

BUENOS AIRES NATIONAL WILDLIFE REFUGE

Sasabe, Arizona

ANNUAL NARRATIVE REPORT

Calendar Year 1988

U.S. Department of the Interior
Fish & Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

REVIEW AND APPROVALS

BUENOS AIRES NATIONAL WILDLIFE REFUGE

Sasabe, Arizona

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Calendar Year 1988

Wayne L. Shifflett
Refuge Manager

10-27-89
Date

Nita M. Fuller
Refuge Supervisor Review

11/11/89
Date

[Signature]
Regional Office Approval

1/5/90
Date

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INTRODUCTION

The Buenos Aires National Wildlife Refuge is located in the Altar Valley which extends in a north-south direction from Mexico. The area is generally 24.5 miles long and 8.5 miles wide, covering 112,500 acres. The area is situated in the heart of the historic Sonoran Savannah Grassland. Today this original sea of native grasses has been displaced with a mesquite grassland association of which Lehmann Lovegrass and Johnson Grass dominate. The refuge is surrounded by the Baboquivari and the Pozo Verde mountains on the west slope. On the east slope, there are the Cerro Colorado, Las Guijas and the San Luis mountains. Elevations range from 3000 to 4500'.



The Buenos Aires NWR is located in the central drainage of the Altar Valley and surrounded on the west boundary by the Baboquivari Mountains. WAS

The early prehistoric era in the Altar Valley is essentially unknown due to a lack of archeological research in the area. At the beginning of the historic era in the region we find the Upper Pima, a term used by the Spanish by the Pima, the Sobaipuri, the Papago, and other Piman-speaking groups directly related to the Pima Indians of today. Exactly when the nomadic, Athabaskan-speaking Apache began depredations in southeastern Arizona is a matter of debate. What is certain is that by the mid 1700's, the presence of these people everywhere in the region was a major obstacle to Spanish colonial efforts. By 1860, southeast Arizona was the exclusive domain of the Apache.

Don Pedro Aguirre founded the famous Buenos Aires Ranch not far from the scene of his brother Epifanio's murder by an alleged Apache ambush in 1870. The Aguirres became a major freight hauling and ranching family, among those prominent early settlers who reoccupied Arizona ranges following the Gadsden Purchase in 1854. The Buenos Aires has been operated as a cattle ranch since territorial times. Originally, the property consisted of at least six smaller ranches. Over the years these were assembled into the property as it exists today.

In 1911, Colonel W. S. Sturges bought the Buenos Aires Cattle Company which encompassed the current Buenos Aires Ranch. In the mid 1920's, the Gill family purchased the Buenos Aires, changed the spelling of Ayres to Aires, and operated it under that name. The ranch changed hands to the Dobson family in 1959. The J. R. Norton Company bought the ranch in the 1960's. Pruett-Wray Cattle Company, later known as the Victorio Company, bought the ranch in 1972. In 1982, the ranch was acquired by default by American Breco Company and shortly thereafter was put on the market.

The 1984 version of the Recovery Plan for the Masked Bobwhite called for an area to be devoted to management of the masked bobwhite and recommended purchase of the Buenos Aires Ranch. Accordingly, in 1984 Congress approved \$9,000,000 to effect the purchase. Secretary of the Interior Hodel approved the purchase on February 28, 1985, and the transaction was completed on August 1, 1985.

The refuge was purchased to establish and manage populations of endangered masked bobwhite. The masked bobwhite was extirpated from this part of Arizona, the only place in the United States it was historically found, due probably to a combination of poor grazing management and drought. The Buenos Aires is made up of 112,470 acres, of which 21,320 acres is owned as fee title and 91,950 acres are leased from the state of Arizona. There are four private inholdings on the refuge, totaling approximately 1300 acres.

The climate in the area is semi-arid, characterized by low precipitation, low humidity, high summer temperatures, and by a pattern of winter precipitation, spring drought, summer precipitation, and fall drought. The spring drought is associated with high temperatures (May thru June) and is generally more severe biologically than the fall drought.

There are typically two rainy seasons: summer rainstorms are generally local and torrential, and originate from convectional storms to the southeast; winter storms are typically regional, gentle, and of a longer duration and originate from westerly (coastal) directions. Annual precipitation refuge-wide averages 16 inches, with 60 percent occurring during July and August. The northern portion of the refuge averages 12 inches of precipitation annually and the southern portion averages 20 inches of rainfall annually. Temperatures range from extremes of 9 F in the winter to 107 F in the summer, with an average monthly mean of 63 F.

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A. HIGHLIGHTS

The refuge was involved in a major land swap within Arizona that included the Bureau of Land Management, U.S. Forest Service, Arizona State Land Department, and the Arizona Game and Fish Department.

A major effort was made in the writing of a Fire Management Plan and the initiation of a Prescribed Burn Program.

The refuge released approximately 1800 foster adopted chicks on the southern end of the refuge. Trapping efforts substantiated the first natural reproduction on the area since the refuge was established.

Efforts were made to acquire approximately 5,000 acres adjacent to the east boundary and referred to as the Arivaca Creek addition.

Predator control of coyotes was accomplished during April and May to provide protection during the antelope fawning period. Cost was approximately \$16,000 for the two weeks of aerial gunning.

Major improvements were made in road construction and maintenance.

The Public Use Program was upgraded with the construction of a self-guiding 10 mile tour route.

Hunting programs on the refuge required considerable manpower to insure compliance with refuge and state regulations. Hunting activity on the area seemed to show significant increases.

The refuge completed its major equipment acquisition program via the excess route.

Research efforts by two graduate students on the masked bobwhite were completed.

Major efforts were made in upgrading and rehabing buildings, equipment, and structures.

The refuge initiated efforts to involve Service personnel in the censusing of masked bobwhite populations in Sonora, Mexico.

B. CLIMATIC CONDITIONS

The high temperature for 1988 was on June 22 when 107⁰ was recorded. This reading was one degree below the record of 108 set last year on June 14. The 1988 low of 9 on December 28 was 4 degrees colder than the old record of 13 degrees set on December 15, 1987.

There were 60 days when the high temperature was 95 or above (May 11-September 17, plus one fluke day on March 27). There were 13 days when the high was 100 or above. This was an increase of seven 95⁰+ days and a decrease of twelve 100⁰+ days. There were 83 days when the low temperature was below freezing (January 1 - May 8, November 15 - December 31) which left us 282 frost-free days, 6 less than in 1987.

Total precipitation for 1988 was 19.58 inches, close to our 20 inch average. The summer monsoon season began on July 6 with almost 8 inches falling that month. We also got a 1 inch skiff of snow late on December 26 that lasted into the next day.

In general, the temperatures and rainfall added up to a "normal" year in southern Arizona.

1988 WEATHER SUMMARY

MONTH	TEMPERATURE				PRECIPITATION
	High	Mean High	Low	Mean Low	(inches)
Jan	78	66	20	28	1.54
Feb	84	71	21	34	.55
Mar	95	75	19	31	.48
Apr	90	79	27	40	2.26
May	99	89	28	44	-0-
Jun	107	99	42	56	-0-
Jul	99	95	62	66	7.81
Aug	96	92	58	66	2.85
Sep	96	91	42	52	.24
Oct	94	86	46	50	2.66
Nov	87	75	22	35	1.06
Dec	80	65	9	29	.13
TOTAL					19.58

C. LAND ACQUISITION

1. Fee Title

There was no land acquired during the year, but progress was initiated to purchase approximately 2,700 acres of privately owned land and the leasing of surface management rights to 2,160 acres of state of Arizona trust land. The proposed area is being referred to as the Arivaca Creek acquisition. The land proper represents a diminishing natural resource in Arizona, a perennial stream with its associated cienegas and riparian forests that has not been significantly altered by man's activities. Acquisition of Arivaca Creek will protect one of the highest quality riparian and cienega marshes remaining in southern Arizona. In addition, a number of animal and plant species of special concern will be protected by preservation of the Arivaca Creek system, including the gray hawk, black hawk, Mexican garter snake, northern beardless tyrannulet, rose-throated becard, thick-billed Kingbird and Santa Cruz striped agave. The area is presently being used for ranching, hunting and non-consumptive recreational pursuits. The proposal has been fully endorsed by various conservation groups throughout southern Arizona. At the end of the year, one owner had expressed a desire in selling his parcel. Approximately 2.5 million has been appropriated by Congress to fund the acquisition. The local congressional delegation has been very supportive by getting special money appropriated for the purchase.



The Arivaca Cienega picture here is the headwaters
of Arivaca Creek.

WAS



The Arivaca Cienega has several permanent ponds and springs. WAS



The Arivaca Creek acquisition includes approximately 4 miles of riparian habitat and a mountain range. The Buenos Aires is in the background. WAS

The refuge also made an effort to purchase a small tract of 20 acres located along the southeast corner. The area provides habitat for a category I endangered plant species known as Agave parviflora. At the end of the year, the land had not been purchased.



The refuge has identified several areas which support populations of Agave parviflora, a category I species. WAS

2. Easements

A water line extending from the Bailey House pump to the King Ranch (R8E, T21S, Sec. 9.16) was replaced with a new water line. The state required a new easement permit since it was considered new construction. The work was performed by Burl Thornton Construction from Arivaca. The King Ranch paid for the construction cost.

3. Other - Leases and Swaps

The refuge has been leasing a total of approximately 90,150 acres from the Arizona State Land Department. In four years, the price had escalated from \$15,000 per year to more than \$145,000. The refuge was faced with a difficult decision. It was decided that the refuge could not afford the excessive lease payments. An alternative was to scale down the overall size of the refuge. Areas were delineated which would meet the primary objective but offered limited opportunities for other wildlife opportunities. Before this alternative could be pursued, the Service identified high profile commercial property on the Havasu Refuge which could be traded to the state for refuge property. The value of the land on the Havasu Refuge was extremely expensive, but there was not enough Service property to compensate the State Land Department for giving up their interest in the refuge. Working closely with the BLM, the Service became a member of the Santa Rita Land Exchange.



Regional Director Mike Spear explaining some of the intricacies of the land swap while BLM Director Dean Bibbles and representative from Congressman Kolbe's office listens. WAS

The refuge is comprised of 112,500 acres, of which approximately 90,150 acres is leased from the state of Arizona. Prior owners of the ranch leased the surface area under a state grazing lease with nominal costs which normally ran around \$15,000- \$16,000 per annum. With the change in governor, came a change in administrative responsibilities. The state office wrote to the refuge that they would no longer consider the refuge under a grazing lease. The lease would have to be considered as a commercial lease with immediate implementation. The lease payment escalated from \$16,000 in 1987 to \$90,000 in 1988. In 1989, the lease payment was raised to \$146,000. The incremental rise in the renewal lease would cost the Government approximately \$732,000 by 1996. Director Dunkle indicated that there would not be funds available to pay this lease. The refuge then became a member of a land swap which involved two Arizona refuges and the State of Arizona. The Havasu Refuge, which is located along the Colorado River, had identified some high valued recreational lands which were determined to be excess to their management objectives. The Havasu lands would swap out for approximately 10,000 acres of state lands within the refuge. With this tentative swap a distinct possibility, the refuge drew up a plan to consolidate high valued fee lands with state lands. Most of these lands were located in the bottoms and extended in a north-south slope. These vigorous exercises were terminated when Regional Director Mike Spear and Arizona Bureau of Land Management Director Dean Bible came up with a grandiose plan to swapout all of the land on Buenos Aires for approximately 56,000 acres of BLM lands located along the Santa Rita mountains and referred to as the Santa Rita Experiment Range. The swap also involved lands on the Kofa and Cabeza Prieta Refuges, Catalina State Park, and Arivaca Lake. The bill known as the Santa Rita Land Exchange was a hotly contested issue within the state. Finally, during the final hours of the 101st Congress, the Santa Rita Exchange became involved in a much larger bill referred to as the Idaho-Utah Bill which involved lands from Florida to Utah and had included allowing the construction of 3 telescopes on top of Mt. Graham which some biologists indicated may lead to the extinction of the Mt. Graham red squirrel. The local swap did not benefit the Cabeza Prieta Refuge which was slated to pick up 89,000 acres. The Kofa Refuge did benefit, however, as all mineral reserves reverted back to the Government. Generally speaking, the land swap benefited all agencies involved and did not require the expense of appropriated funds. The tentative date for the land swap to be final is September 1989.

D. PLANNING

1. Master Plan

The approval of the Master Plan was put on indefinite hold because of the pending land swap. The plan was initially written in 1986 under the assumption that all lands belonged to the Service. Once the land swap is completed, the approval process will again be initiated. Few changes are anticipated in the final plan.

2. Management Plans

Predator Control Plan:

The immediate loss of 20 antelope shortly after introduction (December 7, 1987) to coyote depredation mandated that control efforts be initiated to protect adults and fawns during the 1988 fawning season. The Animal Control Plan was written in March. The control plan consisted of three recommendations:

- (1) Commercial trapping - commercial trappers were encouraged to direct their efforts within 60,000 acres which was identified as the crucial fawning area.
- (2) Predator calling - Private predator clubs were actively encouraged to use the refuge for their calling expertise. This method was recognized as the least practical for coyote removal.

