0	0	1	4	YES	3	2	1	0	YES	3	2	1	0	YES	
1992	H04---	2	1	1	0	0	0	0	0	1	3	YES	3	0	2	1	YES	2	0	2	0	YES	
1992	H05---	2	1	1	0	1	1	0	0	1	3	YES	3	2	1	0	YES	3	2	1	0	YES	
1992	H06---	2	1	1	0	1	1	0	0	1	3	YES	3	0	3	0	YES	3	0	3	0	YES	
1992	H07---	2	1	1	0	1	1	0	0	1	1	NO	0	0	0	0	YES	0	0	0	0	YES	
1992	H07---	2	1	1	0	1	1	0	0	2	3	YES	2	0	0	2	YES	0	0	0	0	YES	
1992	H07A--	2	1	1	0	2	2	0	0	1	3	YES	1	1	0	0	YES	1	1	0	0	YES	
1992	H08---	1	0	1	0	1	1	0	0	0	0	YES	0	0	0	0	YES	0	0	0	0	YES	
1992	H09---	2	1	1	0	1	1	0	0	1	4	YES	3	2	1	0	YES	3	2	1	0	YES	
1992	H10---	2	1	1	0	0	0	0	0	1	1	NO	0	0	0	0	YES	0	0	0	0	YES	
1992	H10---	2	1	1	0	0	0	0	0	2	3	YES	3	1	1	1	YES	2	1	1	0	YES	
1992	H14---	0	0	0	0	0	0	0	0	YES
1992	H15---	2	1	1	0	0	0	0	0	1	3	YES	0	0	0	0	YES	0	0	0	0	YES	
1992	H16---	2	1	1	0	1	1	0	0	1	3	YES	3	1	1	1	YES	1	1	0	0	YES	
1992	H17---	2	1	1	0	0	0	0	0	1	3	YES	2	0	0	2	YES	0	0	0	0	YES	
1992	P02-1-	0	0	0	0	0	0	0	0	YES
1992	P02-1A	0	0	0	0	0	0	0	0	YES
1992	P02-2-	2	1	1	0	1	1	0	0	1	4	YES	1	0	1	0	YES	1	0	1	0	YES	
1992	P02-4-	2	1	1	0	1	1	0	0	1	3	YES	1	0	1	0	YES	1	0	1	0	YES	
1992	P02-4A	2	1	1	0	0	0	0	0	1	4	YES	0	0	0	0	YES	0	0	0	0	YES	
1992	P02-4A	2	1	1	0	0	0	0	0	2	3	YES	3	2	0	1	YES	2	2	0	0	YES	
1992	P02-5-	2	1	1	0	0	0	0	0	1	3	YES	2	2	0	0	YES	2	2	0	0	YES	
1992	P02-6-	2	1	1	0	2	2	0	0	1	4	YES	2	0	2	0	YES	2	0	2	0	YES	
1992	P02-7-	2	1	1	0	2	2	0	0	1	4	YES	3	3	0	0	YES	3	3	0	0	YES	
1992	P03-1-	2	1	1	0	1	1	0	0	1	4	YES	2	0	2	0	YES	2	0	2	0	YES	
1992	P03-2-	0	0	0	0	0	0	0	0	YES
1992	P03-3-	2	1	1	0	1	1	0	0	1	4	YES	1	1	0	0	YES	1	1	0	0	YES	
1992	P03-4-	2	1	1	0	0	0	0	0	1	3	YES	0	0	0	0	YES	0	0	0	0	YES	
1992	P03-4-	2	1	1	0	0	0	0	0	2	4	YES	0	0	0	0	YES	0	0	0	0	YES	
1992	P03-4-	2	1	1	0	0	0	0	0	3	4	NO	2	0	0	2	YES	0	0	0	0	YES	
1992	P03-4A	2	1	1	0	0	0	0	0	1	4	YES	3	3	0	0	YES	3	3	0	0	YES	
1992	P06-1-	0	0	0	0	0	0	0	0	YES
1992	P06-2-	2	1	1	0	0	0	0	0	1	4	YES	3	1	1	1	YES	0	0	0	0	YES	
1992	P07-1-	2	1	1	0	0	0	0	0	1	3	YES	0	0	0	0	YES	0	0	0	0	YES	
1992	P08-1-	2	1	1	0	0	0	0	0	1	3	YES	2	1	1	0	YES	2	1	1	0	YES	
1992	P08-2-	2	1	1	0	0	0	0	0	1	3	YES	2	2	0	0	YES	2	2	0	0	YES	
1992	P09-2-	1	1	0	0	0	0	0	0	0	0	YES	0	0	0	0	YES	0	0	0	0	YES	
1992	P10-1-	2	1	1	0	0	0	0	0	1	3	YES	3	1	0	2	YES	0	0	0	0	YES	
1992	P14-1-	0	0	0	0	0	0	0	0	YES
1992	P14-2-	2	1	1	0	1	1	0	0	1	4	YES	3	0	3	0	YES	3	0	3	0	YES	
1992	P14-3-	0	0	0	0	0	0	0	0	YES
1992	P14-4-	0	0	0	0	0	0	0	0	YES
1992	P16-1-	2	1	1	0	0	0	0	0	1	4	YES	4	1	1	2	YES	2	1	1	0	YES	
1992	P16-2-	2	1	1	0	1	1	0	0	1	4	YES	4	3	0	1	YES	3	3	0	0	YES	
1992	P22-1-	2	1	1	0	1	1	0	0	1	3	YES	3	1	2	0	YES	3	1	2	0	YES	
1992	P24-1-	2	1	1	0	1	1	0	0	1	4	YES	3	3	0	0	YES	3	3	0	0	YES	
1992	P24-2-	2	1	1	0	0	0	0	0	1	3	YES	1	1	0	0	YES	1	1	0	0	YES	
1992	P26-1-	0	0	0	0	0	0	0	0	YES

At least 2 adult bald eagles returned to Bond Swamp in November. Nesting began in January with 2 young eaglets hatched. Both young eagles survived and were free flying by May.



Photo 24. The bald eagle nest at Bond Swamp, which has been active for at least 7 consecutive years, produced 2 eaglets to flight stage in 1992.

Tritaik/'92

Another interesting eagle event was the presence of a pair of adult bald eagles on Piedmont from February through July. The birds were seen at various spots on the refuge during this time. Neither we nor DNR located a nest, but we do find their presence on the refuge interesting.

In addition to the eagles, Bond Swamp supports a healthy alligator population with two 10 to 12 foot gators encountered in Stone Creek this year. Wood Storks have also been seen passing over Bond Swamp.

Both Piedmont and Bond Swamp support resident wood duck populations. Wintering waterfowl migrating through the area also use both refuges. Other than wood ducks, the most numerous waterfowl seen on Piedmont this winter was the ring-necked ducks with up to 3,000 birds at a time seen on refuge impoundments. Bond Swamp has mallards, wood ducks, some black ducks, teal, and ring-necks use the area in the winter in numbers up to 5,000 to 6,000. The early flooding in November dispersed the birds throughout the river bottoms.

For the 1992 season, usable wood duck boxes on Piedmont totalled 159 with 79 boxes used by wood ducks. Estimated wood duck hatch was 431. Many old and dilapidated boxes were replaced. The 12 wood duck boxes placed at Bond Swamp were not used by wood ducks.



Photo 25. Wood duck boxes on both refuges were checked in February and again in mid-summer.

Lacy/'92

4. Marsh and Water Birds

Sandhill cranes on their way to Okefenokee from Wisconsin pass over and often stop on Piedmont in early March. Return flights come through in October and November. The largest flights were observed on March 1 and March 2 with 800 cranes seen the first day and 250 the second. Great blue herons and a few egrets are regularly seen on Piedmont.

