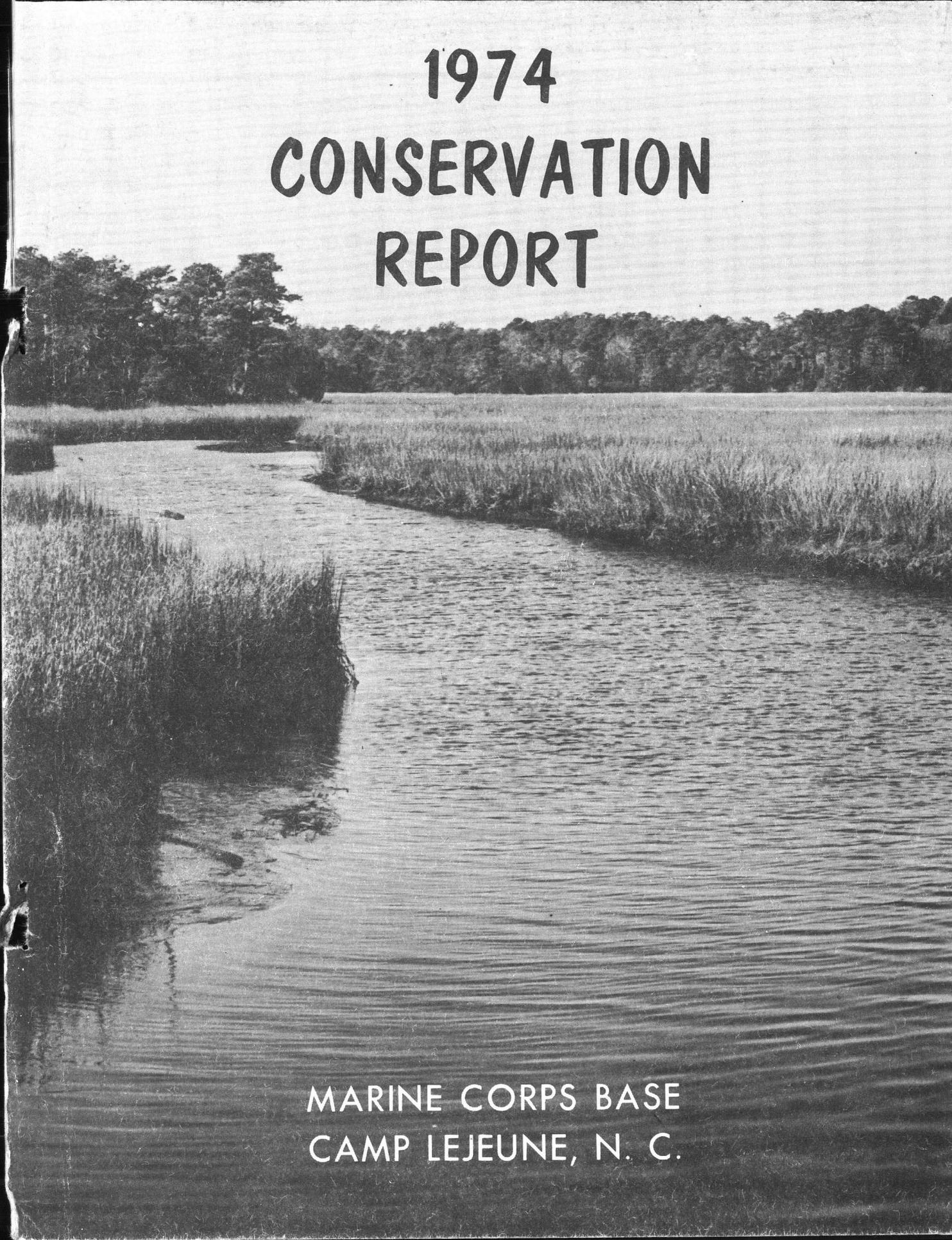
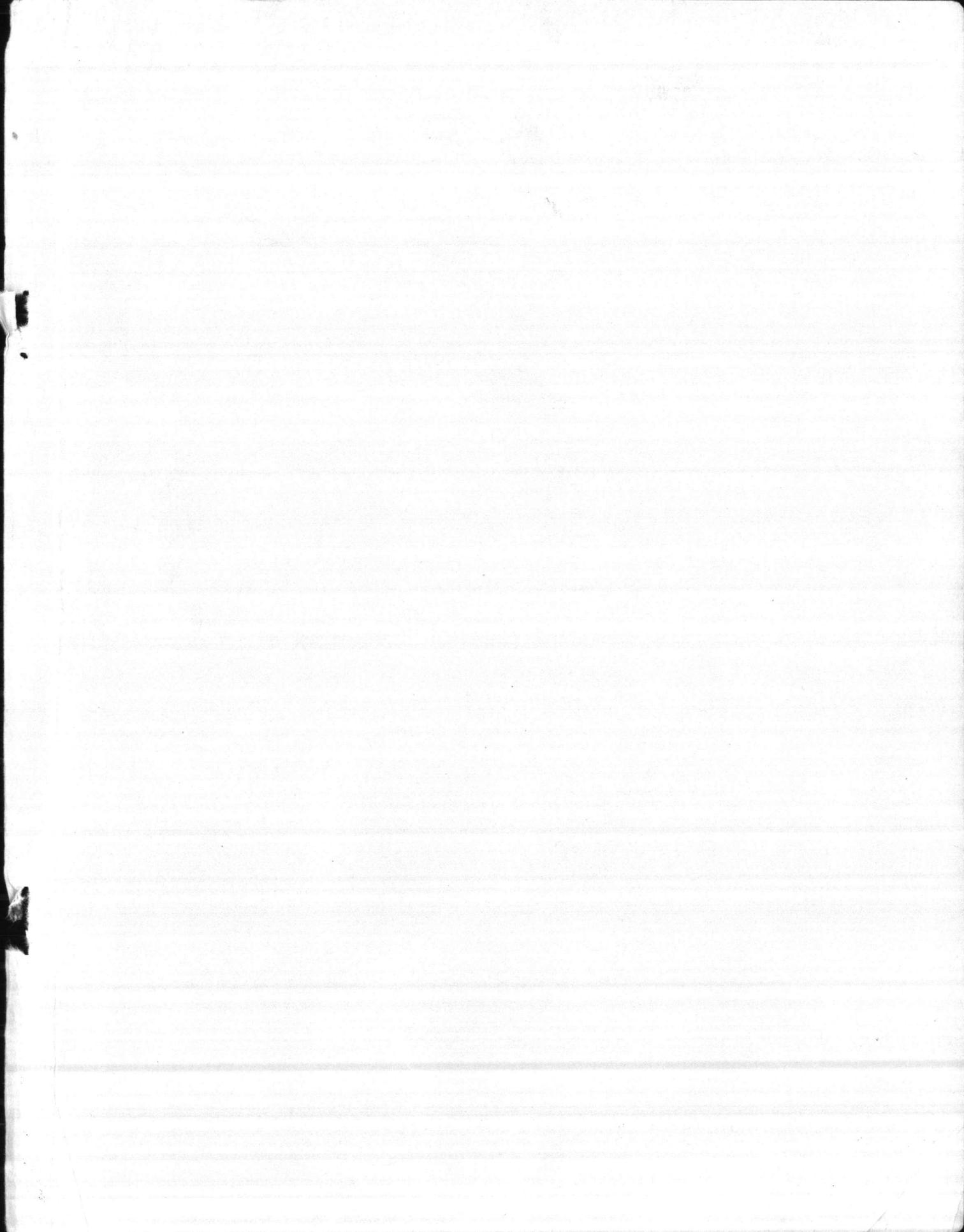


1974 CONSERVATION REPORT



MARINE CORPS BASE
CAMP LEJEUNE, N. C.