Trapping by Animal Damage Control Specialist (APHIS). This method was considered but never recommended because of expense and potential conflicts with other refuge programs.

- (3) Aerial Gunning - This method was considered the most effective, even though the cost was considered excessive. The hunting exercises were broken down into two time periods. The first period was during April 4-8, and the second period was May 16-20. Total coyotes removed was 58, which included 39 during the initial period and 19 during the later effort.

Prescription Burn Plan:

A Prescription Burn Plan was written covering approximately 12,650 acres. The objectives of the burns were: increase native grasses and stimulate forb. diversity; top-kill mesquites to prevent further encroachment into grasslands; and reduce fuel loads on the ground. A total of 4,028 acres was actually burned. Abnormal temperature extremes which exceeded burn parameters kept the refuge from meeting this year's prescribed burn objectives.

4. Compliance with Environmental and Cultural Resources Mandates

The refuge prepared an EA as part of the Animal Damage Control Plan. The EA was submitted to Phoenix Ecological Services office in Phoenix for their review. It was approved with no changes.

The refuge wrote a Section 7 and submitted it to the Ecological Services office in Phoenix as part of the Prescription Burn Plan. The Service recommended that we set up a monitor burn plot to determine what effects fire might have on Agave parviflora, a category I endangered species. The area was not burned so the monitoring of the cactus was not accomplished.

The refuge solicited the assistance of the Regional Archeologist Dave Siegel on two occasions. Dave wrote a no effect opinion on the power line going to Secondino, and a proposed tour road.

5. Research and Investigations

Buenos Aires NR87 - "Home Ranges of Reintroduced Masked Bobwhite"
(22530-01)

Karen Seaman - Partial requirements for M.S. Degree
in Wildlife Management, University of Arizona

Ms. Seaman's research was concentrated on established daily and seasonal movements of reintroduced masked bobwhite. Her research showed that masked bobwhite undertake major movements dependent on various factors. A copy of the thesis was presented to the refuge.



Research on the masked bobwhite quail included the radio tagging of Texas Bobwhites.

PS

Buenos Aires NR87 - "Dietary Preferences of Reintroduced Masked Bobwhite" (22530-02)

Melanie Eyler - Partial requirements for M.S. Degree in Wildlife Management, University of Arizona

Ms. Eyler's research centered on habitat selection used by masked bobwhite within core areas, compared to surrounding areas of the refuge. Her work was completed during the year. The thesis was not completed at the end of the year. A copy of the thesis will be presented to the refuge after it is completed.

Buenos Aires NR87 - "Potential for Recharge Enhancement, Flood Mitigation, and Erosion Control from Developing Waterfowl Habitat at Buenos Aires NWR" (22530-03)

Suzanne Trachey - Partial requirements for M.S. Degree, University of Arizona

The objective of this research effort was to determine the potential influence on the watershed of the Upper Altar Valley from the revised management of the former ranch lands. Through a variety of measurements on and off the refuge, this study will attempt to infer probable changes in surface water infiltration, evaporation, and runoff resulting from the removal of domestic livestock grazing and from various levels of waterfowl habitat development.

Ms. Trachey called the refuge during the year to inform us that she had decided to drop the subject. She decided to pursue a different course of study.

Buenos Aires NR87 - "Limnological Aspects of Mormon Lake. An Evaluation of Suitability for Fish and Waterfowl" (22530-04)

Julie Urman - Partial requirements for M.S. Degree, University of Arizona

The objectives of this study was to describe the limnological characteristics of Mormon Lake on Buenos Aires NWR and determine its suitability to sustain a population of fish on an annual basis, and to use the limnological data to preliminarily document the potential for enhancing waterfowl habitat in the area.

Ms. Urman had to terminate her study because water levels became too low during the summer drought period. When the lake finally refilled with water, the refuge was informed that Ms. Urman would no longer be monitoring the water quality. She dropped out of the degree program to pursue other interests.

E. ADMINISTRATION**1. Personnel**

1, 6, 2, 5, 3, 7

DC

Permanent Staff: PFT

<u>NAME</u>	<u>POSITION</u>	<u>EOD</u>	<u>GRADE</u>
1. Wayne A. Shifflett	Project Leader	6/85	GS-12
2. Rees L. Madsen	Asst. Manager	6/87	GS-11
3. Steve J. Dobrott	Biologist	8/85	GS-9
4. Martha J. Conklin	Clerk	1/86	GS-4 Resigned 6-18-88
5. Jeffrey S. Enlow	Auto Mechanic	8/85	WG-8
6. Dale E. Enlow	Maintenance Worker	7/85	WG-8
7. Drew A. Cyprian	Maintenance Worker	7/85	WG-7
8. Daniel A. Culling	Animal Caretaker	7/85	WG-4

Temporary Staff: TFT

1. Linda Austin	Clerk	6/88	GS-4 Terminated 11-30-88
2. Fabian Gomez	Laborer Fire Crew	5/88	WG-4 Terminated 9-24-88
3. Mike Trent	Laborer Fire Crew	5/88	WG-3 Terminated 9-30-88
4. Joe Czerniak	Laborer Fire Crew	5/88	WG-3 Terminated 8-28-88

Maintenance Worker Drew Cyprian was upgraded from WG-6 to WG-7 through an accretion of duties on 11-20-88.

When Clerk Martha Conklin resigned on 6-18-88 to take a higher paying job in the private sector, she was replaced with Linda Austin, another Arivaca resident. Linda was hired on 6-27-88 on a temporary appointment. We extended the temporary appointment once, but were unable to get Mrs. Austin on permanently. She was terminated on 11-30-88 when her ranking on a local register put her out of reach below some veterans. The refuge ended the year with Assistant Refuge Manager Madsen filling in as clerk.

2. Youth Programs



1, 2, 3, 4, 5, 6

RLM

- | | |
|-------------------------|------------------|
| 1. Shelly Kring | YCC Enrollee |
| 2. Chad Sturgis | YCC Enrollee |
| 3. Joe Avila | YCC Enrollee |
| 4. Justin Gibson | YCC Enrollee |
| 5. Jason Lewis | YCC Leader |
| 6. Larry L. Christensen | YCC Group Leader |

Five YCC enrollees were hired in late May. There were 10 applicants, of which only one was a female. A prior YCC enrollee was also selected as a Youth Leader. The remaining 4 enrollees were chosen by a random

drawing. The drawing was made by the Sasabe Postmaster. In addition, a Group Leader was hired to supervise the crew. The Group Leader started work on June 8, with an orientation of the refuge and general refuge procedure. On June 10, the Group Leader and Assistant Refuge Manager picked up a 1985 1-ton, 15 passenger Ford Van from GSA in Tucson. The van proved to be somewhat less than ideal for use on the refuge's primitive roads, but was made to serve adequately. The rear two seats were removed and replaced with a wooden tool box. This allowed adequate seating for 8, with appropriate restraints for each passenger.

The main problems with this vehicle were that it lacked sufficient weight over the rear wheels to maintain necessary traction in some circumstances, (i.e., it got stuck easily) and its extremely long turning radius made sharp turns impossible. Since we seldom went anywhere on the refuge without another vehicle, the first mentioned problem was of no serious consequence and the second was merely an inconvenience.

The first day for the enrollees was June 13. We started with only 4 enrollees due to an accident in the family of one of the enrollees. She missed the entire first week. On day 3 we lost another enrollee for 8 days due to a bad case of Chicken Pox. Fortunately, the disease spread no further. In all we lost a total of 160 man hours due to absenteeism, 10% of our total hours. No time was lost to job related injuries. The program was terminated on August 5 (day 40), with 1440 paid enrollee man hours. There were very few problems of any kind during the work period. The amount of work accomplished was exemplary and set a high standard for future YCC groups.

Summary of Work Projects:

- (1). Removal of Cattle Feeders and Cattle Related Items. There were 460.0 man hours spent picking up, transporting, and stockpiling or disposing of 174 cattle feeders and related items. These items included 10' x 8' metal feed bins, 16' x 2.5' wooden troughs, 12' x 8' calf feeders, and various feed equipment fabricated from 55 gallon drums. Eighty-seven of the first 100 plus dirt tanks and feeding sites on the refuge were visited. Most of the items were disposed of in the Headquarters landfill, or in a landfill at the Secondino corral area. The items considered salvageable were stockpiled near the carpenter shop for possible sale at a later date. The majority of the items were lifted by hand into a stake bed truck for transport. Some of the larger items were lifted by forklift or crane car. All work was accomplished under the supervision of the Group Leader.

Work began at the south end of the refuge and progressed toward the north end. To avoid the monotony of the job, other projects were interspersed throughout the work period.

All items were turned over using a pry bar and long handled shovels prior to lifting. In the course of the work period, only 3 rattlesnakes were encountered under feeders and at no time was there any danger of snakebite.

The only problem encountered was accessibility of some areas by the vehicles utilized. The general philosophy followed was "if the road was so bad the previous owners could not reach a site with a feed truck, then there was not likely to be a feed device there." Only twice did we opt to use a 4-wheel drive vehicle to pick up a feeder, and then only because we could see the device but could not get there with our usual vehicle.

To our knowledge only 2 items were not picked up. Both of these items were 15' x 20' calf feeders and were in areas not readily accessible by either forklift or crane car.

- (2). Fence Removal. There were 251 man hours spent removing approximately 6 miles of wire fence. Supervision was shared by the Group Leader and Youth Leader as we often worked in split crews. The majority of the fence was 4-strand barbed wire. The wire was cut from the posts, rolled, picked up and deposited in the Headquarters landfill. The metal "T" posts were pulled with a front-end loader and stockpiled in the wareyard near the maintenance shop. Those posts not accessible by tractor were pulled with a "Hilift" jack. For the most part, the wooden posts were left as bird perches.

The roping arena at the Buenos Aires Corral was also removed. The hogwire was rolled and stockpiled and the railroad tie posts were pulled with a forklift and chain. The railroad ties were salvaged to be utilized in future landscape or erosion control projects.

"T" posts and hogwire fencing around the trees in the old orchard were removed whenever practical. The northwest portion was flooded by recent rains and was therefore inaccessible.

No major problems were encountered, although we did learn that buying inexpensive gloves was probably not cost effective.

- (3). Secondino Water Tank Cleanout. There were 20 man hours spent cleaning the debris from a 30' diameter, 8' high, round, concrete water tank. All work was supervised by the Group Leader and Assistant Refuge Manager.

Cleaning was accomplished by lifting a bucket, fabricated from a 55-gallon drum, with a crane car. The enrollees filled the bucket in 3 person shifts, with one of the "off" crew acting as signalman for the crane operator. The bucket was dumped into a dump truck. The debris was then deposited in a gully as a help in

erosion control. All work was done in the early morning hours on a cool day so as to reduce the possibility of heat exhaustion. Numerous water breaks were also taken.

- (4). Carrizo Well Catchment Development. There were 10 man hours spent constructing a water catchment basin at the end of a "plugged" leaking 2" pipe running from Carrizo Well. The dripping water had previously been soaking into the ground offering only enough water for the mud dauber wasps and other insects in the area. Since the drip occurred in the shade of a large mesquite, it was decided to construct a small concrete catchment basin to service a larger variety of wildlife. A depression was dug in the ground and lined with concrete from 3 bags of "Ready-Mix" (approximately 3 cu. feet). Water for the mix was supplied by a refuge fire truck. The final size of the basin was 2' x 3', by 1' deep. All work was supervised by the Group Leader and Assistant Refuge Manager.

This was an excellent learning project for the enrollees as it was one of the few projects done where the end result was an addition to, rather than a removal from, the wildlife habitat.

- (5). First Aid Training. The Group Leader and 4 enrollees spent 32 man hours in Red Cross First Aid training. Only 4 enrollees attended due to one being absent because of an accident in the family. The students considered the course useful, but poorly taught.

The following day, 3 enrollees, along with the Group Leader and Assistant Refuge Manager, spent 12 man hours in Red Cross C.P.R. training. A different instructor made this portion of the training program far more enjoyable. We lost an additional enrollee due to a bad case of Chicken Pox. Fortunately, the disease spread no further.

All participating enrollees and the Group Leader were certified or re-certified in both First Aid and C.P.R. The Assistant Refuge Manager was re-certified in C.P.R.

- (6). Defensive Driving School. On Saturday June 18, the YCC Youth Leader, accompanied by the Assistant Refuge Manager, attended an 8 hour class in Defensive Driving in Tucson. The class qualified the Youth Leader for a Government Driver's License. This single activity probably did more to assure the success of the YCC Program and the completion of the large amount of work that was accomplished than any other single factor.

The types of projects worked on this summer necessitated the utilization of two vehicles in nearly every case. Without the Youth Leader being able to drive one of them, we would have had to rely on the availability of one of the refuge staff to provide that service. It also meant that on some occasions we were able

to split the crew and accomplish far more than otherwise possible. I would highly recommend the continuation of the practice of hiring a Youth Leader and having them qualified to obtain a Government Driver's License. Although the salary cost is greater, I believe this practice to definitely be cost effective.

