

REVIEW AND APPROVALS

FELSENTHAL NATIONAL WILDLIFE REFUGE

Crossett, Arkansas

ANNUAL NARRATIVE REPORT

Calendar Year 1988

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Refuge Manager

5/15/89  
Date

Sam O. Drake, Jr.  
Refuge Supervisor Review

5/22/89  
Date

Donald W. Benham  
Regional Office Approval

5/23/89  
Date

## INTRODUCTION

Felsenthal National Wildlife Refuge (NWR) was officially established on August 12, 1975, as an enhancement project of the U.S. Army Corps of Engineers' (COE) Ouachita and Black Rivers Navigation Project. Effective November 18, 1985, fee simple title to 64,813.34 acres of land and water on Felsenthal NWR was officially transferred from the COE to the U.S. Fish and Wildlife Service (FWS).

Felsenthal NWR is located in Ashley, Union, and Bradley counties in southeast Arkansas, 53 miles west of the Mississippi River, three miles north of the Louisiana border and eight miles west of Crossett, Arkansas. The refuge Office/Visitor Center/Maintenance Complex is located five miles west of Crossett on U.S. Highway 82. We moved into the new facility July 1988 after more than 10 years of leasing office space in a double-wide trailer.

Felsenthal's 65,000 acres consist of three basic habitat types: bottomland hardwood (39,000 ac.), uplands (11,000 ac.), and permanent water (15,000 ac.). The refuge lies within what is known as the Felsenthal Basin, a remnant of an enormous lake that once extended below Monroe, Louisiana. This low lying area is dissected by an intricate system of rivers, creeks, sloughs, buttonbush swamp and lakes that meander throughout the bottomland hardwood forests. Drainage is generally in a southerly direction by the Ouachita and Saline Rivers whose confluence is the geographic center of the refuge. Periodic flooding of the bottoms during late fall, winter and spring historically has provided excellent wintering waterfowl habitat.

On November 16, 1985, the COE began raising the permanent navigation pool to the minimum 65.0' mean sea level (MSL). Concurrently, flooding of the world's largest greentree reservoir (GTR) began, thus providing 15,000 acres of permanent water with the capability to flood an additional 21,000 acres for wintering waterfowl and related species. These wetlands, in combination with the pine and upland forest habitat on the higher ridges, support a diversity of wildlife including three known threatened or endangered species.

Of equal importance and quite possibly of greater management implication is the presence of some of the most significant and abundant cultural resources within the State of Arkansas with over 200 known sites within the refuge.

FELSENTHAL NATIONAL WILDLIFE REFUGE

UNITED STATES  
DEPARTMENT OF THE INTERIOR

ASHLEY, BRADLEY AND UNION COUNTIES, ARKANSAS

UNITED STATES  
FISH AND WILDLIFE SERVICE  
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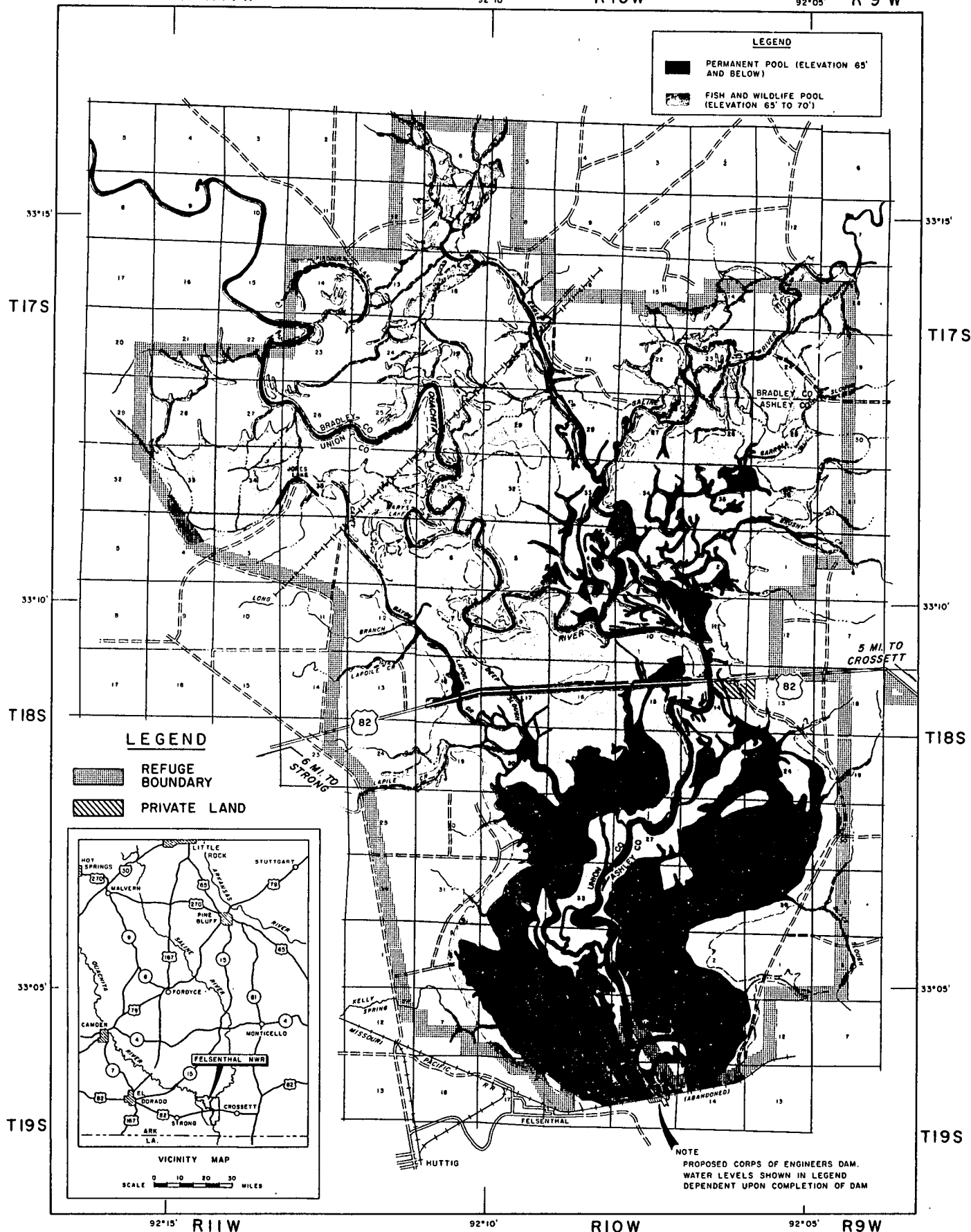
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COMPILED IN THE DIVISION OF REALTY FROM  
SURVEYS BY U.S. ARMY CORPS. OF ENGINEERS  
AND AERIAL PHOTOGRAPHS

**ATLANTA, GEORGIA**

REVISED 1/84  
JULY, 1975

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DECLINATION  
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## A. HIGHLIGHTS

- . Debate continues over proposed bendway cuts and widenings on the Ouachita River (Section D.4).
- . Aquatic plant control task force meeting held in response to pest plant "explosion" (Section D.5).
- . Intensive waterfowl management evaluation conducted (Section D.5).
- . Refuge volunteer program continues to expand. Public Lands Day huge success (Section E.4).
- . Several serious accidents occurred including two known visitor fatalities (Section E.6).
- . Congressional interest and vocal support demonstrated (Section E.8).
- . Record prescribed burning year completed (Section F.9).
- . Endangered red-cockaded woodpeckers continue to thrive while alligators continue to decline (Section G.2).
- . Deer harvest down more than 50% from previous record year (Section G.8).
- . Cooperative turkey restoration efforts highly successful (Section G.10).
- . Refuge visitation continues to escalate with over 322,000 visits recorded (Section H.1).
- . Waterfowl harvest rate lowest on record (Section H.8).
- . Move into new Office/Visitor Center completed after 12 years in house trailer (Section H.1).
- . Maintenance costs of our aging vehicle and equipment fleet continue to climb (Section I.4).
- . Communications capability vastly improved (Section I.5).
- . Despite continued problems, progress made in management of inherited oil field (Section J.2).

## B. CLIMATIC CONDITIONS

The climate in south Arkansas generally consists of hot, humid summers and mild winters, with an average temperature and precipitation of 62.0°F and 57.4", respectively. For 1988 the annual average temperature was 61.6°F and precipitation for the year totalled 52.28".

The Ouachita River, already above the planned pool for the greentree reservoir at the beginning of January, quickly rose 10' to a peak of 81.2' MSL on 1/8. On 2/1 it was back down to 78.5' MSL and March found it still above the planned maximum 70.0' MSL pool stage at 71.0' MSL. The prescribed spawning pool level of 67.0' MSL was not reached until 3/26 where it was held, with minor rises, through April 6. On May 24 the 65.0' MSL was reached where it remained until the usual prescribed rise of the GTR on 11/1. Due to torrential rains in the watersheds, the water level exceeded 70.0' MSL by the end of November. After extended consultation, we requested the COE to hold it at the 70.0' MSL for the remainder of the year (see Section F.3.b).



Entrance to the Crossett Harbor Recreational Site boat ramp during the peak water level of 81.2' MSL in January. Note accumulation of snow and ice, somewhat unusual for south Arkansas.

(1/8/88; RJB; #88-1-11)

The coldest month of the year was January with an average temperature of 41.5°F and the warmest month was July with an average temperature of 79.5°F. The following chart summarizes climatological data for 1988. The next chart gives a ten-year climatological summary. Precipitation data was collected from a rain gauge installed at the refuge headquarters in 1986. Temperature data (and precipitation data prior to 1986) was obtained from the U.S. Forest Service's Crossett Experimental Forest located seven miles south of Crossett, Arkansas.

# PRECIPITATION AND TEMPERATURE DATA FOR FELSENTAL NWR

Calendar Year 1988

<u>Month</u>	<u>Precipitation (inches)</u>	<u>Temperature Extremes (°F)</u>		<u>Average Monthly Temperature (°F)</u>
		<u>Low</u>	<u>High</u>	
January	4.71	15	68	41.5
February	3.46	13	76	44.5
March	6.39	25	80	52.0
April	2.04	39	85	62.0
May	1.62	42	92	67.0
June	2.40	50	101	75.5
July	8.13	60	99	79.5
August	3.35	60	98	79.0
September	3.01	48	93	70.5
October	6.92	40	83	61.5
November	5.01	29	80	54.5
December	<u>5.24</u>	22	72	47.0
Total	52.28			

## TEN-YEAR CLIMATOLOGICAL DATA SUMMARY FOR FELSENTHAL NWR

1979-88

<u>Year</u>	<u>Precipitation (inches)</u>	<u>Average Annual Temperature (°F)</u>	<u>Temperature Extremes (°F)</u>	
			<u>Low</u>	<u>High</u>
1979	78.80	60.1	10	95
1980	47.27	61.0	13	106
1981	42.49	60.4	10	103
1982	70.26	62.4	0	98
1983	52.22	60.0	3	99
1984	75.52	59.7	9	96
1985	43.10	63.3	3	101
1986	57.50	64.2	17	102
1987	54.35	62.7	21	99
1988	<u>52.28</u>	<u>62.0</u>	13	101
Average	57.38	61.6		

C. LAND ACQUISITION3. Other

Last year, refuge personnel prepared a summary of prospective sellers of inholdings and/or additions to Felsenthal NWR. This information was requested by the Regional Office (RO) Realty Division. After RO review, the recommended areas we identified bordering the refuge were determined not to be inholdings and therefore acquisition was not pursued.

## D. PLANNING

### 1. Master Plan

No further effort was made to finalize the draft Felsenthal Master Plan that was printed and circulated for review in October 1986. The decision to hold off on finalizing the voluminous document was made by the Regional Office (RO). This was a "bitter-sweet" decision from our perspective - "bitter" in that so much effort has been expended thus far without having a finished product - "sweet" in that we certainly did not have the time, personnel or resources to complete the task. Hopefully, the document, which needs major graphics revisions and minor text updating, will eventually be finalized and printed.

### 2. Management Plan

The final version of the Public Use Plan/Review was approved in January following an intensive field review of our overall public use program by a RO team in May 1987. Implementation of the recommendations, primarily involving an extensive information/regulatory signing program and construction of a number of interpretative facilities, will not be possible without major additional funding.

The Off-Road Vehicle Management Study (Plan) submitted to the RO in December 1987 was approved in March 1988 after minor revisions were made.

The formal Law Enforcement Plan (combined for both Felsenthal and Overflow Refuges) submitted to the RO in December 1987 was approved in March. Included in the document was an Emergency Response Plan.

The entire Felsenthal NWR Hunting Plan (including all related environmental documents) was revised and submitted to the RO in September and approved by the Regional Director in November. The previous document was more than ten years old and somewhat out-of-date.

### 4. Compliance with Environmental & Cultural Resource Mandates

The Arkansas Highway and Transportation Department (AHTD) has proposed to widen Highway 82 across Felsenthal NWR and as a result we have been deeply involved in coordination meetings with the Department to ensure environmental issues are addressed as mandated. The AHTD is responsible for drafting all required documents for the project but the Felsenthal staff has assisted in red-cockaded woodpecker surveys and preparation of Section 7 documents. Appropriate mitigation measures have been agreed to by both agencies.

The COE has made a push this year to complete plans and obtain necessary permits from the FWS to begin the construction work on the bendway cuts

and widenings along the Ouachita River on Felsenthal NWR as the last stage of the Ouachita-Black Rivers 9-Foot Navigation Project. At one of the coordination meetings Curtis James of Ecological Services (FWS) in Vicksburg, MS, asked for assurance from the COE that the entire project would be completed including the bendway cuts and widenings south of the refuge in Louisiana and those north of the refuge in Arkansas before the FWS would consider granting a permit. For the COE to begin working on Felsenthal NWR which is on the upstream portion of the project instead of working from the downstream Louisiana end of the project northward didn't make sense. It would be embarrassing if the COE made the refuge portion suitable for barge traffic only to have Louisiana not allow the project and we'd be stuck with improvements the barges couldn't get to anyway.

There was also an alternative proposal suggested by the Refuge Forester to dispose of the dredged material in a portion of the created oxbow lake instead of within containment levees onshore. This would save almost 90 acres of bottomland hardwoods.

Archeological clearance needs have been expressed for Felsenthal but allocations in the form of dollars have been unattainable. The Arkansas Archeological Survey has helped with "spot" checks but most of our needs are larger than the "freebie" clearances afforded by the State. We are presently exploring the avenue of acquiring surveys through the use of a volunteer "amateur" archeologist hopefully to be sanctioned by the State Archeologist and the State Historic Preservation Officer. In the meantime EMCO Operating Company is waiting to begin road maintenance, burying flow lines and filling in of sludge pits at the Charivari Creek oil field.

## 5. Research and Investigations

### Effects of Greentree Reservoir (GTR) Management on the Vegetation of Felsenthal National Wildlife Refuge

The purpose of the overall GTR Monitoring Study is to describe the impact of GTR management on the forest plant community in order to improve management over the long run. The general objectives of the study are to (1) define any changes and/or successional pattern differences; (2) describe the difference in tree vigor, growth, mortality and reproduction; and (3) provide quantitative plant community data needed to assess impacts of GTR management. Baseline data was received this year with a report expected early in 1989.

### Hardwood Mast Study

During the month of September, Biologist Robert Ellis conducted a partial ocular mast survey on Felsenthal. This study is part of a statewide survey conducted by Arkansas Game & Fish Commission (AGFC). Most production this year was somewhat better than last but, again due to drought conditions, the quality of acorns wasn't as it should have been. Nuttall oak was the only species with an overall excellent crop. Willow and water oak were "spotty" with some trees having an excellent



crop and some having almost none. Overcup oak production was fair. Bitter pecan production was nil. The few white oaks we have in our uplands had a good mast crop.

#### Black Bear Relocation Project

The Black Bear Relocation Project for Felsenthal has been put on hold. Unfortunately, appropriate funding by the AGFC and/or the FWS for this project is not available at this time. Also, there are individuals who believe the Louisiana Black Bear is a distinct subspecies and should be listed as endangered. Until there is final settlement on this issue, it would be unwise to stock bear on Felsenthal due to our relatively close proximity to the Louisiana populations.

#### 6. Other

On 9/22-23 we planned and hosted a two-day aquatic plant control task force meeting involving 18 personnel from five different State and Federal agencies plus several interested local citizens. The three-fold objective of the meeting was to:

- (1) Assess the degree of impact the aquatic plant infestation has on our primary refuge objectives.
- (2) Determine the degree of control needed (if any) to achieve our primary refuge objectives.
- (3) Develop a management strategy (options) for dealing with the "problem" including determining costs involved and areas of responsibility.

The concept of assembling such an impressive array of plant control experts evolved as a result of the aquatic plant "explosion" (emersed, submersed and floating species) following the 10,000-acre increase in permanent water area when the COE raised the water level some 3.4 feet for navigation purposes in 1985. The primary "pest" plants involved (at least from the public's viewpoint) are American lotus, coontail, water primrose and frogbit.



(9/22/88; RJB; #88-42-13)

An aquatic plant control task force involving 18 personnel from five different state and federal agencies plus several interested local citizens was assembled on September 22-23. Arkansas Game and Fish Commission personnel photographing emergent vegetation, primarily American lotus (above). Refuge Supervisor John Oberheu (below) inspecting vast expanse of Brasenia, considered excellent diving duck food, in the flatwaters of Grand Marais.

(9/22/88; RJB; #88-42-16)



Transcripts of the entire meeting were recorded and are currently being edited. Among the consensus recommendations were: (1) something should be done, i.e., the situation will probably get worse, not better; (2) we have a highly complex situation (environmentally, politically and from a user standpoint); (3) an integrated control program will be needed, i.e., a combination of control techniques will be required; (4) a seasonal drawdown is probably the only large scale practicable solution for controlling submersed species but navigational/public use constraints preclude it; (5) some chemical control will be needed for emergents such as lotus; (6) water levels should be fluctuated (dynamic vs. static conditions) as much as possible throughout the growing season to create stress on plants and (7) "Mother Nature" may take care of much of the problem if we get a major spring backwater flood (for which we're presumably overdue).

An illustrious team of experts visited Felsenthal and Overflow Refuges 12/13-15 to evaluate our waterfowl management program. The team included Associate Manager Sam Drake, District Biologist Ray Aycock, Wildlife and Habitat Management Chief Frank Bowers, Scott Yaich, Waterfowl Biologist with the Arkansas Game and Fish Commission (AGFC), and Steve Frick, Regional Director of Arkansas Ducks Unlimited. The majority of the time was spent in the field via airplanes, boats and ground vehicles inspecting the habitat of the two refuges. Preliminary recommendations were very positive and the team will be following up with a written report. Among the preliminary recommendations on Felsenthal were: (1) possible sanctuary area modifications; (2) need for continued evaluation of the effect of the water level management on the timber; (3) need for intensified bottomland hardwood forest management and (4) continued liberal regulations on hunting and trapping of predators such as raccoons. A final report of the waterfowl management evaluation with formal recommendations has not been completed to date.







Mr. Clyde Mitchell, Laborer on an intermittent appointment with Realty, returned to duty in January to assist with Steve Anderson's surveying of refuge boundaries at Overflow Refuge. In addition to this work we were able to utilize Clyde's services, at our expense, throughout the year with prescribed burning, timber management, equipment maintenance, YCC program, etc. This helped fill a serious gap in our staffing needs. Our requests for additional staffing, including a laborer/maintenance type position, have met with no success.

On February 22 a farewell party was held for John Robinette, Refuge Biologist, his wife Cherryl, and their two daughters, Sarah and Kimberly. John's official transfer date to Savannah Coastal Complex was February 14 after nearly 4-1/2 years with us. The gala event was well attended by the entire refuge staff and their families along with several distinguished refuge guests. John did much to advance the biological program at Felsenthal - setting up excellent deer population/health records, black bear habitat study, turkey restoration, fisheries management, etc. and will be greatly missed by us all. But John will not be forgotten, it seems he has been immortalized in a photo enlargement adorning our new visitor center walls of one of his excursions into forestry management as he "meanders" through the pines trailing a line of fire behind him.



After nearly four and one-half years as our Refuge Biologist, John Robinette and his family transferred to Georgia Coastal Complex effective 2/14. We wish John well in his new venture and trust that his tenure at Felsenthal has been a meaningful and memorable experience.

(2/23/88; RJB; #88-7-14)

Biological Technician Robert Ellis, Forestry Technician Ruth McDonald, and Maintenance Worker Harold Smith all successfully completed their first year of work with the Service and received career ladder promotions in March after completing a full year of duty.

Just weeks before the contract completion date in May for Phase I of our Office/Visitor Center/maintenance complex construction, the Regional Office's Construction Representative, Otis Pauley, accepted an offer to transfer to the west coast and work out of the Denver Engineering Office. Fortunately, without too long of a delay, RO was able to bring James "Ronnie" Parker on board from Sulphur near Sabine NWR in southern Louisiana. Ronnie was able to get us through the final inspection and into the office facilities before termination of his initial appointment. After a brief "vacation" at home, RO brought Ronnie back on board as the Construction Representative for Phase II of the maintenance facilities with his arriving on duty 8/22. Ronnie has been a tremendous help not only with our moving into the completed sections of Phase I but also with those 1,001 little force account things that are needed to add that "polished touch" on the finished product. Thanks to Ronnie and our own excellent maintenance personnel we have had a relatively "trouble free" transition from the old site to the new facilities.