ABOUT THE COVER . . . a downstream view of Freeman Creek, a typical estuary and salt marsh area of Camp Lejeune

The vantage point of the photograph is the site of an old landing from which naval stores were shipped by sailboat in the nineteenth century. The marsh is a unique and invaluable ecosystem, upon which most marine species are directly or indirectly dependent. Some species live and spawn in the sea as adults but enter the marsh for development; others enter the protective waters to spawn or to feed; while other species spend an entire life span in the marsh. It is the home and feeding ground of countless waterfowl and small mammals, in addition to many amphibians and reptiles. The stream at this point is brackish and is one of the best habitats for alligators on the Base. The salt marsh areas remain in the natural state in that no dredging or channelizing has taken place.

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INTRODUCTION, MISSION, AND POPULATION

INTRODUCTION

Marine Corps Base, Camp Lejeune, encompasses approximately 170 square miles of land and water area in the coastal region of North Carolina. The Base takes extreme pride in the management of the vast natural resources inherent to the area. The following report is submitted in order to provide an overview of planned and accomplished efforts which promote the restoration, improvement, and preservation of renewable natural resources and other environmental assets. Report period is for calendar years 1971, 1972, and 1973.

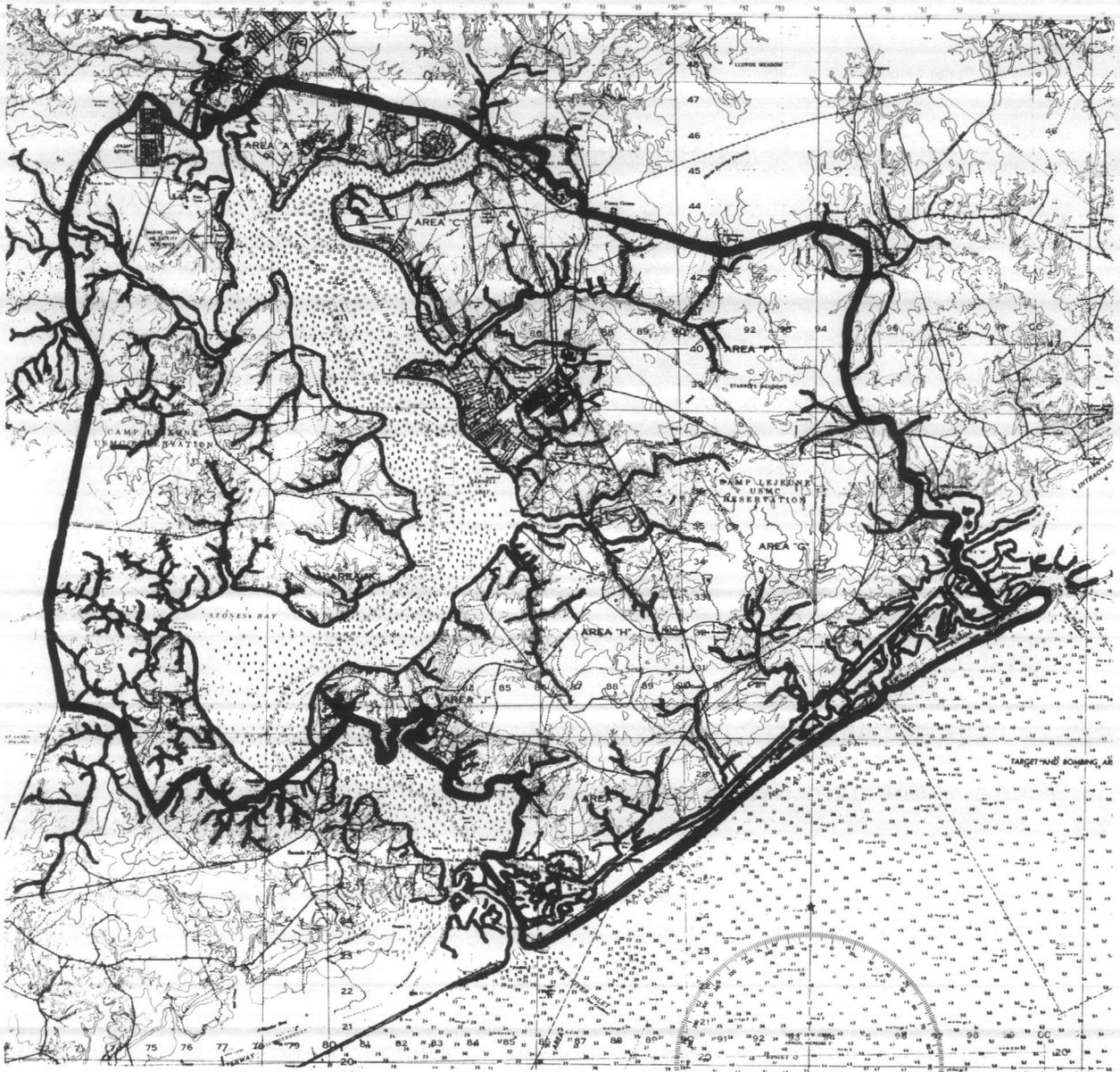
MISSION

The mission of Marine Corps Base, Camp Lejeune, is as follows:

- a. Provide housing, training facilities, logistic support, and certain administrative support for Fleet Marine Force units and other units assigned.
- b. Conduct specialized schools and other training as directed.
- c. Receive and process personnel as assigned and conduct individual combat training as directed.

In addition to the above assigned mission, the Base is charged with the responsibility to ensure that management provides for the following:

- a. Protection and conservation of the watershed and natural landscapes, soil, beneficial forest and timber growth, and fish and wildlife



THE CAMP LEJEUNE WATERSHED
Base boundary is indicated by heavy black line.

as vital elements of an optimum natural resources program.

b. Utilization and preservation of natural resources in the combination best serving the present and future needs of the United States and its people.

c. Optimum ecological development of land and water and controlled public access to such areas.

d. Active participation of activity personnel assigned to resource management positions in assessing the impact of activity programs on the natural environment within the confines of the activity and on public and private resources outside the confines of the activity which may be affected by planned actions.

POPULATION

The Base houses three Marine Corps commands and two Navy commands: Marine Corps Base; Force Troops, FMFLant; 2d Marine Division, FMF; Naval Hospital; and Naval Medical Field Research Laboratory. The normal combined peacetime military strength of Camp Lejeune is approximately 27,000 personnel, augmented by approximately 3,000 civilian employees. Military dependents usually number in excess of 30,000, on and off Base.

HIGHLIGHTS, 1971 - 1973

PURPOSE

This summary of highlights is included to present in brief form the increased accomplishments for the reporting period 1971 - 1973.

CLEARING OF WILDLIFE OPENINGS

Fifteen nonagricultural openings were located and cleared using a KG blade in the enhancement of wildlife habitat.

EXPERIMENTAL WOODY STOCK PLANTINGS

Exotic woody stock planting was continued in cooperation with the N. C. Fish and Wildlife Commission and the Soil Conservation Service. Plantings were made in areas with high population in turkey for the purpose of evaluating growth, adaptation, and use as a turkey food.

TURKEY GOBBLER COUNTS

Two routes for conducting turkey gobbler counts were established to obtain data for use in the enhancement of the turkey population.

CONSTRUCTION OF NEW POND

A 14-acre reservoir site was cleared and a dam constructed to create a new fish pond on a small tributary of Wallace Creek in the summer of 1971. This has more than doubled the fish pond acreage of Camp Lejeune. The pond was opened in July 1973 and production of fish has exceeded all expectations.

SANITARY LANDFILL

In 1971, a site was selected and cleared of merchantable timber for a sanitary landfill. Necessary earth work was completed and operation of the sanitary landfill commenced in May 1972, replacing the requirement for the former burn dump.