- (7). Field Trips. There were 271.5 enrollee paid man hours devoted to trips and environmental awareness activities this summer. Activities included the following:

a. A bird watching trip to a riparian community at the northeast corner of the refuge along Arivaca Creek. Since the area chosen was along the boundary of the refuge, a comparison of the heavily grazed ranch property along one side of the fence, versus the ungrazed area within the refuge was quite spectacular. Birding was good, but not great. Species identified included Turkey Vulture, Gambel's Quail, White-winged and Mourning Dove, Western Flycatcher, Black Phoebe, Cactus Wren, Yellow-breasted Chat, Summer Tanager, Northern Cardinal, Lazuli Bunting, Brown-headed Cowbird, House Finch and Phainopepla. We also had a possible sighting of a Spotted Owl, but never got a good look at the eye color, which is the key identifying characteristic. We also had a brief encounter with a rattlesnake. (We left the area, therefore "brief encounter.")

b. A day hike up to Cumero Peak to observe the petroglyphs. The Assistant Refuge Manager accompanied us on this trip. There is no trail up Cumero Peak so we bushwhacked the entire distance, approximately 1 mile horizontally and 1000' vertically. The petroglyphs face a natural amphitheater. It was interesting to speculate on the origin and significance of the site. We learned later, upon our visit to the National Park Service's Western Archeological and Conservation Center, that an isolated site such as this one is very difficult to interpret. The hike took about 2.5 hours going up, and just over an hour to get back down.

c. Our third activity was an on-site training session with the USDA Soil Conservation Service. After a slide show presentation on how to build a brush-rock dam and an explanation of the hydrology, past and present, of the Altar Valley, we proceeded to a previously chosen site. Here, under the direction of a Range Technician from the Tohono O'odam Nation, we constructed a brush-rock dam according to USDA Soil Conservation Service drawing number 85007-AZ. The structure is designed to filter out sediment from runoff and hold it until it re-vegetates. These types of structures have been extensively tested and found to be successful for erosion control in northern Arizona on the Hopi and Navajo Reservations.

d. Our next activity was a guided tour of the Smithsonian Institution's Fred Lawrence Whipple Observatory. The Whipple

Observatory is located on Mt. Hopkins in the Santa Rita range about 50 miles south of Tucson. After a 30 minute video presentation at the Smithsonian base station, we took a 1 hour bus trip up the mountain. Upon reaching the summit (8000+ feet) our guide showed a 1.5 meter reflector telescope, a 10 meter optical reflector and the newest idea in large telescopes, the 4.5 meter multiple mirror telescope, and explained what each is used for. The view of the Santa Cruz Valley from Nogales to Tucson was fantastic.

e. On July 19 our group joined the YCC group (3 enrollees) from the National Park Service's Saguaro National Monument East, for a tour of their facilities. Our enrollees found that our work was far more labor intensive than that of the NPS. It did not, however, affect their work attitude to any noticeable degree. The afternoon was spent touring the NPS Western Archeological and Conservation Center in Tucson. Two of the staff archeologists explained the prehistoric archeology of the Saguaro National Monument East.

f. An on-going activity was the observation of the masked bobwhite quail reintroduction program here at the refuge. The group was able to observe the process from the sterilization of the Texas Bobwhite Quail adoptive parents (all males) through the adoption process, to the final release as family units. Since the first large release of birds did not occur until the next to the last week of our work period, there was little opportunity to actually observe the success of the program. The Saguaro National Monument YCC group joined us for the morning of the first major release.

g. The last activity was, from the enrollee's point of view, the best. We arrived at the Arizona-Sonora Desert Museum shortly after they opened at 7:30 a.m. Most of the large animals were very active. The Black Bears were especially entertaining as they engaged in mock combat, wrestling, and in general, tormenting each other. The afternoon was devoted to a tour of the newly opened (January 1988) International Wildlife Museum. On display in the museum are mounted specimens of most of the large game animals of the world, something most of us will never see in the wild, or even in a zoo. It also offered a contrast in museum types, the Arizona-Sonora Desert Museum being a local, living museum, whereas the International Wildlife Museum, in spite of the interesting dioramas, is a "dead" museum.

In summary, I believe our enrollees were exposed to a wide range of activities and environmental concerns. If we raised the environmental awareness of only one member of the group, then the cost was well worth it.

- (8). Volunteer Project, San Fernando School. There were 195 man hours spent working on the playground at the San Fernando

School. The San Fernando School is a K-8 self-contained school in Sasabe near the southernmost boundary of the refuge. When the USFWS purchased the Buenos Aires Ranch, the school's enrollment dropped from about 30 students to less than 10 students. Since this was an issue of some concern with the locals, it was determined that it would be a worthwhile public relations activity to do something for the school. Projects agreed upon between the Head Teacher and the Refuge Administration were to include the following:

- a. The construction of a 24' x 24' concrete activity slab.
- b. The replacement of the 2 badly splintered teeter-totter boards.
- c. The replacement of a wooden swing seat.
- d. The importation and leveling of fill dirt around the tether ball and under the swings.
- e. The raking and general cleanup of the playground area.
- f. The construction of a tire sand box utilizing a surplus implement tire and sand donated by the Pima County Highway Department.



The YCC completing a concrete slab for the San Fernando School as part of a community project. WAS

All the above activities were completed with the only problem arising with the concrete slab. Due to a miscalculation of the amount of concrete needed, when the concrete truck left, we were about one cubic yard short. At this point, in keeping with our motto for the summer, "the difficult we do immediately, the impossible takes a little longer," we grabbed our handy cement mixer, a load of river run gravel, and finished the job. And in the process, removed all the glamour of concrete work.

- (9). Facility Maintenance. Facility maintenance took 140.5 man hours. This was perhaps our least value per hour activity, but a very necessary one. Activities included landscaping, general building cleanup and vehicle maintenance. Landscape activities included the placement and leveling of topsoil around the Headquarters' area and the Refuge Manager's residence. Building cleanup was periodic cleaning of the main ranch house since it was used as our lunch room whenever we were working in the area. Vehicle maintenance consisted of weekly washing of the YCC van and any other USFWS vehicle we had used that week. The enrollee's pride in our equipment was evidenced when they chose to wax and polish the van before we returned it to GSA. Much of the maintenance activity was done under the supervision of the Youth Leader.



The YCC completed the landscaping of the yard in front of the Manager's residence. WAS

RECOMMENDATIONS

I recommend that the YCC program continue to be funded as part of the ongoing operation and development of the Buenos Aires National Wildlife Refuge. I believe that it can be an important part of the education of our youth in both environmental awareness and in a work ethic that many may claim is a thing of the past.

ACKNOWLEDGEMENTS

I wish to thank the President and Congress of the United States, the Department of the Interior, and the U.S. Fish and Wildlife Service for the creation and continuation of the Youth Conservation Corps Program. I am also grateful to the administration and staff of the Buenos Aires National Wildlife Refuge for the opportunity they gave us this summer. I am confident that the young people associated with this program have benefitted in ways that only the future will reveal. A special thanks is also due Assistant Refuge Manager, Rees L. Madsen, for helping us in the tough spots and for the praises given when we did well.

Lastly, thanks to the crew, Joe, Justin, Jason, Shelly and Chad. You set a standard by which all future YCC crews will be judged.

Respectfully submitted
12 August 1988
Larry L. Christensen
YCC Group Leader

4. Volunteer Programs

The volunteer program contributed to meeting some refuge objectives even though it was generally considered a passive program. Most volunteers were not actively recruited. During the year volunteers from the Luke Air Force Base spent one weekend on the refuge assisting with various work projects. Some of the projects completed were: boundary posted 10 miles along Rt. 286, removed 1/2 mile of interior fences, painted the guest house, and landscaped around the office. The volunteer effort was guided by Lt. Michelle Monroe, who is a biologist hired by Luke Air Force Base.



A volunteer group from Luke Air Force Base contributed to the Refuge's maintenance deficit program. WAS



Lt. Michelle Monroe giving instructions to members of her
volunteer group. WAS



Lt. Michelle Monroe and volunteers initiated the first efforts of putting up boundary signs along Rt. 286. WAS

Two volunteers lived in refuge housing and contributed to refuge programs. Mary Ann Chapman was housed at the Garcia House. She wrote monthly articles for the local Audubon news letter and conducted wildlife observation tours. Steve Cooper was housed at Figueroa Springs. Steve was instrumental in maintaining a water distribution line running from Arivaca Creek to the Secondino residence. Without his assistance, this gravity flow system would have been non-operational because the maintenance crew is not experienced in its operation.

Volunteers also contributed to the maintenance of a carpentry shop at Bailey Wash and also to the maintenance of the refuge horses.

University of Arizona botanist, Dr. Steve McLaughlin, contributed hundreds of volunteer hours in compiling a plant list for the refuge. The list contains almost 500 species.

5. Funding

Funding for the year was a marked improvement over prior years. Generally there were funds to accomplish most day to day operations. Funds to accomplish major projects were not available.

<u>FY</u>	<u>1260</u>	<u>1240</u>	<u>8610</u>	<u>1110(SE)</u>	<u>TOTAL</u>
1985	80,000			18,500	\$ 98,500
1986	212,400			18,000	284,800
1987	358,000	30.000	8,700	17.9	414,600
1988	481,000	40.500	7,000	28.0	527,500

STAFFING PATTERN

<u>FY</u>	<u>FTE</u>	<u>PERMANENT FULL-TIME</u>	<u>TEMPORARY FULL-TIME</u>
1985	8	2	6
1986	8	4	4
1987	10	8	4
1988	10	8	4

6. Safety

Jeff Enlow, Auto Mechanic, twisted a knee while climbing down from the cab of the White Freightliner in January. The ground was muddy and his left foot slipped when he stepped down, twisting his right knee as his right foot was still in the cab step.

This injury lead to a number of doctor appointments through the winter and surgery was finally required in April. Jeff missed 16 working days while recuperating.

Safety meetings for the entire staff were held about every other month. The crew is very safety conscious and alert to hazardous conditions, leading to a progressively safer station as we slowly correct problems.

8. Other

Project Leader Shifflett and ARM Madsen attended a one day training course (I-220) to become more familiar with the incident command system, especially as it applies to fire suppression.

All law enforcement personnel attended a 40-hour refresher course at Marana, Arizona. Rees Madsen, Dale Enlow, and Drew Cyprian attended the April 4-8 session; while Wayne Shifflett and Jeff Enlow attended the April 18-22 session.

Maintenance Worker Dale Enlow attended an Instructor's Firearms training course held at Marana, Arizona, May 23-27. The course was intensive, but offered Dale ample opportunities to become familiar with various firearms.

Clerk-typist Marti Conklin attended a 3-day seminar on "Radio Dispatching." The training provided her with the knowledge to function as a "dispatcher" on small and large multi-agency wildfires. Her expertise was not utilized during the year.

F. HABITAT MANAGEMENT

1. General

The refuge is compiled of 112,500 acres. Approximately 80,000 is considered mesquite grasslands which is dominated with introduced Lehmann's Lovegrass. The bottomlands are broad and generally extend in a north-south direction and covered with rank stands of Johnson Grass. Approximately 20,000 acres can be characterized as hilly terrain and mountainous. Vegetation is comprised of native grama grasses blending into thick stands of ocotillo. On the higher north slopes, there are sparse stands of live oak. The remainder of the refuge is comprised of Riparian forest, ponds, and numerous washes and gullies.



The refuge is a diverse area of broad mesquite grasslands and rising to more than 4500' in the mountains where thick stands of ocotillo and sparse stands of oak dominate.

Assistant Manager Madsen standing at northwest corner of
R9E,T21S,SEC.27.

WAS

2. Wetlands

This habitat type was generally ephemeral and critical to most wildlife use on the Refuge. During the ranching era, former ranchers designed and constructed approximately 150 ponds in the area varying in size from 1/2 acre to 125 acres. The largest lake, Aguirre Lake, was designed to fill-up

from runoff from the Baboquivari Mountains. During July, monsoon thundershowers arrived on schedule and dropped 8" of rainfall. (The Aguirre watershed is comprised of thousands of acres and a 2" shower will generally result in runoff into Bailey Wash which fills Aguirre Lake). The runoff resulted in Aguirre being filled to capacity and running over the spillway. (The surface carrying capacity has been greatly reduced over the years from silt). During the filling process, water control gates were opened from Grebe pond into a moist soil management area of approximately 30 acres. The Aguirre complex provided excellent habitat for waterfowl and other water dependent birds for a 4-month period. By mid-May, most of the lake bed was dry.



Aguirre Lake complex caught approximately 50 acres of surface water and provided habitat for most waterfowl use. A 30 acre moist soil management area was flooded at the top of the picture. WAS

Mormon Lake was another major lake which filled with runoff in August. This lake basin of approximately 60 acres had not received any major runoff since the refuge was established. However, in August, runoff from the Pozo Verde watershed filled this lake to capacity. The area provided excellent habitat for waterfowl, and provided the best waterfowl hunting opportunities on the refuge. The lake still contained approximately 20 acres of surface water at the end of December.