There are 3 known active nesting rookeries used by great blue herons, little blue herons, green backed herons, common egrets, white ibis, and anhingas on Bond Swamp. Yellow-crowned and black-crowned night herons and American and least bitterns are also present on Bond Swamp Refuge.



Photo 26. At least 3 rookeries were active on Bond Swamp in 1992.
John Hollingsworth/'92



Photo 27. Bond Swamp diverse habitats support a diversity of wildlife species.

John Hollingsworth/'92

5. Shorebirds, Gulls, Terns and Allied Species

Shorebirds are seen on mudflats after impoundment drawdown but are seldom seen otherwise on the 2 mostly wooded refuges.

6. Raptors

Both refuges support significant numbers of migrating and wintering raptors. Raptor species using the refuge on a year-round basis include black and turkey vultures. Coopers hawk, red-tailed hawk, red-shouldered hawks, and American kestrels are also present and screech, great-horned, and barred owls who are often heard but seldom seen.

Some large vulture roosts are found in the Piedmont area and an active vulture nest with 2 young in a hollow tree was found on the refuge.

7. Other Migratory Birds

A formal breeding bird survey was conducted for the second year on Piedmont. In 1992, 57 species of birds were counted compared to 50 species in 1991.

Bond Swamp provides good habitat for a large variety of bird species including some high priority neotropical migrants that breed in Bond Swamp such as Swainson's warbler, wood thrush, prairie warbler, prothonotary warbler, and summer tanager.

The Christmas bird count on Piedmont recorded 100 different species.

Nesting woodcocks were again found on Piedmont.

8. Game Mammals

White-tailed deer continue to generate the most public interest of any mammal species found on the refuge. Visitors often see deer from the road and when combined with a variety of other animals such as gray and fox squirrels, raccoons, turkeys, and an occasional fox, it usually makes their trip memorable.



Photo 28. This white-tailed deer was killed by a falling tree during the tornado. Overall, direct mortality of wildlife due to the storm appeared to be low.

PIEDMONT NWR BREEDING BIRD SURVEY

SPECIES COUNT: 62

	<u>YEAR:</u>	<u>1991</u>	<u>1992</u>
SPECIES:		50	57
INDIVIDUAL BIRDS:		578	640

Great Blue Heron		1
Green-backed Heron		1
Wood Duck	3	1
Turkey Vulture		1
Red-shouldered Hawk	1	2
Red-tailed Hawk	2	
Wild Turkey	5	
Northern Bobwhite	7	12
Mourning Dove	13	9
Yellow-billed Cuckoo	11	14
Whip-poor-will		4
Chimney Swift	3	3
Ruby-throated Hummingbird	1	2
Red-headed Woodpecker	11	7
Red-bellied Woodpecker	23	29
Downy Woodpecker	1	
Hairy Woodpecker	6	4
Red-cockaded Woodpecker	4	2
Northern Flicker	6	9
Pileated Woodpecker	5	3
Eastern Wood-Pewee	7	11
Acadian Flycatcher	3	3
Great Crested Flycatcher	12	13
Eastern Phoebe		2
Purple Martin	2	1
Blue Jay	14	14
American Crow	42	35
Carolina Chickadee	13	15
Tufted Titmouse	44	31
Brown-headed Nuthatch	7	13
Carolina Wren	26	32
Blue-gray Gnatcatcher	1	8
Eastern Bluebird		6
Wood Thrush	10	20
Northern Mockingbird	1	1
Brown Thrasher	1	1
White-eyed Vireo	4	1
Yellow-throated Vireo	5	1
Solitary Vireo		1
Red-eyed Vireo	36	23
Northern Parula	8	5
Pine Warbler	81	84
Prairie Warbler	15	20
Black-and-white Warbler		1
Swainson's Warbler	1	
Ovenbird		1
Louisiana Waterthrush		2
Kentucky Warbler	2	1
Common Yellowthroat	1	4

	1991	1992
Hooded Warbler	2	5
Yellow-breasted Chat	11	17
Summer Tanager	19	29
Scarlet Tanager	1	
Northern Cardinal	25	38
Blue Grosbeak		3
Indigo Bunting	11	21
Rufous-sided Towhee	38	49
Bachman's Sparrow	8	2
Chipping Sparrow	14	4
Field Sparrow	7	16
Common Grackle	4	4
Brown-headed Cowbird		4

day:	Jun 9	Jun 7
start time:	6:01	5:53
end time:	10:44	10:57
start temp:	65	66
end temp:	80	82
start wind:	0	0
end wind:	0	2
start sky:	0	0
end sky:	0	0

Quite a few visitors who had seen large black fox squirrel sitting next to roads stopped in the office to ask what kind of animal is that.

Deer, squirrels, and raccoons checked on refuge hunts were all in good condition.

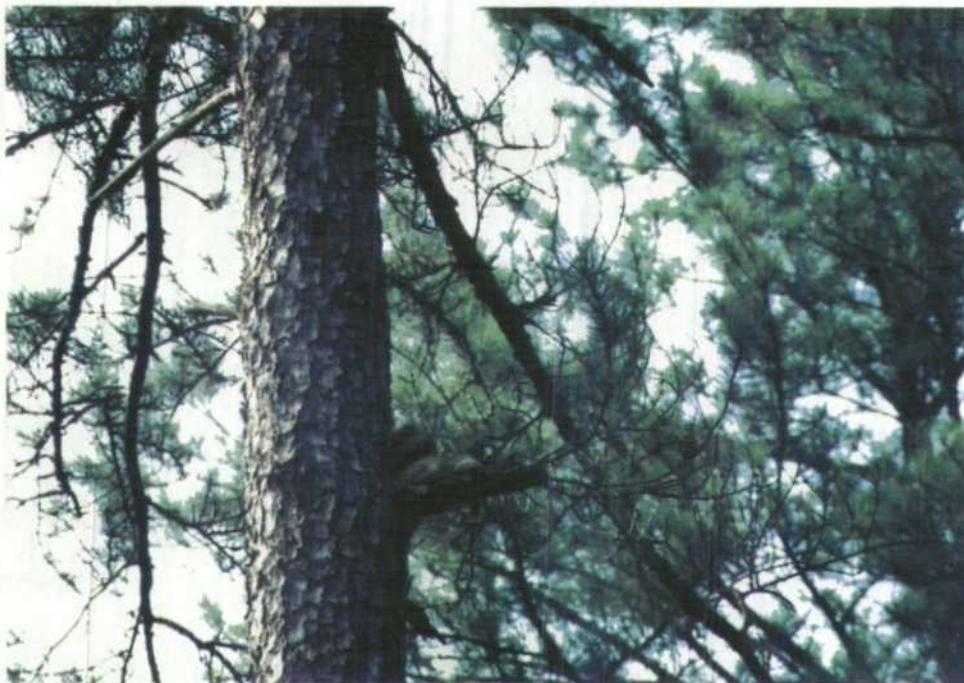


Photo 29. Fox squirrels were observed by staff and visitors throughout the refuge.

John Hollingsworth/'92

10. Other Resident Wildlife

Due to the wet spring weather, turkey reproduction appeared to be down, but large flocks of birds were still seen regularly, gobbler census counts remained high, and refuge turkey hunters were successful.

We continue to observe evidence of an increased coyote population. One of the most asked questions by some landowners is "what are you going to do about the coyotes?"

One of the most interesting observations was a 200 pound black bear crossing the road at Bond Swamp in June.

A diverse variety of rodents, bats, other mammals and reptiles and amphibians are found on both refuges.



Photo 30. This species of animal is abundant on Bond Swamp along with cottonmouths. This abundance causes employees to watch where they put their feet and hands.
John Hollingsworth/'92

11. Fisheries

Refuge lakes on Piedmont are stocked with largemouth bass, bluegill, red-eared sunfish, and catfish. While the fisheries management program is a secondary activity that is integrated with wildlife objectives, the area does provide some good small pond fishing that is heavily utilized.