Refuge Law Enforcement Officer Larry King and Office Assistant Ann Laney both received their 10-year length-of-service pins in September. Larry came on board in November 1977 and Ann followed in March 1978. They are the two remaining "charter members" of the Felsenthal staff.

Maintenance Worker Bill Parker received a Special Achievement Award certificate in September for duck banding successes that occurred nearly two years ago.

Biological Technician Robert Ellis officially filled the Refuge Biologist position on November 20. Information regarding a Range Technician 5/6/7 is currently being compiled for recruitment to fill his vacated position.

A new Position Description more accurately reflecting Maintenance Worker Harold Smith's duties was submitted in December with action still pending as of the end of the year.

The following chart summarizes the past five-year staffing pattern for Felsenthal.

## STAFFING PATTERN

## Felsenthal NWR - 1984-1988

<u>Fiscal Year</u>	<u>Permanent</u>			<u>Temporary</u>			<u>Approved FTE's</u>
	<u>FT</u>	<u>PT</u>	<u>I</u>	<u>FT</u>	<u>PT</u>	<u>I</u>	
1988	11	1					11.8
1987	11	1		1			11.8
1986	10	1	1	1			11.6
1985	10	1	1	1			11.0
1984	11	1	1	1			12.6

FT = Full-time; PT = Part-time; I = Intermittent  
FTE = Full-time equivalent

Note that even with our vastly expanded refuge program (including construction of nearly five million dollars in capital improvements), public use that has quadrupled and the addition of 10,000 acres at Overflow NWR, we have two staff people less now than four years ago.

## 2. Youth Programs

Recruitment for our 1988 (sixth consecutive year) Youth Conservation Corps (YCC) program began in March. Contact was made through school officials and applications were placed in the school offices. A total of only 13 applications from Crossett and three from the Hamburg area was received. A public drawing was held in April for the four enrollees (3 males, 1 female) as well as four alternates.

The eight-week YCC program began on 6/6 and ended on 8/5 with a one-week break during the week of July 4. Mr. Clyde Mitchell once again served as our crew foreman to supervise the YCC enrollees. His first few weeks were volunteer work but he was later hired on a temporary basis for the remainder of the program.

Our program this year was quite successful due, in large measure, to Mr. Mitchell's leadership. Projects completed are as follows:



## YCC PROJECTS FOR THE SUMMER OF 1988

## Felsenthal and Overflow NWR's

<u>Project</u>	<u>Staff Hours</u>
Litter pickup	100
Landscaping	216
Boundary Line Marking	587
Car Washing & Waxing	104
Facility and Sign Maintenance	128
Clerical Work	72
Seeding	8
Checking Wood Duck Nest Boxes & Beaver Traps	8
Field Trip	32



Our hard working YCC crew and their fearless leader with new Office/Visitor Center in the background. Kneeling, from left to right, are enrollees Marcus Thrower, Chris Harper and Chuck Parrott. Standing, back row, is enrollee Deborah Hogan and Crew Leader Clyde Mitchell.

(8/5/88; RJB; #88-35-8)





YCC crew clearing understory at new headquarters site.  
(8/3/88; RJB; #88-33-15)



One of many routine maintenance chores performed by YCC crew this summer.

(6/88; LDW; #88-23-7)





YCC crew and leader at Poverty Point archeological site in Epps, LA, during a one-day field trip.  
(7/21/88; MAH; #88-31-12)

#### 4. Volunteer Program

The volunteer program continued to opportunistically increase in numbers of individuals and value of work accomplished in 1988. In numbers we have gone from one volunteer in 1985 to 15 in 1987 and in 1988, 127 people participated in volunteer work.

The biggest splash of volunteer work occurred on 9/10 when over 100 people came to the refuge for our first annual Public Lands Day. Various projects were accomplished with the emphasis on litter pick-up with over a ton of debris cleaned up on four areas. In addition, road and trail maintenance and marking was accomplished along with shrubbery planting, bird feeder construction and insect collection. The Crossett High School Band played while the participants enjoyed a donated picnic-type lunch. Excellent media coverage was received including a regional TV spot and a feature newspaper article. Forestry Technician Ruth McDonald did an outstanding job of coordinating the successful event including obtaining over a dozen local sponsors.

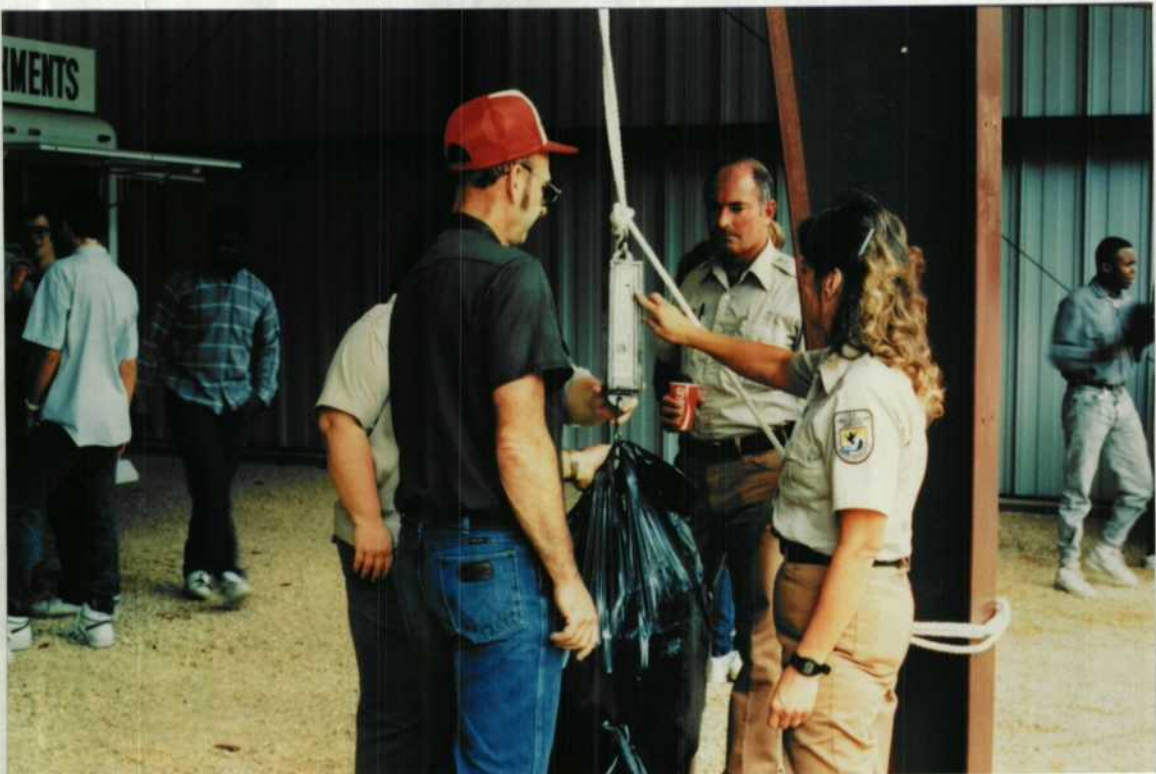




(9/10/88; RJB; #88-40-19)

Perhaps the biggest splash involving volunteer work occurred in September with over 100 people participating in our first annual Public Lands Day. A local Girl Scout troop picks up litter at the Jones Lake Campground (above) while coordinator Ruth McDonald weighs in the litter picked up (below). Over one ton of debris was removed from the refuge by the group. Other activities included road and trail maintenance, planting shrubbery, constructing bird feeders and making insect collections.

(9/10/88; RJB; #88-40-22)





Mr. Jack Lee, our first official volunteer, continued his outstanding assistance by completing 13 news releases, tediously analyzing all our deer hunt data, compiling bass tournament catch data for a special report, compiling a 180-page transcript of the aquatic weed control task force meeting, attending meetings we could not attend as an observer, plotting a Ouachita River hydrograph, and compiling a history of the refuge. All of this totally on his own time (500 hours) and his expense for transportation, telephone, etc. Sam Drake presented Mr. Lee with an award lapel pin at our Christmas party.

Crossett natives Barry Dolan and David Weaver volunteered to work with us this summer during their college break to gain work experience. They worked a hard, hot 226 hours each. They painted and cleared ATV trails, beaver trapped, banded wood ducks, moved furniture into the new office, cyclone seeded Bermuda grass, ryegrass, and millet, conducted a creel survey, and travelled to pick up and return bait or equipment from other refuges.



Volunteers David Weaver (left) and Barry Dolan (center), both college students from Crossett, assist Refuge Biologist Robert Ellis in pre-season wood duck trapping and banding.  
(8/4/88; RJB; #88-33-25)

A rather unique volunteer arrangement entered into this fall is for an outstanding local amateur archeologist being tentatively approved by the State to conduct archeological surveys for clearance of refuge projects. Mr. Bob Cooper agreed to work on weekends with the refuge providing his



transportation expenses. This arrangement has been approved by the Arkansas Archeological Survey but apparently has run into some snags regarding using a "non-professional" for survey work.

Other volunteer activities were: (1) Dr. Eric Sundel, Botanist of the University of Arkansas at Monticello (UAM), continued his plant collections and identification for the refuge; (2) several photographers volunteered their assistance and photographs for our new headquarters; (3) two UAM wildlife students assisted at deer check stations; (4) three volunteer trappers removed beavers outside the State trapping season; (7) seven Arkansas Audubon Society members assisted with locations and observations of red-cockaded woodpecker cavity trees; and, (6) six individuals assisted with mallard or wood duck banding. We even had a group of local children assist us in making penned corrections on our quota deer hunt permit applications.



This group of young volunteers made a significant contribution and saved many of hours of staff time by making penned corrections on our quota deer hunt applications this year.

(7/19/88; RJB; #88-31-4)

## 5. Funding

Documented FY88 funding totalled \$887,200. However, once all specially marked funding (as shown in the following chart) was removed, our base O&M budget of \$405,000 was a tight squeeze. Despite the 10.6% increase over FY87's allotment we were still below the FY85 and FY86 funding levels. Thanks to special funding for fire equipment, Overflow

waterfowl habitat development, and last minute end-of-year bail-out, we were able to have a fairly productive year. But, many routine maintenance projects had to slide by because of lack of basic O&M funds and manpower. The following table summarizes our funding allocations for FY 1988.

## FY-88 FUNDING ALLOCATIONS

<u>DESCRIPTION</u>	<u>FUND TYPE</u>	<u>AMOUNT</u> <u>(thousands)</u>	<u>SUB-ACTIVITY</u>
STATION: FELSENTAL NWR			
Initial Allocation	INI OPR	256.6	1261
Salary Savings (vice John Robinette - delay filling position) FERS REDUCTION	FERS	-10.0	1261
Tilt bed for truck	FIRE EQP	15.0*	1261
Tilt bed for truck (Additional funds needed)	FIRE EQP	1.8*	1261
Radios (4 each)	FIRE EQP	4.8*	1261
Mobile power unit for moist soil areas (Overflow)	RPRP 88	8.0*	1261
EOY needs (concrete spillway, weed control, travel, radio repeater, security gate	SPECIAL	12.0*	1261
Initial Allocation	INI MTN	108.4	1262
Maintenance add (Overflow dike repairs & water management development)	MAINT AD	20.0*	1262
Initial Allocation	EXP/SALE	50.0	6860
YCC - 4 Enrollees	YCC	4.7*	1210
Construction of Office/ Visitor Center/Maintenance Facility, etc.	PRO/SALE	415.9*	8260
SUBTOTAL		\$887.2	
* Specially Marked Funding		- 482.2	
Base O&M		\$405.0	

The following chart depicts base funding of Felsenthal NWR since fiscal year 1984. No special appropriations are included in this chart.

FUNDING  
(in funding of dollars)

<u>PROGRAM</u>	<u>1988</u>	<u>1987</u>	<u>1986</u>	<u>1985</u>	<u>1984</u>
Wildlife Resources - Refuge O&M - 1260	355.0	316.0	331.5	363.5	326.0
Wildlife Resources - ARMM - 1260	-	-	60.0	15.5	45.0
Expenses for Sales - 6810 (6860)	50.0	50.0	50.0	50.0	26.0
<hr/> TOTAL REFUGE APPROPRIATIONS	<hr/> 405.0	<hr/> 366.0	<hr/> 441.5	<hr/> 429.0	<hr/> 397.0

Salary expenditures this year accounted for \$328,311 or just over 81% of our base funding. This was down slightly from the 85% it took in FY87.

For the third year, no 8260 funds were available for station use. The balance of this account is being held for contingencies arising on our new headquarters Office/VCS and maintenance complex. The final construction on the maintenance area is scheduled for completion in April, 1989. The Office/VCS is complete with the final exhibit installation and landscaping scheduled for April also.

In March a special report requesting funds for COE-funded waterfowl management projects on refuge lands was submitted to RO. This same month ARMM Project Proposals for Felsenthal and Overflow Refuges for 1988 and beyond were sent to RO.

During the month of August, in response to a congressional inquiry from the office of U.S. Congressman Beryl Anthony, the RO was sent a list of major operational and development needs for Felsenthal and Overflow Refuges. The total amount was nearly four million dollars.

## 6. Safety

There were no reportable vehicle accidents or injuries involving refuge staff on Felsenthal this year. However, our 1979 Dodge crew cab truck that the YCC Crew Leader, Mr. Clyde Mitchell, was using caught on fire and burned leaving only a charred shell and four tires. A Motorola radio was also destroyed. The fire started under the hood next to the firewall and was so hot that the hood could not be raised to use the fire extinguisher. Mr. Mitchell's quick thinking and positive action



prevented any injuries to himself or the YCC workers. The truck was valued at \$6,616.



Remains of our 1979 Dodge crew cab after catching fire while our YCC crew was working at Overflow Refuge during the summer. Crew Leader Clyde Mitchell's quick action prevented any injury to the enrollees or to himself. The exact cause of the fire was undetermined.

(7/18/88; LDW; #88-29-9)

We also received notice that a \$46,000 tort claim had been filed against the Service as a result of an accident in 1986 involving former Refuge Biologist John Robinette who inadvertently rear-ended an Arkansas Highway and Transportation Department dump truck with a FWS Jeep. Damages to the Service Jeep totalled \$3,709.

Larry West was the safety chairman in 1988 and there were monthly safety meetings that covered topics such as: a film on heavy equipment; explosives training hosted here at Felsenthal on the use of Kinopak; alcohol and drug abuse in conjunction with National Drug Free Week; boating safety film entitled "Judgment on the Water"; fire safety and security alarm systems; two films on chainsaw safety; and physical fitness awareness conducted by local physical therapist, Richard Setian. Also, Kyle Cheeseman had all of the fire extinguishers checked, filled or replaced.

There were two visitor deaths on or immediately adjacent to the refuge. One involved a man that was navigating the inside of a left curve on the



Ouachita River (see Section H.17). Refuge Manager Bob Bridges and Refuge Law Enforcement Officer Larry King participated in a public meeting on boating safety in Warren that had been scheduled before this accident but turned out to be very timely indeed.

Another accident on Felsenthal's southern border but technically on COE properties involved a man that was killed when his underpowered houseboat was sucked under the gates at the Felsenthal Lock and Dam. His body was recovered 43 days later several miles downstream.

A twelve-year old boy was shot once in the leg and once in the arm with a .22 caliber rifle by a man who mistook him for a hog (see Section H.17).

Vehicle accidents continue to "flourish" along U.S. Highway 82 across the refuge (affectionately referred to as "the dump"). With all of the traffic, especially considering the number of log, pulpwood and chip trucks, it's no wonder the number of fatalities is no greater.



One of numerous vehicle accidents that occur each year along U.S. Highway 82 across Felsenthal Refuge. Plans for renovating this dangerous stretch of highway, referred to locally as "the dump", have been in the mill for several years. Appropriate mitigation measures have been agreed to between the Arkansas Highway and Transportation Department and the Service.

(3/29/88; RJB; #88-9-20)

## 7. Technical Assistance

The Felsenthal staff provided technical assistance to State and Federal agencies as well as private enterprise throughout the year. Assistance was provided in the form of information exchange, copies of literature, on-ground investigations, and review of documents. The subjects included: turkey management, law enforcement, deer management, moist soil area construction and management, greentree reservoir (GTR) management, aquatic weed control, wood duck boxes, red-cockaded woodpecker management, hardwood management, memory typewriter and computer use, beaver pond management for waterfowl, and fish pond construction and management.

## 8. Other

In September an interim Special Use Permit (SUP) was issued to the U.S. Army Corps of Engineers to use 32.76 acres of refuge land as part of the public park and recreation outgrant (lease) to the Crossett Port Authority until transfer of jurisdictional control is finalized. The sliver of land, adjacent to the south boundary of the city-owned Crossett Harbor property, was part of the recently surveyed 229-acre parcel of refuge land within which the recently constructed Crossett Harbor Recreational Site lies.

After nearly two full years of negotiations, a final Memorandum of Understanding (MOU) between the COE and FWS regarding administration of the Crossett Harbor Recreational Site was executed by both parties in October. This monumental achievement basically gets us out of any direct involvement in the operation, maintenance or administration of the 2.7 million dollar Class A recreational park that was officially outgranted (leased) to the Crossett Port Authority by the COE. The Service's commitment is to (1) establish and appropriately mark a safety buffer zone in which hunting and firearms are prohibited; (2) establish and maintain a permanent firebreak around the recreational site and (3) provide the COE support in the suppression of wildfires within the recreational site. The 119-camper unit facility was officially dedicated and turned over to the Crossett Port Authority on October 19.





After years in the planning stages and much hassle regarding funding, the 2.7 million-dollar Class A Crossett Harbor Recreational Site was formally dedicated on 10/19. This 119-camper unit facility, located in the middle of the refuge, was constructed by the U.S. Army Corps of Engineers and turned over to the Crossett Port Authority for operation and maintenance.

(10/19/88; John Oberheu; #88-44-10)

Speaking of first-class campgrounds, the smaller but no less impressive Grand Marais Recreational Site located adjacent to the south boundary of the refuge in the town of Felsenthal, was officially opened to the public on November 26 and dedicated on December 14. This first-class COE-constructed facility is being operated and maintained by Union County. The strategic location of the facility, especially its proximity to the Felsenthal Lock and Dam, should enhance its appeal to the public.

Congressman Beryl Anthony, along with an entourage of supporters, visited us on 11/1. His visit included a press conference and tour of our new headquarters facilities, the Crossett Harbor Recreational Site, and the waterfowl impoundments on the east side of Overflow Refuge. The Congressman appeared to be very impressed with the progress that has been made and was looking forward to the installation of the exhibits in our Visitor Center and the forthcoming dedication set for April 22, 1989. He expressed concern that staffing and funding levels have apparently not kept pace with the rapid development of habitat and public use facilities at Felsenthal and Overflow Refuges.





Congressman Beryl Anthony (right, background) visited Felsenthal and Overflow Refuges on 11/1. His visit included a press conference and tour of our headquarters facilities, the Crossett Harbor Recreational Site and an overview of the waterfowl management program at Overflow Refuge.

(11/1/88; RJB; #88-47-3)

Our new Refuge Supervisor (Associate Manager) Sam Drake conducted a brief operational inspection of both Felsenthal and Overflow Refuges 12/13-15 in concert with an intensive waterfowl management evaluation.

## F. HABITAT MANAGEMENT

### 1. General

The habitat on Felsenthal can be broken down into the following general types and acreages:

<u>HABITAT TYPES</u>	<u>ACRES</u>
Permanent Water	15,000
Forestland	49,383
Open fields, Prairies & Non-productive Areas	<u>617</u>
TOTAL	65,000

During the winter, up to 21,000 additional acres of bottomland hardwoods are flooded to provide wintering waterfowl habitat (see Section F.3).

### 2. Wetlands

Felsenthal NWR currently contains approximately 15,000 acres of permanent water at 65.0' MSL. This includes the Ouachita and Saline Rivers, oxbow lakes, creeks, sloughs, and cypress brakes. This elevation is maintained by the recently completed COE lock and dam located at the south boundary of the refuge. The amount of available wetland habitat may fluctuate from year-to-year due to backwater resulting from winter and spring rainfall.

We initially intended to burn our 73-acre "bean field" moist soil unit this year but by the time it became dry enough to burn, it was too late in the summer for the grasses to mature and reseed. We felt at that point we would lose more waterfowl food than we could gain by burning so we left it alone. While the water was shallow in this area we had good use by dabbling ducks and later as the water deepened there was a record number of diving ducks using the area.





High spring backwater kept our 73-acre "bean field" moist soil unit wet well into the spring. Here refuge staff inspect damage to the low level dikes as the water gradually recedes.