Mormon Lake caught approximately 40 acres of surface water and provided excellent waterfowl habitat. WAS

Many of the ponds on the refuge caught runoff. The maintenance staff was kept busy prior to the rainy season putting in diversion plugs to harvest runoff. One diversion dike, approximately 1/2 miles long, diverted water too efficiently. The recipient pond (Lopez) filled to capacity and washed out. Most ponds on the refuge were not constructed to handle excess water and they then invariably wash out. It is estimated that 30 ponds still need major rehab work before they will harvest and hold water. The ponds were washed out in 1983 when record precipitation was received.



Water overfilled Lopez Tank and caused a major break
in the dike. WAS

3. Forests

There are no upland forests located on the refuge. The riparian area along Arivaca Creek is habitat most resembling a forest. The riparian habitat consists of Cottonwoods, Ash, Willow, Walnut and Hackberry. Cottonwoods are the most conspicuous, often towering 50-75' over the landscape. The most notable change in the riparian association is the regeneration of Cottonwoods, Willow and Ash which had been subject to heavy grazing pressure prior to Service ownership.

The refuge planted approximately 25 Arizona Cypress trees in the headquarters area. The trees were donated by the State Land Department. The trees had to be watered weekly. Approximately 80% of the trees survived.

5. Grasslands

Prescribed burns were implemented in 1988 to enhance and restore refuge grasslands. Approximately 5,600 acres were burned in April and May. The purpose of these burns was to reduce mesquite, burroweed and snakeweed, and stimulate annual forbe and legume production.

Since the discontinuation of grazing on the refuge, the grasslands are reaching climax successional stages that do not benefit wildlife. The refuge burning plan hopes to meet the needs of masked bobwhite and other wildlife dependent on early successional stages of vegetation.

These burns have also resulted in top-killing mesquite trees that resprout and offer "shrub cover" for quail.

This program will also aid in controlling mesquite invasion and result in maintaining an "open" grassland.

Preliminary surveys of the burned areas indicate a higher diversity of plant and insect life than before. Woody species such as snakeweed and burroweed were removed. Many native grasses, such as Arizona cottontop, cane beardgrass, plains lovegrass and vine mesquite were stimulated by fire. The exotic Lehmann's Lovegrass also responded well. However, where adequate moisture fell, annual forbes seemed to out-compete even this hardy grass.

Prescribed burning was the only grassland management technique employed in 1988.

7. Grazing

There were constant requests from local ranchers to graze the refuge. Many felt that the refuge was wasting grass and they considered it only prudent to have their cows remove the surplus. Refuge staff worked closely with an adjoining Mexican rancher in keeping his cattle off the refuge. Illegal drug running results in fences being cut and causes many problems in keeping the international fence in good condition.



International trespass cattle were a constant problem.
Here cattle are being herded along a 'cut' fence and back
into Mexico. WAS

A second rancher was consistently reminded to get his cows off the refuge. They would be removed but they would be back the next day. The rancher's response, "What do you expect; you have all the grass." Another rancher's cattle are constantly trespassing on the Northeast part of the refuge. Because of the lack of personnel, it has been impossible to correct the problem. They have all been given written warnings. Once the land swap takes place, the refuge will initiate a roundup policy where the livestock will be gathered and corralled. If the owners do not compensate the refuge for expenses, the animals will be sold at the livestock auction. Maybe this will get their attention.



Generally the refuge is surrounded by large ranchers who practice poor grassland management techniques. WAS

9. Fire Management

A. Wildfire Suppression

We had some trouble in 1988 hiring the 4-person fire crew called for in our Fire Management Plan. We are authorized to hire temporary full-time laborers for 6 months (April through September). The requests for personnel actions fell in a crack between here and the Regional Office and had to be resubmitted. Because of this delay, we didn't get the crew on board until May 1st. And then only 3 of the 4 hired showed up. One man came to the refuge, signed all the pre-appointment papers, was issued 2 nomex fire shirts and then disappeared into the night.

Fabian Gomez, the WG-4 crew leader, was a returnee from 1987. He was "on loan" to the Buenos Aires from the U.S. Forest Service to help us get our fire program organized and underway. Mike Trent and Joe Czerniak, WG-3 laborers, also had fire fighting experience with the U.S.F.S.

The fire crew and regular staff put out 6 wildfires on and off the refuge:

<u>DATE</u>	<u>NAME</u>	<u>ACRES</u>	<u>LOCATION</u>
<u>OFF REFUGE</u>			
17 MARCH	LUIS	75.0	T21S,R9E,S26
<u>ON REFUGE</u>			
26-27 MARCH	ARROYO	1500.0	T21S,R8E,S21
03 MARCH	ASHCRAFT	45.0	T22S,R8E,S27
17 JULY	BOBWHITE	125.0	T22S,R8E,S9,10
10 NOVEMBER	NEW TANK	13.0	T21S,R9E,S3
10 NOVEMBER	ARIVACA	1.0	T21S,R9E,S4

In addition, Fabian Gomez, Mike Trent and Jeff Enlow provided 89 staff-days of assistance to some of the large project fires in the northern Rocky Mountains.

<u>DATE</u>	<u>NAME</u>	<u>LOCATION</u>	<u>ASSISTANCE</u>
23 JUL-04 AUG	WILLIS GULCH	SAWTOOTH NF, IDAHO	1 FIRE FIGHTER
17 AUG-09 SEP	WARM SPRINGS	MONTANA	1 PROBE-EYE OPERATOR
27 AUG-09 SEP	TRAIL CREEK	CARIBOU NF, IDAHO	2 MEN, 1 ENGINE
10 SEP-21 SEP	RED BENCH	MONTANA	2 MEN, 1 ENGINE

B. Prescribed Burns

The refuge crew conducted 3 prescribed fires, all in the headquarters area, that totaled 4,028 acres. The use of fire to manipulate vegetation worked very well. Specifically, we were able to set back the mesquite trees by top-killing, eliminated snakeweed and burroweed, and produced the flush of annuals that follow grassland fires. By removing the litter and providing many annual forbes, the areas burned provided excellent brood habitat for the masked bobwhites released there later in the summer.

<u>DATE</u>	<u>NAME</u>	<u>ACRES</u>	<u>LOCATION</u>
09 MAY	ENTRANCE ROAD	893	T21S,R8E,S21,22
10 MAY	ROUND HILL	1835	T21S,R8E,S2
16 MAY	BIG BERTHA	1300	T21S,R8E,S20,29,32

TOTAL	<u>4028</u>
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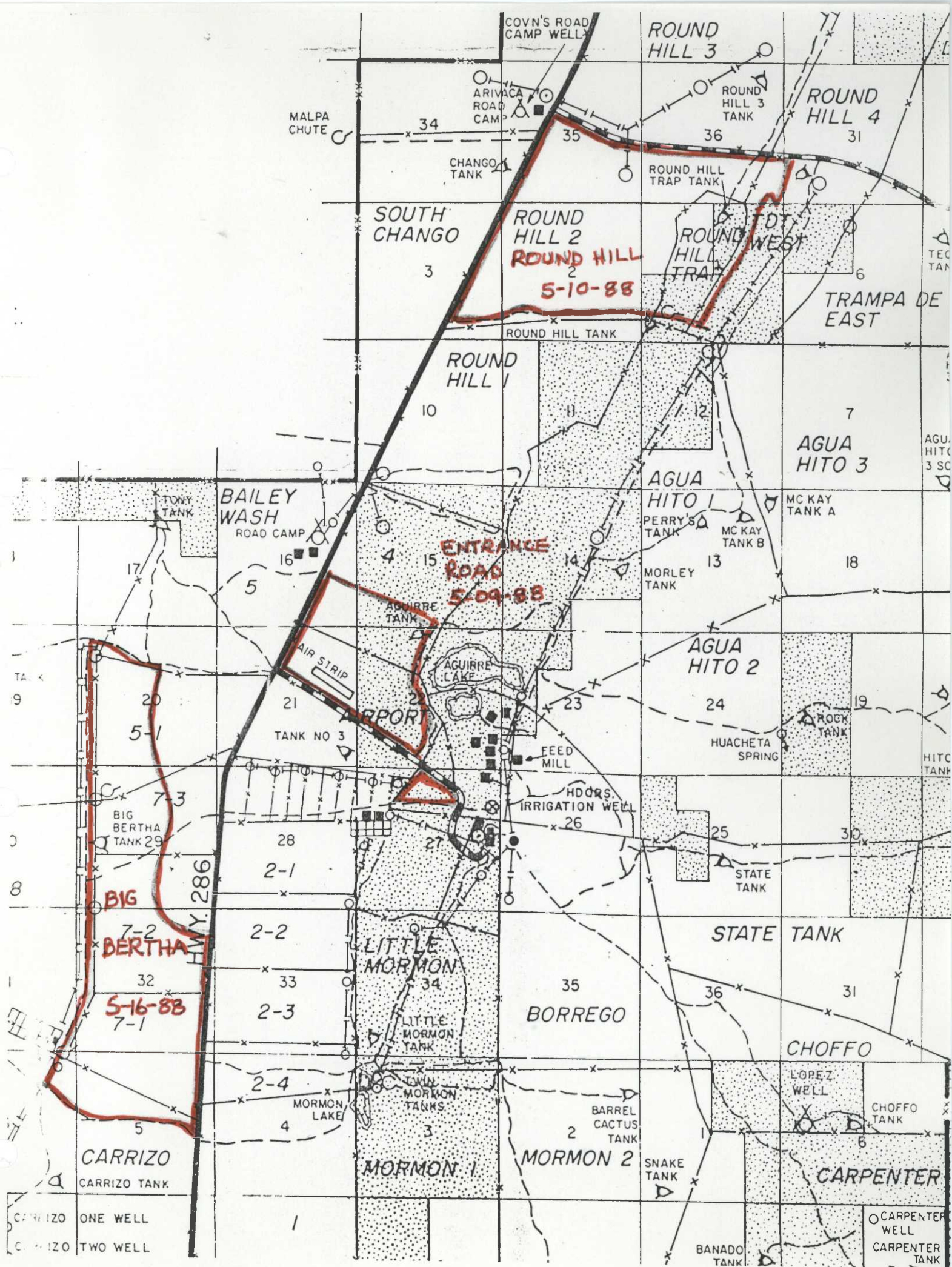
Forest Service and State Land Department Personnel
assisted the refuge on wildfires. WAS



Assistant Manager Madsen going over plans for a
prescribed burn prior to ignition. WAS



Prescribed burns were used on 4,028 acres of grasslands
to control the spread of mesquite and encourage more
grassland/forb diversity. WAS



10. Pest Control

The refuge checked out the possibility of having a pest control agency come out and service all residences and administrative buildings. The estimated cost was \$3600 annually. The decision was made that the Government could be better served by having each tenant handle his own pest control problems. The Government purchased the household chemicals.

The refuge had a problem in the headquarters area and around all residences with gophers. They would travel underground and make holes and mounds of dirt. The appearance of the lawns resembled a plowed field and mowing was a safety hazard. Hole traps were set and helped to alleviate the problem, but it never completely disappeared because a new gopher would almost immediately move into the area. Poison bait was not used because of the potential conflict with wildlife management objectives.

11. Water Rights

Filing claims for all lakes and ponds have been completed on fee and non-fee lands as per the Santa Cruz adjudication process. During the year, the refuge pumped 6 acre feet of water for domestic use and 17.2 acre feet for non-irrigation use. The refuge has 79 acre feet of Grandfather water rights. The refuge also has grandfather rights to a specified amount of free flowing water in Arivaca Creek but it is not yet determined what that right is.

G. WILDLIFE

1. Wildlife Diversity

On April 7, 1988, an adult male garganey visited Grebe Pond. Students on an ornithology field trip led by Dr. Steve Russel were the first to discover this unexpected occurrence. It was the second record for this species in Arizona. Approximately 100 Arizona birders added it to their life list before it departed.

On October 7, a Heermann's Gull was seen on Grebe Pond. On November 9, eight Bonaparte's were observed at Aguirre Lake. They stayed for seven days. On November 13, two sandhill cranes were observed flying toward Aguirre Lake. Shortly thereafter, the numbers increased to eight individuals. They fed several days around Aguirre Lake.

On November 19, an old squaw showed up at Grebe Pond. It was the first record for the refuge and a rare sighting in Arizona. On November 20, two merlins stayed around the Aguirre Lake complex for several weeks.

The refuge conducted its third annual Christmas Bird Count on December 20. A total of 17 participants counted 121 species (including 9 masked bobwhites) and approximately 10,000 individual birds. The most notable species seen included a green kingfisher, crested caracara, red-shouldered hawk, and golden-crowned sparrow.

2. Endangered and Threatened Species

Jaguar

One of the most exciting sightings made on the refuge was that of an adult jaguar. In February, a large spotted cat was reported by javelina hunters in the San Luis wash area. It was later "treed" in March by dogs of an experienced lion hunter about two miles north of the refuge on the Palo Alto Ranch. Refuge biologist Steve Dobrott investigated soon after the incident and made casts of the 5 inch tracks. Further investigation revealed the tracks of a large cat in several washes on the north end of the refuge. In May it was reported in the Sierrita Mountains about 10 miles to the northwest of the Palo Alto Ranch.