Bo Ginn NFH stocked 11,000 catchable size catfish in refuge impoundments in May. More fish were stocked in November.

Streams are maintained with native fish including red-eyed bass.

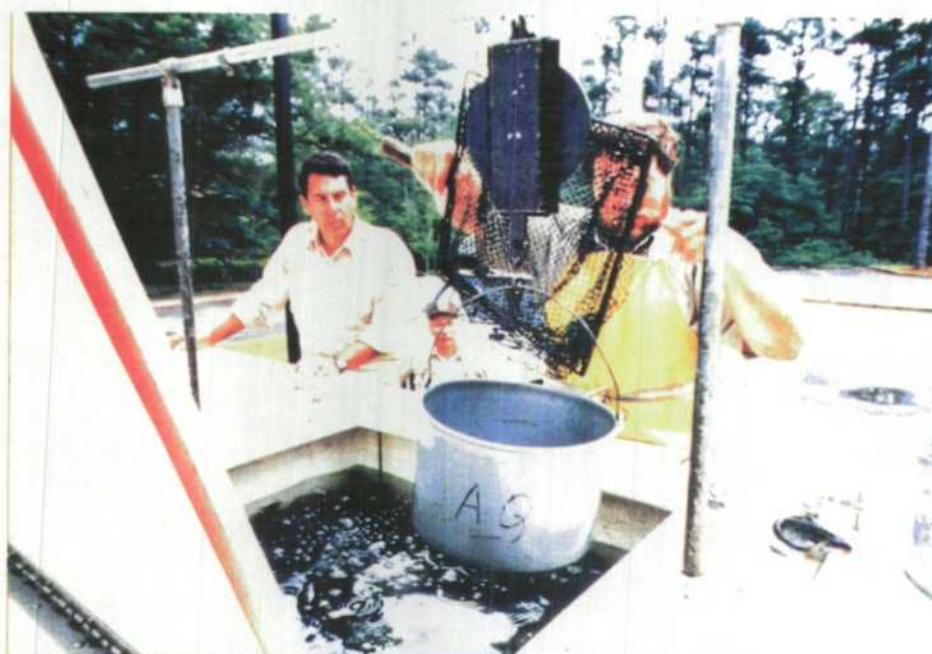


Photo 31. Bo Ginn National Fish Hatchery delivered fish to Piedmont several times during 1992.
Shell/'92

15. Animal Control

The only animal control on Piedmont was limited to a specific problem area which was beaver. Beaver provide excellent wetland habitat for a variety of wildlife species and are generally left to create their dams unimpeded. In some instances where beaver flood roads or seriously hamper water control efforts in impoundments, problem animals are removed by shooting or trapping. During 1992, four beavers were removed.

16. Marking and Banding

Because we had been successful in meeting our wood duck banding quota of 60 birds for the last few years, the Regional Office raised our 1992 quota to 100 ducks with no input from the refuge. We did not reach our new quota. A total of 50 wood ducks were banded on Piedmont in 1992. Attempts were made to also band wood ducks at Bond Swamp, but the feral hogs on the area messed up all efforts.

Red-cockaded woodpecker biologists also banded all RCW nestlings with colored leg bands.

17. Disease Prevention and Control

Both rabies and Lyme's Disease were down in the Piedmont area. We now suspect that the feral hogs at Bond Swamp harbor pseudo-rabies and possibly other diseases.

H. PUBLIC USE

1. General

Many people came out to enjoy the Refuge throughout the year. Activities ranging from wildlife observations and outdoor classrooms to fishing and hunting were enjoyed by many. We continue to get calls from local schools and groups interested in using the Refuge as a study area for outdoor classrooms. The busiest month for visitation were April, May, October, and November. The total visits for 1992 were estimated at approximately 120,000.

December was an especially busy public use month because of the tornado which slashed through the Refuge on November 22. Many interested rubberneckers were seen riding the roads observing the devastation.

The Refuge had a busy year, especially with exhibits put on at other locations. Many exhibits were displayed and talks given including the Earth Day Braves Game Celebration in April, the Spring Atlanta Home Show, the Buck-A-Rama in Atlanta and Perry, and the Olympic Flag Tour through Georgia in September.

Julie King, the Refuge Interpretive Specialist, was sent to Atlanta for a three month career development detail to work in the Public Affairs Office. Julie worked on environmental education for the Region, as well as many outreach programs throughout the state. The knowledge she gained should have a very positive impact on the Refuge.

The spring and summer months were filled with programs on the Refuge and also many visits to local libraries. All of the Middle Georgia area libraries were working on programs with their children's groups, and Julie King visited each one to give a program about the Refuge and U.S. Fish and Wildlife Service. These programs reached hundreds of children.



Photo 32. Julie King worked both on and off the refuge throughout the year to help people of all ages and backgrounds gain a better understanding and appreciation of our wildlife and the habitats they need.

King/'92

During the Christmas season, Julie King worked with local schools on "Christmas Trees for Wildlife". Many classes participated and helped make Christmas ornaments for animals to eat off of outside trees. The project was a big success.

2. Outdoor Classrooms - Students

With the completion of the Backyard Wildlife Habitat, many local school have taken advantage of this teaching opportunity. A new trail is being planned to follow through the Backyard Wildlife Habitat and continue down to a creek behind the Visitor Center.

This would be an interpretive, handicap accessible trail. Hopefully funding will be available next year to begin this project. This area will be used as a demonstration area for schools, local clubs and interested public. We hope this will help increase interest in planting for wildlife and also handicap trail accessibility. Much thanks should be given to Drew Cook. He is a local eagle scout who decided to make Piedmont's Backyard Habitat his eagle scout project. He helped plant plants for the Backyard Habitat and build numerous blue bird boxes and bat houses for the refuge. He received a volunteer award and T-shirt for his efforts.

3. Outdoor Classroom - Teachers

The staff was very active in Project WILD. Julie King and Paul Tritaik conducted several Project WILD workshops during the year.



Photo 33. Julie coordinated several Project WILD and other wildlife related teacher workshops to help teachers prepare to lead their students in outdoor classrooms.

King/'92

4. Interpretive Foot Trails

All three interpretive trails have continued to be improved and maintained. New signs were ordered for the Red-cockaded Woodpecker Trail.

5. Interpretive Tour Routes

The Little Rock Wildlife Drive is a six mile, self-guide auto tour route. The drive has twelve stops which correspond to an interpretive leaflet. New signs were ordered as needed and the route checked for fallen trees and debris regularly. Presently, the Little Rock Wildlife Drive has been temporarily closed because of the tornado which ripped through the Refuge in November. Hopefully, we can reopen it after the first of the year.

6. Interpretive Exhibits/Demonstrations

Several members of the Piedmont staff helped set up and work exhibits throughout the Region. The first was the Earth Day Celebration with the Atlanta Braves. Julie King, John Vinson, Osvaldo Castro-Poveda, and Paul Tritaik helped work on exhibits, set up displays, and talk with the media throughout the day. The event also included Julie King singing the National Anthem. This was a huge public relations event for the Fish and Wildlife Service and could not have been a success without the help of Piedmont's staff.

The next event was the 1992 Spring Atlanta Home Show. Julie King, John Vinson, Glenn McMichael, and Ozzie Castro-Poveda helped to plan, set-up and take down the Backyard Wildlife Exhibit. This event reached approximately 90,000 people and was a very positive event for the Service.



Photo 34. Julie King was detailed to the Regional Office for the first 4 months of the year to help plan and coordinate the Service's exhibits at the Atlanta Home Show and Earth Day at Atlanta-Fulton County Stadium. She did a great job on all projects including singing the National Anthem at the Earth Day Braves game.