(5/5/88; RJB; #88-16-13)

We converted the "bean field" area into a sanctuary area this year. Larry King pushed a 'dozer line around the previously cleared bottomlands including a buffer zone of timbered land and signed the 330-acre area prior to waterfowl season.

### 3. Forests

#### a. Forestlands

Felsenthal NWR has 49,383 acres of forestland under active management. This long-term program is designed to provide a diversity of habitat conditions to meet the needs of a full spectrum of indigenous wildlife species with the main emphasis on endangered species and waterfowl.

With the help of Mr. Clyde Mitchell and Refuge Biologist Robert Ellis, Larry Threet and Ruth McDonald marked over 500 acres of pulpwood for sale including 260 acres of bottomland hardwoods in a total sale package for 1988 of four new sales totalling 963 acres. All of the sales were intermediate thinnings. We received as much as \$15.61 per cord for pine pulpwood and as much as \$7.00 per cord for hardwood pulpwood.

Strict administration of the timber sales resulted in very little damage to remaining trees and soils. We are especially pleased

with the hardwood pulpwood thinning where the stands were as dense as 130 basal area and reduced to 70-80 basal area by tree-length logging using a Bell shear (which looks like a very large 3-wheeler with balloon tires). This piece of equipment directionally fells by grasping the bole of the tree and sawing the tree in two at the stump. Very little residual damage is done using this piece of equipment in conjunction with carefully laid out skid trails.

Refuge forestlands are classified in four major types. These types and their acreages are:

Pine	9,490
Pine-Hardwood	705
Bottomland Hardwood	39,000
Upland Hardwood	<u>188</u>
TOTAL	49,383

Based on our approved Timber-Wildlife Management Plan (1979), we use biologically-sound silvicultural practices to provide a diversity of forest habitats. Through commercial forest thinnings and improvement cuts, the forest environment is manipulated in such a manner as to provide habitat for the endangered red-cockaded woodpecker, resident and wintering waterfowl, other migratory birds, and numerous species of resident wildlife.

Currently, we are in the process of redefining management unit (compartment) boundaries to reduce the individual units from 2,000-3,000 acres to between 1,000-1,300 acres. This change will increase the diversity of all timber age classes, thus providing a more diverse and sustained habitat.

Approximately 350 acres of refuge forestlands received some type of silvicultural treatment in 1988. Timber was harvested through four commercial timber sales. The timber was removed to improve wildlife habitat and aid forest protection by salvaging pine trees infested with southern pine beetles. Improvement cuts and forest thinnings were applied on the above acreage. These cuts consisted primarily of removing trees that were undesirable as future growing stock, leaving healthier, more vigorous stands. Wildlife habitat conditions were greatly improved by obtaining better species composition and by creating more open conditions in the forest canopy, thereby promoting the growth of wildlife food plants and cover on the forest floor.



## TIMBER HARVEST REPORT

Felsenthal NWR - 1988

<u>Permittee</u>	<u>Special Use Permit No.</u>	<u>Acres</u>	<u>Pine</u>		<u>Hardwood</u>		<u>Value</u>
			<u>Pulpwood (cords)</u>	<u>Sawtimber (bd.ft.)</u>	<u>Pulpwood (cords)</u>	<u>Sawtimber (bd.ft.)</u>	
Marion Wood Co., Inc.	F-1-88	120	382.4	-	-	-	\$5,067
Smith & Roberts, Inc.	F-2-88	150	-	-	862.2	-	\$4,441
Johnson Pulpwood	F-3-88	0	-	-	-	-	0
Meshell Timber Company	F-4-88	<u>80</u>	<u>281.8</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>\$4,399</u>
		350	664.2		862.2		\$13,907

## TIMBER SALES

Felsenthal NWR - 1988

<u>Permittee</u>	<u>Date</u>	<u>Special Use Permit No.</u>	<u>Acres</u>	<u>Pine</u>		<u>Hardwood</u>		<u>Value</u>
				<u>Pulpwood (cords)</u>	<u>Sawtimber (bd.ft.)</u>	<u>Pulpwood (cords)</u>	<u>Sawtimber (bd.ft.)</u>	
Marion Wood Co.	6-8-88	F-1-88	120	382.4	-	-	-	\$ 5,067
Smith & Roberts	6-15-88	F-2-88	473	-	-	2,838	-	\$14,616
Johnson Pulpwood	8-24-88	F-3-88	250	-	-	920	-	\$ 6,440
Meshell Tbr. Co.	8-31-88	F-4-88	<u>120</u>	<u>425</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>\$ 6,634</u>
			963	807.4		3,758		\$32,757

Special attention is given to red-cockaded woodpecker (RCW) colony areas by maintaining open park-like conditions where necessary. Additionally, trees with potential nesting cavities and den trees for other wildlife are retained. Ruth R. McDonald, our Forestry Technician, completed a survey of the roughly 10,000 acres of available red-cockaded woodpecker habitat and found 32 additional RCW trees, bringing the grand total to 256 (see Section G.2). Also, under Ruth's direction, the YCC enrollees repainted 20% of the RCW trees with stencilled black numbers over neatly painted white bands. It's very distinctive and professional looking.

We had very little problem with southern pine beetles. The tiny pests had an insignificant impact this year killing only a handful of trees. In addition to these, we had a few trees killed by black turpentine beetles. Loggers removed the infested trees to prevent further spread of the beetles.

Detection and control of the beetles is a cooperative effort of the refuge staff, Arkansas Forestry Commission, and the U.S. Forest Service. With our high-density population of the endangered red-cockaded woodpecker, the potential loss of habitat is a major refuge concern.

Free firewood permits (for personal use only) were issued to 16 individuals during the summer and fall of 1988. Firewood cutting was restricted to specifically marked or downed trees along the Pine Island road, Lapile Creek bridge and the Jones Lake road. Timber stand improvement work was needed and commercial sales were not feasible in these areas.

#### b. Greentree Reservoir

Felsenthal National Wildlife Refuge (NWR) is the result of mitigation measures taken by the U.S. Army Corps of Engineers (COE) to help offset the ecological damage caused by the Ouachita-Black Rivers Navigation Project. In 1985, following completion of the Felsenthal Lock and Dam, the water level on the Ouachita River was raised from 61.6' MSL to 65.0' MSL, permanently inundating 10,000 acres of bottomland hardwoods. The COE then deeded 40,000 acres of bottomland hardwood, 15,000 acres of permanent water and 10,000 acres of upland habitat to the FWS to manage what is now the Felsenthal NWR.



This \$30 million-dollar structure, the Felsenthal Lock and Dam, is the backbone of our water management on the refuge. The U.S. Army Corps of Engineers works very closely with us to assure that planned water levels are maintained. However, "Mother Nature" often overrides the system as happened again this year.

(7/28/88; LAT; #88-31-18)

With the completion of the Felsenthal Lock and Dam in 1985, the water level was permanently raised 3.4 feet. Except during extreme high water conditions, the Felsenthal Lock and Dam has the capability to seasonally regulate refuge water levels between 65.0' and 70.0' MSL. This five-foot difference in elevation will flood an additional 21,000 acres of bottomland hardwoods, providing what is presumably the world's largest greentree reservoir or GTR. In essence, from late fall through early spring, the refuge will contain up to 36,000 acres of flooded wetland habitat for wintering waterfowl. Much of this is shallowly-flooded bottomland forest.

For the first two years of the GTR (1985 and 1986), the water was gradually raised from 65.0' MSL to 70.0' MSL at a rate of one inch per day beginning November 1 and culminating at 70.0' MSL by January 1. The water was then held at 70.0' MSL until January 8 at which time lowering was begun at approximately 1.2 inches per day until the permanent pool level of 65.0' MSL was attained by March 1. For the first two years, the dewatering goal was March 1 to preserve the integrity of the three years of baseline data collections begun in 1984 on 80 control plots within the GTR needed to help monitor the effects of our GTR management on the bottomland hardwoods.

Felsenthal's selected GTR water management regime is to gradually raise the water level five feet from 65.0' MSL to 70.0' MSL during the winter months on a yearly basis unless evidence indicates the integrity of the bottomland hardwoods is being jeopardized.

The water will be raised at the rate of one inch per day beginning November 1 until the 70.0' MSL is reached by January 1. The water level is held steady at 70.0' MSL until January 8 when dewatering is begun at a rate of approximately one-half inch per day until the permanent pool level of 65.0' MSL is reached on May 15. However, every third year the schedule is modified to enhance sport fish production. The fisheries enhancement schedule is exactly the same as above from November 1 until January 8 but, when the dewatering begins, the rate of fall is increased to approximately 1.4" per day until the 67.0' MSL level is reached by March 1. The water is then held at 67.0' MSL until April 20 when the water level is lowered at the rate of approximately one (1) inch per day until the permanent pool level of 65.0' MSL is attained on May 15.

The above schedules are adhered to as closely as possible when the COE has control of the river. As is often the case within this dynamic river system, "Mother Nature" may override our schedule and we have little to no control of the river and subsequent water levels.

With the COE's lock and dam system across the Ouachita River on Felsenthal NWR's southern boundary and the historically high river flow, there should be no problem with insufficient water supply.

The spring of 1988 was the first year to implement the fisheries enhancement schedule for the GTR. However, due to extremely high water during the winter and early spring, our water management schedule was overridden and adjustments were made.

Also, in the fall of 1988 we had higher than normal muddy water on the Ouachita River during November and December. We asked the COE to hold the muddy water and reach 70.0' MSL as soon as possible (reached 70.0' MSL on December 1, 1988). We normally would not have reached 70.0' MSL until January 1, 1989. The logic behind holding this muddy water was that it might place additional stress on the aquatic plants that have been multiplying at an exponential rate over the past two years. Dewatering will be initiated on schedule if possible.

The GTR appears to be grossly under utilized by wintering waterfowl, at least during these last two years of record low waterfowl populations.

We have no way of determining short term effects of GTR management on the bottomland hardwoods but we do have 80 control plots within

the GTR with pre-GTR baseline data and plans to monitor those plots through a long-term research program.

Deep and prolonged inundation from December 1987 through April 1988 seemed to have no effect on the rapid spread of aquatic "weeds" (lotus, frogbit, watershield, coontail "moss", naiad, water lily, etc.) on Felsenthal.

This prolonged flooding may have been a contributing factor in the deer, turkey, and squirrel populations being down significantly this fall (1988).

The prolonged flooding along with the spawning pool had a beneficial effect on fish populations as fishing appears to have improved this past year.

##### 5. Grasslands

There are currently approximately 186 acres of nontimbered land or openings on Felsenthal, some of which were large fields that were farmed prior to the establishment of the refuge. Two small upland areas of eight acres each were added to the openings system this year in areas that had previously been void of this type habitat. These two sparsely stocked areas were burned, with plans to remove the brush with 'dozers next summer.

Fifteen acres of openings were disked and seeded with wheat or subterranean clover and, as an experimental plot, one acre of joint vetch. These areas were also fertilized and limed. Another two acres in the permanent firebreak around the Crossett Harbor Recreational Site were disked and seeded to ryegrass and clover.

Twelve acres of openings were mowed in the fall along with thirteen miles of road shoulders, four miles of pipeline and one-half mile of the old Bradley Tram.

Approximately 60 acres of openings were burned early this fall with the remainder to be burned early in 1989 if the weather allows.

##### 9. Fire Management

Felsenthal NWR had zero wildfires to report in 1988.

Prescribed fire is a primary habitat management tool on the 9,490 acres of pine forest type on Felsenthal NWR. The objectives of our prescribed burning program are (1) wildlife habitat improvement for red-cockaded woodpeckers and other species, (2) fuel reduction, (3) site preparation and, (4) understory management. With the help of the entire staff we managed to burn 3,245 acres in 1988. Most of the burning was done in February at an average cost of just over \$1.00 per acre.

In February the annual "step test" was administered to the refuge staff. All eight personnel taking the test (King, Ellis, McDonald, Cheeseman, Smith, Threet, West & Bridges) successfully passed with everyone making



at least in the "good" range, which qualifies them for prescribed burning. Kyle Cheeseman and Larry Threet scored a 45+ which makes them eligible for wildfire detail.

Larry Threet was called out on two fire details this year. One detail in June lasted nine days on an eastern detail on fires in Tennessee, Georgia and South Carolina. A western detail in August-September lasted 21 days on the Trail Creek fire in eastern Idaho and the Huck fire in western Wyoming.

Larry also attended a three-day aerial ignition course in early November at Merritt Island NWR in Florida.

We continued our program of putting in permanent firebreaks with Harold Smith pushing another 2-1/2 miles of permanent line, bringing the total to 10 miles.

We had a tilt bed assembly manufactured for our fire truck this summer. H & H Chief Sales, Inc. in Carthage, MS, received the honors with a bid of \$16,850. We're very pleased with the unit so far. Fire funds also paid for seven hand-held 3-watt I-Com Model H-16 high band radios at a total cost of \$3,843.



After years of waiting, we finally received the tiltbed for our new fire transport truck. This \$17,000 procurement from special fire funds has vastly enhanced our operational and safety capabilities.

(10/5/88; RJB; #88-43-5)

#### 10. Pest Control

Aquatic vegetation continues to be an ever increasing problem on Felsenthal NWR. In July 1988, Larry Threet coordinated the spraying of a one-acre test plot of American lotus with a mixture of four pints of Rodeo and one pint of Agri-Dex surfactant in twenty-five gallons of water. The solution killed all of the lotus but did not harm small cypress trees that were purposely sprayed. We have since been informed that 2,4-D amine is a more economical chemical for control of American lotus.





(7/15/88; RJB; #88-28-14)

In response to the "explosion" of aquatic plants, particularly in the open water areas of the refuge, a one-acre test plot of Lotus was treated with Rodeo and Agri-Dex surfactant. Forester Larry Threet and Biologist Robert Ellis (above) shown applying the chemical. This aerial photo (below) of the test plot in Pete Wilson is beginning to show signs of stress one week after being sprayed.

(7/21/88; LAT; #88-30-1)





Forestry Technician Ruth McDonald and Biologist Robert Ellis attacked the weed encroachment problem on our five COE-constructed gravel parking lots under the direction of Refuge Forester Larry Threet. A solution of 2-1/2 quarts of Roundup and one pint of surfactant in twenty-five gallons of water was sprayed on annual and perennial grasses and weeds using a "high volume" portable spray rig with a hand-held wand with adjustable "cone" nozzle. This method of application proved very inefficient on the large areas we had to cover. Post treatment evaluation of the parking lots revealed very little grass and weed mortality. The herbicide was applied in June and an extended drought may have reduced the effectiveness of the treatment.

## 12. Wilderness and Special Areas

Felsenthal NWR encompasses at least two areas of local ecological significance that are being managed as special areas. These areas have not been formally proposed for any special designation but are addressed in our Timber-Wildlife Management Plan.

One area is a 160-acre tract of timber in Union County with a representative sample of all known timber types occurring on the refuge. This area has not been logged since the 1950's and is currently managed as a natural area. In 1986, southern pine beetles killed five acres of a 28-year old stand within the unofficial natural area. In 1987 a 14-foot wide firebreak was pushed around the perimeter.

The second area is a 60-acre alkaline prairie community in Ashley County. Because the soil on this tract is extremely alkaline, very few trees or shrubs are present. Though not unique in Arkansas, it is uncommon and is the only example of this type habitat on the refuge.

## G. WILDLIFE

### 1. Wildlife Diversity

With the completion of the Felsenthal Lock and Dam, a 15,000-acre reservoir or navigation pool was created in 1985. Together with this, Felsenthal has the world's largest greentree reservoir (GTR) with the capability to seasonally flood an additional 21,000 acres of timber. When coupled with a good mast crop, the GTR provides excellent habitat for wintering waterfowl, resident and related wildlife.

Most open areas within the pine/upland hardwood types support an almost homogeneous stand of broomsedge if left undisturbed. In an effort to provide suitable habitat for a diversity of species, we continue to manipulate these areas through burning, disking, mowing, and limited planting. This has proven to be a very effective management approach, enhancing growth of a wide variety of plant species in these areas. Also, with the blessing and encouragement of the AGFC, our District Biologist and openings management guidelines from the Regional Office,

we have begun to establish additional small permanent openings in our upland pine/hardwood areas.

In conjunction with our beaver control program, the growth of many moist soil plant species is enhanced by dewatering of beaver ponds and sloughs during late spring and early summer.

There are plans to create small openings in otherwise thick, brushy areas at the 70.0' MSL which is the "feather edge" of our GTR. We have observed heavy use by mallards in small, shallowly flooded, grassy areas and feel we can duplicate this in areas now too thick to benefit waterfowl.

By far, our most valuable habitat management tool is our active forest management program. This has greatly enhanced habitat for the red-cockaded woodpecker, while providing positive benefits for a host of other resident and migratory species as well. The hardwood mast study has shown that acorn production is stimulated in areas where we have thinned overstocked hardwood stands. Thinning in our upland pine stands, coupled with an active prescribed burning program, has enhanced the production of seed, cover and browse for a diversity of wildlife species.

## 2. Endangered and/or Threatened Species

Three species listed as endangered or threatened in Arkansas by the Department of Interior are known to occur on Felsenthal. Resident species include the American alligator and the red-cockaded woodpecker. One transient species, the bald eagle, is not infrequently seen during winter.

### a. American Alligator

Felsenthal lies near the northern fringes of the historical range of the American alligator. For the most part, our remnant alligator population is the result of State and Federal stocking efforts from 1971-79. A total of 261 alligators was reported released during the nine-year period. Natural attrition, egress, drownings in gill and trammel nets, and other visitor-caused mortality have reduced the population to an estimated 100 individuals or less. One thing that may have a positive impact on the alligator population on Felsenthal has been the increase in the normal summer pool from 5,000 to 15,000 acres. The additional 10,000 acres is fairly shallow and thick with vegetation. This should not only provide excellent additional habitat but also some isolation from human contact.

The alligator has been taken off the endangered species list in Arkansas. As a result the cooperative alligator survey, conducted through the Alligator Subcommittee of the Southeast Section of The Wildlife Society, was suspended this year after eight consecutive years of intensive night counts. Reports of alligator sightings by refuge personnel and the public continue to be documented.

b. Bald Eagle

The annual aerial bald eagle survey (combined with our mid-winter waterfowl survey) was conducted in January. The survey route included lands from the western boundary of Felsenthal east to and including Overflow NWR. No eagles were seen during this survey. A summary of eagle sightings for 1988 is as follows:

BALD EAGLE SIGHTINGS

Felsenthal NWR - 1988

<u>Date</u>	<u>Location</u>	<u>Immature</u>	<u>Mature</u>
1/8	Lock & Dam	-	1
11/26	Mud Lake	-	1
12/14	Bean Field	-	1
12/16	Bean Field	-	<u>1</u>
	Totals	0	4

According to reports by refuge personnel, at least three of the four eagles sighted were different birds. Compared to 1987, the total number of eagle sightings on the refuge was down by two birds.

c. Red-cockaded Woodpecker

Felsenthal harbors one of the highest known concentrations of the red-cockaded woodpeckers in the State of Arkansas. Refuge personnel annually conduct a red-cockaded woodpecker cavity tree survey to monitor the status of this species. Survey results for the past eight years are summarized in the following table.



## ANNUAL RED-COCKADED WOODPECKER CAVITY TREE SURVEY RESULTS

Felsenthal NWR - 1981-88

	Numbers by Year							
	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
Colonies	30	32	32	32	32	34	25	25
Active Cavity Trees	70	68	71	74	76	85	118	129
Inactive Cavity Trees	44	35	36	57	57	58	35	38
New Start Colony Trees	15	20	17	6	4	3	13	24
Abandoned Cavity Trees	15	33	47	27	27	28	58	65
Dead Cavity Trees	3	4	5	7	0	1	12	4
Total Cavity Trees (excluding dead trees)	144	156	171	164	164	174	224	256

Thirty-two additional cavity trees were found during the 1988 season. Some were abandoned trees that had not been previously located. All of the information including location, cavity height and aspect, and current nest tree was entered into a computer program written by Al Impellitteri of the Regional Office.

### 3. Waterfowl

1988 began with waterfowl populations on Felsenthal numbering approximately 48,000. Due to high water conditions the numbers began to decline as the birds dispersed. On a flight made on 1/5, 35,900 were tallied. On the final flight on 1/27, approximately 1,200 birds were seen. Waterfowl populations remained low during the month of February with the abnormally high water still with us. The river had peaked at 81.2' MSL in January which is 16' above normal summer pool and was at 78.5' MSL on February 1. The number of ducks dropped steadily until mid-April when most migrants departed leaving a resident wood duck population of approximately 1,200 birds.

In August, the first flights of blue-winged teal were observed with the numbers increasing by September. During October, waterfowl began moving onto the refuge. There were approximately 200 mallards and this increased to 4,000 by the end of the month. The resident wood duck population swelled to approximately 10,000 with the arrival of migrants. By November, there were an estimated 10,000 mallards, 15,000 wood ducks, 2,000 green-winged teal, and 2,000 ringnecks. By December, possibly due to high water scattering the birds, the mallard population had dropped to 8,000 with the wood duck population remaining stable and an increase in divers with 5,000 ringnecks and 1,000 lesser scaup being recorded. A summary of peak waterfowl populations for the past ten years is shown in the following table.