A report was made of a jaguar on the refuge. The only signs that the refuge witnessed was a track. WAS

Masked bobwhite

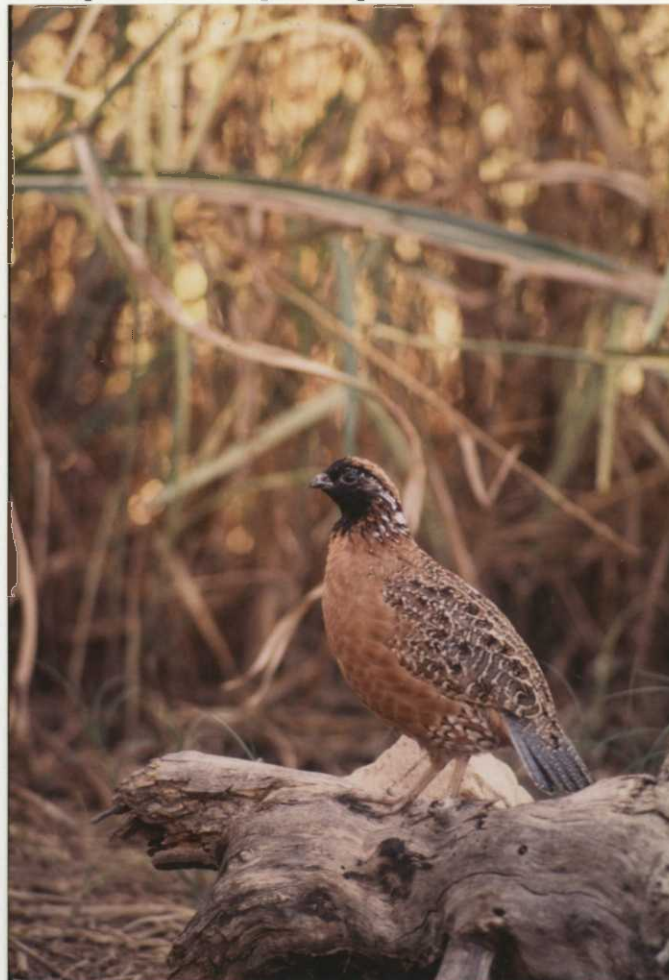
A total of 2,313 masked bobwhites were received from Patuxent Wildlife Research Center. Using the foster-parent adoption method, a total of 1,841 masked bobwhites (80%) were released on the refuge. An additional 153 birds were held for experimental releases in the spring. Releases consisted primarily of broods fostered by adult Texas bobwhites resulting in 130 broods released. The masked bobwhites were received at 2 weeks of age, and were released at 3 to 4 weeks. We lost 118 chicks to an outbreak of Coccidiosis. Overall mortality was limited to 14% of the total birds received. Thirteen covey releases consisting of juvenile birds were made in the fall. These groups were also released with a Texas adult. The 1988 progress report is submitted herewith:

Program Highlights:

- (1) Continuing efforts have focused on reestablishing and researching the refuge population and its habitat; 6,300 pen-reared masked bobwhite juveniles have been released on the refuge since 1985 (1,841 of these in 1988).
- (2) Approximately 10-15 calling males, and two pairs were observed during the breeding season. A total of 135 bobwhites (14 coveys) have been located during winter surveys. Capture efforts since

December resulted in only 15 birds trapped, 5 of which were wild birds of the year.

- (3) Graduate studies directed by the Arizona Cooperative Wildlife Research Unit are continuing. A full-time Biological Technician was hired by the Unit to monitor the refuge population for 6 months.
- (4) Prescribed burns were implemented on the refuge as a habitat management tool for bobwhite. Approximately 4,000 acres were burned to stimulate new growth of important forbs and legumes, and to retard mesquite invasion.
- (5) Field work in Mexico in August indicated continued decline in wild population and its habitat. The revegetation of overgrazed areas with exotic buffelgrass is considered as much of a threat to bobwhite ranges as overgrazing itself.



The Buenos Aires was purchased for the reintroduction of the masked bobwhite to southern Arizona. A small population has been established.

PZ



Female masked bobwhite. PZ

Important Changes Since Last Year:

- (1) Efforts were made to reduce brood mortalities by coordinating releases to end prior to the fall raptor migration period (October). Approximately 100 birds were held for other experimental releases through spring and summer.
- (2) Implementation of a hormone study on Texas bobwhites to better understand adoptive behavior and improve adoption success.
- (3) Implementation of first prescribed burns for bobwhite habitat improvement on the range.
- (4) Completion of graduate studies on bobwhite habitat preferences (results pending).
- (5) Hiring of full-time Bio-tech to monitor releases.

- (6) An important contact was made with the manager of Rancho El Carrizo, one of the last remaining areas where masked bobwhites are known to exist in Sonora, Mexico.

Texas Bobwhites:

Surplus Texas Bobwhites (40) used in 1987 were kept for reuse in 1988. We received 119 birds from Texas Parks and Wildlife Department in December (included in Table 1.) This is the total number of bobwhites received from Texas since 1975. The birds were received in December instead of March, as in previous years. This change enabled greater ease in trapping in Texas, and provided birds in better condition than those received in early spring.

The sterilization of these birds was performed in May and June. Only one bird was lost during the operations. Five other post-op mortalities were later recorded. Other mortalities for the year totalled 22.



Refuge Biologist Steve Dobrott has become an expert at masked bobwhite quail sterilizations. WAS

The criteria for evaluating adoption results (Table 2.) was modified in 1988. Acceptors were identified by the defensive behavior they displayed while hearing an imitation of the chick distress call. This response was associated with brooding behavior and usually occurred within the first 24 hours of the adoption trial. Rejecters were kept

for future use as foster parents or covey mates. Interestingly, 64% of the 1987 rejecters were acceptors in 1988.

For 194 adoptions (groups), 315 trials resulted in 141 acceptors and 174 rejecters with an overall success of 45% resulting in 140 brood releases. The average brood size was 12.2 chicks.

In an attempt to increase the number of acceptors, research was conducted for the purpose of understanding the mechanism relating hormones to the adoptive behavior in Texas Bobwhites. A total of 88 blood plasma samples were analyzed to determine baseline hormone levels of 48 prospective surrogates before and after adoption trials. Testosterone assays were conducted by Dr. Carol Vleck at the University of Arizona. The results confirmed a significant increase in testosterone levels in the rejecters and a significant decrease in the acceptors.

It is suspected that high levels of testosterone interferes with other hormones (i.e. prolactin) that induce broody behavior. We plan to investigate the use of testosterone inhibiting chemicals that might increase the number of acceptors in 1989.

Masked bobwhites:

Nine shipments totalling 2,313 masked bobwhite chicks were received at the refuge (Table 3.) Chicks were received at 2 weeks of age and released at 4 weeks with their foster parents. The first shipment arrived on June 20, and the last one on September 28. All brood releases were made by October 1st, in an attempt to avoid the fall raptor migrations. Covey releases of 135 subadults were made in November. A total of 1,841 birds (80%) were released in optimal habitat on the refuge.

Approximately 118 birds succumbed to Coccidiosis before we were able to gain control over the disease. Necropsy reports indicated that the disease was present in the chicks prior to arrival at the refuge. Total mortality of chicks used for adoptions was 319 birds (14%).

Releases were made south of Arivaca Road within areas that were responding to spring prescribe burns (Figure 1.) The habitat in these areas was believed to be the best available for broods. This years release strategy was to concentrate higher numbers of birds within optimal habitat and avoid releasing into areas where last years birds might be breeding. It was felt that the 1987 release strategy spread groups too far apart over too much habitat, resulting in few concentrations of birds able to provide adequate covey recruitment through the winter.



Animal Caretaker Danny Culling and Biologist Steve Dobrott preparing to release birds. The Volkswagen has proven to be an invaluable asset in releasing birds in remote areas. WAS



A total of 1,841 masked bobwhite chicks were released in grassland habitat that contained a diversity of grasses, forbs, and shrubs. WAS

From September to November, 12 coveys of juvenile masked bobwhites, totalling 135 birds, were released. Each covey included a Texas Bobwhite as a covey-leader. Prior to release, the juveniles experienced about 1 month of flight conditioning in a 60 x 100 foot pen.

One hundred fifty-three subadults were held for releases later in the year. As of January 1, 112 birds remained after 22 losses and 19 escapes. These birds were kept in excellent condition by rotating half of the flock from the holding pens to the flight pen at 2 week intervals.

Recoveries:

On June 28, an adult male was recovered from a private residence in Arivaca. The bird, accompanied by another male not captured, was apparently attracted to domestic bobwhites that the owner was raising. The bird was identified by the clipped left hallux (before patagial wing bands) as originating from the point of release near Sasabe in 1986. The birds had traveled a minimum of 15 airline miles.

On July 21, male no. 2749 was captured at headquarters. The bird was released on September 16, 1987, at .75 miles south of Pozo Nuevo at the north end of the refuge. The bird had traveled a minimum distance of 14 miles.

On July 26, the morning after a hard rain, 11 immature bobwhites were found dead under a mesquite. They had been released on July 1.

From August 7 to December 4, a total of 19 Texas Bobwhites were recovered at the headquarters. All but one had been released with chicks; the other, with immature birds. The time in the wild for these birds ranged from 5 to 39 days. They included 10 acceptors, 8 rejecters.

On December 8, six birds from a covey of 12 were captured 1 mile north of the Mexico border. They included one adult female released near Pozo Nuevo on September 16, 1987 (a distance of 20 miles); a juvenile male released near the refuge headquarters on August 18, 1988 (a distance of 5 miles); and one male and three female wild juveniles.

Table 2. Texas bobwhite adoption results in 1988.

Date	No. Groups	No. Adoption Trials	No. Acceptors	No. Rejecters	% Success
Jun 20	4*	5	3	2	60
Jul 6	10*	10	8	12	40
Jul 6	10*	19	5	14	26
Jul 20	10*	11	10	1	91
Jul 20	20	36	15	21	42
Aug 3	30	60	22	38	37
Aug 18	30	74	21	53	28
Aug 31	30	40	22	18	55
Sep 14	30	30	20	10	67
Sep 28	20	20	15	5	75
Total	194	305	141	174	46%

* Groups consisting only of 1987 surplus Texas bobwhites.

A maximum of three trials per group were made in order to find acceptors, with the exception of the August 18, shipment which needed four trials.

Table 3. Numbers of masked bobwhites received and released on the Buenos Aires NWR in 1988.

Date Received	Number Chicks	Age in Weeks	Shipping Loss	Brooder Loss ^a	Run Loss ^b	Total	%	Number Released	%
Jun 20	40	2	0	0	2	2	5	38	95
Jul 6	251	2	2	9	4	15	7	206	93
Jul 20	458	2	3	21	6	30	7	420	93
Aug 3	448	2	1	24	12	37	8	322	92
Aug 17	300	2	3						
Aug 18	130*	2	1	7	44	55	13	330	80
Aug 31	320	2	12	45	61	118	37	90	63
Sep 14	160	2	0	22	6	28	17	132	83
Sep 28	206	2	4	26	4	34	17	168	83
								135**	
Total	2313		26	154	139	319	14%	1841	80%

A total of 153 birds were held-over for other types of releases in the spring. As of January 1, 1989, 112 birds remained due to 22 mortalities and 19 escapes.

^a Average time chicks spent in brooder was 3 days.

^b Average time chicks spent in runs was 5 days.

* Shipment treated for Coccidiosis.