BURN DUMP

Site of the former burn dump has been converted into a recreation area including a lake. The lake was stocked with fish in the summer of 1973 and will be opened for fishing in July 1974.

PUBLICATION OF AN OIL SPILL PREVENTION, CONTAINMENT, AND COUNTER-MEASURE PLAN

This order was published to establish policy and procedures concerning oil pollution abatement. Forty waste oil storage tanks have been installed at strategic locations throughout the Base.

CONTINUOUS FOREST INVENTORY PLOT REMEASUREMENT

This large project was accomplished to update the Forest Management Plan by obtaining accurate growth measurement data.

REFORESTATION

For the 3-year period, a total of 643 acres was site-prepared for natural regeneration and a total of 518 acres was site-prepared and planted in pine. Approximately 1,000 black walnut seedlings were planted adjacent to wildlife food plots on reforestation sites.

TIMBER HARVEST

During this reporting period, Camp Lejeune realized an income of \$1,069,333 in timber sales.

MUTUAL FIRE FIGHTING ASSISTANCE AGREEMENTS

Camp Lejeune entered into agreements with city, county, and federal authorities for fire fighting assistance and updated the agreement with state officials.

TIMBER ACCESS ROADS

Disking and planting of timber access roads for wildlife food areas has been in progress for the past two years.

REVISION OF BASE ORDER ON HUNTING, FISHING, AND BOATING

This order was revised to clarify and institute certain procedures on hunting violations, weapon utilization, and the establishment of hunting and fishing fees.

ENDANGERED SPECIES AND WILDLIFE IN NEED OF ASSISTANCE

Efforts increased significantly in identifying populations and protecting the endangered species. Habitat improvement measures should also improve their well-being.

SALLIERS BAY WATERFOWL IMPOUNDMENT

This new impoundment area was constructed for the improvement of waterfowl habitat.

RACCOON TRAPPING

A trapping season was opened for the first time in 1973. By the end of December, 56 raccoons had been live-trapped and made available to the state of North Carolina for restocking purposes.

BEAR CAPTURING

Eight black bears were trapped, tagged, weighed, aged, and released. The first one trapped was equipped with a radio transmitter for telemetry studies of its habitat.

WILD TURKEY TRAPPING

Forty-five wild turkeys have been live-trapped and transported to other public game management areas for restocking purposes.

WILD HONEYBEES

Two colonies of wild honeybees were preserved by installing them in hives in safe areas.

BASE GAME PROTECTOR

This activity moved from the Provost Marshal office to the Base Maintenance Department which provides for better management with centralized control.

USE OF ULTRA LOW VOLUME SPRAYER

In 1973, a new type ultra low volume sprayer was used for adult mosquito control. Use of this machine resulted in the conservation of 4,000 gallons of fuel oil.

INSTALLATION OF 4-1/2 TON CARDBOARD COMPACTOR

One of eight 4-1/2-ton cardboard compactors was installed.

NATURAL RESOURCES AND ENVIRONMENTAL AFFAIRS DIVISION

This division of Base Maintenance Department was created as an organizational change in order to increase the effectiveness of Base conservation efforts.

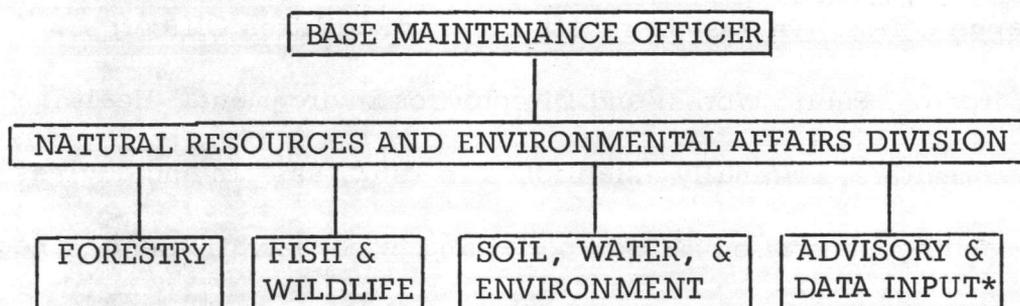
BASE-WIDE AWARENESS OF CONSERVATION PROGRAM AND ASSISTANCE RENDERED

An increase in awareness and voluntary contributions of time and efforts by Base civilians, military, and dependents has been noted throughout Camp Lejeune. Contributions by individuals, clubs, and Base organizations were most helpful.

ORGANIZATION

FORMAL

The Base Maintenance Officer has staff responsibility for the management of all natural resources aboard the Base. The management is accomplished primarily through the Natural Resources and Environmental Affairs Division of the Base Maintenance Department. However, other divisions of Base Maintenance also provide significant contributions. Branches within the Natural Resources and Environmental Affairs Division include Forestry and Fish and Wildlife. This organization is new to the Base and a further refinement has been restructured as depicted below:



*This section consists of advisory and coordinating personnel from Base Public Works Department and other divisions of Base Maintenance Department on a collateral duty basis.

COMMITTEE FOR ENVIRONMENTAL ENHANCEMENT

Base Order 11015.2, which gives authority for this committee, was updated in 1973. In rewriting the order, the name was changed from

"Committee for the Conservation of Natural Resources" to "Committee for Environmental Enhancement." The only major change was to reduce the membership from sixteen to six but retaining the original ten as advisors. This is expected to increase the efficiency of the committee in that advisors need attend meetings only when the agenda includes items requiring their particular expertise. Membership is as follows: Chairman (as appointed by the Commanding General); Director, Natural Resources and Environmental Affairs Division; Base Wildlife Manager; Representatives from - 2d Marine Division, FMF, and Force Troops, FMFLant; and President, Rod and Gun Club. Advisors: Forester; Ecologist; Game Protector; Veterinarian; Special Services Officer; Maintenance Officer; Provost Marshal; Training Facilities Officer; Design Director, Public Works; and Director for Environmental Health.

This committee, originally established in 1962, assists and advises the Commanding General on matters pertaining to conservation and management of natural resources and environmental enhancement. Responsibilities of the committee encompass general cognizance over any phase or facet of the Natural Resources Conservation Program with recommendations provided to the Commanding General for implementation, instructions, procedures, regulations, and programs. Appendix A provides a detailed description of the committee's responsibilities.

The most significant contribution the committee has made recently

was a recommended revision to the procedures utilized in taking administrative action against fish and wildlife violators. This recommendation has been adopted, included in the appropriate Base order, and has proven to be effective.

INFORMAL

An increased awareness of the requirements and benefits of a sound conservation program has been observed throughout the Base. As a consequence, the efforts of individual commanding officers, Marines, civilian employees, and dependents have been producing excellent results.

Many Base organizations and clubs other than sections primarily concerned with conservation also have provided invaluable assistance in various programs. These include Base Special Services, Ecology Club, Rod and Gun Club, Boy and Girl Scouts, and the Camp Lejeune School System. Specific accomplishments and plans of these organizations are included later in the report.

BASE COORDINATION WITH EXTERNAL AGENCIES

Assistance provided by external organizations cannot be over-emphasized as it provides an essential portion of the Base's overall program.

In 1963, a cooperative plan with the Department of the Interior (Bureau of Sport Fisheries and Wildlife, U. S. Fish and Wildlife Service)

and the State of North Carolina (Wildlife Resources Commission) for the conservation and development of fish and wildlife was developed, revised, and updated in 1973. Representatives of these agencies have made a number of visits to Camp Lejeune during the past year rendering considerable assistance and greatly enhancing the conservation program. Also, close liaison is maintained with state game law enforcement officials. In addition, a cooperative mutual aid agreement for fire suppression has been established with the North Carolina Department of Conservation and Development for many years. This agreement is part of the fire plan for the state.