#### ESTIMATED PEAK WATERFOWL POPULATIONS

Felsenthal NWR - 1979-1988

<u>Year</u>	<u>Mallards</u>	<u>Wood Ducks</u>	<u>Total Population</u>	<u>Average Population (Oct.-Dec.)</u>
1979	7,500 (Dec.)	10,000 (Nov.)	16,950 (Dec.)	3,857
1980	4,500 (Nov.)	10,000 (Nov.)	14,815 (Nov.)	6,663
1981	2,500 (Jan.)	10,000 (Jan.)	12,500 (Jan.)	3,098
1982	1,500 (Jan.- Dec.)	8,000 (Jan.)	10,000 (Jan.)	3,192
1983	4,500 (Dec.)	4,500 (Dec.)	13,420 (Dec.)	10,673
1984	4,000 (Dec.)	5,000 (Dec.)	11,315 (Dec.)	7,663
1985	41,500 (Dec.)	8,300 (Dec.)	55,000 (Dec.)	13,500
1986	53,000 (Dec.)	17,000 (Dec.)	70,000 (Dec.)	17,500
1987	45,000 (Jan.)	19,000 (Dec.)	60,000 (Jan.)	15,000
1988	42,000 (Jan.)	15,000 (Dec.)	50,000 (Jan.)	12,500

Counting ducks in flooded timber is difficult. Counts on Felsenthal are designed to be conservative and estimates of total populations should be considered as indices and not a true census.

Estimates of wood duck production indicate approximately 1,800 young fledged from an estimated breeding population of 1,500 birds. Last fall

the shop class of Rogers Jr. High School in El Dorado constructed 47 wood duck nest boxes from cypress lumber supplied by the refuge. Nineteen of these were erected at Felsenthal. Also, four plastic Ducks Unlimited boxes were purchased and erected. We didn't get any wood duck use this year; however, it was late in the nesting season before we got all the boxes up. A temperature study was conducted which indicated the boxes should be put in a shaded area, especially late in the nesting season. The plastic boxes, in particular, should be placed in the shade. Temperatures up to 110°F were recorded in the plastic boxes while the cypress boxes measured a maximum of 104°F.



One of several experimental wood duck nest boxes purchased from Ducks Unlimited being erected at Locust Ridge pond. Temperatures ranging up to 110°F were recorded in these plastic boxes placed in open areas compared to a maximum of 104°F in comparably placed cypress boxes.

(4/27/88; RJB; #88-14-14)



#### 4. Marsh and Water Birds

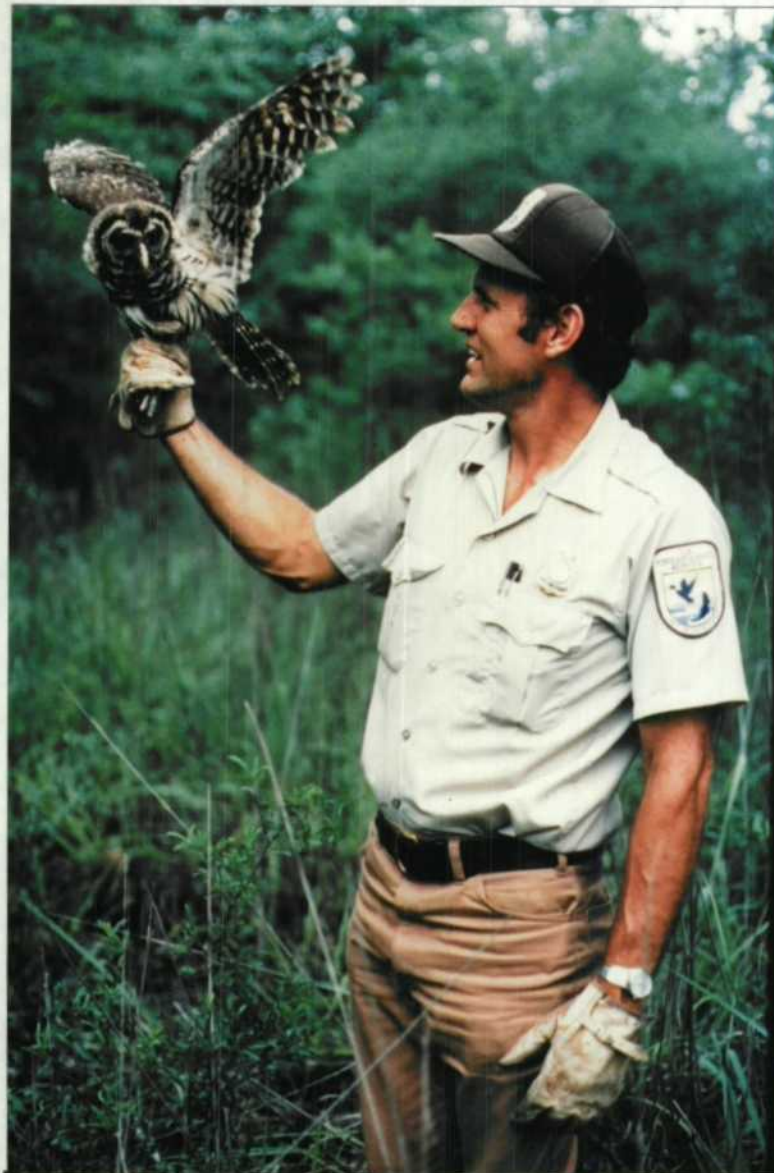
The following species have been identified on Felsenthal by refuge personnel and are listed more or less in order of abundance: great blue heron, little blue heron, black and yellow-crowned night herons, double-crested cormorant, common egret, American bittern, and anhinga. Also, species that are rare for our area but were seen by refuge personnel this year include white pelicans, woodstorks, and sora rails. Cormorants have increased with over 500 roosting near the Felsenthal Lock and Dam.

#### 5. Shorebirds, Gulls, Terns & Allied Species

Through casual observation, refuge staff identified the following species listed in approximate order of abundance: American woodcock, killdeer, common snipe and least, spotted and semipalmated sandpipers.

#### 6. Raptors

Species in this category that have been identified on the refuge include: turkey vulture, black vulture, barred owl, screech owl, great-horned owl, American kestrel, red-tailed hawk, red-shouldered hawk, broad-winged hawk, marsh hawk, and sharp-shinned hawk. These species have been identified by refuge personnel through casual observation. Also, there were a few sightings of ospreys on the refuge again this year.



Refuge Law Enforcement Officer Larry King prepares to release an immature barred owl seized from a local citizen.

(7/7/88; RJB; #88-27-7)

#### 7. Other Migratory Birds

Forestry Technician Ruth McDonald participated in the Audubon Society's Christmas bird count. We haven't received the results as yet but numerous birds of various species were recorded on the refuge.

Large flocks of grackles and starlings traditionally pass through our area in late fall, winter and early spring. These species concentrate in the bottomland hardwood areas utilizing the mast crops from willow and water oaks in particular.

## 8. Game Mammals

The primary species in this category include: white-tailed deer, gray and fox squirrels, eastern cottontail and swamp rabbits, and a host of furbearers.

### a. White-tailed Deer

The white-tailed deer is probably the most popular game mammal found on the refuge. Felsenthal has approximately 50,000 acres of fairly good deer habitat. Soil tests conducted in 1985 show an average pH of 4.5. Other soil condition parameters measured were found to be deficient (calcium, phosphorous, etc.). Despite these relatively poor soil conditions, habitat quality remains very good as a result of intensive habitat and herd management programs.

Last year (1987) a record number of deer (902 checked) was harvested on Felsenthal Refuge. This year the harvest was down more than 50% (445 deer checked). We believe the deer population was down somewhat due to a poor mast crop the previous year, extremely high water and a hard freeze last year. However, bad weather hampered hunter success in 1988. It rained on the first day of the muzzleloader hunt, we had heavy rain on the second day of the first modern gun hunt and it stormed and rained hard on the first day of the second modern gun hunt. We believe this deterred a lot of people from hunting or spending all day in the field. Although the number of hunters was approximately the same (1,130 in 1987 and 1,165 in 1988), the success ratio was substantially down. Again, we believe bad weather had an effect on this. The success ratio dropped from an astronomical 80% in 1987 to a respectable 38% in 1988.

The overall condition of the deer herd remains good. The fawn crop was down substantially. Again, we believe this was due to the extreme weather conditions and poor mast crop of last year. The adult doe to fawn ratio dropped from 1:1.5 in 1987 to 1:0.94 in 1988. The sex ratio of adult deer was approximately the same. The percent spikes for 1-1/2 year old bucks increased from 45.2% in 1987 to 74.2% in 1988. However, a number of trophy bucks were taken. Also, the average body weight for all age classes increased. These apparently contradictory biological data on Felsenthal's deer herd is summarized in the following tables.



AVERAGE WEIGHT BY AGE AND SEX FOR WHITE-TAILED DEER  
(mean hog-dressed weight in lbs.)

Felsenthal NWR - 1982-1988

Year	<u>Age Class (years)</u>							
	0.5		1.5		2.5		2.5+	
	M	F	M	F	M	F	M	F
1982	38.9	34.8	73.7	62.5	108.1	75.3	116.5	64.0
1983	39.2	31.4	74.8	62.4	104.3	65.2	-	78.4
1984	38.9	35.7	74.3	61.8	91.1	72.9	-	66.8
1985	46.3	42.3	72.4	65.3	92.1	71.9	115.5	76.3
1986	49.3	45.7	86.8	74.5	112.1	78.9	123.9	79.8
1987	41.3	39.6	78.1	66.6	106.3	71.0	124.4	70.8
1988	51.0	44.0	80.0	70.0	112.0	79.0	131.0	82.0

## BIOLOGICAL DATA SUMMARY OF WHITE-TAILED DEER

Felsenthal NWR - 1984-1988

Percent of Total Harvest  
(N = Sample Size)

Age (years)	1984	1985	1986	1987	1988
	N=88	N=400	N=677	N=902	N=445
0.5	45	31	35	30	23
1.5	23	35	33	38	32
2.5	22	17	22	20	29
2.5+	10	17	10	12	16
=====					
	<u>M</u> <u>F</u>	<u>M</u> <u>F</u>	<u>M</u> <u>F</u>	<u>M</u> <u>F</u>	<u>M</u> <u>F</u>
Sex Ratio (excluding fawns)	1.0:1.3	1.0:1.14	1.0:0.89	1.0:0.83	1.0:0.83
=====					
	N=16	N=99	N=143	N=243	N=95
% Spikes for Yearling Bucks	56.3	87.6	37.1	45.2	74.2
=====					
	N=48	N=205	N=358	N=477	N=151
% Fawn & Yearling Bucks of Total Buck Harvest	87.5	84.5	75.7	78.6	61.9
=====					
Ratio Adult Doe:Fawn	1:1.74	1:1.2	1:1.87	1:1.5	1:0.94
=====					
		N=101	N=127	N=185	N=108
% Lactation for Adult Does (2-1/2 & older)	-	82	79	81.3	78.8

Felsenthal Refuge encompasses parts of three Arkansas counties, each a unique part of the refuge. Bradley County, on the north end, lies between the Ouachita and Saline Rivers and is mostly hardwood bottomland. Ashley County, on the east side, has a fringe of uplands, some bottomland hardwoods and a lot of permanent water. Union County, on the west side, has the most upland habitat but also has extensive bottomlands and permanently flooded areas. The following is a breakdown of checked deer by county for each of the three quota hunts.

#### CHECKED HARVEST BY COUNTY FOR 1988 QUOTA DEER HUNTS

##### Hunt and Harvest by Sex

County	Muzzleloader Hunt (Oct. 28-39)			Modern Gun Hunt (Nov. 11-12)			Modern Gun Hunt (Nov. 25-26)			Total
	M	F	Total	M	F	Total	M	F	Total	
Bradley	49	36	85	25	28	53	20	19	39	177
Ashley	8	5	13	15	6	21	13	15	28	62
Union	30	25	55	62	41	103	22	26	48	206
Totals	87	66	153	102	75	177	55	60	115	445

In September 1988, the Southeastern Cooperative Wildlife Disease Study Unit (SCWDS), assisted by Robert Ellis and Bill Parker, collected 11 deer, six at Felsenthal and 5 at Overflow NWR's on the night of September 14. All the deer appeared to be in generally good shape as far as visible parasites and body conditions are concerned. On 10/9/88, we received the results from the SCWDS on the deer collected and examined at Felsenthal. According to the report the Abomasal Parasite Count (APC) value, which ranged from 700 to 2,600 (averaging 1,348), indicates that the herd is near nutritional carrying capacity.





The Southeastern Cooperative Wildlife Disease Study team conducted a deer health herd check on Felsenthal and Overflow Refuges this year. Similar collections were made in 1982 and 1985. Based on the six deer collected and necropsied, our herd appears to be in generally good shape but near the nutritional carrying capacity of the habitat.

(9/16/88; RJB; #88-42-6)

#### b. Gray and Fox Squirrels

The squirrel population on Felsenthal was down this year, again probably due to the poor mast crop, high water and cold weather of 1987. Also, it was an extremely dry summer. Hunter success (daily bag) was therefore down, averaging slightly less than two squirrels per hunter based on hunter contacts during the opening weekend.

#### c. Eastern Cottontail and Swamp Rabbits

The rabbit population also appeared to be down probably due to weather extremes. There are far more swamp rabbits than cotton-tails on Felsenthal but the hunting pressure on both species was low.

#### d. Furbearers

Furbearers found on the refuge include: raccoon, beaver, mink, opossum, striped skunk, coyote, bobcat, river otter, muskrat, nutria, and the gray fox. The species that has the greatest impact on the refuge is the beaver. With no significant

predators, a prolific reproductive rate and thousands of acres of prime habitat, recruitment potential is astronomical. Because this species has the potential to destroy thousands of acres of bottomland hardwood forest, a major beaver control effort continued in 1988 (see Section G.15). Raccoons continue to be the primary furbearer sought by hunters and trappers. The population continues to increase despite a more liberal refuge hunting and trapping season.

#### 10. Other Resident Wildlife

Turkey populations on Felsenthal appear to be down somewhat from the estimated 700-800 birds reported in 1987. The high water and severe winter had a detrimental effect on breeding success during the spring. Felsenthal was included in the statewide turkey brood survey but no turkey broods were reported during 1988.

The refuge cooperated with AGFC in efforts to reestablish the wild turkey in Ashley and Union counties off the refuge. Early in the year, two sites on the south and west ends of the refuge and one site on the north end were baited. This year turkeys readily took to the bait and rocket nets were set up and AGFC personnel were successful in capturing 44 turkeys. This included 20 hens taken from the Eagle Lake area on the north end of the refuge, 10 hens and 4 gobblers from Locust Ridge on the west side, and 10 gobblers from the Shallow Lake area on the south end. All the birds were successfully released in the adjacent Ashley and Union counties.





(1/20/88; RJB; #88-3-3)

Unlike last year's efforts, turkey trapping and restocking efforts were highly successful in 1988. Above, Arkansas Game and Fish Commission personnel bait one of three trapping sites used on Felsenthal this year (Locust Ridge). Below, Commission personnel release one of 44 turkeys captured on Felsenthal and released in counties adjacent to the refuge.

(3/11/88; RJB; #88-7-22)





This year, due to other pressing needs, the turkey sighting questionnaires usually sent to quota deer hunt participants were not mailed. We continue to record sightings by refuge personnel and the visiting public.

A reliable citizen reported seeing a black bear twice during the month of December in the Washman Bay area near the northeast corner of the refuge. Refuge personnel attempted to locate the bear without any luck; however, colder weather may have forced the bear to den. An attempt may be made this spring to locate the bear for verification.

#### 11. Fishery Resources

Primary management responsibilities for the fisheries resources have been essentially relegated to the AGFC. Refuge personnel work closely with the State in managing the fisheries which attracts the largest number of visitors and is a tremendous economic boost to the local area. In July, seine and rotenone samples were taken in Eagle Creek and Fish Trap Lake. The preliminary results indicate healthy sport fish populations and good reproduction of game and forage fish, especially at Fish Trap. There is a possibility that the Arkansas Cooperative Fish and Wildlife Research Unit might do some fisheries research on the refuge. There is a need for aquatic plant control research since the recent aquatic "weed" explosion has a tremendous impact on fishing.

On October 24 Refuge Biologist Robert Ellis and Fisheries Assistance Biologist John Forester stocked 200 channel catfish in the Locust Ridge pond, 150 channel cat, 600 bluegill and 100 redear in the Shallow Lake pond and 9,450 channel catfish in Jones Lake. All fish stocked were fingerling size. Next year a follow-up stocking of largemouth bass is planned in the Shallow Lake pond.



Fisheries Assistance Biologist John Forester stocking approximately 9,500 channel catfish in Jones Lake, one of our most popular oxbow fishing lakes within the refuge.  
(10/24/88; RME; #88-45-8)

#### 14. Scientific Collections

Refuge Biologist Robert Ellis has begun collecting, identifying and pressing aquatic and moist soil plants found in the refuge. Also, a plan is being developed to study and monitor the tremendous aquatic plant growth that is rapidly encroaching in the newly flooded area of the refuge. A number of specimens of plants and animals were collected from various sources for potential use in our soon-to-be-completed Visitor Center exhibits.

#### 15. Animal Control

Although construction of beaver dams results in habitat diversity and the creation of wetland habitat, many acres of bottomland hardwood timber have been destroyed on Felsenthal. In an effort to control the loss of bottomland hardwoods on the refuge, an intensive beaver control program was initiated in 1981. The objective of this program was not to eliminate the beaver but to keep the population in check. Control methods used include:

- (1) Daytime shooting from boats.
- (2) Nighttime spotlight shooting from boats.

- (3) Incidental shooting by refuge personnel during other management activities.
- (4) Trapping by refuge personnel.
- (5) Public trapping by permit during the State trapping season (see Section H.10).
- (6) Trapping by special use permit (SUP) outside the State season.
- (7) Removal of beaver dams and lodges utilizing explosives, hand tools, and heavy equipment.

Techniques used during 1988 included daytime shooting, public trapping, SUP trapping, and dam blowing. The total number of beaver removed during 1988 was 194 compared to 248 removed in 1987. Public trapping and SUP trapping accounted for over 70% of the beaver removed. This has proven to be a very efficient method of beaver removal on Felsenthal. The following is a summary of the beaver harvest for Felsenthal during 1988.

#### BEAVER HARVEST SUMMARY

Felsenthal NWR - 1988

<u>Technique Used</u>	<u>Number Beaver Killed</u>	<u>Staff Hours Expended</u>	<u>Beaver Killed Per Staff Hour</u>
Daytime Shooting	58	42	1.4
Public Trapping	106 <sup>1/</sup>	N/A	N/A
SUP Trapping	<u>30</u>	—	—
Total	194	42	4.6

<sup>1/</sup> From trapping reports submitted by 36 trappers during 1987-88 season.



## 16. Marking and Banding

For the second consecutive year, pre-season wood duck banding was attempted on Felsenthal NWR. We were given a quota of 200 birds. Two banding sites were located and pre-baited beginning in late July. The demands of other necessary duties hampered filling our quota; however, 152 birds were finally banded using portable swim-in traps. A rocket net was borrowed from White River Refuge and a site prepared and baited; however, no birds came to the bait. Our two refuge volunteer college students saved us many staff hours by helping keep trapping sites baited, checking and monitoring trapping sites and other labor-intensive tasks (see Section E.4).

## H. PUBLIC USE

### 1. General

Felsenthal is known for its excellent hunting and fishing opportunities and over 90% of our public use falls into these two categories. However, during the past few years we have made some progress in developing the interpretive aspect of our public use program as well. We anticipate major advances in the areas of interpretation and environmental education in the future, especially with the near completion of our Visitor Center exhibits and related facilities. Throughout the year, numerous articles appeared in local and statewide newspapers and other media dealing with a wide variety of subjects on Felsenthal. Refuge volunteer, Mr. Jack Lee from El Dorado, continued to prepare the majority of these news releases. Primarily through Jack's efforts, we have made great strides in keeping the public informed.

Refuge visitation continued to increase with (322,610) visits recorded in 1988 compared to 273,102 visits the previous year. With the completion of our new headquarters office/visitor center, coupled with completion of 10+ million dollars worth of recreational facilities by the Corps of Engineers, we fully expect refuge visits to exceed one-half million in the next few years.

### 7. Other Interpretive Programs

During the year we were able to accommodate most requests for refuge programs. Refuge staff presented fourteen programs (nine on refuge) to school and civic groups, conservation and other organizations. The following chart summarizes the programs involving 411 participants in 1988.