** Birds held and later released as coveys.

BUENOS AIRES NATIONAL WILDLIFE REFUGE

UNITED STATES
DEPARTMENT OF THE INTERIOR

PIMA COUNTY, ARIZONA

UNITED STATES
FISH AND WILDLIFE SERVICE

R 8 E

111°30' R 8 E

R 9 E

111°25'

R 9 E

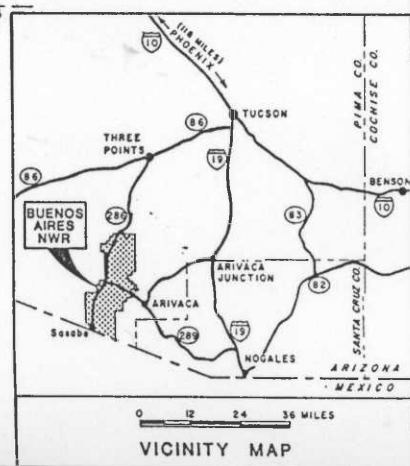
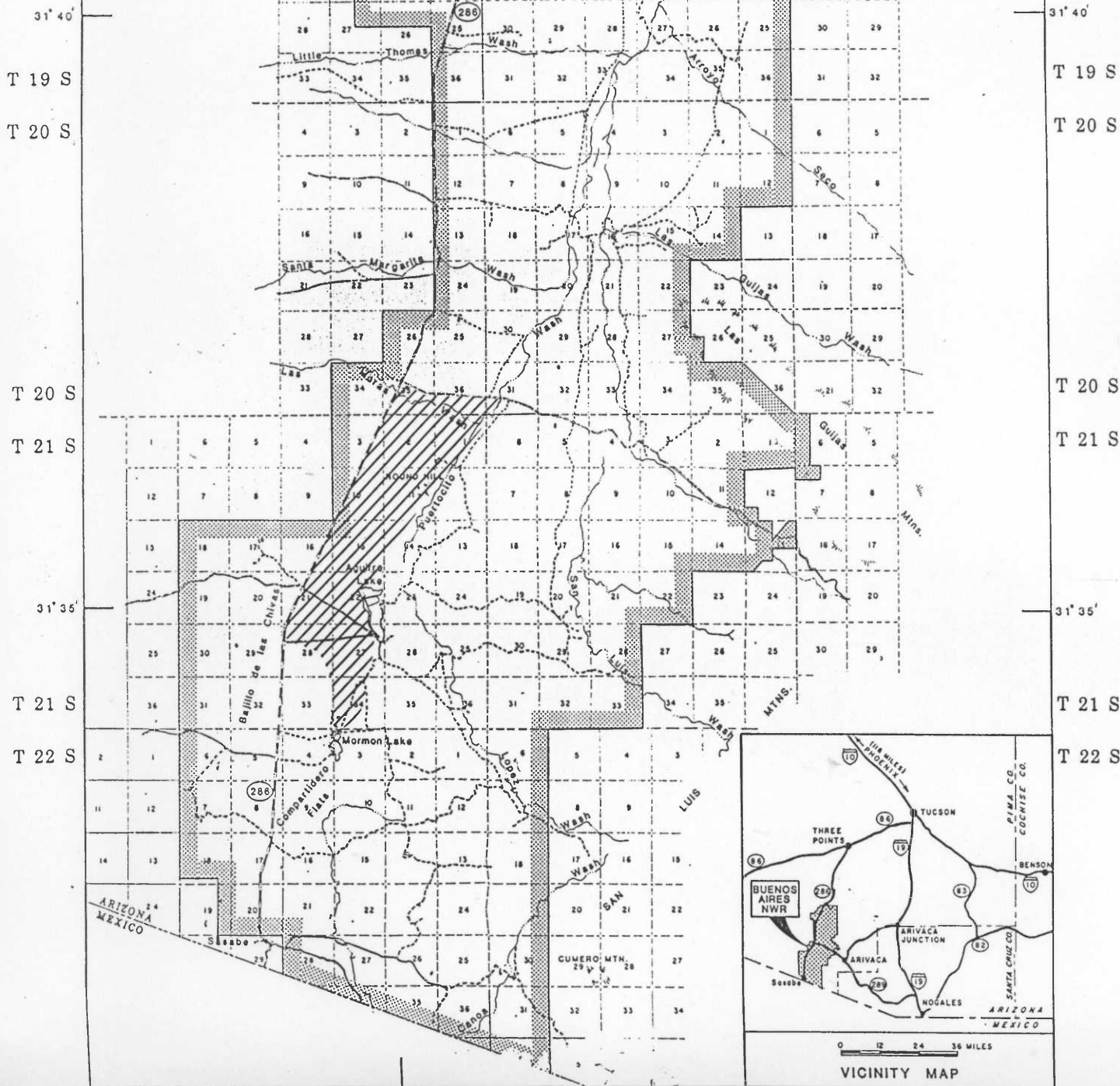
R 10 E

FIGURE 1.

LEGEND

REFUGE BOUNDARY

1988 Release Area



COMPILED IN REALTY FROM
U.S.G.S. QUADRANGLES, G.I.O.
PLATS, AND SURVEYS BY F.W.S..

GILA AND SALT RIVER PRINCIPAL MERIDIAN

ALBUQUERQUE, NEW MEXICO JULY 1985



MEAN
DECLINATION
1979

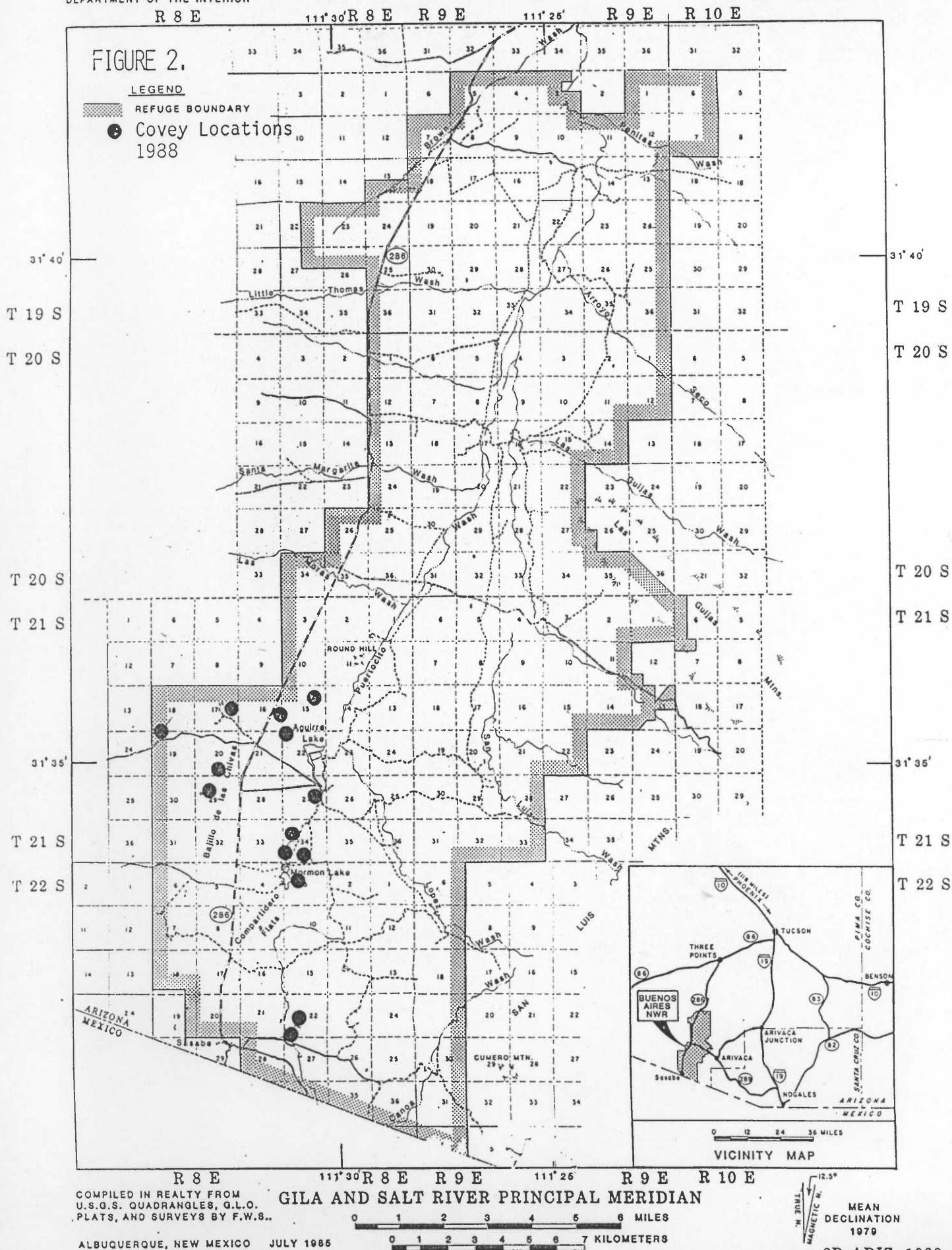
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UNITED STATES
FISH AND WILDLIFE SERVICE

LEGEND

 REFUGE BOUNDARY

 Covey Locations
1938



From December 1 to February 6, 14 coveys totalling a minimum of 135 bobwhites, were located on the refuge (Figure 2.). Intensive trapping efforts resulted in capturing only 15 birds, as of February 24.

Recommendations:

It is suspected that inadequate winter food and cover may be contributing to the high rate of dispersal of birds from release sites and low numbers of birds over-wintering on the refuge. Habitat manipulations such as brush-piling, mesquite half-cutting, discing, prescribed burns, and seeding of winter food crops, are recommended actions at this time. Propagation and planting of legumes for food and cover should be investigated and experimented with. The restoration of winter habitat, characteristic of bobwhite winter habitat in Mexico, should be the goal. In the meantime, management practices described above will help hold and over-winter birds to breeding season.

Endangered fish

Personnel from Arizona State University visited the refuge periodically to assess 1987-88 stockings of bonytail chubs and razorback suckers. The experimental use of refuge ponds as interim grow-out facilities for endangered fish has proven very successful. Survival and growth of bonytail and razorback sucker have been excellent in these artificial habitats. The efficacy of stock tanks for grow-out of imperiled fishes at the refuge was clearly demonstrated. Additional waters for receipt of endangered fishes have been identified and plans to continue this program are under way.

3. Waterfowl

Runoff from the summer monsoons helped increase the surface water over last year. Both Aguirre and Mormon Lakes filled in late August, providing waterfowl habitat throughout the winter. The greatest concentration of waterfowl occurred in early September and peaked at 5,000 birds. Most of the birds were gone by February 1, except for a few ruddy ducks and grebes that remained until March.

4. Marsh and Water Birds

Due to adequate water levels, high numbers of breeding amphibians, and the presence of bullhead catfish that washed out of an upstream pond, there was an excellent food supply for herons and egrets this year. Two tricolored herons were notable visitors, as well as 15 black terns, 4 green herons, 12 black-crowned herons, and about 80 white-faced ibis.

5. Shorebirds, Gulls, Terns, and Allied Species

Habitat for this group of birds is restricted to pond edges and exposed mud flats on Aguirre and Mormon Lakes. The largest concentration of shorebirds occurred during the fall migration when approximately 50 blacknecked stilts, 10 American Avocets, 25 long-billed curlews, and 100 Greater and Lesser Yellowlegs were observed feeding and resting on the shoreline of Aguirre Lake. Most of these species stayed only for a brief period.

6. Raptors

The most outstanding refuge raptor sightings of the year include the following:

- (1) Caracara - sighted by Jeff Bolsinger in November.
- (2) Swainson's Hawk - at least six pairs nested on the refuge.
- (3) Black-shouldered Kite - at least three pairs were seen on the refuge. No evidence of successful reproduction has been identified.
- (4) Merlin - two merlins wintered at the headquarters area.
- (5) American Rough-legged Hawk - In November, Steve Dobrott reported the first refuge record of a single adult American Rough-legged Hawk.

Of the raptors that breed on the refuge, the most common species is the Red-tailed Hawk. An estimated 20-30 pairs nested on the refuge. The second most common breeding raptor is the Great Horned Owl. Great Horned Owls have all but replaced nesting Barn Owls around the headquarters.

7. Other Migratory Birds

Mourning and white-winged dove numbers were down statewide. Biologist Steve Dobrott conducted the annual mourning dove routes in May.

The primary waterfowl species using the refuge included Cinnamon, Blue-wing, Green-wing Teal, and Pintails.

8. Game Mammals

The big game species that occur on the refuge include mule deer, whitetail, javelina, and mountain lion. Small game species include cottontail and jackrabbit. These animals are hunted over the majority of the refuge. Refuge boundaries lie within state game management units 36A, 36B, and 36C.

The refuge cooperated with Arizona Game & Fish Department by assisting in big game surveys (ground and air), and by making management recommendations to the Department.

The 1987-88 big game surveys were conducted by the refuge staff from January 11-15. Seven permanent deer survey routes (vehicle) were established totalling approximately 70 miles of refuge roads. Some routes were run more than once. The following results of the refuge deer surveys are expressed as the ratio of number of bucks : 100 does : number of fawns.

Mule Deer

<u>Unit</u>	<u>Bucks</u>	<u>Does</u>	<u>Fawns</u>	<u>Total</u>
36A	7 (18)	38 (100)	12 (32)	57
36B	15 (19)	78 (100)	49 (63)	142
36C	3 (27)	11 (100)	6 (54)	20

For comparison, the following results of the Arizona Game and Fish Department unit-wide surveys are expressed as the ratio of number of bucks: 100 does: number of fawns.