King/'92

During the weekend of July 11 and 12 the refuge had the best of 25 exhibits for an environmental emphasis weekend. Staff members answered questions at the exhibit with over 10,000 people viewing it.



Photo 35. The refuge also had an exhibit seen by several thousand people in the Macon Mall for an environmental awareness weekend the Mall sponsored.

Shell/'92

In August, Piedmont coordinated and staffed the Service exhibit at both the Atlanta and Perry Buck-A-Rama put on by the Georgia Wildlife Federation. Over 70,000 people attended these events. We talked to many of them about the Service and its programs.

The final event was the Olympic Flag Tour through Georgia. This event lasted 9 days. Every day the exhibit would be set up in a different city in Georgia. The employees working had to set up the exhibit the day before, be at the exhibit from 7:00 am to 7:00 pm and then take it down and drive to the next city to set it up. It was a long, grueling schedule. John Vinson stayed with the exhibit from the first day until the last day. He helped set up, take down, and work the exhibit. Paul Tritaik and Julie King were on the planning committee and worked the last four days of the tour. It was an outstanding effort by the Service employees and a great public relations boost for the Fish and Wildlife Service. Once again, Piedmont had a major role in the success of this exhibit.

Paul Tritaik represented the Service at a Career Day held at the Jones County High School in February. A display was presented and leaflets and information distributed.



Photo 36. The unsung heroes are often the backbone of any special effort. John Vinson was the driver of the truck that carried the Service's Olympic Flag exhibit each night from city to city in Georgia and then he helped staff the exhibit and did an excellent job of interpretation.

Tritaik/'92

7. Other Interpretive Programs

The Refuge has started a new Environmental Education Program with the Jones County School System. The program is called "Nature Network". Julie King is currently working with Gray Elementary School. She not only gives programs of all types, but also works with the teachers on innovative techniques, teaching tools, supplies and information on subjects relating to wildlife, habitat, endangered species, environment and many other related topics. The materials cover all subjects (math, English, PE, etc.). This program also includes teacher workshops such as Project WILD and Project Learning Tree. The school is currently planning a backyard wildlife habitat.

Throughout 1992, the staff presented 103 programs to all types of groups. The demand for programs came from schools, local organizations, and professional organizations. Their topics ranged from wildflowers and birds to Refuges and history. Manager Shell also worked closely with other agencies, graduate school classes and professionals on endangered species management, wildlife management and other information about Piedmont Refuge.

8. Hunting

Hunting remains a very popular activity on Piedmont and serves both as a management tool and provides good recreational opportunities for the public. Participation in all hunts was high with quotas and public drawings required for the deer gun hunts and turkey hunts.

This was the second year of the hunt permit fee system. We had very few complaints about the fees and collected enough money to cover permit and fee costs. However, fee collection, accounting, and administration of the program are very time consuming headaches. It takes one staff person a good part of the year to administer the program, and we have an average of 3 people tied up with hunt fees during the period when fees are coming into the office.

Our second annual Piedmont disabled hunt for deer was held on October 16-17 with a substantial increase in wheelchair hunters from 15 in 1991 to over 50 this year. The campground was alive with pigs roasting, deer stories, and a group of fun-loving deer hunters. Most of the refuge staff was involved in the hunt and it was our most energy intensive hunt, but it was also our favorite hunt by far. The refuge staff probably got as much out of sharing and working with the hunters as the hunters got from the hunt. We got television coverage of the hunt and newspaper coverage locally and from as far away as San Antonio, Texas.

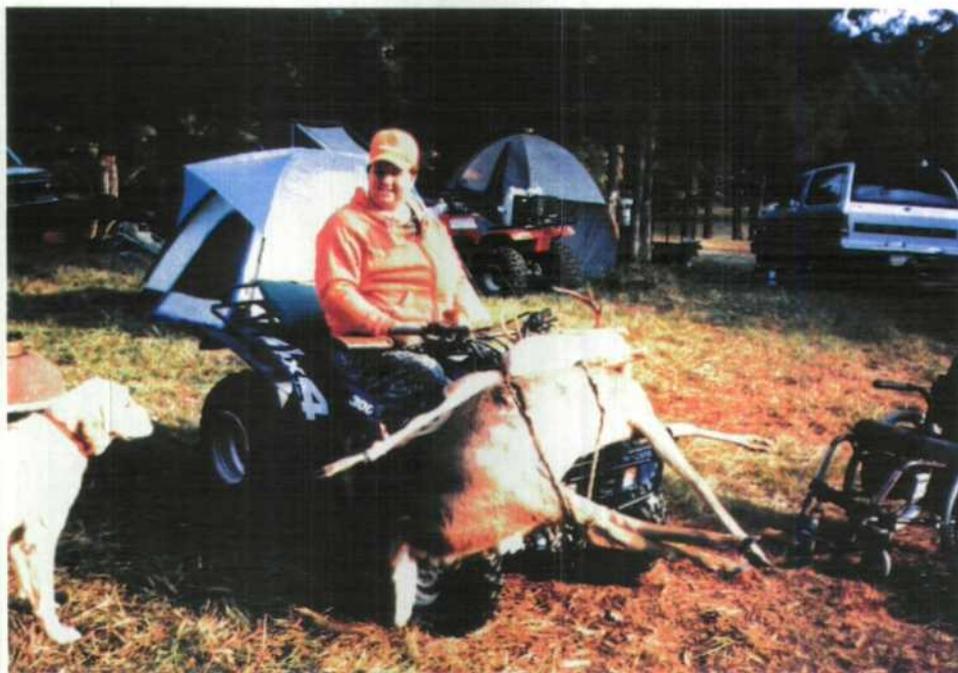


Photo 37. Over 50 wheelchair bound hunters participated in our 1992 disabled deer hunt. They all enjoyed the experience.

King/'92

The total harvest for all deer hunts was 606. We have been trying to reduce the refuge deer herd to bring it more in balance with its habitat and have been able to do so through public hunting. The number of deer hit by cars on the refuge has dropped significantly in the last 3 years.

Table 6. Summary of 1992 Piedmont NWR Deer Hunts

<u>Type Hunt</u>	<u>Dates</u>	<u>Hunter Days</u>	<u>Harvest</u>
Archery (ES)	Sept. 26 - Oct. 11	3,100	30
Handicapped Hunt	Oct. 16-17	80	4
Bucks Only	Oct. 22-24	3,500	109
Primitive Weapons (ES)	Oct. 29-31	3,100	141
Either Sex I	Nov. 7	1,100	215
Either Sex II	Nov. 14	900	97
Either Sex III	Nov. 21	150	10

The winter raccoon hunts were popular and caused us very few problems. The spring turkey hunts were also successful with 647 of 800 hunters drawn for the hunt paying their permit fees and then checking in 29 turkeys.

Table 7. Wild Turkey Harvest Summary, 1980-91. Piedmont NWR, GA

<u>Year</u>	<u>HARVEST</u>	<u>Age</u>		<u>Avg. Wt.</u>		<u>No. Hunts</u>	<u>No. Days</u>	<u>Total Permits</u>
		<u>A</u>	<u>I</u>	<u>A</u>	<u>I</u>			
1980	8	unknown	unknown			2	6	100
1981	4	4	-	20	-	2	6	100
1982	10	5	5	20.4	13.7	3	9	225
1983	14	7	7	19.3	13.5	3	9	225
1984	23	19	4	18.3	14.5	3	9	375
1985	17	11	6	18.2	12.0	3	9	450
1986	28	16	12	18.0	13.3	3	9	600
1987	18	16	2	18.6	9.6	4	12	800
1988	22	14	8	18.5	13.0	4	12	800
1989	21	15	6	18.3	13.2	4	12	800
1990	24	11	13	19.2	11.3	4	12	800
1991	32	17	15	18.5	14.2	4	12	800
1992	29	20	9	17.5	13.5	4	12	647*

*Number permits paid for under hunt fee system



Photo 38. This was the largest deer checked in during our 1992 deer hunts.