## REFUGE PROGRAMS PRESENTED IN 1988

<u>Speaker</u>	<u>Date</u>	<u>Program Subject</u>	<u>Organization</u>	<u>No. of People</u>
West	2/27	Waterfowl Production	Wilmot Baptist Church Wilmot, AR	40
Bridges	3/11	Deer Management	Drew Co. Bowhunters Assoc. Monticello, AR	48
McDonald	4/11	Refuge Management	Crossett Lions Club Crossett, AR	30*
McDonald	4/16	Red-cockaded Woodpecker	Arkansas Audubon Society Little Rock, AR	10*
McDonald	4/30	Red-cockaded Woodpecker	Arkansas Audubon Society Arkadelphia, AR	130
McDonald/ Ellis	5/3	Refuge Management Tour	Girl Scouts Crossett, AR	15*
Ellis/ McDonald	5/6-7	Take Pride in America Refuge Management Tour	General Public	35*
Threet	5/24	Refuge Management	Soil Conservation Service State of Mississippi	36*
McDonald/ Ellis	7/11	Habitat Management for Wildlife	Crossett Gifted & Talented Students, Crossett, AR	20*
McDonald	9/30	Refuge Management	Ashley Co. Retired Teachers Assoc., Hamburg, AR	15
Ellis	10/6	Refuge Management	Wildlife Management Class UAM, Monticello, AR	12*
McDonald	10/7	Refuge Management	Science Club, Crossett High School, Crossett, AR	15
McDonald	11/2	Refuge Management	Girl Scouts Crossett, AR	16*
McDonald	11/4	Refuge Management	Girl Scouts Crossett, AR	9*
McDonald	11/15	Hardwood Regeneration & Litter	Gingerbread House School Crossett, AR	15

\*On-Refuge Programs



With our new facilities and recently completed recreational access sites within and adjacent to the refuge, more and more requests are received to accommodate groups such as this. Here Biologist Ellis leads a group of 15 local Girl Scouts on a refuge tour.

(5/3/88; RRM; #88-15-7)

## 8. Hunting

Small game and furbearer hunting on Felsenthal include: squirrel, rabbit, and quail plus a limited nighttime raccoon hunt. Squirrel season began on 10/1 and ran through 1/31/89. This year the success rate was down considerable, 2.0 squirrels per hunter visit as compared to 2.54 during the 1987-88 season. These figures are based on limited data collected during the heavy hunter use opening weekend.

Dates for the rabbit hunting season were the same as for squirrel season. Rabbit hunting generally occurs incidental to other small game hunting with few hunters specifically out to hunt this game species. The main reason is the somewhat limited prime cottontail habitat, coupled with the fact that we do not allow dogs for rabbit hunting until January 1. Although we have an abundant swamp rabbit population in the 40,000 acres of bottoms, very few folks actively pursue the "ole cane cutter".

Quail season began 11/19 and ran through 1/31/89. Hunting pressure on quail is normally light and with this year's very low population, few hunters turned out. Again, we feel the dry summer, extreme high water and hard freeze of 1987 hurt our quail population. In January the ground was covered with ice for a week and we again had a dry summer in 1988.



For the second year in a row, raccoon and opossum season was held during the entire month of December during the hours of darkness only. Bag limits were three raccoons per hunter per night with no group limit. As usual, hunter pressure and harvest was very light and the high water during December substantially reduced the huntable area.

Deer archery season was open from 10/1 through 1/31/89 except for being closed during the three two-day quota deer hunts. Hunting pressure was somewhat greater than last year with an estimated 900 archery hunting visits to the refuge. The quality and number of deer on Felsenthal has begun to attract many bow hunters from surrounding areas and is considered "the place" to hunt by our local clientele.

This year's gun deer hunting included one two-day muzzleloader (primitive weapons) hunt and two two-day modern weapon hunts. Hunters were selected by a public drawing held on 9/10 at our new Office/Visitor Center. By the deadline of 9/1, a total of 5,604 legal (acceptable) applications for the three quota deer gun hunts had been received. This was an increase of nearly 1,500 applications over the 1987 hunts. A total of 2,700 permits (300 more than last year) was mailed to selected applicants on 9/21. All deer hunting on Felsenthal, including archery, is either-sex. All deer harvested during the quota permit hunts are required to be checked at designated refuge check stations.

On October 28-29, an estimated 453 hunters (1,000 permits issued) participated in the muzzleloader deer hunt. The checked kill for this hunt was 149 deer, producing a success rate of 33%. An estimated 413 hunters (800 permits issued) participated in the November 11-12 modern gun deer hunt, harvesting 182 deer, for a success rate of 44%. A total of 114 deer was harvested during the November 25-26 modern gun hunt with about 294 hunters participating (900 permits issued) for a 39% success rate. The total checked harvest for all three hunts was 445 deer harvested by the estimated 1,160 participating hunters, for an overall very respectable success rate of 38%. The estimated total deer harvest for the fall of 1988 is summarized in the following table.

## TOTAL CHECKED HARVEST DURING QUOTA DEER HUNTS

Felsenthal NWR - 1988

Hunt/Date	<u>Buck</u>		<u>Doe</u>		<u>Both Sexes</u>		Total
	Fawn	Adult	Fawn	Adult	Fawn	Adult	
Muzzleloader Either-Sex (Oct. 28-29)	14	71	6	58	20	129	149
	85		64				
Modern Gun Either-sex (Nov. 11-12)	25	81	19	57	44	138	182
	106		76				
Modern Gun Either-sex (Nov. 25-26)	17	36	21	40	38	76	114
	53		61				
Total Known Kill	56	188	46	155	102	343	445
	244 (54.8%)		201 (45.2%)				

Volunteer Jack Lee spent many hours analyzing the deer harvest records for the 1988 quota deer hunts. The following chart summarizes the demographics of each of the three quota hunts for those hunters who checked deer.

## DEMOGRAPHICS FOR QUOTA DEER HUNTS

Felsenthal NWR - 1988

<u>Number and Percentage of Deer Harvested by Hunt</u>				
<u>Hunter Residence</u>	<u>Oct. 28-29</u>	<u>Nov. 11-12</u>	<u>Nov. 25-26</u>	<u>3 Hunts Combined</u>
Local AR Zips 716-717	28(18.8%)	27(14.8%)	22(9.6%)	66(14.8%)
Central AR Zips 720-722	68(45.6%)	45(24.7%)	35(30.7%)	148(33.3%)
Northeast AR Zips 723-724	31(20.8%)	60(33.0%)	55(49.1)	147(33.0%)
Other AR	14(9.4%)	21(11.6%)	6(5.3%)	41(9.2%)
Out-of-State	<u>8(5.4%)</u>	<u>29(15.9%)</u>	<u>6(5.3%)</u>	<u>43(9.7%)</u>
	149	182	124	445

The taking of feral hogs is permitted during all daytime refuge hunts with weapons legal for those hunts. We do not keep harvest data for this species. However, based on staff observations, we believe the harvest of feral hogs was significantly lower from that of 1987. Many of the out-of-town hunters come to Felsenthal to actively hunt the "wild boar."

Felsenthal had a 30-day split waterfowl season (11/26-12/18 and 12/26-1/1/89) with hunting allowed from sunrise until noon each day. This represents a 10-day shorter season than last year and a change in shooting hours from 30 minutes before sunrise to sunrise. This year, like last year, steel shot was required. Waterfowl hunter visits dropped from 7,005 in 1987-88 to 6,521 for the 1988-89 season. Also, the average number of ducks harvested per visit dropped from 1.22 to 1.10 based on limited hunter bag checks. Total harvest was estimated to be 7,200 ducks, a decrease from the 1987-88 season. The overall low continental waterfowl population no doubt had its effect on hunter visits and the harvest of waterfowl. A summary of hunter use and hunter success for the past 10 waterfowl seasons follows.



## ESTIMATED WATERFOWL HUNTER-USE AND SUCCESS RATE

1979-80 through 1988-89

Felsenthal NWR

<u>SEASON</u>	<u>NO. HUNTER VISITS</u>	<u>NO. WATERFOWL HARVESTED</u>	<u>DUCKS/ VISIT</u>
1979-80	480	1,050	2.27
1980-81	1,565	3,250	2.08
1981-82	1,335	2,235	1.67
1982-83	1,125	1,879	1.67
1983-84	1,250	2,412	1.93
1984-85	625	1,200	1.92
1985-86	2,700	5,400	2.00
1986-87	10,750	19,200	1.79
1987-88	7,005	8,546	1.22
1988-89	6,521	7,200	1.10

9. Fishing

Sport and commercial fishing constituted 77% of the total refuge visits in 1988. With heavy publicity in area newspapers and magazines concerning the good fishing on Felsenthal, we fully expect fishing pressure will continue to increase over the next few years. Fishing was generally good in 1988 with numerous reports of limit catches for bluegill, crappie, and largemouth bass. During the early spring flooding, bass fishing was a bonanza for local fishermen.



Sport fishing continues to be the number one public use on Felsenthal Refuge accounting for over 77% of the 322,610 visits recorded in 1988.

(6/11/88; RJB; #88-23-20)

This was the seventh consecutive year we have required special use permits for commercial fishing in refuge waters, and the third year we have charged a \$25.00 fee. A total of 51 commercial fishing SUP's was issued for calendar year 1988, 21 less than was issued in 1987. Based on general observations and informal reports, commercial fishing success (and interest) was somewhat less than in previous years.

Competitive fishing tournaments continued to be popular on Felsenthal. SUP's carrying a minimum charge of \$35.00 or 5% of the total entry fees are required for all tournaments. As in the past, we do not allow the tournaments to originate from refuge landings and we require a comprehensive catch data form be completed. A total of 10 tournaments was held on the refuge this year, the same as in 1987.

## 10. Trapping

Forty-eight public furbearer trapping permits were issued for the 1987-88 season, the same as last year. The 1988-89 season began on 12/6/88, and ran through 1/31/89. A \$25.00 fee is charged for trapping permits on Felsenthal NWR and trapping reports are required to be submitted at the end of the season. We are still receiving trapping reports for the 1988-89 season; therefore, results from this season will appear in next year's Annual Narrative. Fur harvest for the 1987-88 season was up somewhat from the previous year even though number of trapper visits was down slightly. A summary of Felsenthal's trapping program for the past five seasons appears in the following tables.

### SUMMARY OF PUBLIC FURBEARER TRAPPING PROGRAM

1983-84 through 1987-88

Felsenthal NWR

	<u>1983-84</u>	<u>1984-85</u>	<u>1985-86</u>	<u>1986-87</u>	<u>1987-88</u>
No. Trapping Permits Issued	59	89	44	48	48
No. Permittees Who Reported	55 (93.2%)	71 (79.7%)	36 (81.8%)	36 (75.0%)	36 (75.0%)
No. Permittees Who Reported & Actually Trapped	35 (63.6%)	49 (69.0%)	29 (80.5%)	33 (91.7%)	33 (91.7%)
No. Permittees Who Reported but did not Trap	20 (36.4%)	22 (31.0%)	7 (19.4%)	3 (8.3%)	3 (8.3%)
No. Trapper Visits	482	1,248	1,550	793	587
No. Activity Hours	1,446	4,992	6,200	3,172	2,348



## PUBLIC FURBEARER TRAPPING HARVEST SUMMARY

1985-86 - 1987-88

Felsenthal NWR

<u>Species</u>	<u>1985-86 No. Trapped</u>	<u>1986-87 No. Trapped</u>	<u>1987-88 No. Trapped</u>
Raccoon	953	2,166	2,307
Opossum	130	258	180
Beaver	63	107	113
Mink	97	202	146
Gray Fox	0	3	5
Skunk	0	14	9
Coyote	0	1	0
Bobcat	2	0	2
Nutria	4	56	97
Otter	9	24	11
Muskrat	13	18	23

11. Wildlife Observation

Most of the wildlife observation on Felsenthal occurs incidental to hunting and fishing activities. We expect this activity to increase following completion of the new headquarters visitor's center complex in 1989 and with the recent completion of the two Class A camping facilities adjacent to the refuge. We do get a number of serious bird watchers in the spring in hopes of catching a glimpse of the endangered red-cockaded woodpecker. Increased interest has also been shown in sightings of bald eagles on the refuge.

12. Other Wildlife Oriented Recreation

Camping occurs on the refuge primarily in conjunction with our hunting and fishing programs. On-refuge camping was limited to ten designated primitive campgrounds located at strategic points throughout the refuge. Now that the two privately-operated Class A campgrounds adjacent to the refuge have become operational (Crossett Harbor and Grand Marais Recrea-

tional Sites), several more primitive refuge campgrounds may be eliminated. Restricting camping to designated areas has been well accepted by the public and has vastly improved our ability to manage our hunting and fishing programs.

There appears to be a growing interest in wildlife photography, especially with the recently enlarged permanent pool and increasing waterfowl use associated with the 21,000-acre GTR. Many people are beginning to film the refuge, especially turkeys and ducks, using video camcorders.

Picnicking primarily occurs as a secondary activity associated with hunting, fishing, and occasionally, wildlife observation. No designated picnic areas are on the refuge.

#### 15. Off-Road Vehicling

No sanctioned off-road vehicle (ORV) use occurs on Felsenthal NWR. Off-road vehicling is limited to the use of high-flotation all-terrain vehicles (ATV's) such as three-wheelers, four-wheelers, and "Hustlers" on designated trails strategically located throughout much of the refuge. We've tried to achieve a reasonable balance between providing public access, especially to the numerous remote hunting and fishing areas, and protecting the resource. ATV's are allowed only to reach areas open to hunting, fishing and trapping. Trails marked in yellow (approximately 55 miles) are open from 10/1 through 1/31 during refuge hunting and trapping seasons. Trails marked with blue paint (approximately five miles) are open year-round for access to remote fishing areas. Formal Regional Office approval was received in March for the Off-Road Vehicle Management Study (Plan) submitted late in 1987.

#### 16. Other Non-Wildlife Oriented Recreation

Although not encouraged, waterskiing, swimming, and recreational boating are popular activities on the Ouachita River, particularly during the warmer months and on holidays. Because of its winding configuration and narrower width, these activities are much less popular on the Saline River. Another activity of local interest is the picking of mayhaw berries from which a unique but highly desirable jelly is made. As the name suggests, this activity occurs primarily in May.

#### 17. Law Enforcement

A new procedure for processing law enforcement cases was initiated in 1988. Felsenthal now prepares the Notice of Violation (NOV) with the refuge officer's signature and mails it to the law enforcement office in Little Rock. Special Agents review the NOV, enter it into L.E.M.I.S. (computer system), mail it to the violator, and send the information to the Central Violations Bureau in Denver.

Everyone here at Felsenthal has been dreading what tragically happened on July 17. The third fatality in the history of the refuge resulted when two boats going in opposite directions met while negotiating a sharp curve on the same side of the Ouachita River. A 16' Ranger bass boat ran

over a 14' aluminum Jon boat, knocking its occupant into the river. The body was recovered within two hours. Even though the body had several lacerations, the cause of death was stated to be drowning. Positive flotation devices (PFD's) were not worn by either subject and no charges were filed. The refuge staff feels that with the continued increase in boating activity, this type of accident will eventually occur again.

Another single non-fatal boating accident occurred when two juveniles were trying out a boat and turned it over. The two boys received only minor scratches and abrasions. Neither boy was wearing a PFD. State law only requires that PFD's be readily available in the boat, not on the person. The boat, a 15' ski rig powered by a 65 h.p. motor, sustained heavy damage.

Several thefts occurred on the refuge at the boat ramps while people were fishing. Items reported stolen ranged from food stamps, spare tires, boat trailers, and a boat, motor and trailer. One individual allegedly left his boat, motor and trailer (Tide Craft boat with an 85 h.p. Johnson outboard) in the parking lot while he went to pick up his wife. When he returned the boat, motor and trailer were gone. The insurance company, along with the investigation refuge officer, feel that there is more to the story.

On October 1, opening day of squirrel and hog season, a hunter shot six to eight times at what he claimed was a "black hog with red ears". This "hog" turned out to be an eleven-year old boy who was hunting with his dad. The youth was struck three times (twice in the arm and once in the leg) with .22 caliber hollow point bullets. The leg was broken and the youth underwent surgery to have a pin put in his leg. At last report the youth was doing fine.

An abandoned and stripped vehicle was found on the refuge. A vehicle check revealed that the vehicle had been reported stolen in Fort Worth, Texas, thirteen days earlier. Investigation was handled by the Union County Sheriff's Department.

During construction of the refuge Office/Visitor Center and maintenance complex, the contractor's Ford 3000 diesel tractor was stolen. The lock had been cut off of the entrance gate and the tractor loaded onto a trailer. An anonymous tip led the Ashley County Sheriff's Department to a motel and the arrest of two men who had taken the tractor to Mississippi and sold it. Hopefully, this won't be an annual event.

An aluminum fishing boat reported stolen in June was found floating full of water in December by refuge personnel on patrol. The owner was pleasantly surprised to have his "ole" favorite fishing boat returned.

Wildlife enforcement problems reached an all-time low this year. We feel that this was largely due to the stepped-up refuge enforcement program, along with the cooperative effort of eight Arkansas Game and Fish Commission wildlife officers. The cooperation and willingness of the State officers to work on the refuge cannot be over emphasized. The cooperation between the two agencies has created a most pleasant atmosphere in which to work.

Low waterfowl populations, a shorter season (30 vs. 40 days) and later shooting hours made it hard for honest hunters to take over-limits of ducks. A few cases were reported but far fewer than in previous years. However, the new opening shooting hours (sunrise vs. 30 minutes before sunrise) created a pile of complaints from honest hunters who wanted some trigger-happy violators stopped. As you can see from the following charts, several cases were made; however, too many times we were in the wrong place at the wrong time. Hopefully, next year this problem can be better addressed.



"Book 'em Danno!"  
(12/14/88; RJB; #88-54-6)

The following three charts summarize the nature and disposition of the 49 refuge cases made by refuge personnel in 1988. Four off-refuge cases were made by refuge personnel including possession of lead shot, littering (2), and driving left of center. Formal warnings were issued only when there were extenuating circumstances.



## FEDERAL COURT CASES AND OFFICIAL WARNINGS

## Felsenthal NWR - 1988

<u>Offense</u>	<u>No. of Cases</u>	<u>Disposition</u>	<u>Fine</u>	<u>Total Fines Collected</u>
Camping outside designated area	1	Warning	\$100	-
Damaging plants (trees)	1	Forfeiture	\$100	\$100
Vehicle off designated road	1	Warning	\$100	-
ATV off designated trail	17	2 Forfeitures 8 Pending 7 Warnings	\$100	\$200
Littering	1	Forfeiture	\$100	\$100
Hunting from road	1	Pending	\$100	-
Transporting loaded and uncased firearm	3	Pending	\$ 50	-
Taking non-target species	1	Warning	-	-
Hunting in closed area	3	Pending	\$100	-
Possession of untagged deer	<u>1</u>	Pending	\$100	<u>-</u>
TOTAL	30 (involved 28 individuals)			\$400

STATE COURT CASES  
Felsenthal NWR - 1988

<u>Offense</u>	<u>No. of Cases</u>	<u>Disposition</u>	<u>Fine</u>	<u>Total Fines Collected</u>
Littering	1	Forfeiture	\$100	\$100
No hunter orange	1	Forfeiture	\$ 25	\$ 25
Illegal possession of a firearm	1	Forfeiture	\$100	\$100
Floating State duck stamp	1	Forfeiture	\$ 50	\$ 50
Unplugged gun	<u>1/</u> 2	Forfeiture	\$100	\$200
Shooting waterfowl before legal hours	<u>2/</u> <u>9</u>	Forfeiture	\$150	<u>\$1,350</u>
TOTAL	15 (involved 14 individuals)			\$1,825

1/ 1 case made by State officers

2/ 7 cases made by State officers

## COUNTY COURT CASES

Felsenthal NWR - 1988

<u>Offense</u>	<u>No. of Cases</u>	<u>Disposition</u>	<u>Fine</u>	<u>Total Fines Collected</u>
Littering	2	Forfeiture	\$100	\$200
Disorderly conduct	<u>2</u>	Forfeiture	\$ 50	<u>\$100</u>
TOTAL	4 (involved 4 individuals)			\$300

19. Concessions

In 1988 we issued one SUP for an individual to operate a hunting and fishing guide service. A \$50 fee per quarter is charged for a guide service permit. We strongly suspect that other guide services for profit occur but have yet to confirm it.

I. EQUIPMENT AND FACILITIES1. New Construction

We officially moved into our new Office/Visitor Center on 7/11/88 after more than twelve years of planning and wishing. The 4,800 sq. ft. building has a large exhibit room and auditorium as well as offices. The public portions of the building and grounds should present a positive image for the Service. The office portion of the building is aesthetically pleasing and well laid out, though actually smaller and with less closet and storage space than the trailers from which we moved. But, we're not complaining. It is truly an outstanding facility.