Valuable assistance also has been provided to the Base in technical areas by the Environmental Protection Agency and Headquarters, Marine Corps.

Specific instances of cooperation between the Base and external agencies are related in appropriate portions of the report.

PROGRAM BACKGROUND WITH PRESENT AND FUTURE PLANS

GENERAL

It is the continuing policy of this Command to restore, improve, and preserve the natural resources and environmental quality of the Base to the maximum extent possible in the interest of the public as well as the military; to encourage and give incentive to conservation activities of the Base; and to provide within manageable quotas, the control of public access to fish and wildlife resources of the Base on a first-come, first-served basis when such can be accomplished without impairing the military mission. Additionally, it is a Command policy to work in close coordination with state and federal authorities in planning, developing, maintaining, and coordinating fish, wildlife, and forest management programs.

OBJECTIVES

The management and conservation effort of the Base is directed toward accomplishment of the following objectives to the maximum extent consistent with funding priorities and military requirements:

- a. Protection and preservation of wildlife, soil, beneficial forest and timber growth, and suitable vegetative cover.
- b. Utilization and care of natural resources in the manner best suited for present and future military requirements, and for the use of military personnel and the public.
- c. Provision for maximum multiple-use and optimum ecological development of land and water areas and access thereto.

- d. Continued development and harvest of timber stands, consistent with wildlife management and military requirements.
- e. Improvement of forest and water areas for recreational purposes.
- f. Improvement of the aesthetic value of streams and woodlands.
- g. Achievement of effective water and air pollution control in improving the environmental quality.

GENERAL PLANS

The basic conservation plan encompasses the following:

- a. Continued conservation and improvement of natural resources.
- b. Development and maintenance of artificial wildlife habitats required to support the available natural resources.
- c. Development and supervision of plans for harvesting fish and wildlife species which will preclude an over-population or extermination of any species.
- d. Development and supervision of projects for introduction of new fish and wildlife species and to supplement or replace natural species when in the best interest of conservation.
- e. Development and supervision of plans to ensure compliance with local, state, and federal laws and regulations pertaining to the conservation and harvesting of fish and wildlife.

Within the above framework, certain projects such as controlled burning, brush clearing, and elimination of low quality, overaged trees

have been programmed for accomplishment in annual increments. Other projects such as the establishment of new food plots and pond clearing, treatment, and stocking require reevaluation and annual incrementation for achievement of long range objectives in an orderly manner.

SPECIFIC FUTURE PROJECTS

- a. Erosion control projects are in the planning stages in two areas of the Base - the 1800 Industrial Area and the Main Ammunition Dump.
- b. Installation of eight washing facilities for vehicles which will separate oils and solids and reuse the water, which eventually is channeled into the sewage system in lieu of storm drains.
- c. Complete installation of waste oil storage tanks at unit level in accordance with survey findings.
- d. Complete the Long Range Multiple-Use Natural Resources Management Plan as directed by Marine Corps Order P11000.8.
- e. Continue to plan and accomplish improvements in trash collection through recycling of materials. Initial efforts are concentrated on paper.
- f. Continue to inventory and devise more accurate survey procedures for endangered, rare, and unique species.

ANALYSIS OF THE ACTIVITY'S ACREAGE

GENERAL DESCRIPTION

History - Prior to 1941, the land of Camp Lejeune was privately-owned. Tracts ranged in size from less than an acre to several thousands of acres. There were approximately 6,000 acres of cleared land with most of the woodland having been cut over and denuded of timber. There was little or no fire protection, and the wildlife habitat generally was poor. After government ownership in 1941, with the implementation of multiple-use management programs, environmental conditions for flora and fauna and man have improved steadily.

Topography - The topography of the Base is typical coastal plain ranging in elevation from sea level to 70 feet above. Surface relief ranges from flat, savannah-like, to gentle rolling. Deep wooded forests characterize the better upland sites while most of the branches and water-courses are headed by inaccessible swamps and pocosins. The principle watershed drainage areas are New River, Northeast Creek, Southwest Creek, Wallace Creek, French Creek, Bear Creek, Freeman Creek, and Duck Creek.

Soils - There are 21 different soil formations of varying structures ranging from sandy loams to fine sand and muck, but the soil type generally is classified as sandy loam. Some of the soil is low in organic matter and fertility, but most of the land produces abundant

crops of timber and forage for wildlife.

In 1965 the Soil Conservation Service conducted a low-intensity soil suitability survey of woodlands on the reservation. Soils were rated also as to their game potential and fisheries possibilities. This makes it possible to compare present timber stands with the appropriate soil suitability map to determine optimum management. This plan is valuable in establishing vegetative cover programs and improved drainage as it relates to requirements for improved forestry and fish and wildlife programs.

Climate - Located just below the 35th parallel of latitude, Camp Lejeune has a mild climate. Summers are from mild to hot and humid. Winters are fairly mild with the temperature frequently dropping below freezing. Snow is the exception rather than the rule. Average annual precipitation averages 52 inches while the average temperature is 61 degrees. There is a long growing season of approximately 230 days.

Vegetation - Vegetation on the Base is typical of the southeastern coastal plain. Extensive tracts of both pure pine and pine-hardwood mixtures dominate the landscape. Pines consist of loblolly and longleaf; while the hardwoods are represented by southern red oak, white oak, turkey oak, willow oak, red gum, tupelo gum, hickory, etc. The upland swamps, commonly referred to as pocosins, are overgrown with fetter bush, cyrilla, pond pine, and greenbrier.

Several unique carnivorous plants including the venus flytrap, sundew, bladderwort, and several species of pitcher plants commonly are found on poorly drained sites having infertile, acid soils.

Appendix B lists native plants common to Camp Lejeune that are useful to wildlife.

Types of acreage under management at Camp Lejeune are listed in Table 1.

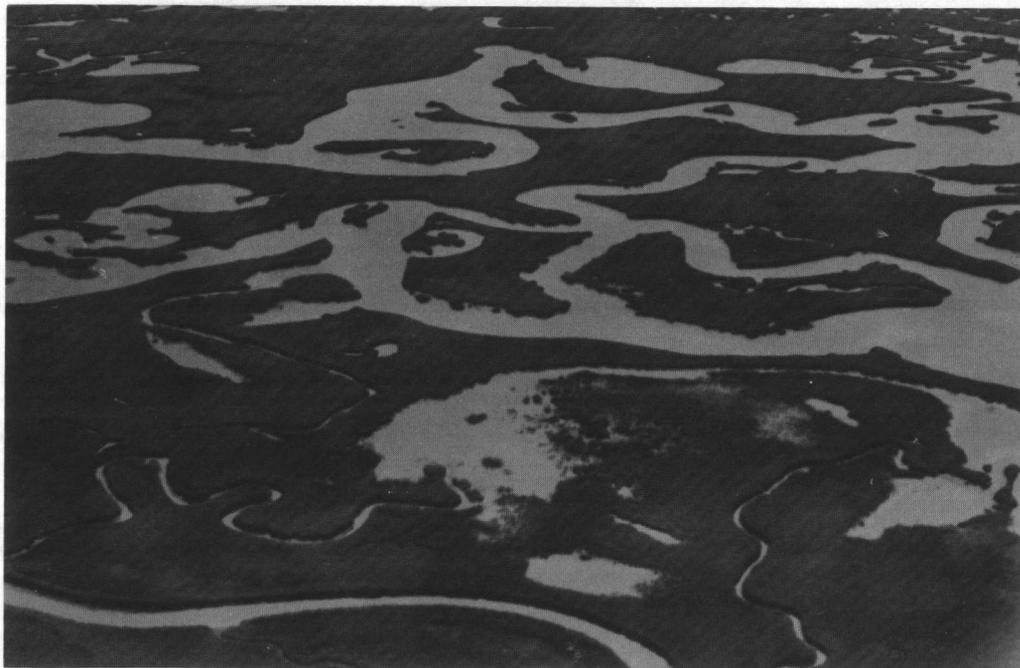
TABLE 1

ACREAGE UNDER MANAGEMENT

<u>Management</u>	<u>Acres/Miles</u>
Forestry	60,552 acres
Fish and Wildlife	95,000 acres
Soil and Water	110,877 acres
Improved Land	3,650 acres
Fresh Water	
Ponds	33 acres
Streams	14-1/2 miles
Salt Water (New River, Intracoastal Waterway, and ocean beach)	41 miles
Hunting Authorized	64,000 acres
Fishing Authorized	
Ponds	30 acres
Streams (New River, Intracoastal Waterway, and ocean beach)	46 miles
Fishing acreage to be opened in 1974	3 acres