<u>Unit</u>	<u>Bucks</u>	<u>Does</u>	<u>Fawns</u>	<u>Permits</u>
36A	18	100	32	1000
36B&C	18	100	45	600

Whitetail

<u>Unit</u>	<u>Bucks</u>	<u>Does</u>	<u>Fawns</u>	<u>Permits</u>
36B	14	100	26	N/A
36C	16	100	49	N/A

Javelina

A five year average of data for javelina is as follows:

<u>Unit</u>	<u>Average Herd Size</u>	<u>No. Juveniles/100 Adults</u>
36A	8.2	31.4
36B	9.6	33.0
36C	12.8	31.0



Javelina are one of four big game species hunted on the refuge. The others are mule and white-tailed deer, and mountain lion. SD

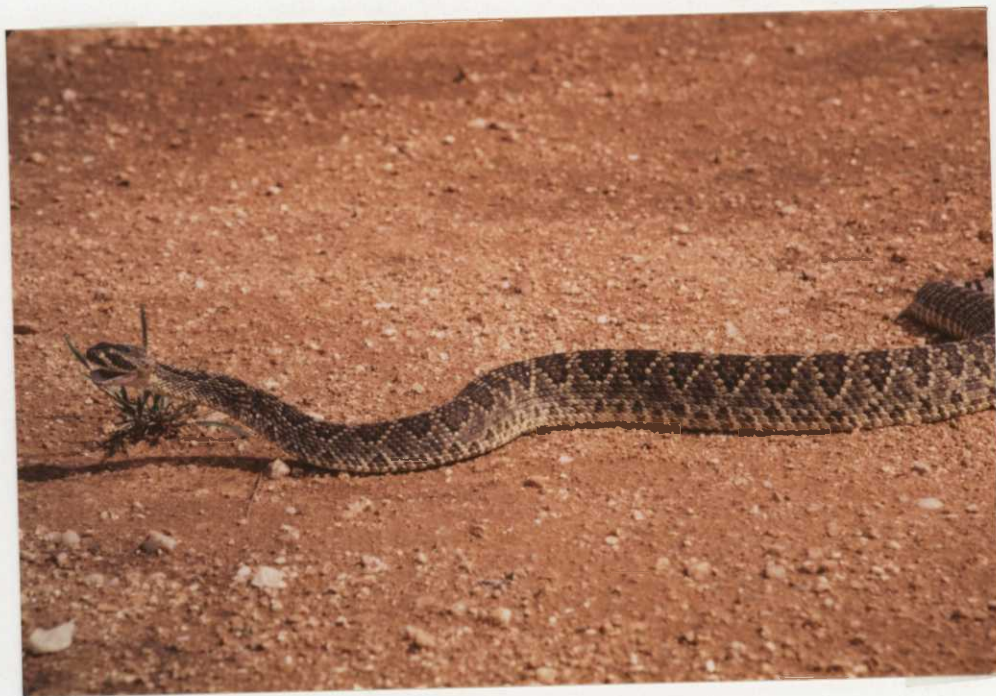
Mountain Lion

Mountain Lion hunting was closed this year on the refuge from April 1, through September 1. One lion was reported by a highly excited bowhunter who surprised the cat while both were apparently stalking the same group of deer. Mountain lion tracks have been seen in various locations of the refuge, particularly where deer numbers are high.

10. Other Resident Wildlife

A small portion of the colony of free-tailed bats, that in the past used the hayloft of the horse barn, arrived late in the summer. The bats disappeared shortly after construction began on replacing the barn roof.

With the new roof and skylights, it is not likely that the loft is still suitable for the colony.



Mohave rattlesnakes are resident species which are fairly common on the refuge and they can generally be distinguished from Western Diamond-backed rattlesnakes by their green coloration. WAS

11. Fisheries Resources

No other fisheries resources occur on the refuge other than those associated with the endangered fish recovery program.

12. Wildlife Propagation and Stocking

The pronghorns that were reintroduced to the refuge last year finally settled down after extensive wandering. From the original 86 animals released, approximately 50 have been accounted for, including 37 on the refuge. Five of the original 11 radio collared animals remain on the refuge. Only three fawns were known to have been produced, despite 2 weeks of coyote control efforts. However, no evidence of adult predation has occurred since. The refuge herd has developed a home range in the vicinity of the headquarters and various groups and individuals are commonly seen by visitors and staff. We look forward to a more productive fawning season in the spring.

The following is a summary of the pronghorn herd composition as of December 1988:

<u>Group</u>	<u>Males</u>	<u>Females</u>	<u>Fawns</u>	<u>Total</u>	<u>Comments</u>
1	5	6	0	11	Two radios (M,F)
2	6	11	2 (M,F)	19	One radio (F)
3	1	4	1 (F)	6	Two radios (F,F)
Totals	12	21	3	36	
Ratio	57	100	7		

All three groups later joined together and wintered in the Mormon Lake area of the refuge.

15. Animal Control

It became immediately apparent that coyotes were steadily preying upon the pronghorns reintroduced to the refuge in December 1987. Six adult pronghorns were taken the first week after release. It is estimated that approximately 30 of the 86 animals released were lost to coyote predation this year. To combat these losses, the refuge implemented coyote control in 1988 for the protection and increase of the herd. The control program was directed at lowering the numbers of coyotes within the anticipated pronghorn fawning areas. The control program was coordinated by Arizona Game & Fish Department and the Service, and contracted with APHIS. Approximately 60,000 acres were controlled by helicopter from April 4-8, and again from May 16-20. A total of 58 coyotes were taken. It is expected that this program will have to continue for possibly 2 more years until the pronghorn herd is stabilized and recruitment is exceeding losses.



The refuge contracted APHIS to control coyotes for the protection of antelope young. Using helicopters, APHIS personnel removed 58 animals. WAS

The total number of coyotes taken on the refuge in 1988 include the following:

<u>Category</u>	<u>Number of coyotes</u>
Trappers	5
Refuge personnel	9
Varmint callers	15
APHIS	58
Misc. reports	2
Total	89

16. Marking and Banding

A total of 270 Texas bobwhites and 1,841 masked bobwhites were banded and released on the refuge in 1988.

17. Disease Prevention and Control

Standard health precautions were taken to reduce the possibility of disease among the captive quail. Periodic doses of Terramycin and coccidiostat were administered in the drinking water. All brooding facilities and equipment were thoroughly disinfected.

In spite of these efforts, we suffered our first outbreak of coccidiosis. The disease killed 118 masked bobwhites before brought under control. Infected stock were treated with sulfa and a more aggressive preventative program has been implemented. Although minor, this incident revealed the need for improved pen facilities.

Refuge horses were routinely inoculated for encephalomyelitis, tetanus, equine influenza and distemper. Routine worming twice a year was also included in our horse maintenance program.

H. PUBLIC USE

1. General

The Public Use Program centered on giving slide talks at the refuge's proposed visitor center and off-refuge presentations. The Public Use Program escalated from 1987 use.

6. Interpretive Exhibits/Demonstrations

The refuge was programmed for \$10,000 to plan and construct exhibits for the proposed visitor center. A meeting was convened at the refuge with Gerry Fuhrman, Contract Designer; Steve Smith, Supervisor for Zone 1; Bonnie Swarbrick, Artist & Illustrator; and the Project Leader. A concept plan was completed. Exhibiting at the proposed visitor center was planned in two phases. In phase 1, there would be some rehabing of the existing facility, plus 6 exhibits would be completed. Major exhibits and rehabing of the visitor center would be completed when major construction funding was available through a "special" appropriation. At the end of the year, the verbage had been completed for the exhibits, but Mr. Fuhrman had not presented the refuge with a draft of the schematic concept plan.



The refuge opened up a self-guiding auto toor loop complete with new routed signs. The loop is 12 miles long and offers the visiting public the opportunity to see antelope, deer, and other wildlife. WAS

7. Other Interpretive Programs

The refuge contracted a local artist to design and illustrate a general brochure and bird list for the Buenos Aires and San Bernadino refuges. The verbage was completed, but the final draft of the leaflets had not been completed at the end of the year. Leaflets have not been published previously because of other higher priority projects. During the year, the refuge presented 22 programs to various groups who have an interest in the refuge programs.

Following is a list of programs presented during the year:

<u>Month</u>	<u>Group</u>	<u>Participants</u>	<u>On-Refuge</u>	<u>Off-Refuge</u>
Jan.	Visiting tour group	35	X	
	Visiting tour group	12	X	
Feb.	Silver Toppers Club	40		X
	Arizona/New Mexico Wildlife Chapter	50		X
	Sasabe School	12		X
	Tucson Estates Nature Club	40		X
	Pima Community College	10	X	
	Tucson Estates Nature Club	30		X
	Arizona Nature Conservncy	30	X	
Mar.	Pima Community College	20	X	
	Hi Twelve Club	40	X	
	Pima Community College	20	X	
Apr.	Range Society	30		X
May	Sahuarita High School	30	X	
June	Federal Executive Council	6	X	
July	Kiwanis Club	60	X	
Sept.	University of Arizona	75		X
	Hi Twelve Club	40		X
	Pleasure Bent Tours	20	X	
Oct.	University of Arizona	25	X	
Nov.	Pleasure Bent Tours	20	X	
	Total	645		



The refuge expanded its on-refuge sponsored programs by giving guided tours to 13 groups. WAS

The refuge contributed monthly articles to the Audubon newsletter. These articles were written by volunteer Mary Ann Chapman and generally related to the latest wildlife news occurring on the refuge.

There were numerous articles written in the Tucson and Phoenix newspapers about the refuge. The news media has slowly began to write positive articles about the refuge's programs. The only negative comments came from a spokesman from "Defenders of Wildlife" on the proposed predator control program.

The refuge sponsored a Fish & Wildlife Service display panel and booth at the swap meet in Tucson. The "Public Lands Day" was a cooperative effort between the various public agencies in the Tucson Basin area. Interest was moderate. Plans were made to move the event into one of the Tucson malls in 1989 because of the unpleasant weather conditions (high winds).

8. Hunting

The refuge overlaps part of the State game management units 36A, 36B, and 36C. Although the Arizona Game and Fish regulations allow very liberal seasons on many species, it is the deer and javelina hunting that brings almost all of the hunters to the Buenos Aires.

In 1988, we used a questionnaire to survey javelina hunters. The following is a summary of the results:

	<u>REPORTED</u>		<u>PROJECTED</u>	
Questionnaires handed out	47			
Questionnaires returned	14	30%	47	100%
Hunters reporting	73		243	
Total hours spent	2,627		8,757	
Hours camping	1,830	70%	6,130	70%
Hours hunting	797	30%	2,627	30%
Javelina harvested	4	5%	12	5%

The 5% success ratio and the high number of hunting hours per javelina (219) are indicative of both the low number of javelina on the refuge and the quality of hunters involved.

The deer season began with an any antlered deer archery hunt from August 26 through September 22. This hunt brings so few hunters to the refuge that no law enforcement patrols were made. Casual contacts in conjunction with other duties led to no reports of success.

The early rifle hunt for antlered white-tailed deer was held on October 21-24. Only one small buck was taken. Twelve hunters were checked and three cripples reported.

The first mule deer hunt on October 28-31 brought more participants to the refuge (43), with 4 deer being taken.

The second mule deer hunt on November 4-13 resulted in the most hunters being checked (121) and 13 deer bagged.

The late white-tailed hunt on November 11-20 accounted for 25 hunters, but no success. The last white-tailed hunt, December 16-31, the muzzleloader hunt for any antlered deer on the same dates, and the any deer archery hunt, from December 16 through January 31, again brought so few hunters to the refuge that patrols were not made and no success was reported.

1988 DEER HUNT SUMMARY

<u>Species</u>	<u>Hunters</u>				<u>Harvest</u>			
	<u>Checked</u>		<u>Projected</u>		<u>Checked</u>		<u>Projected</u>	
	36A	36B/C	36A	36B/C	36A	36B/C	36A	36B/C
Mule deer	106	58	117	64	11	6	12	6
	36A/B/C		36A/B/C		36A/B/C		36A/B/C	
White-tailed deer	37		39		1		5	

The projected figures are based on our estimate of 90% of the hunters on the refuge being checked. The calculated success of 10% (18/181) is indicative of the quality of hunters more than of the number of deer (although surveys show a continual widening of the buck/doe ratios in our area). It is interesting to compare comments when checking hunters. They range from "I didn't see any deer" (which was our fault, naturally), to "I saw a lot of deer, but only does," to "what a great area to hunt" (4 bucks hanging in camp).

The deer taken in 36A were: spike (3), 2 x 2 (1), 3 x 2 (1), 3 x 3 (4), 3 x 4 (1), and 4 x 5 (1). In units 36B and C, the harvest was: spike (2), 1 x 2 (1), 2 x 2 (1), 2 x 3 (1), and 3 x 4 (1).

Very few dove hunters were checked and only a couple of parties of duck hunters. Success in both areas was low.

11. Wildlife Observation

The number of avid birders coming to the refuge to observe wildlife increased in 1988. It is estimated that 4,000 visited to observe wildlife. Since the refuge does not actively encourage people to visit, the refuge continues to be a rather unknown attraction to the general public. However, there were several birds observed on the refuge that attracted state-wide attention. A Garganey was identified at Grebe Lake on April 8 by a visiting ornithology class from the University of Arizona. Several hundred birders converged on the refuge to add the rare visitor to their life list. It was only the second record for the state. Many birders also visited the refuge to observe birds along Arivaca Creek which contains the only riparian habitat on the refuge. The number of avid birders to visit the refuge will probably increase substantially once the Arivaca Creek acquisition is completed. Birds such as Gray Hawks, Rose-throated Becards, Thick-billed Kingbirds, and Green Kingfishers are considered fairly common residents and may be easily observed. Plans are to construct a 5 mile nature trail along the creek and it should attract international attention.

The introduction of antelope on the refuge on December 7, 1987, also encouraged many visitors. Many sightseers would drive from Tucson or Green Valley for the explicit purpose of observing the antelope. Often the antelope were easily observed along the entrance road or along the self-guiding auto tour loop.

12. Other Wildlife Oriented Recreation

The refuge has one designated horse trail which runs along the southern boundary. The trail is open to public riding, but most use is by horseback riders from the neighboring resort site of Ranch de La Osa. They are dependent upon refuge trails for all of their riding. It is estimated that 500 riders use the trail annually.

13. Camping

During the Master Planning process, it was decided that camping would not be permitted unless it was in conjunction with a hunting experience. All camping in 1988 was associated with big game hunting of mule deer, white-tailed deer, and javelina. It is impossible to determine what percentage of hunters were camped, but all campers were assumed to be hunters. Using this correlation, it was determined that there were an estimated 750 camping days during 1988. Camping is generally not encouraged on the refuge because this opportunity is offered by a private businessman in Arivaca.