Maintenance Worker Harold Smith (left) and Construction Representative Ronnie Parker erect entry hours sign in front of recently completed Office/Visitor Center. Ronnie assisted us with numerous "finishing touches" around our new facilities as his time allowed while overseeing Phase II of our maintenance area construction.  
(10/18/88; RJB; #88-44-5)

A portion of the planned maintenance facilities was also included in this same contract (Phase I). Phase I consisted of a 4-bay shop, dual fuel tanks and pumps, a 40' x 100' open storage shed and graveled yard. We could have moved into these buildings at the same time as the office, but chose not to due to the need to construct storage cabinets and work benches and because the Phase II portion of the contract was being let by that time. We operationally moved into the maintenance facility in early December, though we still can't complete the move until Phase II is completed in the spring of 1989.





Completed Phase I of our new maintenance facilities consisting of a four-bay shop, fuel pumps, 40' x 100' open storage shed and graveled maintenance yard. Unfortunately, since Phase II of our facilities have still not been completed, we are not yet fully operational.

(9/1/88; RJB; #88-39-7)

We had only a few minor problems with the facility after we moved in. We've had to have warranty repair on a hot water heater heating element, an air conditioning unit, door locks and door jams that were too tight, thermostats that had to be replaced, and a few roof and plumbing leaks. All of these deficiencies were cleared up fairly easily but there seems to be no end to the problems with our security system. After dozens of return trips by the security system subcontractor, we concluded he was right when he suggested that our system not be installed and that a completely different system be purchased. This same system has been installed on at least four refuges and to our knowledge it does not work satisfactorily on any of them. The only other problem we've had is the lone remaining "punch list" item of completing satisfactory turfing around the new facilities. In order to have some grass cover, the contractor was allowed to temporarily substitute Bermudagrass seed for the required centipede because of the relative ease of establishment. The contractor agreed to try again this spring with centipede in lieu of the drought we had last summer when they were trying to establish a turf.

We understand that claims totalling about \$22,000 have been filed by the contractor for Phase I, Hampton and Crain Construction Company, Inc., for

disagreements on the gravel and asphalt required for the contract. We haven't heard anything on the status of this claim since it first came up back in September.

D & M Construction, Inc. of Sheridan, AR, was the low and only bidder on Phase II of our maintenance facilities. Their 180-day contract officially began 7/29 at a cost of \$131,113. Basically, Phase II included construction of a 40' x 75' open storage shed (on concrete pad), a 30' x 40' enclosed equipment storage building, a 12' x 16' oil and paint storage building with a canopy over the fuel island, approximately 1,300 linear feet of six-foot high security fencing and all related site work. The contractor was given several small extensions for rain days and for additional concrete aprons on the storage buildings. They have been doing a satisfactory job under the able and watchful eye of Construction Representative Ronnie Parker. About the only problem we've had with this contract, other than its slow start, has been that the contractor somehow managed to break practically every water line that we had at the shop in the construction process. During the breakage of all the PVC pipe, Ronnie Parker noted that the pipe put in during Phase I was much thinner than had been specified in Phase II of the construction. Upon further investigation he found that no specification for the thickness of the PVC had been given in Phase I and that we were possibly looking at many years of problems down the road with this thin pipe. By the end of the year two buildings were about 90% completed, one was about 50% complete and the site work (graveled yard area) still required much work.

Another contract item which was still not even let out for bids by the end of 1988 was for landscaping the entire Visitor Center area. Site planning was essentially completed by Regional Office Landscape Architect Richard Mattison with input from refuge staff.

Ronnie Parker and Laborer Clyde Mitchell acid cleaned and sealed the concrete surfaces of the new shop, one open storage shed and the Visitor Center basement. This should make the concrete more durable and stain resistant and gave it a fine, finished appearance.

A great big "attaboy" goes to Maintenance Worker Harold Smith and Ronnie Parker for constructing storage cabinets and work benches in the new shop. No such items were included in the contract. They constructed 12' x 9' and 14' x 8' cabinets with two work benches of 12' and 14' lengths and two 4' x 8' pegboard tool hangers. They, along with Automotive Worker Kyle Cheeseman, stained and finished all the mounted cabinets and built two large rolling cabinets. We now have 56 professionally appearing doors and drawers not to mention the shelves inside them to neatly hold tools and supplies. The end products were excellent and other refuges may want to copy the rolling cabinets for their shops also.





Before moving into our new shop building, storage cabinets, work benches and pegboards had to be built. Here, Automotive Worker Kyle Cheeseman (left) and Maintenance Worker Harold Smith put finishing touches on one of the storage cabinets recently constructed.

(12/1/88; RJB; #88-50-10)

A new gate on the entry road to the new facilities, which are located about 0.2 miles back into the woods, was purchased with end-of-year add-on funds and erected by a local contractor. The 26' long x 4' high aluminum cantilever slide gate (turnkey cost of \$4,465) is a vast improvement in safety, appearance and function over the dangerous cable we were temporarily using as a gate.

## 2. Rehabilitation

Rehabilitation of the Eagle Lake sub-headquarters continued this year. All water pipes were insulated, locks were put on doors and windows, a screen door was installed on the boat house and the septic drain field was covered.



### 3. Major Maintenance

We quickly became aware of the increased maintenance needs associated with our new facilities and grounds. We'd only just moved in when we looked around and the grass was a foot high and we had no lawn mower; pine needles were covering sidewalks, road drains and pavement and filling the gutters and we had no blower or extension ladder; the carpet was dirty and we had no vacuum cleaner; and the bathrooms were dirty and we had no contractor or maintenance person to clean them. We had to hire a person to do the lawn mowing on the grounds of the new facilities at a cost of \$75 per cutting. We found an energetic, self-employed woman in the cleaning business who vacuums, mops and cleans the headquarters twice a week for only \$40 per week.

We attempted to control weeds in the recreational boating access parking lots this year for the first time. The five parking lots, all with capacities between 30 and 75 vehicles with trailers, were sprayed using a portable sprayer we borrowed from the COE at a rate of 2-1/2 quarts of Roundup per acre. Success killing the vegetation in the parking lots was only fair perhaps due to the drought that followed. It is likely that more than one spraying will be needed each year in these parking areas which only get seasonal rather than continuous high public use.

Probably the major maintenance headache we've inherited is the 18 miles of graveled roads which were either existing or built by the COE as part of our recreation facilities. Early in the year debris such as logs and other floating material had to be cleared from the roads after the extremely high backwater we had in the spring of 1988. We managed to grade all the roads five times during 1988, but this was not nearly adequate. Road complaints, especially from the Felsenthal staff, were generated due to washboarding and potholes that had developed. The reason for this was simply that all our manpower and equipment was at Overflow Refuge during August and September. When you commit to a large force account project, you know that sacrifices have to be made somewhere but you usually are not quite sure where they will be. For us, road grading was one of the areas that was impacted.

The Bolding House road began to cave in and about a 20-yard long beaver tunnel had to be dug out with a backhoe and then refilled and packed.

### 4. Equipment Utilization and Replacement

Equipment sharing activities this year included Tensas River NWR borrowing our lowboy to transport a refrigeration truck they had secured for storing acorns; D'Arbonne NWR borrowing our lowboy for transporting heavy equipment and also borrowing our van to use in their waterfowl management inspection; and Big Lake NWR borrowing the John Deere 450E widetrack 'dozer for their lake renovation project this summer.

Equipment we borrowed this year was primarily related to waterfowl habitat development projects at Overflow Refuge and will be covered in that section of the narrative. For Felsenthal Refuge, we borrowed a chipper from Holla Bend NWR to use in landscaping work around the new headquarters.

The winch on the John Deere 450E widetrack, which had been used in the Big Lake NWR project all summer, burned out while clearing the new sanctuary boundary around the "bean field" at Felsenthal even though the winch was not being used at the time. It was repaired by John Deere in Camden for nearly \$1,000. The 1985 Chevrolet van broke down near Wapanocca NWR early in the year with serious transmission problems. The cost to repair it was \$695. Thanks to the Wapanocca crew, a vehicle was loaned to John Robinette and Robert Ellis who were stranded on their way back from the Wood Duck Symposium in St. Louis, MO. Upkeep on the GMC General used to pull our lowboy trailer was a whopping \$4,360 this year that included ten new radial tires, new batteries, general servicing and a wet kit. Our oldest and most eligible for replacement passenger vehicle is the previously wrecked Jeep CJ-7. Miscellaneous repair costs, transmission and air conditioner repair items totalled nearly a \$1,000. Our five yard dirt pan which had never been used before was finally used this summer when we borrowed White River NWR's big farm tractor to pull it. Immediately upon use, the cylinders began leaking profusely and it took \$320 to repack cylinders, purchase hoses and to repair a wheel. The dump trailer was double lined with 3/4" plywood for hauling riprap at a cost of \$600. The backhoe that we picked up on surplus property cost \$420 for batteries, transmission, and miscellaneous repairs to get it in running condition. Our International TD-15 'dozer cost \$515 for repacking two cylinders, replacing hoses and servicing. Total general maintenance costs for all the other vehicles and equipment, not including the above, came to \$3,767 for the year. Semi-annual vehicle inspections are completed for all assigned vehicles twice each year. These always turn up many repair needs, but are good at reminding us of general maintenance needs and helping us head off major problems.

To help meet some of our many needs and to keep our ever-expanding operation going on our two relatively new refuges, we continue to look closely for opportunities in surplus property. Larry King found four seized firearms that were available through the Federal court system on surplus property that we needed for law enforcement and beaver control purposes. They were a Remington Model 742, 6 mm semi-auto with 3x9 scope; a Browning Model BPR .22 magnum with 3x9 scope; a Sturm-Ruger mini-14, .223 cal.; and a Browning Model Light 12, 12-gauge shotgun. Larry West orchestrated acquisition of the remainder of the surplus property that included an International Harvester 4-wheel drive front end loader with 3-yard bucket; a White front end loader with backhoe; two completely self-contained 21' travel trailers for use as check stations; three Hustlers for use as spare parts; a GE 100-watt Master II repeater radio; a walk-in cooler for storage of acorns; and several four-cylinder Continental diesel engines which we will try to adapt for use as a relift pump. Other miscellaneous items were a refrigerator, a Hustler trailer, power drill, skill saw, radial tires, mufflers, grinding kit, hand dolly, floating bridge sections, welded wire, IBM Selectric II typewriter, airplane runway mats, barreled erosio scope, binoculars, torch, aluminum repair kit, sheet metal brake machine, and boxes of miscellaneous hand tools. The government's cost for these items at the time they were purchased was \$195,315. Most of these items were put to immediate use, some are planned to be used in the near future and only a very few items turned out to be unusable and will have to be disposed of.



(3/18/88; RJB; #88-9-16)

Thanks to the keen eye and extra effort by Assistant Manager Larry West many useful items of surplus property were located and procured for our ever-expanding operations on Felsenthal and Overflow Refuges. A surplus "payloader" (above) along with two travel trailers (below) were among those items secured. Altogether, nearly \$200,000 worth of useful equipment and supplies were obtained, most of which was put to immediate use.

(5/19/88; RJB; #88-20-5)





Property that was destroyed, sold, transferred or reduced to scrap parts in 1988 included a Ford Courier pickup, a Dodge crew cab, a GE mobile radio, a Kawasaki 3-wheeler, a Honda 185 3-wheeler, a Motorola mobile radio, a hot water pressure-cleaner, a rechargeable drill and two binoculars. Real property disposed of this year was the old YACC trailer used as our office which was abandoned on site as uneconomical to move.

No new equipment was purchased at Felsenthal this year out of O&M funds other than a pressure washer which was purchased early in FY89. We did receive the following items purchased out of fire, special add-on, end-of-year or discretionary funds: (1) a tilting truck bed for fire equipment transport and a Ford Model 9000 truck that it mounts on (FY86 fire funds); (2) a Chevrolet diesel crew cab 4x4 truck (FY87); (3) a Chevrolet 4x2 (FY87); (4) seven Icom hand held radios (fire); (5) a 40 h.p. Yamaha outboard motor; (6) a Simplicity riding lawnmower; (7) a McCulloch Promac 700 chainsaw; and (8) 28 buoys purchased by the COE for us to place on the refuge as boating safety or boundary markers. One surprise new item obtained this year was a Polaroid Spectra camera which was valued at \$171.50 given to us free for sending them our old Polaroid Land camera. This was a great deal for us because our camera was not functioning after having been dropped in the water.

##### 5. Communications Systems

In conjunction with the completion of our new headquarter facilities, a new Toshiba telephone system was purchased and installed at a cost of approximately \$5,600. This included the wiring, jacks, phones, and control panel for the system. During the transition of our move the new phones were installed in our new headquarters, and our six-button rental phones were removed from the old headquarters. We rented two household-type phones with a separate phone number for the old shop and rental trailer. This was necessary because, even at this writing, we have not completely moved out of the old shop and there was no way to communicate with the people working at the old facility.

Radio maintenance costs, which exploded to \$4,500 in 1987, caused us to look at a maintenance contract system for radio repairs. We went through bid procedures and awarded a contract to Reynolds Radio Service of Warren for \$250 a month. The contractor was very responsive and did an excellent job of maintaining our radios but we still get the feeling that maybe the cost is too much. On the other hand, if preventive maintenance and radio repair is better accomplished through a contract then you don't need to call the repair man as often for major repairs and, thus, save money. It's a tough call, but with our aging equipment, it probably saved us money over what would have taken place if we had just maintained the radios on an "on call" basis.

A 190-foot ROHN 45G radio tower was purchased through a Federal Supply Schedule. The 185' tower (5 feet in concrete underground) was erected by Two-Way Communications of Hamburg. The contractor did an excellent job putting up this tower in only seven days and in strict accordance with ROHN specifications. We noticed an immediate improvement in communications, especially in Bradley County and at Overflow Refuge with this taller tower. With end-of-year add-on money we purchased a repeater,

which has still not been received, that should give us first-class communication capability throughout the Ashley, Bradley and Union County areas. We still desperately need to upgrade our mobile units as the new trucks that were purchased had 10-year old or older 40-watt units installed that had been taken out of excess vehicles.

The 1,100' distance between our shop and our Office/Visitor Center, coupled with lack of funds, has caused us to use an extension line of our 'phone system to bring radio communications to the office. We presently have our base station at the shop and an extension radio desk set at the office which runs through the telephone line back to the shop. This gives us good outside communication to everywhere but the shop. An extension radio has also been placed at Refuge Officer Larry King's residence through the telephone system.

#### 6. Computer Systems

Felsenthal Refuge hosted a Microcomputer Workshop on May 16-20. Allen Impellitteri from RO conducted the workshop covering the following topics: Introduction to Microcomputers, WordPerfect, Electronic Mail and R:Base System V. Gwen Cotton from Noxubee NWR conducted a special session on the use of Multiplan spreadsheets with emphasis on the station budget process. Fifteen refuges (28 people) were represented as well as the Wildlife Habitat Management Office in Jackson, MS.



Felsenthal hosted a micro-computer workshop at the nearby Ramada Inn 5/16-20. Regional Computer Systems Analyst Al Impellitteri conducted the "hands on" training in which 28 personnel from 15 refuges were present.

(5/17/88; RJB; #88-20-2)

Forestry Technician Ruth McDonald discussed with Al Impellitteri the need for a computer program to handle the data she collects on the red-cockaded woodpecker (RCWP). Al took the information about her work and developed a RCWP data base. The program was sent to Ruth to see how functional it would be. After minor changes, Al came up with a very workable program that is now available to any refuge.

In an attempt to learn more about our IBM PC/AT computer system, Mary Hollis and Ann Laney attended a 2-1/2 day computer training course at Louisiana Business College in Monroe, LA, on October 10-12. Due to a last minute change of instructors, the training proved to be so useless and unrelated to our needs that we asked for a reduction in the cost of the training. We were pleased that they agreed and the cost of \$500 was reduced to \$200.

#### 7. Energy Conservation

The following chart summarizes the refuge's fuel consumption and mileage over the past six years.



## FUEL CONSUMPTION AND MILEAGE

Felsenthal NWR - 1983-1988

<u>Year</u>	<u>Miles</u>	<u>Gasoline (Gallons)</u>	<u>Diesel (Gallons)</u>
1988	137,780	8,086	7,144
1987	128,483	7,103	4,000
1986	93,519	6,615	3,670
1985	104,100	7,240	3,030
1984	104,283	5,475	2,200
1983	56,375	4,937	2,209

Expanded work programs at Overflow NWR (60 miles from Felsenthal headquarters to work site on the east side of refuge) accounts for most of the 14% increase in gasoline and 6% mileage increase from 1987. This also accounts for the 56% increase in diesel usage as several pieces of heavy equipment (trackhoe, 'dozers, tractors, etc.) were borrowed from other refuges (in addition to our own equipment) for a "Mobile Forces" project at Overflow Refuge. The intensive effort (described in detail in the Overflow Annual Narrative Report) involved repairing some of the dikes and water control structures for water manipulation for wintering waterfowl on newly acquired refuge lands. We continue to try to use the most economical vehicle available for trips and wherever possible as a fuel saving measure. Other conservative measures include combining trips, using ATV's instead of 4x4's where possible, twice-a-year maintenance checks, and individual vehicle responsibility assignments to individuals.

8. Other

Approximately 2-1/2 miles of right-of-way were cleared around the Crossett Harbor Recreational Site and a "No Hunting" buffer zone around the south and east side of the camping area was established. This additional two miles of boundary were cleared with a 'dozer and signed and posted by the YCC crew.

Approximately 10 miles of boundaries at Felsenthal were reposted and repainted this summer by the YCC crew or Felsenthal staff.

Our ATV trail system had some minor additions this year to eliminate concurrent use of ATV's and conventional vehicles on improved roads. We also eliminated about seven miles of trails by removing signs and blacking out the trail marking trees in order to expand walk-in only

areas. This was a net reduction of five miles of ATV trails. The remaining 60 miles of ATV trails were cleared of debris, repainted and resigned as needed by Biological Technician Robert Ellis and our two volunteer college students.

## J. OTHER ITEMS

### 1. Cooperative Programs

A refuge staff member, generally Project Leader Bob Bridges, participated in the monthly meetings of the Felsenthal Committee of the Crossett Area Chamber of Commerce in an advisory capacity.

Construction of the Crossett Harbor Recreational Site was completed this October and the COE turned the operation of the facility over to the Crossett Port Authority under a lease agreement. The Fish and Wildlife Service signed a Memorandum of Understanding with the COE detailing agreements in association with the administration of the 229-acre recreation site that is located within the perimeter of Felsenthal NWR.

We still have a Cooperative Agreement with the Arkansas Forestry Commission for fire detection and suppression - \$6,000 for detection plus going rates for suppression. We had no suppression needs in 1988.

### 2. Other Economic Uses

Forester Larry Threet and Regional Minerals Manager Ken Butts met with the Arkansas Oil and Gas Commission and the Arkansas Department of Pollution Control and Ecology (ADPC&E) in El Dorado on 10/6. The purpose of this meeting was to get to know the people involved with oil and gas regulation, to come to a better mutual understanding of each other's position and to set up an annual inspection of the Charivari Creek oil field on Felsenthal NWR.

On February 9 there was a relatively minor oil spill at the Charivari Creek oil field in Bradley County which was reported by Mr. Fred Myers, owner and operator of the EMCO Operating Company, Inc. out of Shreveport, LA. The two to three acre spill in the backwater was apparently caused by a leak around a packing box gasket of their Borden #1 oil well. A floating boom was placed around the well head to contain the largest portion of the oil but little could be done to remove the thin film of oil that had spread across the water surface. All appropriate personnel within the Fish and Wildlife Service, Environmental Protection Agency (EPA) and ADPC&E.



A relatively minor oil spill occurred on 2/9 at the Charivari Creek oil field in Bradley County. The 2-3 acre spill occurred during high water, apparently due to a leak around a packing box gasket on one of the active oil wells. A floating boom was placed around the well head in an effort to contain the majority of the leaking oil.

(2/10/88; LAT; #88-4-14)





Sloppy "housekeeping" is one of the primary problems associated with the Charivari Creek oil field operated by the EMCO Operating Company of Shreveport, LA. Here is evidence of the clutter found around the tank battery during an inspection trip with Regional Minerals Manager Ken Butts (red jacket) and representatives from EPA, EMCO and the refuge.

(12/6/88; RJB; #88-52-3)

On December 6 Ken Butts, Larry Threet and Bob Bridges participated in an inspection of the Charivari Creek oil field by the EPA's SPCC (Spill Prevention Control and Countermeasures) Coordinator Don Smith and his contract inspector, Gary Dry. High water limited the inspection to the tank battery, several operational wells and abandoned sludge pits.

Several deficiencies were noted including standing oil in the containment pit behind the tank battery, leaky storage tanks, oil and trash on the storage tank pad, an invalid SPCC plan and generally poor housekeeping.

Later that afternoon, all of the above except Bob Bridges gathered in El Dorado to meet with representatives of the Arkansas Oil and Gas Commission and the ADPC&E. The objective of the meeting was to promote cooperation and involvement between the State agencies, EPA, and the FWS regarding oil and gas exploration and production on Felsenthal NWR.

EPA representative Don Smith stated his position as did Ed Thompson of the ADPC&E, Ken Butts and Larry Threet for the FWS, and Bill Wright, Director of the Arkansas Oil and Gas Commission. Everyone was very positive and willing to participate in annual inspections with the

exception of Mr. Wright who was negative and offered little hope for cooperation from the Commission regarding enforcement of State regulations on oil field problems within the refuge.