King/'92

Interest in our hunts is not limited to Georgia. In addition to Georgia, we had hunters and vehicles from Florida, Tennessee, Alabama, North Carolina, South Carolina, Kentucky, Illinois, Texas, and New York this year and they all had their non-resident licenses. Some of the "hunting" vehicles we see are also interesting. In addition to the pickup trucks and family sedans, we saw hunters in BMWs, cadillacs, Chrysler New Yorkers, Mita's, and one corvette this year. The corvette hunter was successful. Times are changing but from what we see hunting and hunting interest is a long way from dead.

9. Fishing

Fishing interest and pressure are surprisingly intense on Piedmont's small impoundments. The refuge fishing season opened on May 1 and closed September 30. Quite a few good catches with some bass up to 13 pounds and catfish up to 15 pounds caught.



Photo 39. Fishing pressure was heavy on refuge impoundments in 1992.
Tillman/'92



Photo 40. A successful fisherman.

Tillman/'92

11. Wildlife Observations

As wildlife areas decline, the amount of interest in the Refuge increases.



Photo 41. There is lots of public interest in Bond Swamp NWR. Because of no funding and frozen positions, the only public access in 1992 was through guided canoe trips.

John Hollingsworth/'92

With our wildlife clipboard at the Visitor Center, many visitors will record their sightings. This is informative to other visitors as well as the staff.

The Christmas Bird Count was held on December 21. A record number of bird species were identified.

12. Other Wildlife Oriented Recreation

Many visitors enjoy observing wildlife and the quite serenity of the woods. Photography and bird watching are becoming increasingly popular. Many areas apart from the specific wildlife trails are taken advantage of. Many visitors walk the foot travel only roads to observe wildlife.

13. Camping

The only public camping allowed is during the big game hunts. During the deer and turkey hunts several hundred people camped.

Also throughout the year, special use permits are issued to scout groups which enables them to camp. This is allowed only under the condition that they do a service project for the refuge. These projects include litter pickup, trail maintenance, wood duck box building and other such activities.

15. Off Road Vehicling

Off road vehicles are not allowed on the Refuge. The exception is our handicapped-wheelchair bound hunters. They are issued a special use permit to hunt from ATV's on foot travel only roads.

17. Law Enforcement

Many years of both active and preventive law enforcement effort have worked together to cut back on wildlife related and hunt regulation violations on Piedmont. However, increased public use, more development in the area, the proximity of several major roads in the area have all combined to bring more unusual and more serious crime to the refuge. We have reported on some of these in past narratives.

A subject who was charged with raping a female on the refuge was sentenced to 10 years in prison. During a 3 day period in early July, refuge officers Tillman and Shell assisted in a search on and around the refuge for a subject who had committed a brutal murder, vowed not to be taken alive, and then abandoned his car near the refuge. He was finally apprehended by a homeowner south of the refuge. Refuge officers also stopped a number of DUI vehicles and had to assist county officers who had pursued violators onto the refuge. We have run our officers through driving and boating under the influence courses at the Georgia Public Safety Training Center and purchased field alcohol test units for them. We were especially alert for persons hunting under the influence this year. The refuge and visitors are hopefully safer because of these efforts.

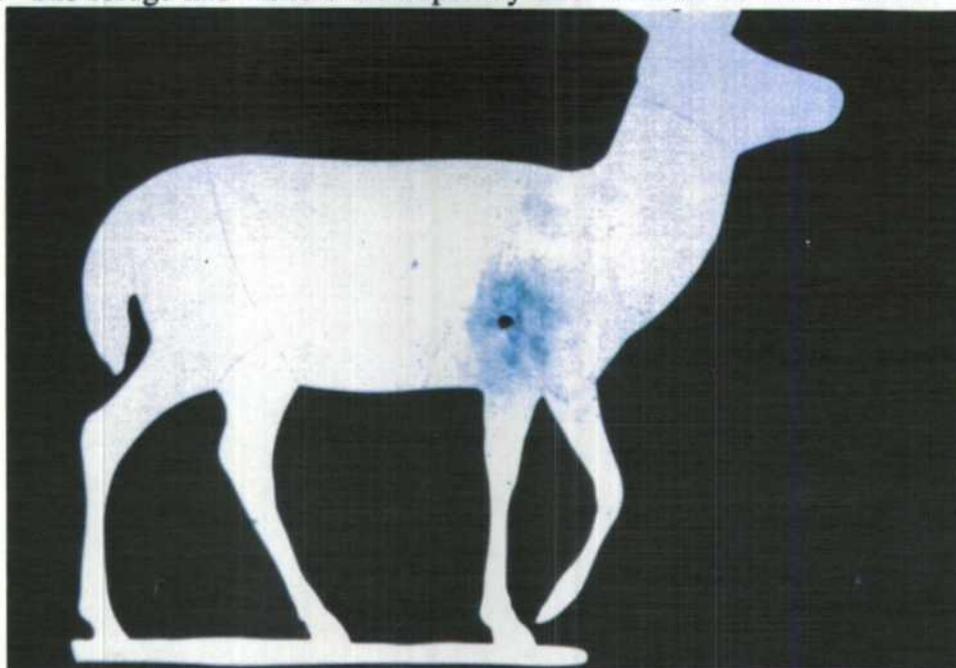


Photo 42. Law enforcement on our refuges gets a little more interesting each year. In 1992, we dealt with incidents ranging from vandalism of the traditional type . . .

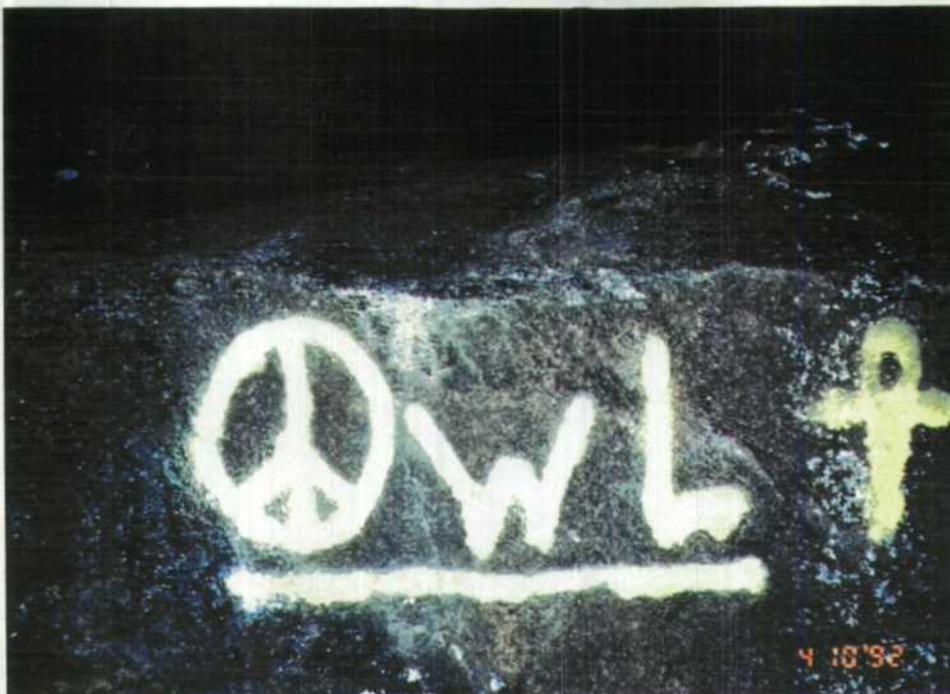


Photo 43. To a new type of vandalism associated with some satanic ceremony.