14. Picnicking

There were no established picnic facilities available on the refuge. The only activity associated with picnicking was accomplished by public user groups who were given conducted tours or programs on the area. Most of this activity was done in the headquarters area where trash disposal and sanitary facilities were available.

15. Off-Road Vehicling

The refuge did not allow this type of activity even though there was substantial evidence showing that it did occur. Most of the activity was during the big game hunting season. Hunters would drive the numerous washes looking for hunting sites, or simply shortcutting from various hunting areas. The refuge has not made a definite stand on the issue because most of the violations were occurring on state lands. Once the lands convert to Service ownership, there will be concerted efforts to eliminate all off-road vehicling.

16. Other Non-Wildlife Oriented Recreation

There were several requests to use the refuge for shooting practice purposes. Several local neighbors assumed the refuge was large enough where shooting targets would not be an obtrusive use of the area. Naturally, these uses were not permitted.



No records are kept on illegal drugs and aliens entering the refuge after hours, but the Border Patrol has indicated that this international gate is a major port of illegal entry into southern Arizona. WAS

17. Law Enforcement

Scheduled law enforcement patrols take place only in conjunction with the hunting seasons. Usually, the first day of dove and waterfowl hunting ends up with so few contacts that we drop back to incidental checking in conjunction of other duties.

The deer and javelina season bring enough hunters into the area that we run two officers a day for the Friday-Monday portions of the hunts.

Our biggest problems with hunters continue to be "new" trails resulting from driving beyond the ends of the roads (we haven't been able to catch anyone yet), and littering. By checking the condition of the camp area at the start and end of each weekend, and documenting who is camping where, we were able to make two cases in 1988.

The first instance resulted in three individuals being cited. One paid the \$100 fine; the other two requested a court date where, because of the circumstantial nature of the evidence and a one day lapse between the party leaving and in checking the camp, the U.S. Attorney recommended dismissal.

The second case was a party of four being cited, this time through the state J. P. system. Again, one person paid the \$125 fine and the other three requested a court hearing. They each ended up with a \$65 fine.

I. EQUIPMENT AND FACILITIES

1. New Construction

Approximately 1/2 mile of new dirt road was constructed in the headquarters area. This realignment of the 25 foot wide entrance road serves two purposes: (1) it reroutes all traffic away from the barn and quail pens, reducing dust and disturbance, and (2) it provides an access for ranchers and hunters going to forest lands without going through the headquarters area.

Standard, galvanized channel posts were installed along the 32 miles of refuge boundary that parallels the Sasabe and Arivaca Highways. The boundary and quail closure signs were taken off the barbed wire fences and mounted on the posts, greatly improving the appearance of the refuge from the highways.

2. Rehabilitation

During the year, the fire crew repaired or replaced the eaves and porch ceiling at the Pozo Nuevo house. The entire house was also scraped and painted.

Using informal contracts, we had local contractors complete the following major rehabilitation work:

- Completed electrical rewiring of the barn, including installing underground service. In numerous instances, the old wiring was found to be fused together with all the insulation melted into a "glob."
- Replaced the deteriorating cedar shingle roof on the barn with a ribbed metal roof with baked on enamel color.
- Upgraded the electrical wiring at Quarters No. 1 (Manager), Quarters No. 2 (Biologist), and the cook house.

About six miles of barbed wire fence and two cattle guards were removed from the general area of refuge headquarters.



The shake shingle roof was removed from the horse stable by a local contractor. WAS



The shake shingle roof was replaced with a new green metal roof with light panels. WAS

3. Major Maintenance

One old two bedroom adobe house in the headquarters area was demolished this year. The house had stood in 2-3 feet of water for a couple of months during the 1983 flood. Besides being located in an obvious floodplain, the adobes had been softened enough to make the building structurally unstable.



Maintenance worker Dale Enlow in the process of digging a hole to bury an adobe house flooded in 1983. WAS



Dale putting the finishing touches on leveling the land
after causing the adobe house to disappear. WAS

4. Equipment Utilization and Replacement

A new Dodge 4 x 4 pickup was received on December 15. We had ordered a 1/2 ton, diesel powered truck. For a number of reasons, we got a 3/4 ton with a gasoline engine.

A new John Deere 7 foot rotary mower and a 12 inch post hole auger were purchased in October.

When the Service special agents in Region 2 changed to new radios, we were able to obtain 6 of their old Motorola Syntor units. These 32 channel radios are being installed in our vehicles as we have the money. By replacing the 2 channel Motorola Micor radios, we not only increase our law enforcement communications ability, but also improve the safety of our personnel, as they are apt to encounter some desperate types working near the border.

Being located near two large air bases and an army fort, and being fortunate to enjoy excellent working relations with the local GSA disposal office, this refuge has been able to use the excess property program to good advantage. During 1988, we received the following items as excess property:

13 lawn mowers (to be cannibalized for parts)

One IBM Selectric II typewriter

\$5825 worth of miscellaneous materials (bolts, nuts, washers, electrical wire and outlets, PVC pipe and fittings, window screen, rooled roofing, angle iron, etc.)

Two 1972 Massey-Ferguson tractors, Model MF-31

1970 Case articulated front-end loader, Model MW-24, 2-1/2 yard bucket
D-7 Caterpillar dozer

1985 Dodge 4 x 4, 1 ton pickup

1979 Chevrolet Luv 4 x 4, 1/4 ton pickup with topper shell

40 feet semi box or van trailer (to be converted into a mobile fire cache)

400 gallon water trailer (for fire camp potable water)

Skid-mounted Lincoln 300 amp arc welder with engine.



A 1970 Case articulating front-end loader was picked up by excess from the Tooele Army Proving Ground in Utah. No repairs were necessary prior to putting it into operation. The front-end loader has contributed to many refuge objectives. WAS



A D-7 bulldozer was picked up by excess from the Army Corps of Engineering at Lake Whitney, Texas. The bulldozer had not been put into operation by the end of the year. WAS

5. Communications System

The 1988 fire season made us realize we needed a scan feature on our base station radio to enable our dispatcher to coordinate between refuge and state or USFS units. Regional Fire Management Coordinator Martin Suhr was able to get this item put in for us. Now we can transmit on one frequency while monitoring others for related traffic.

During the year, Martin was also able to obtain 13 Motorola Micor radios as excess property from the Border Patrol, change the crystals to our frequencies, and ship them to Buenos Aires. These radios have given us our first staff-wide communications.

6. Computer System

A second DEC Rainbow computer was received from the Regional Office as they upgraded their system. This outdated machine is being used by the refuge Biologist to record and track the masked bobwhite reintroduction program.

J. OTHER ITEMS

1. Cooperative Program

The refuge continued to be a member of the Group II Interagency Fire Council. This group is comprised of members representing the U. S. Forest Service, National Park Service, Bureau of Land Management, Arizona State Land Department, and various local fire departments. The group is charged with the responsibility of responding to any major fires in southern Arizona, with each agency contributing necessary fire fighting expertise. The refuge picked up a trailer which will be converted to a 100 man fire cache mobile unit. It will be transported by refuge equipment and personnel.

The refuge is comprised of 112,500 acres, of which approximately 90,150 acres is leased for commercial use. Law enforcement patrols and other law enforcement responsibilities have to be coordinated with wildlife managers of the Arizona Game & Fish Department or state land managers, because they have priority jurisdiction over state lands.

The Arizona State Land Department had major responsibilities over timber and plant removal on the refuge. The monitoring of mesquite wood cutting and removal was conducted by the refuge staff even though the responsibility was delegated to the state.

The refuge cooperated with the local Arizona Game & Fish wildlife managers in conducting antelope, dove, and deer censusing population estimates on the area. The completed data helped to set hunter permit numbers within Sections 36A, B, and C. The refuge staff worked closely with personnel from the Arizona Game & Fish Department in conducting a coyote control program on the refuge. Both groups contributed specific funds for the control efforts. The refuge staff participated in the control efforts by operating sirens and identifying coyote locations. The information was relayed via radio to an aerial gunner in the helicopter.

2. Other Economic Uses

The refuge issued a Special Use Permit to Steve Cooper for 600 hives of bees. The charge was \$0.50 per hive for a total of \$300.00.

A Special Use Permit was issued to Steve Dobrott for 36 AUM's at \$2.00/AUM. Mr. Dobrott grazed 2 horses and 1 mule. All animals were used infrequently to conduct refuge business such as riding the refuge boundary, conducting quail census, and rounding up trespass cattle.

3. Items of Interest

January - A slide program and tour of the refuge was presented to Service Director Frank Dunkel, his secretary (Pat), and Marvin Plenart from the Central Office; Dean Bibbes, Arizona Director for BLM; John Timmons, Administrative Assistant to Senator John McCain; and Regional Director Michael Spear. The group flew to the refuge using BLM and FWS aircraft.

The group convened at the refuge to discuss the proposed land swap between BLM, FWS, and the Arizona State Land Department. They were served a lunch of steak and baked potatoes.

February - Project Leader Wayne Shifflett and Biologist Steve Dobrott attended the Arizona/New Mexico Chapter of the Wildlife Society meeting conducted at Safford, Arizona, from February 4-7. Biologist Dobrott presented an excellent talk on the refuge's pronghorn antelope transplant program.

February - A Congressional delegation consisting of Congressman Jim Kolbe and staff, Regional Director Michael Spear, State Director of BLM Dean Bibbes, and George Ruhl, University of Arizona, met at the refuge headquarters to discuss the multi-agency land swap involving 90,150 acres of state land on the refuge.

March - A masked bobwhite quail strategy meeting was conducted at the refuge on March 16. The meeting was called to bring together historic and current information germane to the reintroduction efforts for the masked bobwhite quail. The meeting was well attended by various quail experts.

March - Project Leader Shifflett attended the annual zone meeting in Yuma on March 22-23. It marked the last official meeting for ARD Ellis Klett, who announced his retirement to devote full time to ranching activities in Texas.

March - Assistant Manager Rees Madsen attended a joint powers fire meeting in Tucson on March 21. Also during the afternoon of March 21, Mr. Madsen attended the Class II Interagency Fire Board meeting at the same location.

Project Leader Shifflett attended monthly meetings of the Federal Executive Association Council in Tucson. The council is composed of Federal managers of various agencies who have an interest in Government activities.

April - Jim Hubert, Zone 2 Supervisor, visited the refuge for an orientation tour. He visited the refuge in conjunction with a visit to The University of Arizona.

May - Regional Director Michael Spear visited the refuge May 12, in conjunction with a proposed utility line going in to the Secondino residence. He was met by Amos Eno at the refuge.

May - Amos Eno, Policy Director with the National Fish and Wildlife Foundation, spent 1 day on the refuge looking at refuge facilities and environments.

June - Pat Langley, ARD for Administration; Ed Cyran, Personnel Director; and Debra Sering, Personnel Specialist from Washington, were given an orientation tour of the refuge on June 6.

August - Project Leader Shifflett attended the Programmatic meeting in Albuquerque from August 8-12.

The refuge hosted a one-day International Seminar on "Arid Land Studies." The symposium brought together 30 managers of lands from 25 different nations. The University of Arizona was the sponsoring institution.

Steve Hoffman, President of the Western Raptor Conservation Association, spent 1 day on the refuge observing hawks. Steve was formally a Endangered Species Biologist at the Albuquerque Regional Office, charged with masked bobwhite responsibilities.

4. Credits

The 1988 edition of the Buenos Aires Annual Narrative Report can be credited to the following individuals:

Project Leader Shifflett wrote Sections A, C, and D; Section E (4, 5); Section F (1, 2, 3, 11); Section H (1-7, 11); and Section J.

Assistant Manager Madsen wrote Section B; Section E (1, 2, 3, 6, 7, 8); Section F (9); Section H (8, 17); and Section I.

Refuge Biologist Steve Dobrott wrote Section F(5), and Section G.

The pictures were taken by refuge staff and volunteers (credit given under pictures), using a Nikon camera and 64 kodachrome film. All film processing was done by Jones Photo, Tucson, Arizona.

The manuscript was typed and assembled by Office Assistant Doris Cummings. The report was edited by Project Leader Wayne A. Shifflett.

K. FEEDBACK

The decision by the Regional Directorate to eliminate bureaucratic paperwork has made it easier to concentrate on management problems, rather than trivial administrative tasks. There are still, however, some outstanding policy procedures which seem to be antiquated and make no sense. We, as Project Leaders, have tremendous latitude in purchasing various items from pencils to major equipment not to exceed \$5,000, however, we can not sign an SF-122 for any excess items no matter what the cost. We can make decisions on what we purchase, but a higher authority has to approve our decisions to pick up excess supplies and materials. Most other agency managers can now sign their own SF-122's and pick up the materials immediately. It currently takes at least 2 weeks for our office to receive approval for any excess items. Unless it is a major item, we normally will not submit the paperwork, so the materials are lost to another agency. Today, with limited budgets, I don't think we should be limited in our flexibility to acquire essential supplies and materials by a little administrative technicality.