Mr. Fred Myers had the opportunity to speak to Don Smith and Larry Threet about the deficiencies after the meeting. Don Smith was to follow up by sending a copy of the inspection findings to Mr. Myers and to FWS personnel. A draft inspection report with photographs was prepared by refuge staff and sent to Ken Butts and Gary Dry.

### 3. Items of Interest

One of the two remaining houseboats on Felsenthal was sold this year. In compliance with our Houseboat Policy and Special Use Permit conditions, the structure had to be removed from the refuge. This was done leaving one "grandfathered" houseboat still moored on the refuge in a designated site.

Project Leader Bob Bridges and Primary Assistant Larry West attended the annual hunt coordination meeting with AGFC and other district refuges at Wapanocca NWR and Little Rock on 1/12-13.

Biologist John Robinette traveled to Savannah NWR on 1/19-22 to participate in their waterfowl management planning.

Bob Bridges, Larry West, and Forester Larry Threet attended the Wintering Waterfowl Symposium in Jackson, MS, on 1/25-27. Only one traveled under per diem.

A meeting was held 1/29 to outline fisheries research needs on Felsenthal Refuge with the Felsenthal staff, District Fisheries Biologists Don Turman and Jerry Smith of the Arkansas Game and Fish Commission (AGFC) and FWS Fisheries Assistance Biologist John Forester.

On 2/4 Larry Threet spent the day at Tensas River NWR with their Forester, Larry Moore, inspecting acorn plantings, discussing hardwood regeneration, and timber management from a wildlife point of view.

Dr. Wiley Kitchens, Co-op Unit Leader at the University of Florida, visited the refuge on 2/17 to discuss a water quality monitoring system to be field tested on Felsenthal Refuge.





Dr. Wiley Kitchens, Co-op Unit Leader at the University of Florida, instructs refuge staff on use of our HACH water testing kit in conjunction with an intensive water quality monitoring program to begin next year on Felsenthal Refuge.

(2/17/88; RJB; #88-6-5)

John Robinette and Biological Technician Robert Ellis attended a 3-day Wood Duck Symposium in St. Louis, MO, 2/20-22.

Maintenance Worker Bill Parker assisted in some major carpentry work at Yazoo NWR on a two-week detail beginning 2/29.

Bob Bridges attended the week-long Project Leaders Meeting in Orlando, FL, 2/29-3/4.

Office Assistant Ann Laney attended a workshop in Little Rock on 3/3 entitled "Power Communication Skills for Women."

Bob Bridges spoke at the annual banquet of the Drew County Bowhunters Association in Monticello on 3/11.

Felsenthal Refuge hosted a workshop on explosives training on 3/15 conducted by an instructor from Kinepak, Inc. A total of 16 people attended including Safety Officer Ken Cooper from RO.

Larry West, Robert Ellis, and Refuge Law Enforcement Officer Larry King spent the second week of March at 40-hour law enforcement refresher.



training in Quincy, FL. Bob Bridges attended refresher training May 9-13.

Felsenthal Refuge hosted a 3-day Microcomputer Workshop May 16-20. There were 15 refuges (28 people) represented. The workshop was conducted by Al Impellitteri from RO with the help of Gwen Cotton from Noxubee NWR.

Jim Metzger of Histicon Associates interviewed Larry West for a COE publication he was preparing on the Ouachita/Black Rivers Navigation project as it affected the refuge.

A special request to use the Eagle Lake boat ramp for a baptismal service during the summer was granted to the Eagle Lake Baptist Church.

On 7/16 a boating fatality occurred on the refuge involving a large bass boat and a small aluminum boat at Henderson Bend on the Ouachita River.

On 7/20 Bob Bridges cruised the Ouachita River on the COE boat "Lipscomb" with District Engineer Colonel Skidmore and other "top brass" and local dignitaries to discuss the proposed bendway cuts and widenings on the Ouachita River.

Larry King completed a one-week refresher training for refuge officers on 8/22-26 at Quincy, FL.

Bob Bridges and Larry King attended and spoke at a public meeting called by the Bradley County Quorum Court on 9/8 regarding boating safety on the Saline River.

Our first annual Public Lands Day was held on the refuge 9/10 with over 100 people participating.

Larry Threet was detailed to Idaho and Wyoming for firefighting for 21 days in August and September.

An accidental shooting occurred on the refuge opening day of squirrel season, 10/1. A 12-year old boy was shot twice with .22 caliber hollow points, once in the leg and once in the arm. The boy, who was sitting behind a tree, was apparently mistaken for a feral hog.

Larry Threet and Regional Minerals Manager Ken Butts met with the Arkansas Oil and Gas Commission and the Arkansas Department of Pollution Control in El Dorado on 10/6.

A firearms requalification was held at Camp Robinson near North Little Rock 10/11. Officers Larry King, Bob Bridges and Robert Ellis successfully participated.

A coordination meeting with the AGFC was held at Camp Clearfork near Hot Springs 10/20-21. Ruth McDonald presented a talk on the red-cockaded woodpecker work on Felsenthal Refuge. Larry West gave a talk on the work accomplishments and management of Overflow NWR. Larry Threet shared some of his western firefighting experiences and Bob Bridges gave a talk on aquatic plant infestations on Felsenthal NWR.

#### 4. Credits

Introduction, Table of Contents, Section E.2, I.6, typing, proofreading and assembly - Mary Hollis

Photo layout, editing, Section A, D.1-3, D.6, E.8 and K - Bob Bridges

Section B, H.1, H.7, and H.11-12 - Ruth McDonald

Section C, D.5, G, H.8 and H.10 - Robert Ellis

Section D.5, E.6, F, and J.1-2 - Larry Threet

Section E.1, E.5, I.7 and assembly - Ann Laney

Section E.4, E.7, I.1-5, J.3-4, editing, proofreading, and supervision  
- Larry West

Section H.13-15, H.16-17, and H.19 - Larry King

### K. FEEDBACK

This year it's going to be short and, perhaps, not-so-sweet. I believe it's safe to say that Director Dunkle's sharply-focused waterfowl management emphasis is long overdue and, for the most part, strongly supported by refuge field folks. I was certainly glad to see us return to our "first love". That's the "good news". The "bad news" is, we have stretched our limited operational resources (dollars, staff and equipment) so thin we've got to be close to the breaking point. As the saying goes, "we've done so much, with so little, for so long" one gets the feeling that the head shed expects us to produce something from nothing... and most of us will (or go to our grave trying). In the words of one of our finest southern philosophers while describing a storybook 'coon hunt, "Shoot up here amongst us... one of us has got to get some relief"!

END



# PROFILE

## '88

ASHLEY NEWS OBSERVER, WEDNESDAY, FEB. 24, 1988



### *Snakes Are Protected*

All wildlife, including snakes, are fully protected on national wildlife refuges. Black rat snakes, such as this one, help control pests such as rats and mice. Photo by Bob Bridges.

# Access sites completed at Refuge

By Tim Kessler  
Associate Editor

By this fall, visitors to Felsenthal National Wildlife Refuge will be able to experience, close-up, some of the diversity of animals to be found in this natural habitat.

Blending into the shady pines of the forest, a brand-new office/visitors center and maintenance complex is taking shape about six miles west of Crossett, just off Highway 82. The project went out for bids one year ago, with a contract awarded in April to Hampton and Crain Construction Co., El Dorado. The total cost of the project will be an estimated \$877,462.

Groundbreaking ceremonies were held in May, highlighted by an address by U.S. Rep. Beryl Anthony, who has proved to be a prime supporter of the Felsenthal project over the years. Construction on the project is proceeding and Felsenthal Refuge Manager Bob Bridges says completion of the visitors center is expected in May.

Associated exhibits and public use features are expected to be completed in September, when formal dedication ceremonies are tentatively planned. Included in the 4,800 square foot facility are an office/administrative area, public reception area, large exhibit room and a 40-seat auditorium with a projector booth.

An array of displays are planned for the center which will guide visitors through every aspect of Felsenthal's rich cultural and biological habitat. A small female bear was received from White River National Wildlife Refuge in December. It may join other nature-related preserved items on display at the center.

Also under construction nearby is a four-bay 3,200 square foot shop building, complete with crew quarters, office area, carpentry shop, two-bay vehicle repair stalls with hydraulic lift and one enclosed storage bay.

A 4,000 square foot open equipment storage building, fueling facility and ample open storage area are also being built. If money permits, two additional equipment storage buildings and an oil/paint building will be constructed in the expanded maintenance compound.

All of the above facilities are being built with one goal in mind — to provide a pleasing starting point for the ever-increasing flood of visitors to Felsenthal and to provide necessary facilities for refuge personnel to meet the needs of those visitors.

As proof of the impact those visitors will have, Felsenthal administrators have submitted a request for \$4 million in federal funding for operational and development needs.

According to Bridges, much of that money will be used for interpretative facilities at Felsenthal to complement recreational facilities. Included would be boardwalks, observation towers, management access roads and additional support personnel.

About half of the request is for habitat management and associated equipment for wintering waterfowl at Overflow National Wildlife Refuge, Felsenthal's sister refuge in southeast Ashley County.

## ACCESS SITES COMPLETED

A series of other construction projects has captured the attention of sportsmen throughout the country in recent years, as Felsenthal Refuge access sites have slowly been completed. In 1987, the last of the five on-refuge sites was completed, while six adjacent off-refuge recreational sites and access sites are in varying stages of completion — including the Crossett Harbor Recreational Site, which will be the showplace of southern Arkansas in terms of recreational facilities when completed in the next year.

"Now, after three years, all of the recreational access facilities have been completed and turned over to the U.S. Fish and Wildlife Service (FWS)," says Bridges. The five on-refuge access sites are highlighted by improved gravel roads, concrete boat ramps and parking areas. The access sites were constructed by the U.S. Army Corps of Engineers (COE) at a total cost in excess of \$3.3 million.

The Shallow Lake access site in Union County was built at a cost of \$1,210,700. Phase II of the project was completed this year, including 2.8 miles of gravel access road with a two-lane concrete bridge, a 60-vehicle parking lot and a five-lane concrete boat ramp. No camping facilities are planned there, as present camping will be phased out.

Jones Lake access site, also in Union County, was completed in 1985. Its \$268,900 cost includes a 1.8 mile gravel road, a 30-vehicle parking lot and a two-lane concrete boat ramp. Primitive camping is allowed year-round.

Pereogeethe Lake access site in Bradley County cost \$339,100, with Phase II of the project completed in September. A 0.7-mile gravel road, three concrete low-water crossings, a 30-vehicle parking area and a two-lane concrete boat ramp highlight this site. Primitive camping is also allowed here year-round.

Eagle Lake access site in Bradley County was completed in October, at a cost of \$165,000. It includes 1 mile of gravel access road, a 30-vehicle parking area and a two-lane concrete boat ramp. Primitive year-round camping is permitted.

The final on-refuge access site, Pine Island, was completed in 1986 at a cost of \$1,342,600. Located in Ashley County, this facility includes six miles of gravel access road, a 60-vehicle parking area and a five-lane concrete boat ramp. No camping is allowed at Pine Island.

Among the off-refuge access sites, Crossett Harbor in Ashley County perhaps sees the most use of any of them. It has a paved road coming off Highway 82 just before the Ouachita River bridge. It also includes a paved 75-space parking area and a five-lane concrete boat ramp. It was completed in 1985.



### ***Fishing is Great on Refuge***

**Local bass fishermen took advantage of spring backwater flooding on the refuge. Photo by Bob Bridges.**



Soon to be one of the largest and complete camping areas in southern Arkansas, Crossett Harbor Recreational Site, just east of the Crossett Port, will include 125 camping units, restrooms and bathhouses, picnic tables, electric and water hook-ups, tent pads, recreational vehicle hook-ups, a picnic pavilion, registration house, water treatment facility and paved access roads — all estimated to cost \$2,773,600.

Another off-refuge access site, Grand Marais, located in Union County near the south end of the refuge, includes an access road, parking area and five-lane boat ramp. A nearby Grand Marais Recreational Site includes 50 camping units with water and electricity.

Felsenthal Lock and Dam Upper Pool access site includes a paved access road, paved parking area, five-lane concrete boat ramp and sanitation facilities. The Felsenthal Lock and Dam Lower Pool access site includes a paved access road, parking area and two-lane boat ramp.

#### **LARGEST GREENTREE RESERVOIR IN WORLD**

According to refuge biologist John Robinette, Felsenthal NWR was officially established on Aug. 12, 1975 as an enhancement project of the U.S. Army Corps of Engineers' Ouachita and Black Rivers Navigation Project. Effective Nov. 18, 1985, fee simple title to 64,813.34 acres of land and water on Felsenthal NWR was officially transferred from the corps to the U.S. Fish and Wildlife Service.

Felsenthal's 65,000 acres consist of three basic habitat types: bottomland hardwood (39,000 acres), uplands (11,000 acres) and permanent water (15,000).

"The refuge lies within what is known as the Felsenthal Basin, a remnant of an enormous lake that once extended below Monroe, La. This low-lying area is dissected by an intricate system of rivers, creeks, sloughs, buttonbush swamp and lakes that meander throughout the bottomland hardwood forests," Robinette adds.

"Drainage is generally in a southerly direction by the Ouachita and Saline Rivers whose confluence is the geographic center of the refuge. Periodic flooding of the bottoms during late fall, winter and spring historically has provided excellent wintering waterfowl habitat," he says.

"On Nov. 16, 1985, the Corps of Engineers began raising the permanent navigation pool to the minimum 65-foot mean sea level. Concurrently, flooding of the world's largest greentree reservoir began, thus providing 15,000 acres of permanent water with the capability to flood an additional 21,000 acres for wintering waterfowl and related species. This, in combination with the pine and upland forest habitat on the higher ridges, supports a diversity of wildlife including three known endangered species," says Robinette.

"Of equal importance and quite possibly of greater management implication is the presence of some of the most significant and abundant cultural resources within the State of Arkansas, with over 200 known sites on the refuge," he says.

Within the greentree reservoir (GTR), a three-year study was undertaken through a contract with the COE's Waterways Experiment Station to assess the impact of GTR management on the forest plant community in order to improve management over the long run.

Baseline data results are expected to be ready next summer, according to Bridges. The study will continue, to ensure the integrity of the bottomland hardwood resource by monitoring the effects of water management upon the health of the forest, says Bridges.

#### **HIGH WATER HITS REFUGE**

Also having an impact upon the refuge this year was unseasonably high water. Shortly before midnight on Dec. 30, the 70-foot mean sea level (MSL) was reached at Felsenthal Lock and Dam.

The water evened out on both sides of the gates and control of upstream water levels was lost. Water levels peaked on Jan. 8 of this year at 81.2 foot MSL, which is the highest level in about four years.

"It is unusual to have it such high water that early in the year. Usually it's in the spring when we have the peak floods," says Bridges. The basic impact of the flooding was that "most public access to the refuge was shut off, except by boat." The flooding also caused waterfowl to disperse from Felsenthal once the high water came.

"From a wildlife standpoint, very stressful conditions were created since only 3,000 to 4,000 acres of the refuge were out of water during the peak period. This condition, coupled with a less than bountiful mast crop, pushed most species to the remaining high ground, where food supplies are limited.

"Fortunately, our record harvest of over 1,000 deer prior to flooding minimized the impact of high waters. This phenomenon stresses the importance of keeping wildlife populations, especially white tailed-deer, at a level compatible with their habitat," Bridges emphasizes.

"Either-sex deer harvest is absolutely essential to maintain a healthy herd. Now that most lands surrounding the refuge are leased, hopefully the clubs will recognize the need and opportunity for managing their deer herds through liberal either-sex harvest," Bridges comments.

## GAME MAMMALS ABUNDANT

Felsenthal is home to a wide variety of animals which may be hunted during the proper seasons by obtaining refuge permits. The refuge has about 50,000 acres of fairly good deer habitat, which is enhanced by an intensive habitat management program.

During the fall hunts in 1986, a total of 694 deer were checked. The mast crop was considered fairly good that year and there was a bumper mast crop the previous year.

In 1987, during one muzzle-loader and two modern gun hunts on the refuge, for the second year in a row, a record number of deer were taken, with 902 deer checked. That was an increase of 23 percent from the previous year's harvest.

The increase was mostly attributed to a large increase in hunters' success. In 1986 and 1987, 2,400 permits were issued each year for the quota deer hunts. The number of hunters participating decreased from about 1,215 in 1986 to 1,132 in 1987.

However, it should be noted there was a dramatic increase in the number of applications for the quota deer hunts in 1987, as 4,165 applications were received by the deadline — an increase of over 1,000 applications from 1986.

Hunters' success in 1986 was 57 percent, compared to almost 80 percent in 1987. The poor quality of the 1987 mast crop and excellent weather conditions for hunting are thought to have had an impact on the increase in hunters' success.

For the mid-November modern gun deer hunt alone, an estimated 314 hunters participated and harvested 377 deer — for a phenomenal success rate of 120 percent.

Robinette says biological data on the deer taken "indicate that quality and quantity of the fall mast crop, coupled with spring flooding conditions, will have a significant impact on the quality of Felsenthal's deer herd. However, overall, the deer herd still appears to be in excellent shape."

Noting that the optimum harvest level has still not been reached, Robinette adds that during the 1988 deer hunting seasons, efforts will be taken to increase the harvest to 1,000 checked deer.

"Although the quality of the herd was slightly less in 1987 as compared to last year, the hunting public was still very impressed with their success and the quality of the animals harvested," Robinette comments.

"The increase in the harvest success and the high quality of animals maintained has generated much public support for the FWS, in general, and Felsenthal NWR in particular," he notes.

Among other game animals, data gathered from opening week-end of squirrel season indicated a ratio of 1:1 for fox squirrels to gray squirrels on the refuge. Hunters harvested an average of 2.5 squirrels per hunter, a slightly higher success rate than in 1986.

Swamp rabbits are said to be fairly abundant at Felsenthal, and although there is much less suitable cottontail habitat, an increase in cottontails was noted last year by refuge personnel. Furbearers found on the refuge include raccoon, beaver, mink, opossum, striped skunk, coyote, river otter, muskrat, nutria and the gray fox.

Turkey sightings on the refuge continued to increase last year. Out of 287 hunters participating in the 1987 fall turkey survey, almost 42 percent reported turkey sightings.

Based upon this, the total population for turkeys on the refuge was estimated to be 814, which is an increase of 144 birds from 1986. Most significantly, in questionnaires returned, the number of turkeys sighted per return went up three-fold, from 1.4 birds in 1986 to 3.4 birds in 1987.

"The expanding turkey populations on Felsenthal gives us the unique opportunity to participate with the Arkansas Game and Fish

Commission (AGFC) in efforts to reestablish the wild turkey in Ashley and Union counties off the refuge. In early 1987, an attempt was made to bait and capture turkeys for the restocking effort," Robinette says.

"However, due to mild winter conditions and the availability of mast, we did not succeed in getting turkey on bait. The turkey trapping efforts will continue in 1988," he says.

Quail season began Nov. 21, 1987 and ran through Jan. 31, 1988 with fairly good hunter success. Hunting pressure for this species is normally light, however, refuge quail hunters enjoyed one of the best seasons in many years.

## WATERFOWL HARVEST DOWN

Felsenthal had a 40-day split waterfowl season with hunting allowed until noon each day. This year, steel shot was required for the first time since the 1982-83 waterfowl season.

Waterfowl hunter visits dropped from 10,750 in 1986 to 7,005 for the 1987-88 season. Also, the average number of ducks harvested per visit dropped by more than 30 percent, according to Robinette.

Total harvest was estimated to be 8,546 ducks, a dramatic decrease from the 1986-87 season, when 19,200 ducks were taken — which was just slightly under the combined total of ducks taken in the previous eight seasons.

While waterfowl hunting is significant at Felsenthal, it is said to have an even greater potential at Overflow NWR. "We're very, very excited about the habitat management and development prospects of Overflow Refuge," says Bridges.

"Its potential contribution to the North American waterfowl resource is overwhelming. Waterfowl populations during the past two seasons have nearly quadrupled as habitat management and land acquisition continues. Public acceptance and support of the refuge program has been rewarding," he comments.

"Overflow continues to provide excellent waterfowl hunting opportunities while still meeting the needs of the waterfowl resource. Establishment of a much-needed sanctuary area, coupled with intensive habitat management is largely responsible for this," Bridges says.

"I'm proud of the progress we've made at Overflow, but realize we've only scratched the surface in terms of wintering waterfowl potential. Continued public support will go a long way in allowing us to reach its potential," he concludes.

### ENDANGERED SPECIES

As a wildlife refuge, Felsenthal has a goal of preserving three endangered species found within its boundaries. Resident species include the American alligator and red-cockaded woodpecker. A transient species, the bald eagle, is not infrequently seen during winter.

"Felsenthal lies near the northern fringes of the historical range of the American alligator. For the most part, our alligator population is the result of state and federal stocking efforts from 1971-79," explains Robinette.