APPROXIMATELY 14 MILES OF SCENIC FRESHWATER STREAMS
DRAIN THE BASE



INTRICATE PATTERNS OF SALT MARSH - AN IMPORTANT PART OF
THE COASTAL ENVIRONMENT

SOIL, WATER, AND AIR RESOURCES

SEWAGE TREATMENT

Secondary treatment is now accomplished at all of the seven sewage treatment plants at Camp Lejeune. Construction of rotating trickling filters at each facility has provided the capability to process waste at a high state of purity, obtaining an efficiency of 90% in relation to the biological oxygen demand and suspended solids, thus assuring that the seven million gallons of waste water that daily flows through the sewage treatment system will not degrade the quality of New River. ⁸ Continuous attention and control at these sewage plants by qualified personnel assures that effluents meet and exceed water quality standards established by the state of North Carolina. To help improve the qualifications of sewage treatment plant operators, all recently employed personnel are engaged in an intensive two-year on the job training program set up and administered by the Civilian Personnel Office. The final step of this training program requires the employee to pass the Waste Water Treatment Operator Examination (Grade II) administered by the North Carolina Department of Water and Air Resources. ³ Twenty-one sewage treatment plant operators have completed successfully examinations for certification with grades ranging from I to IV.

SANITARY LANDFILL

Operation of the sanitary landfill (since 1 July 1972) has been a

success. Elimination of air pollution from the former open burning dumps was a great stride forward. One of these former burn dumps has been converted to a Base recreation area complete with pond now stocked with fish. The Landscaping Section of Base Maintenance Department has done a commendable job in beautifying the area, and the former eyesore has become a valuable asset. Another former open burn dump will be reforested with pine seedlings in the near future.

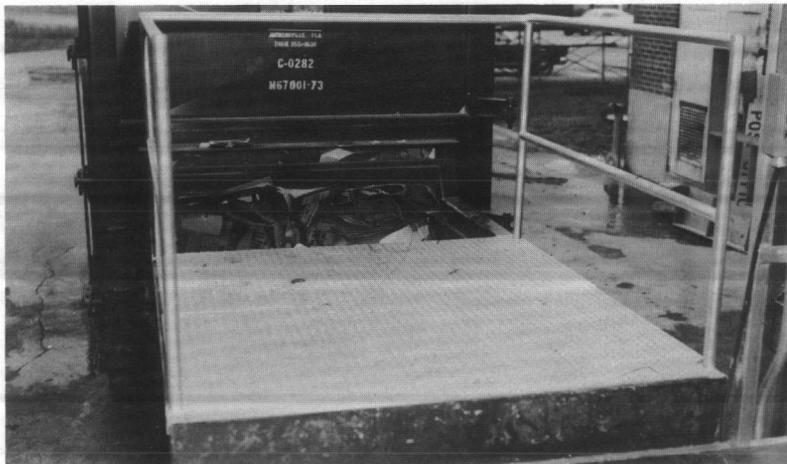


SANITARY LANDFILL IN OPERATION

COMPACTION DEVICES

Shortly following the opening of the sanitary landfill, twenty-one compaction devices were installed in Base messhalls. Utilization has proven these devices to be a superior method of waste disposal. The compaction devices exert a 10-to-1 compression ratio making them popular with mess personnel in that they greatly reduce the laborious task of transporting waste to dumpsters. Base-wide requirements for dumpsters at messhalls have been reduced by half; the poundage per trip in the dumpmaster truck has been increased; and the space per pound in the sanitary landfill is substantially reduced.

7 1974
In 1973 additional compaction equipment was installed at the Marine Corps Exchange *HAIR* *The Commissary* ~~Location~~ *& 5 other locations*. The device exerts a 4-to-1 compression ratio and is equipped with a container capacity of 4-1/2 tons of cardboard, greatly reducing the necessity for dumpsters. Similar ~~equipment~~ will be installed at other locations during 1974.



COMPACTION DEVICE WITH CONTAINER

*EP
Pending
pg 40*

OIL SPILL PREVENTION

A complete Base-wide survey conducted to determine the extent of oil pollution in maintenance areas, motor pools, etc., revealed some minor soil and water pollution was occurring; action was initiated immediately to correct the situation. In addition to a personal explanation of the necessity for preventing oil spillage, time was spent with each unit in these areas instructing in the preparation of oil drip pans for oil dispensing drums and discussing other methods for prevention and containment. In 1973 ^{+ 1974} approximately ⁵⁰ forty waste oil storage tanks with capacities of 280 and 550 gallons were modified and installed at different locations for utilization at the unit level.

Base Order 11090.1 (Appendix C) was published implementing the Base Spill Prevention, Containment, and Countermeasure Plan for oil and other hazardous substances. ^{Insy} Oil contaminated soil has been replaced in various locations with new soil and reseeded. Further work is planned in the future to improve the appearance of the grounds around maintenance buildings, motor pools, etc.

In the past, most of the waste motor oil collected at Camp Lejeune was used for dust control on unpaved roads and parking lots. ^{This practice has been approved by the EPA} Now, a 272,000-gallon tank is available for storing excess waste oil that is not ^{needed} needed for dust abatement. ^{Approximately 75,000 gallons have been stored in the tanks} It is expected to use this excess oil for either heating fuel or reclamation.

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SMALL OIL SPILL IS CLEANED UP BY PUMPING OIL FROM THE DITCH WITH A PUMPER TRUCK



FORTY STORAGE TANKS HAVE BEEN INSTALLED AT VARIOUS MOTOR POOLS DURING THE PAST YEAR

CHEMICAL DUMP

In the past, certain items of a chemical nature which could not be utilized, reconditioned for return to the supply system, sold, donated, or transferred were buried in specific areas of the Base. Although close control of the burying was maintained, this practice has been suspended until technical advice can be gained concerning the effects of the various substances on the environment. Listings of the specific items buried in specified areas in the past have been compiled and the assistance of the Environmental Protection Agency solicited in determining the advisability of continuing the practice for each specific substance. The Environmental Protection Agency is currently working on this problem and has been most cooperative.

HERBICIDE AND PESTICIDE SAFETY PRECAUTIONS

The Base has effected several changes in utilization of herbicides/pesticides in order to improve conservation techniques and comply with current regulations. The application of less persistent approved pesticides/herbicides is now practiced and applications are made based on insect count in specific areas rather than on a routine area basis. A vigorous training program for personnel in the Insect and Rodent Control Section of Base Maintenance Department has been conducted to ensure that all personnel including pest controllers and supervisors are certified as competent.

Base Maintenance Officer is tasked with the responsibility of maintaining surveillance over the types of chemicals used, methods of application, formulation procedures, and recommended strengths. All pesticides are stored in locked storage facilities and issued under strict controls. The District Entomologist, Naval Facilities Engineering Command, Norfolk, has been most cooperative in providing necessary technical expertise as required.