Shell/'92

We worked with the Drug Enforcement Administration on some reported on refuge marijuana activities late in 1992. One marijuana patch was found on Forest Service land adjacent to the Refuge and another was found on private land near the refuge. The subjects possibly involved are still under investigation. Three fenced sites that had been planted earlier were also located.

One of the stranger events of the year occurred in April when a rock waterfall area on Falling Creek was apparently used late one night for some satanic worship activities. Some painted symbols were left on the rocks which were later cleaned by refuge staff. We were informed later that one of the persons involved had 25 hits of LSD in his possession. He may have been seeing all types of spirits.

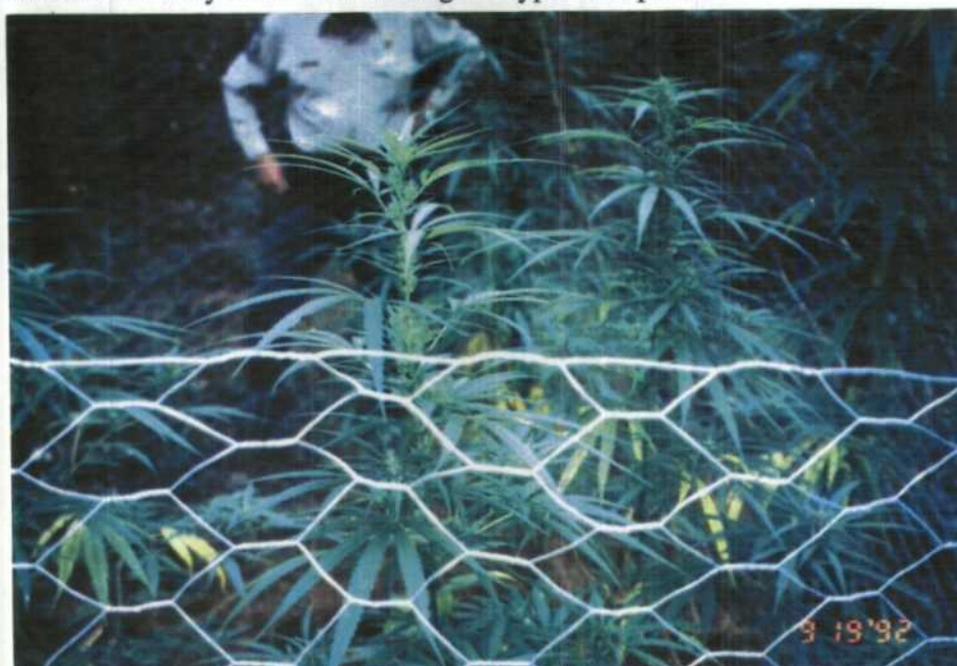


Photo 44. We continued to cooperate with DEA, the GBI, and local authorities in drug control efforts.

Tillman/'92

We also investigated one large wildfire that was possibly arson and one incident where a stolen log truck was crashed into a refuge gate.

Bond Swamp is still a fairly wide open place with a long history of people hunting in the river swamp without any concern for the law or whose property they are on. During 1992, we had illegal hunting on the refuge most months of the year and worked with Georgia DNR and Special Agents from our Division of Law Enforcement as time and officers permitted. Violators access the area by 4 wheel drive trucks, ATV's, mud buggies, and boats. Many of the daylight violations involved baiting on and near the refuge. On one Saturday morning working with State officers 9 cases were made. Night violations often involve boats, violators with catch dogs (mostly pit bulls), lots of alcohol, and on occasion some possible commercial activity. A couple of our mid-summer night trips to the swamp were interesting. The violators have better equipment for getting around the area than we do.

Due to transfers resulting, frozen positions and the removal of one officer's authority at the request of the Regional Office in order to reduce overall number of officers in the Region resulted in the number of personnel with LE authority at this station dropping from 6 to 3. This has made it very difficult to carry out the law enforcement programs on our stations safely and effectively and to provide the level of protection the public has grown to expect here.

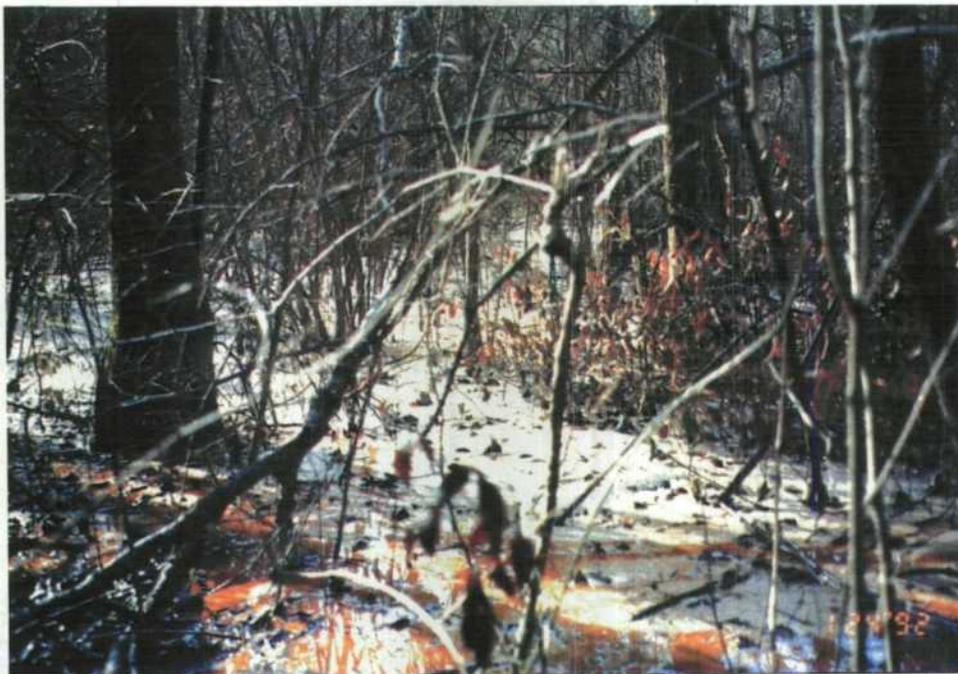


Photo 45. In 1992, we also had to deal more with environmental problems like this overflow from a sand pit into Bond Swamp.

Shell/'92

We revised our hunt demonstration crowd control plan and made contingency plans in anticipation of another hunt demonstration but did not have a repeat of the 1991 demonstration.

Walter Tillman again served as Regional Refuge Firearms Coordinator. Ronnie Shell was given the assignment of planning and coordinating Regional Refuge Officer In-Service Training for 1993. Planning and preparation began in August of 1992. Several Piedmont employees assisted with law enforcement training at FLETC, refuge in-service, and Georgia DNR. Several local, state and federal agencies used the refuge firing range for training.

An automatic gate that opens and closes at dark was installed on the headquarters entrance road to help provide after hours security to the office and visitor center.

I. EQUIPMENT AND FACILITIES

2. Rehabilitation

A contract was let to J. P. Contractors to rehabilitate refuge Quarters A#38 by installing energy efficient doors and windows and replacing cracked, peeling wooden siding with vinyl siding. The work was not being done properly and the contractor had been told that it was substandard. Then the tornado hit the quarters area, blew out the recently installed windows and damaged the roof and siding. It turned out that the contractor had no insurance and had not paid part of the suppliers, and refused to come back on the job unless the government, which had not accepted the work or made a payment, paid her for all labor and materials. The project ended the year in a disputed mess. At this writing, Contracting and General Services is preparing to declare the contract is default, and we will have to pick up the pieces and complete the job so we can let a Service employee move into the house.