During that period, a total of 261 alligators were released on the refuge. However, natural attrition, egress, drownings in gill and trammel nets and other visitor-caused mortality have reduced the population to an estimated 100 alligators or less, he says.

Robinette suggests the increase in the normal summer pool from 5,000 acres to 15,000 acres may provide some excellent additional habitat, with fairly shallow areas thick with vegetation. In addition, the additional acreage may provide some isolation for the alligators from human contact.

A comparative study has been conducted through the Alligator Subcommittee of the Southeast Section of The Wildlife Society for eight consecutive years at Felsenthal.

The study was done along 11 river miles of the Saline River within the refuge boundary and two miles of the Caney Bayou drainage which encompasses Jones and Blue lakes.

Last year, only one alligator was sighted, near the confluence of the Saline and Ouachita rivers. It was about 2 1/2 feet long, which leads those conducting the study to surmise that some successful alligator reproduction has taken place on the refuge. However, even with the sighting, the number of alligators found on the refuge has steadily decreased, from a peak of 22 in 1982 to one alligator sighted in 1987.

More successful has been the status of the red-cockaded woodpecker. Felsenthal harbors one of the highest known concentrations of the red-cockaded woodpecker in the state of Arkansas.

Refuge personnel annually conduct a red-cockaded woodpecker cavity tree survey to monitor the status of this species. Last year, 25 colonies were found and for the first year, reproduction data was obtained on 10 of the colonies.

In each of the 10 colonies, two adult birds were involved in the nesting effort. From the reproduction data, it was estimated that the total post-nesting population on Felsenthal was about 123 birds.

### OTHER BIRDS TO WATCH

While the red-cockaded woodpecker draws much of the attention of avid bird-watchers, there is an amazing variety of birds which may be viewed at Felsenthal. An ongoing participation in the Arkansas Chapter of the National Audubon Society's Christmas bird count last year counted 1,615 birds representing 65 species on the refuge.

Marsh and water birds found at Felsenthal include the great blue heron, little blue heron, black-crowned night herons, double-crested cormorant, common egret, American bittern and anhinga. Species that are rare in the area which were seen by refuge personnel last year included white pelicans, woodstorks and sora rails.

Among shorebirds, gulls, terns and allied species, the American woodcock, killdeer, common snipe and least spotted and semipalmated sandpipers have been seen at the refuge. Raptors found include turkey vultures, black vulture, barred owl, screech owl, great-horned owl, American kestrel, red-tailed hawk, red-shouldered hawk, broad-winged hawk, marsh hawk and sharp-skinned hawk. There have also been a few sightings of ospreys.

### YOUTH/VOLUNTEER PROGRAMS

The natural appeal of Felsenthal has been successfully combined with several programs to provide a learning experience for the outside public. Whether as an individual effort or as an organized activity, Felsenthal has a variety of wildlife, recreational and occupational activities to appeal to all types of visitors.

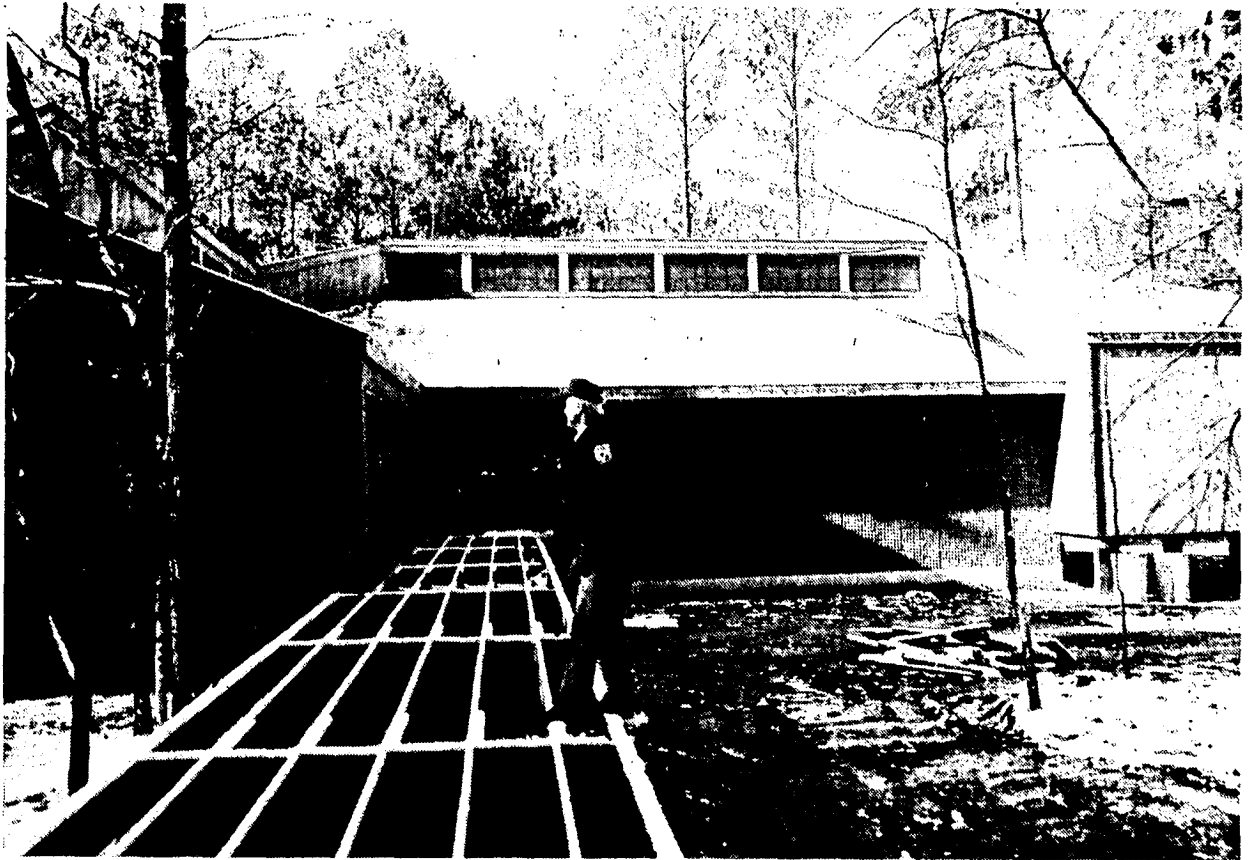
A Youth Conservation Corps program last summer was successfully conducted by a volunteer worker, Clyde Mitchell, with assistance from staff personnel. Four enrollees performed over 1,200 hours of work on the refuge, including litter pickup, tree marking for red-cockaded woodpecker colonies, engineering surveys, erosion control, facility and sign maintenance, and in training field trips and safety seminars.

Volunteer programs were expanded at Felsenthal last year, with 16 volunteers helping with such items as duck banding, processing permit applications, assisting at deer check stations, collecting biological deer data and helping in a beaver control program.

It is this blend of support from the surrounding community and the wide cornucopia found at Felsenthal National Wildlife Refuge that will provide a haven to nature-lovers and recreation-minded persons alike in the years ahead. Anyone who comes to Felsenthal will leave it amazed after sampling this paradise in southern Arkansas.

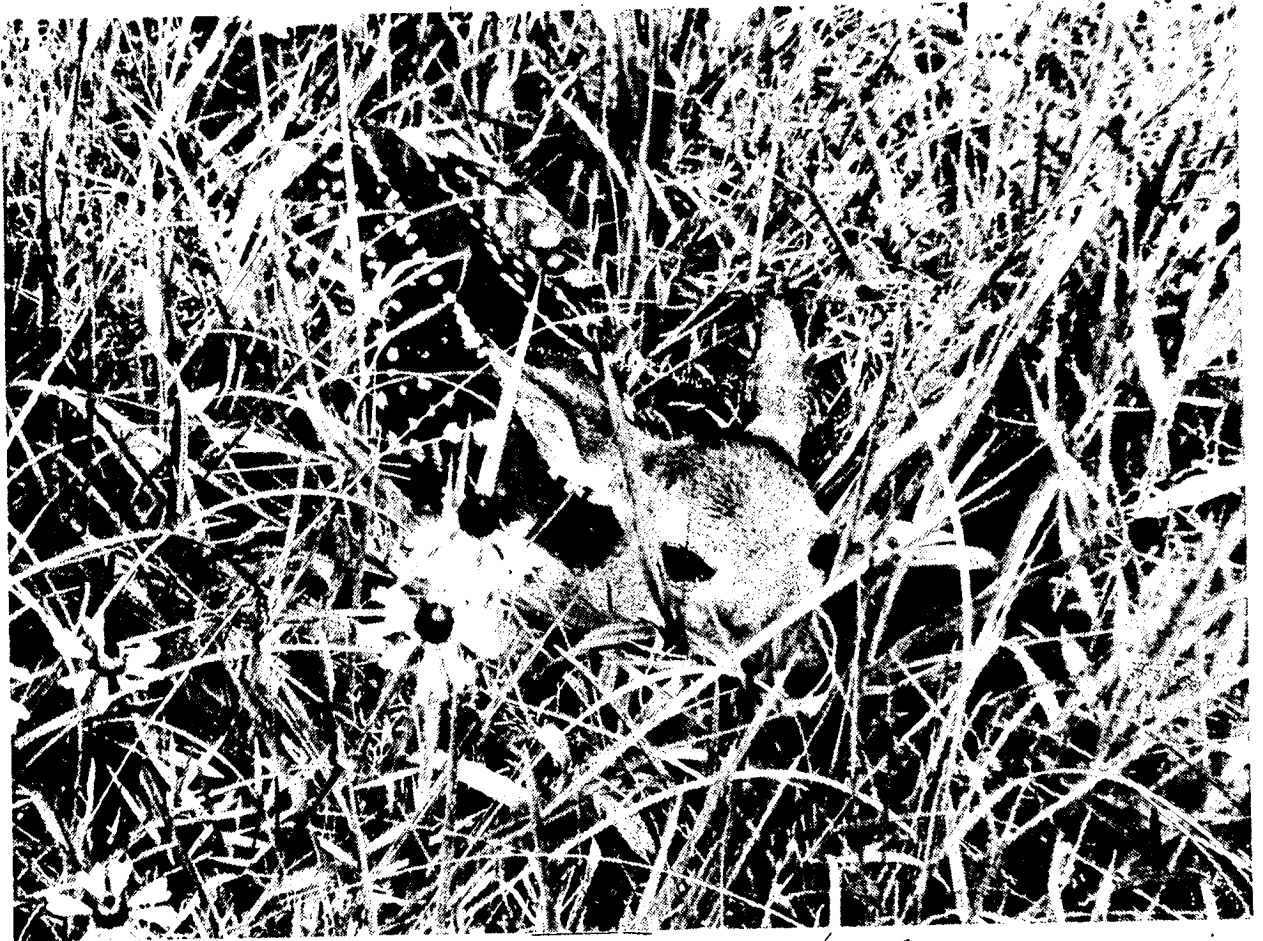


ASHLEY NEWS OBSERVER, WEDNESDAY, FEB. 24, 1988



### ***New Visitors Center***

**Felsenthal National Wildlife Refuge Manager Bob Bridges stands on the threshold of the brand-new administration/visitors center, which is rapidly nearing completion. The center will be a starting point for tourists coming to the refuge and will include exhibits and presentations on the many attractions found at Felsenthal.**



### ***Week-old Fawn Discovered***

Natural camouflage helps protect wildlife such as this week-old fawn found on Felsenthal National Wildlife Refuge. Photo by Bob Bridges.



A record of 902 white-tailed deer were checked during the six days of quota permit hunts on Felsenthal National Wildlife Refuge last year. Here, biologist John Robinette obtains biological data from this trophy buck. Photo by Bob Bridges.

# Third turkey release held for birds taken on refuge

For the third time this year and the second time within a week, Arkansas Game and Fish Commission, and U.S. Fish and Wildlife officials cooperated in a release of wild turkeys within the county on Friday.

According to Todd Callaway, Arkansas Game and Fish Commission wildlife officer, 20 hens were released on Feb. 19, four gobblers on March 4; and three more gobblers on Friday.

The release program is in its eighth year, with all turkeys this year trapped on Felsenthal National Wildlife Refuge and then released elsewhere in the county and in Union County. Last year, Mississippi allowed 22 turkeys to be trapped on a private lease for the program.

Callaway noted a drought in 1980 hurt the turkey population in Arkansas and at that time, Ashley and Union counties became closed to turkey hunting. He comments that shortly before the closure, Ashley County had an average of only about six to 10 turkeys taken per year.

Now, the turkey population has been allowed to increase for

**Hunting clubs have been cooperative in restoration efforts.**

Callaway says. With a variance in the conditions, the average could trapping and relocation purposes. A turkey brood survey is done each summer to see how many new birds have hatched.

"I feel like the deer (hunting) leases will help our turkey population this year," Callaway says. He explains that each camp has been "policing" their leases, which may cut down on the turkeys' No. 1 problem — poaching.

He says there hasn't been much evidence of poaching yet this year, but he feels there will be some cases detected. Because of the sensitivity towards poachers, those involved in the recent releases requested that the exact location not be revealed.

"On a good year, you would expect each hen to produce five to six poult (baby turkeys), depending upon weather conditions,"

be as low as two poults per hen or as high as 12 poults per hen.

"A real rainy season is almost as detrimental as not enough rain. A cold rain in April is bad for poult and eggs," he notes, adding, "Control burning in April and May during nesting period can have an effect on turkeys, too."

He comments that hunting clubs have been cooperative in the restoration efforts. "The hunting clubs in the leased areas around which we have released them (turkeys) have been pretty good about watching the birds and stressing to members the importance of not shooting them."

Felsenthal NWR Manager Bob Bridges notes, "In order for restoration to be successful, it requires public support, especially in terms of protecting the birds and giving them time to establish themselves."

The birds which are now being relocated are the result of a series of stockings by the Arkansas Game and Fish Commission of 60 birds on Felsenthal National Wildlife Refuge during the late 1970s and early 1980s.



### ***Taking To The Air***

Immediately upon its release, a turkey takes it on the wing, enjoying its freedom. Arkansas Game and Fish Commission, and U.S. Fish and Wildlife Service officials cooperated in releasing three turkeys in Ashley County last week, hoping to build up the population of the birds. The turkeys were trapped on Felsenthal National Wildlife Refuge and were released in the south central part of the county. Arkansas Game and Fish Commission staff members shown, from left, are Guy Hughes, Ashley County wildlife officer; Rusty Mitchell, game technician, Monticello; and Todd Callaway, Ashley County wildlife officer.



## Felsenthal Refuge

Jack Lee

Larry Threet, Felsenthal Refuge forester, has just returned from a tour of duty fighting wildfires in national forests in Georgia and South Carolina. He spent four days backpacking water in the mountains of Georgia to stamp out the last remnants of a sub-surface fire in Chattahoochee National Forest and seven days cutting fire lanes with chain saw and pulaski to contain a 1,000-acre fire in Francis Marion National Forest in South Carolina. A pulaski is a grubbing hoe-axe combination firefighter's tool.

Larry is a member of the inter-agency fire fighting crew composed of physically fit trainees from the several land managing services within the federal government. The crew is divided into modules which take turns at standby duty for two weeks at a

time. Once called to active duty, a module may serve for periods of up to three weeks at a time.

Larry pointed out that the interagency crew was available to fight wildfires on the Felsenthal Refuge is ever needed.

### Passion flower

In bloom now on the Felsenthal Refuge is a botanical delight, the strikingly beautiful fringed passion flower. The passion flower is a climbing or trailing vine boasting large flowers composed of whitish or bluish petals in a wheel-like arrangement, forming the backdrop upon which rests a

fringe of two or three circles or purple and pinkish throat-like segments. The unique structure of this distinctive flower makes it easy to identify and hard to miss.

The name refers to the resemblance of the flower's parts to certain aspects of the crucifixion account. The outer petals represent the loyal disciples, excluding Peter who denied he knew Jesus, and Judas, who betrayed him. The five stamen in the center of the flower indicate the wounds Jesus received (hands, feet and side); the knob-like stigmas the nails which held him to the cross.

# The Ashley News Observer

## Experts testing deer to determine health

A team of experts is currently conducting tests on deer collected last week on Felsenthal and Overflow national wildlife refuges to determine the overall health of the herds there.

Members of the Southeastern Cooperative Wildlife Disease Study with the University of Georgia at Athens took five deer each from the two refuges. Their necropsy studies will result in a report on the number of parasites and fat content of the deer, which will provide important information on the health of the herd and give Felsenthal and Overflow refuge staff members data which will allow better management of the herd.

Dr. Randy Davidson says about 20 percent of the data obtained will come from on-site studies. Other tests will be done in the next several weeks for diseases, stomach worm counts, microscopic studies of tissue samples, lung parasites

and examination of blood samples for parasites.

The studies are done every three years on the refuges. The data may affect next year's hunting regulations, but Davidson notes, "We don't tell them what their regulations should be.

"We tell them what the overall herd health status is and how much risk we think the herd is under from parasite or disease-related losses and then they decide what their regulations will be," he comments.

Of the summer's drought and its effect on the deer herds nationwide, Davidson says, "The drought will have an influence on the deer herd because it will inhibit plant growth used for food, but how much impact it will have depends

on where the deer herd was before."

Refuge Manager Bob Bridges emphasized the importance of continued public support of the refuge's deer management program. Data collected during managed hunts at refuge check stations coupled with overall habitat evaluation must also be considered in deer herd management.

ASHLEY NEWS OBSERVER, WEDNESDAY, SEPTEMBER 21, 1988



### Deer study conducted

Several deer were taken from Felsenthal and Overflow refuges last Thursday for studies by the Southeastern Cooperative Wildlife Disease Study team. Tests will be conducted to determine the health of the herd. Shown, from left, are Gail Mahnke, Emily Jo Wentworth, Dr. Randy Davidson and Terry Hensley. Not pictured is Gary Doster. (See story, P. 8A)

# The Ashley News Observer

Wednesday, September 21, 1988

## Moss task force takes to the water

Several agencies from the federal and state agencies will band together tomorrow (Thursday) for the first meeting of a task force established to combat a problem with "moss" forming on area lakes — a problem which has expanded in recent years.

Robert Ellis, a biologist with Felsenthal National Wildlife Refuge, says the task force will concentrate on three different types of semi-aquatic vegetative matter, the proper name for the moss. The three types are submergic (under the surface of the water), emergent (grow above the water) and floating.

The task force will include officials from the U.S. Fish and Wildlife Service, Arkansas Game and Fish Commission, U.S. Army Corps of Engineers, Tennessee Valley Authority and the Louisiana Department of Wildlife and Fisheries.

One of the main types of emergent matter at Felsenthal is the American lotus, which has expanded from a few acres to over 100 acres. One acre of lotuses was sprayed with Rodeo™ on July 15 and the plants were successfully killed.

Fishermen have also complained about "coontail" moss, which is a submergent plant which has been known to become tangled in boat motors. However, it is advantageous to fish, as it provides oxygen and shade for them, and for ducks, who use it as food.

The task force will try to deal with problems experienced by fishermen, with input given from several sources. "You don't want to eliminate it, but you want to keep it under control," Ellis says of the plants.

Spraying the plants would be very expensive. In addition, from a biological standpoint, officials are

hesitant about putting any type of chemicals into the water, though they could be safely used.

The problem is not a new one, says Ellis. "From talking to people who have hunted and fished here for years, we know it has been present as far back as 20 years ago."

Most aquatic plants grow in shallow, clear water and the flooding of 10,000 additional acres on Felsenthal after the lock and dam was completed has created areas where the water is only 3 1/2 feet deep.

The simple solution would appear to be to raise the water level to drown the plants. However, Ellis cautions that if the water levels were raised any more, more bottomland hardwood timber would be killed.

He notes the most common way to control aquatic plants is to have a drawdown of the water, which would allow the bottom of the lake to dry out. That option is not available with the Felsenthal Lock and Dam unless the U.S. Army Corps of Engineers would allow the water to go below the 65-foot navigation pool stage. Even so, Ellis says some water would be left in the lakes.

Another option is to use underwater mowers or suction dredges, but that has been found to not be very economical nor very effective. Biological controls, such as insects which feed on plants, could control the plants somewhat, but once again, that method has not been found to be very effective.

Another biological control method considered is the use of hybrid grass carp. The task force will be discussing this technique in depth.

One disadvantage of spraying the plants with chemicals is the

fact that the plants would sink to the bottom and decompose, which could cause a fish kill. If that method was used, smaller areas would have to be sprayed. Ellis notes a partial treatment could possibly be done in areas which would allow more public access by boat.

Refuge Manager Bob Bridges takes the position that, "I'm keeping the doors open. I want to make sure we've explored all alternatives and all practical options, one of which is to do nothing and let

nature take its course.

"I want to ensure that it's clearly understood what the feasibility and costs involved would be, and with some of the most experienced resources managers from different states and agencies attending this meeting, we should be able to draw from their experience to come up with the most reasonable approach.

"I hope to walk away with a consensus opinion on what action should be taken, if any," he concludes.