In the summer of 1973, a new type ultra low volume sprayer was used by the Insect and Rodent Control Section for adult mosquito control. This machine, which provides a direct spraying of undiluted insecticide, conserved an estimated 4,000 gallons of fuel oil by eliminating its requirement as a dilutant.

NATURAL BEAUTY

BURN DUMP CONVERSION

Perhaps the most significant beautification project to be accomplished during the reporting period was the conversion of the Base burn dump site into an attractive and desirable recreation area. Prior to May 1972, all burnable trash was transported to this site and burned daily. The dump contributed to air pollution, was attractive to rats and other scavengers, and constituted a colossal eyesore. An average of 70 pounds of rodenticide was used weekly for the control of rats. Upon commencement of the sanitary landfill operation, a coordinated operation was launched to correct the situation at the burn dump. Initially, the entire area was covered with dirt; a tenant engineer battalion greatly assisted in this project transporting earth to the dump. A 3-acre man made lake was then prepared at the site of the former borrow pit, and extensive landscaping, including filling of the lake with water and the planting of approximately 900 plants including 600 azaleas and 75 flowering trees, followed throughout the area. The lake, completely stocked with fish, ^{was} will be opened for fishing in ^{Sept} July 1974. As the accompanying photographs reveal, the conservation-oriented combined efforts of Base and tenant units to restore a formerly degraded area have provided a beautiful and necessary recreation site for Camp Lejeune inhabitants.

METAMORPHOSIS OF AN AREA FROM A BURN DUMP SITE TO A RECREATION AREA - NOTE: ALL THREE PHOTOS WERE TAKEN AT THE SAME ANGLE AND LOCATION



BEFORE



DURING

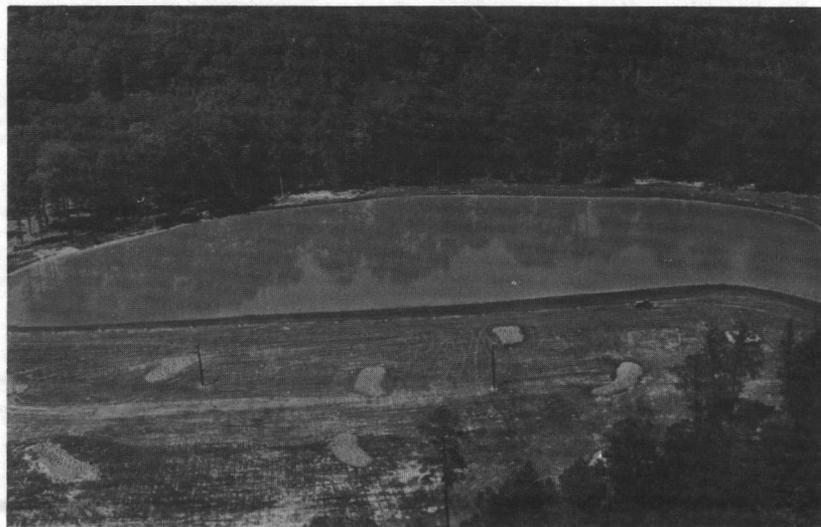


AFTER



LANDSCAPING

During the past three years, Camp Lejeune has been the scene of an active beautification program through landscaping efforts. In addition to efforts of various clubs and organizations whose achievements have been listed elsewhere in the report, the Nursery and Landscaping Section of Base Maintenance Department has made excellent contributions. Completed projects include beautification efforts in the areas of 2d Marine Division, Force Troops, quarters and housing, industrial and central areas, headquarters buildings, road intersections, golf courses, and horse stables. In excess of 4,500 flowering trees, shrubbery, and flowers have been planted in support of the above projects. Principle plant life includes hetzi juniper, cedrus deodora, weeping willow, red cedar, flowering peach, dogwood, rose, etc.



FORMER BURN DUMP AREA NOW IN HARMONY WITH NATURE

FORESTRY

Roadside zones are an intricate phase of the Base's Long Range Multiple-use Plan. These zones are favored along scenic corridors and are maintained by selective cutting from a sanitation salvage standpoint. Extremely careful selection of trees to be harvested and close supervision of logging operations is accomplished. Timber slash is removed from roadsides so that minimum disturbance is noted. During site preparation in clear-cut and seed tree cut areas, the dogwood is protected for its flowering beauty.

ROADS AND GROUNDS

Contributions by the Grounds and Structures Section of Base Maintenance Department in enhancing the beauty of the Base include the removal of cluttering underbrush from stream banks and scenic corridors and maintenance of grassed areas along road shoulders and backslopes, buildings, etc.

AREA COMMANDERS

Each area commander has specific responsibilities for the cleanliness and general housekeeping functions within his assigned area. This system has proven to be especially responsive and effective, and the initiative of the individual area commanders has been recognized and encouraged.

WILDLIFE MANAGEMENT

GENERAL

Camp Lejeune's Wildlife Management Program is designed to provide optimum environmental conditions for the wide variety of fauna that inhabit the Base. Extensive habitat management programs, such as the proper harvest of timber lands, prescribed burning, creation of food plots, maintenance of wildlife openings, and the preservation of habitat occupied by unique species have resulted in abundant, healthy populations of wildlife available for both consumption and nonconsumption use.

WILDLIFE RESOURCES

A listing of the wildlife species most common to Camp Lejeune, their scientific name, relative abundance, and condition of their habitat is found in Appendix D. Relative abundance ranges from common to very abundant. Population estimates were derived through sight counts, track counts, sample area counts, and harvest estimate methods of inventory.

WILDLIFE MANAGEMENT PLAN

The initial wildlife management plan for Camp Lejeune was formulated during fiscal year 1968 and has been updated each year with an annual increment for enhancing wildlife species. A new ten-year plan

was formulated during fiscal year 1973 for the purpose of improving management of all fish and wildlife. The new plan will be updated annually with an annual operational plan.

Under the new plan, the Base has been divided into fourteen wildlife units featuring a particular game species within a wildlife unit with management emphasis being directed toward improving the habitat for that particular species. All other game and nongame species also will be considered within the wildlife unit.

Progressive improvement is expected to be realized under the plan since it is adjusted to meet the increasing needs of the public using the local fish and wildlife resources. The plan is compatible with the forest management plan and with other land use of the Base.

MANAGEMENT PRACTICES

Local emphasis is directed primarily toward management of a variety of forest game species. Forest game populations are dependent upon timberlands which provide food and cover throughout the year and successful conservation of these populations depends upon sound management of timberlands from the commercial viewpoint.

The Base Forester and Base Wildlife Manager enter these timberlands together in prescribing plans for timber stands which best fit the multiple-use concept. Site plans are prepared for future roadway plantings for wildlife, new food plots, natural openings, clear cuts,

seed tree cuts, and thinning operations. This management procedure is necessary to ensure compatibility of the two programs and continuous progress in the future.

WILDLIFE FOOD PLOTS

Fifty-four food plots totaling 250 acres have been established to supplement the natural food supply, provide edge effects, and enhance natural brood range. One half of each plot is planted autumnally in improved varieties of rye and wheat to provide winter grazing. The remaining half of the plot is left fallow for invasion by grasses and succulent herbs. The food plots are seeded with millets and other annuals during the spring season.