Through a challenge cost share proposal, the fishing pier at Allison Lake had a concrete access ramp and platform poured to improve access for the disabled.

Road access was also improved to allow for the disabled.

Through a \$15,000 special maintenance fund allotment, five 14 foot tall overhead shop doors were replaced at the shop/service building. The wooden doors that were installed when the building was constructed in 1981 were very heavy and had deteriorated to the point they had become a safety hazard. They were very difficult to open. Some of our smaller employees could not open them. They were also a threat to fall. The insulated metal doors that replaced them are much lighter, easier to open, and safer. This project certainly prevented a serious employee injury.

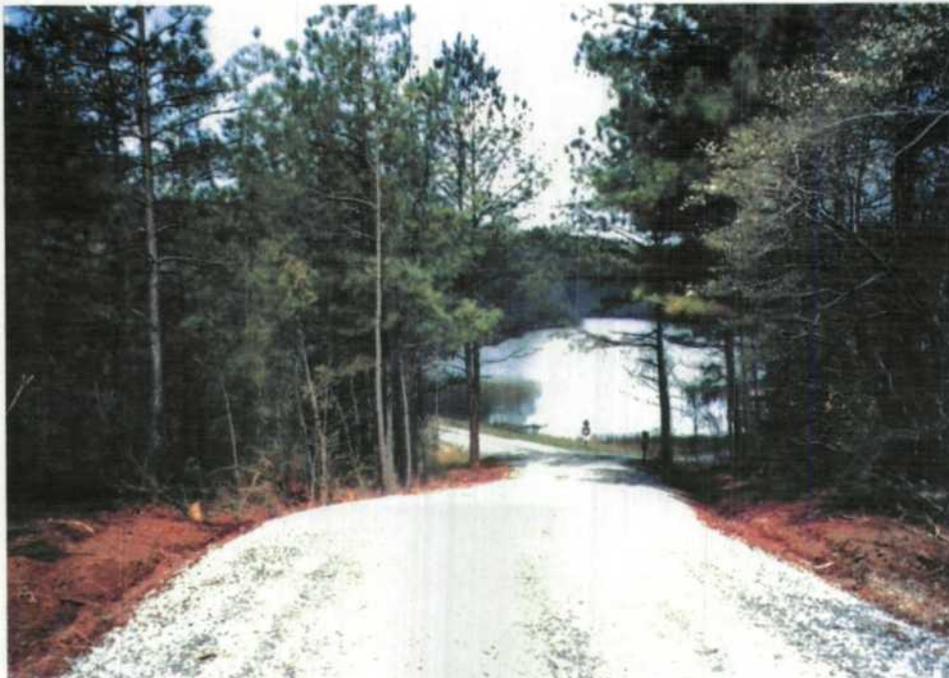


Photo 46. Access for disabled fishermen at Allison Lake was improved.
Shell/'92



Photo 47. A concrete pad and other improvements were possible because
of a challenge grant.

Shell/'92

A landing pad was poured for helicopter use behind our shop area and appropriate safety equipment was procured. Ships working on the refuge had previously been landing in a grass field. This is a much safer arrangement.

Wood roads used in southern pine beetle salvage operations were restabilized and grassed to help prevent erosion.

At years end our crews were still busy, and will be for sometime, trying to cleanup and rehab facilities after our massive tornado.



Photo 48. Refuge Quarters 38 and other facilities suffered damage during the November tornado. Rehabilitation will be required in 1993.

Shell/'92

3. Major Maintenance

In 1992, 3695 tons of crusher run gravel were tailgate spread on refuge roads needing spot gravel throughout the refuge. The 205 loads of gravel cost \$24,916.50. The refuge staff supervised the gravel spreading and used the refuge motor grader to smooth the road surface and grade approximately 50 miles of refuge roads. Major maintenance was required because of southern pine beetle salvage operations.

A 1 1/2 mile section of previously abandoned county road that linked Compartments 2 and 4 with Compartment 1 was reworked and graveled to improve fire access to the far northwestern corner of the refuge. This will save up to 30 minutes on responding to

fire. A creek ford was established on Falling Creek between Compartments 14 and 16 with tractor work, rip rap, and smaller rock. This will also cut 15 minutes of travel time in responding to emergencies in the northwestern section of the refuge.



Photo 49. The tornado blew trees across both refuge and county roads.
Tillman/'92



Photo 50. Refuge equipment was used to repair roads.

King/'92



Photo 51. A 1 1/2 mile section of road had to be cleared to gain access to refuge headquarters the night of the storm. By years end, all refuge roads except the wildlife drive had been reopened.

Tillman/'92



Photo 52. Heavy rains and flooding associated with the tornado and other storms caused damage to refuge roads that must be repaired in 1993.

Shell/'92

Boundary lines on 4 inholding tracts on Piedmont were resurveyed through a regional contract. Several miles of boundary line were maintained and reposted.

We had two bad water samples from the headquarters/visitor center water system in March and April. The well pump was replaced, the entire system was superchlorinated, and a chlorination system was activated in May. No further bad samples occurred.

Maintenance was performed on several water controlled structures, dikes, and spillways. The emergency overflow pipes at impoundment 21A were replaced.

Tracks were reworked on the CAT D3B crawler tractor.

Preventive maintenance and necessary repairs were performed on equipment and facilities throughout the year.

4. Equipment Utilization and Replacement

Available funding limited equipment replacement. We were able to requisition 2 critical items with fire funding. Our fire pumper truck and pump are worn out through years of use and several trips to Okefenokee to work on project fires in the big swamp. We got a new electric reel pump from BLM at the Boise Interagency Fire Center. A one ton 4x4 dual wheeled truck was requisitioned to replace the fire truck. We were informed by years end that Ford Motor Company was the successful bidder with delivery anticipated in May, 1993. The new unit will be much safer than the old single wheel unit which was easy to overload. A disk to rehab fire breaks was also acquired with fire money.

5. Communications Systems

Special maintenance funding was received for FY 93 to rehab and update the refuge radio system. The project is in Contracting for acquisition action.

6. Computer System

A 486 MHZ desktop computer with an AutoCad and map plotter was purchased with 6860 funds for the expenses for sales program. A small hand held computer was also acquired so data could be put in it in the field. The smaller unit is then hooked to the new machine to transfer data for processing. This appears to be a more efficient way of doing business.

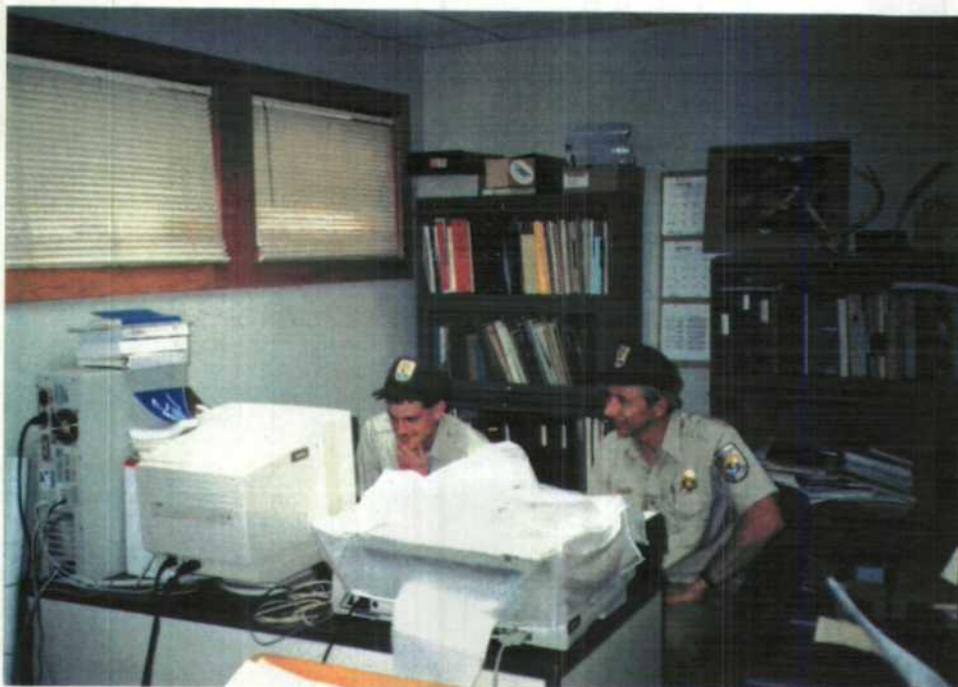


Photo 52A. The refuge forestry staff put a new computer system and plotter to good use.