VALUE OF SUPPLEMENTAL PLANTING FOR WILDLIFE IS DEFINITELY REALIZED IN THIS FOOD PLOT OF WINTER GRAIN

SMALL GAME MANAGEMENT AREA

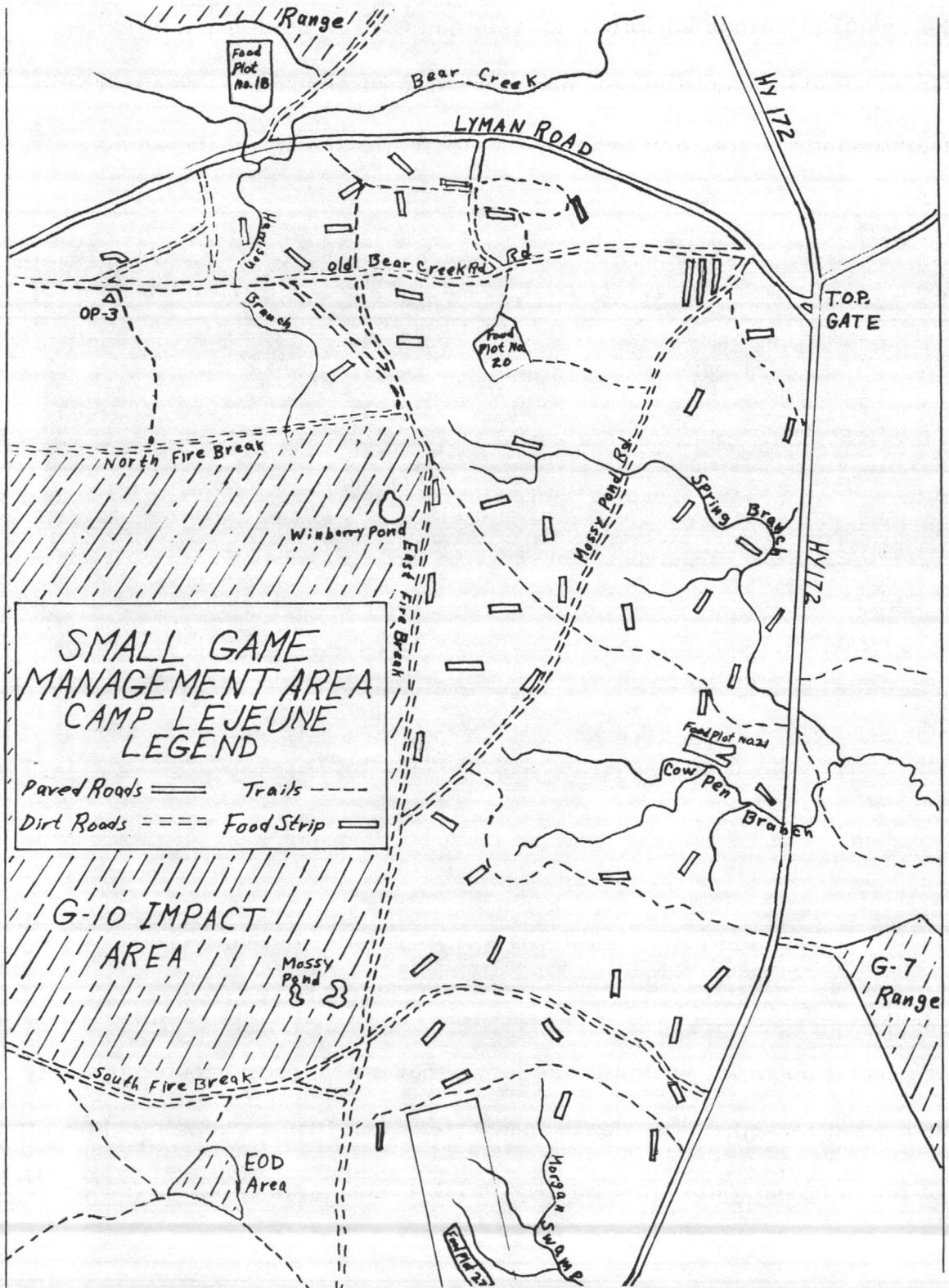
An area was maintained as an annual work project to provide additional recreational quail hunting and further enhance the wildlife resources program. The area covers a 1300-acre continuous tract of pine-hardwood stands which generally are open enough to provide excellent quail hunting.

Forty-eight strips were seeded in annual mixtures furnished by the State Wildlife Resources Commission. Perennials, such as serica lespedeza, were maintained in six previously cleared strips. Each of the fifty-four strips in the management area is approximately one-fourth acre in size.

Sawtimber in the south portion of the area was thinned through timber operations during fiscal year 1972. Firebreaks were cut to divide the area into small units which are prescribed burned on 2-year rotations. Management techniques are implemented to improve food sources, nesting, and escape cover. The area was prescribed burned in fiscal year 1973 to improve the quail habitat of the area.

FOREST ACCESS ROAD PLANTINGS

Three miles of forest access roads were planted in perennial grasses such as rye and fescue. Bahia grass of the Wilmington variety was seeded on an additional one-fourth mile of access roads as an experimental planting, which appears to be successful at the present.



Perennial plantings on forest access roads aid in prevention of wild-fires, provide supplemental food sources for forest game, reduce road maintenance costs, and improve the aesthetic quality of the area.



FOREST ACCESS ROAD PLANTED IN PERENNIAL GRASS

WILDLIFE OPENINGS

Small openings within timberlands that are well distributed are very important for enhancing the needs of forest wildlife. There are thirty-five of these openings ranging from $1/2$ to $3/4$ of an acre in size. Edge

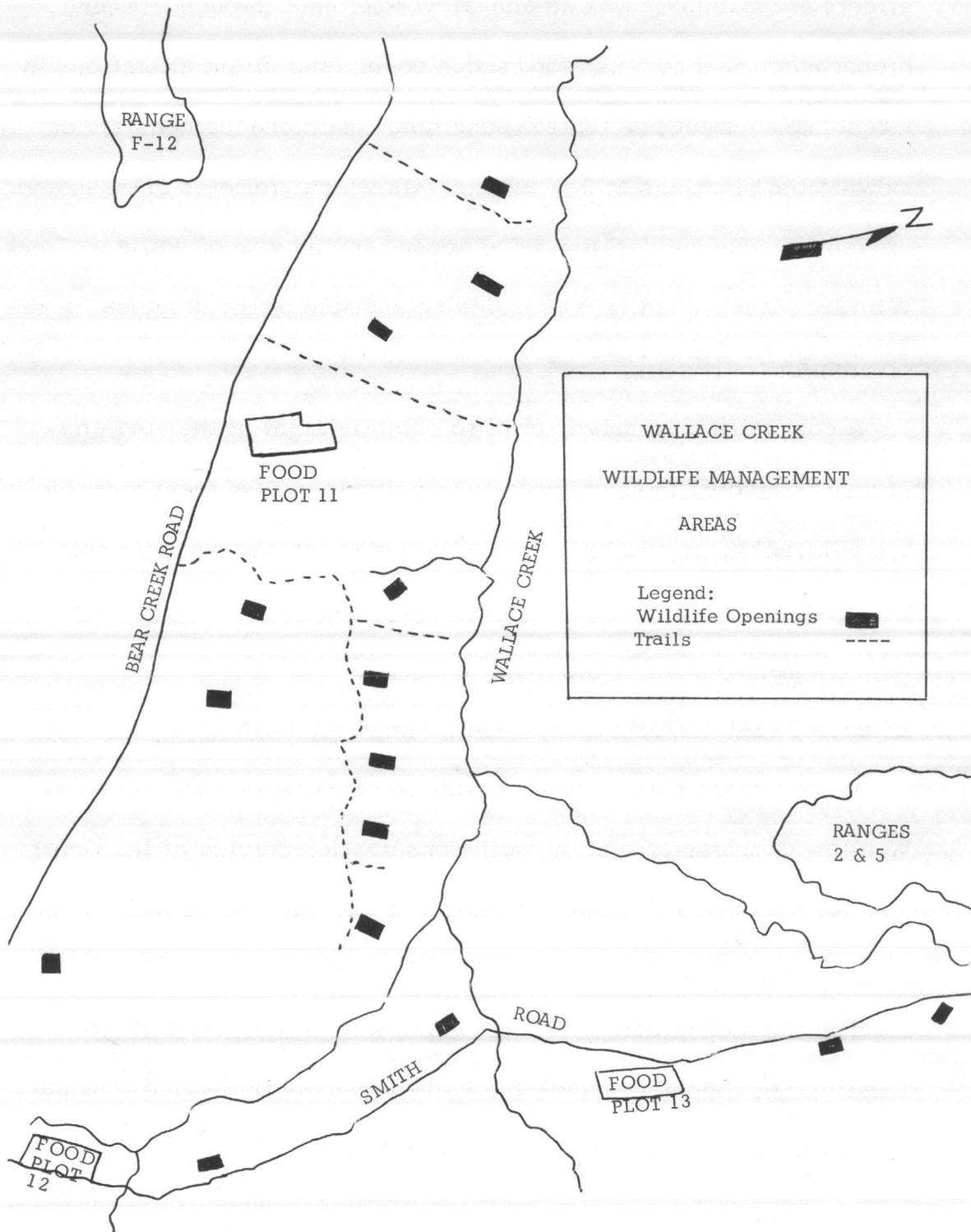
effects are maintained as an annual work project through trimming, proper placement of brush for escape cover, and slight alterations in forest management practices. Long range maintenance consists of mowing the clearings at 3-year intervals which promotes grasses and prevents woody succession. The accompanying map of Wallace Creek Wildlife Management Area provides an example of the dispersal of the openings.