Shell/'92

7. Energy Conservation

We continue to recycle all office paper and aluminum. Thermostats are set to conserve energy. We are all kept aware of good energy habits through staff meetings. We were informed that Piedmont had been recommended as a relighting energy saving pilot project.

J. OTHER ITEMS

1. Cooperative Programs

Much of what we are able to accomplish on the refuge is through cooperative programs. We continued to work under formal cooperative agreements with the U.S. Forest Service for providing habitat and management sufficient to support a recovered red-cockaded woodpecker population on our adjoining properties. A formal agreement also places hunting on the Hitchiti Experimental Forest under the Piedmont hunt permit program and refuge officers patrol Hitchiti and do most of the law enforcement on the area, and refuge officers also assist in drug eradication work on adjoining portions of the National Forest. We also have several cooperative research programs ongoing with the Forest Service.



Photo 53. All management and research interests associated with the Fish & Wildlife Service and Forest Service RCW recovery cooperative agreement met at the refuge in August to plan future strategy and work.
King/'92

The refuge works cooperatively with several divisions of the Georgia Department of Natural Resources throughout the year including the Game and Fish Division, the Non-game and Endangered Species Division, the Heritage Trust Division, Law Enforcement, State Parks and Historic Sites, and the Environmental Protection Division. During 1992, we worked on joint programs and regularly shared information and assisted each other as necessary. We often bounce ideas off each other.

We also had office space in the National Park Service's Ocmulgee National Monument headquarters for much of the year and worked together on several cooperative efforts including giving them some biological and equipment operation assistance, public lands day, attending meetings and news conferences jointly, and provided some mutual law enforcement assistance to each other.

We cooperated on several fires with the Georgia Forestry Commission including one large wildfire, hosted a major meeting at the refuge and attended several planning sessions at Commission headquarters. We held one meeting to review communications, etc. to improve cooperative efforts on fires.

We co-sponsored a prescribed fire course with the Georgia Extension Service and assisted them with wildlife efforts in 3 counties.

The refuge regularly works with the University of Georgia, Clemson University, Mercer University, Georgia College, and Fort Valley State University on programs, possible research projects, and in assisting students.

We cooperate with the public works departments, sheriff's departments, and emergency services in Jones, Bibb, Twiggs, and Jasper Counties and monitor and use radio frequencies for these counties. Joint assistance ranging from road work to law enforcement was received and given during the year. A Jones County fire station is located on the refuge and provides structural fire protection.

Drug enforcement cooperative efforts during the year were with the Drug Enforcement Administration, Georgia Bureau of Investigation, U.S. Forest Service, Georgia DNR, and Jones and Jasper County Sheriff's Departments.

We worked with the Jones and Bibb County governments and Georgia DOT in a cooperative effort to obtain special Highway Bill funding for needed refuge road projects.

The Ocmulgee Audubon Society and Macon Museum of Arts and Sciences worked cooperatively with us on several biological and environmental education projects.

We also worked cooperatively with several Fish and Wildlife Service divisions on special projects.

We could not run an effective refuge program without our partnerships with these organizations and individuals.

3. Items of Interest



Photo 54. Fire management officers and foresters from southeastern refuges visited the refuge as part of their annual meeting the week after the tornado.

Ford (St. Marks)/'92

4. Credits

This narrative is the team effort of Dean Metteauer, Julie King, Julie Bailey, Pat Jackson and Ronnie Shell. Photo credits are listed with the pictures. We especially appreciate the excellent photographs by John Hollingsworth.

K. FEEDBACK

This was a year when outside factors had a major impact on our refuge operations. The staff time required to complete off refuge details including Earth Day, Home Shows, Olympic Flag trip, Buck-A-Rama's, other exhibits, year long task force reviewing State DNR forest, and coordinating refuge LE training was measured in staff months rather than staff days.

The extra details were good experience and we were glad to be able to contribute to the Service's mission, hopefully in a positive way, but the time away from the station certainly had a negative effect on the refuge and what we would have liked to have accomplished during 1992. On top of having employees away from the station for extended periods we got caught with several vacant positions when the freeze on replacing personnel was put into effect. Doing more with less finally caught up with us and our stretched thin rubber band broke as evidenced by the fact this narrative is being submitted late. We then wound up the year by suffering some fairly extensive damage from a major tornado and have since been hit by another smaller tornado and a blizzard with heavy damaging winds. It was a year of challenges and storms of various types.

We would not care to repeat the storms of the year, but challenges and adversity usually tend to bring out true character and the best in people. This was true of the Piedmont/Bond Swamp staff as they responded to the events of 1992. I am proud of them and what they were able to accomplish during the year often under what may have seemed to be impossible circumstances. After each storm the whole crew pulled together to not only help the refuge recover but to help our neighbors. I'm also proud of the way the community and other agencies responded to help the refuge. Years of cooperation paid big dividends. We were all brought closer together this year by some storms of nature and some storms of life.

The exhibits and programs our folks helped plan and put on were seen by several hundred thousand people who now have a better idea of who we are and what we do in the Fish and Wildlife Service. We think we also represented the Service well in our other details.

We were able to establish 9 red-cockaded woodpecker artificial cavity insert sites each with 4 inserts in 1992. I had hoped we could do 4 sites. Two of the sites already have active RCW nests. We were able to keep our ambitious research efforts going and to add two multi-year neotropical bird research projects. We were able to work effectively with a real diversity of the public ranging from birders to hunters. We continued past cooperative efforts and began a new one with the Macon Museum of Arts and Sciences. We held a very successful hunt for 50 of our friends confined to wheelchairs. Everyone on the refuge, including several spouses and children, pitched in to help and we've all learned that working with the disabled is much more than a job requirement. Enough said about what we did. The point is that in spite of the challenges of 1992, we had a good year and we are proud of our refuges, the Refuge System, and the Fish and Wildlife Service, and we have tied our rubber band back together, regrouped, re-prioritized, and are headed the only way we know to go, forward.

At the same time, we have some serious concerns about the past year and where we are headed. We are concerned about positions that were filled on the station for over 30 years now kept vacant and frozen at a time when they are needed to work with endangered species and new concerns like neotropical birds.

We are concerned that the response to our storm damage needs was slow to non-existent. I don't know the real reason for this non-response, but would love to be let in on it. We get great support from our Regional Wildlife and Refuges folks and greatly appreciate them, but

beyond that level, especially in support services, things seem to drop off in a hurry. We know everyone is overworked, but so are we and we are fighting the daily battles. If you thought about it, this situation could be demoralizing.

We are very concerned about where the field staffing patterns in our refuge law enforcement program appear to be headed. In an effort to standardize officer levels and to try to save some money, we may well place our natural resources, facilities, employees, the public, and our image in jeopardy. If this happens, the money initially saved may turn out to be very expensive in long term costs and problems.

This has been a long and serious feedback section, but we are in some serious times with some serious decisions yet to be made. For all who are in positions to make those decisions, I have one wish - may you choose wisely. Our refuge system, the critters, the public and some right good employees are depending on your choices.