A comprehensive survey prior to establishment of the area and a survey conducted in fiscal year 1972 indicate a 30 percent increase in the wild turkey population of the area due to intense management. This is an instance which substantiates the importance of quality wildlife management at the local level.

EXPERIMENTAL WOODY STOCK AND PERENNIAL PLANTINGS

Woody stock plantings were made in cooperation with the N. C. Wildlife Commission and the Soil Conservation Service of the Department of Agriculture. Plant materials were distributed through the Soil Conservation Plant Nursery, Albany, Georgia.

Plantings of Wilmington bahia grass were established at five locations in cooperation with the Soil Conservation Service. Bahia grass provides a permanent food source throughout the year for quail, wild turkey, and deer. Present plantings look very promising and may greatly enhance local wildlife populations in the future.





REPRESENTATIVES, N. C. SOIL CONSERVATION SERVICE,
EXAMINE WOODY STOCK PLANTING OF AUTUMN OLIVE.



FRUIT OF THE AUTUMN OLIVE

DOVE MANAGEMENT AREAS

Five management areas for mourning dove were established as annual work projects to provide site locations for the successful harvesting of dove during the hunting season. Strips of millet were planted adjacent to strips of winter grain to provide food sources for the dove throughout the year. The strip planting method keeps breeding populations and young dove in the management areas.



TREES ADJACENT TO THE DOVE MANAGEMENT AREA ARE USED FOR RESTING

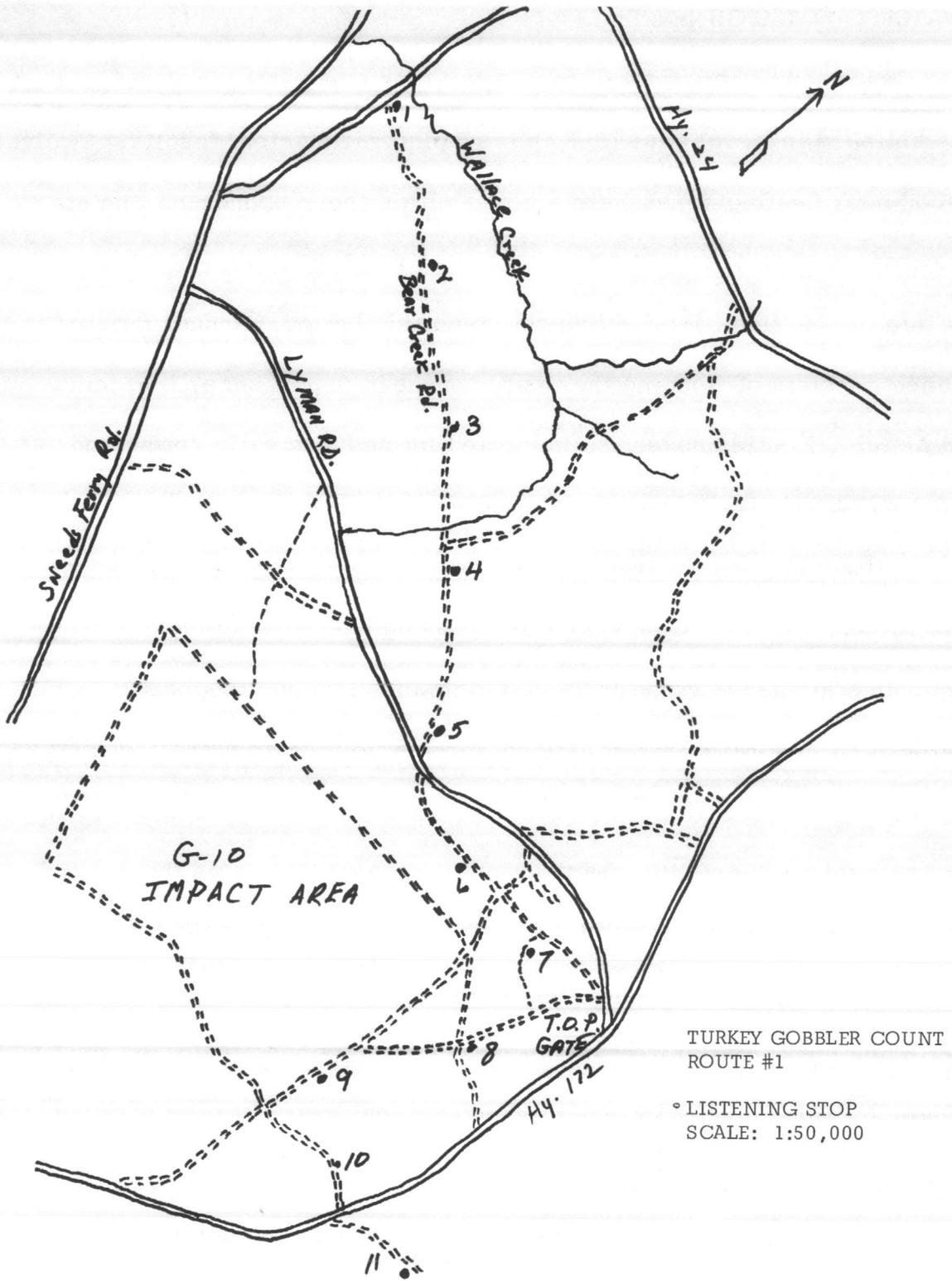
WATERFOWL IMPOUNDMENTS

Continued management of the Town Creek Green-tree Impoundment established in fiscal year 1968 is producing satisfactory results. Twelve wood duck nesting boxes were erected within the impoundment and are maintained each year. Eighteen broods of wood duck were hatched within the nesting boxes during this reporting period. Annual maintenance consists of flooding the impoundment in September and draining in March. Nesting boxes are inspected for nests in early spring and nesting material is replaced in December.

Salliers Bay Impoundment, five acres in size, was established in fiscal year 1972. Marine Corps Reserve engineers constructed a road through a highland swamp in 1969 during an extended drought and, afterwards, normal rainfall flooding of the adjoining area created what appeared to be excellent potential for waterfowl. A culvert positioned in the roadway by wildlife management personnel maintains the desired water level and prevents roadway destruction adjacent to the impoundment. The impoundment is being managed as a permanently flooded area for black duck, mallard, wood duck, and green winged teal. Six nesting boxes for wood duck were established in fiscal year 1973.

TURKEY GOBBLER COUNTS

Turkey gobbler counts are conducted each spring to determine year-to-year abundance. Accompanying charts indicate the established routes

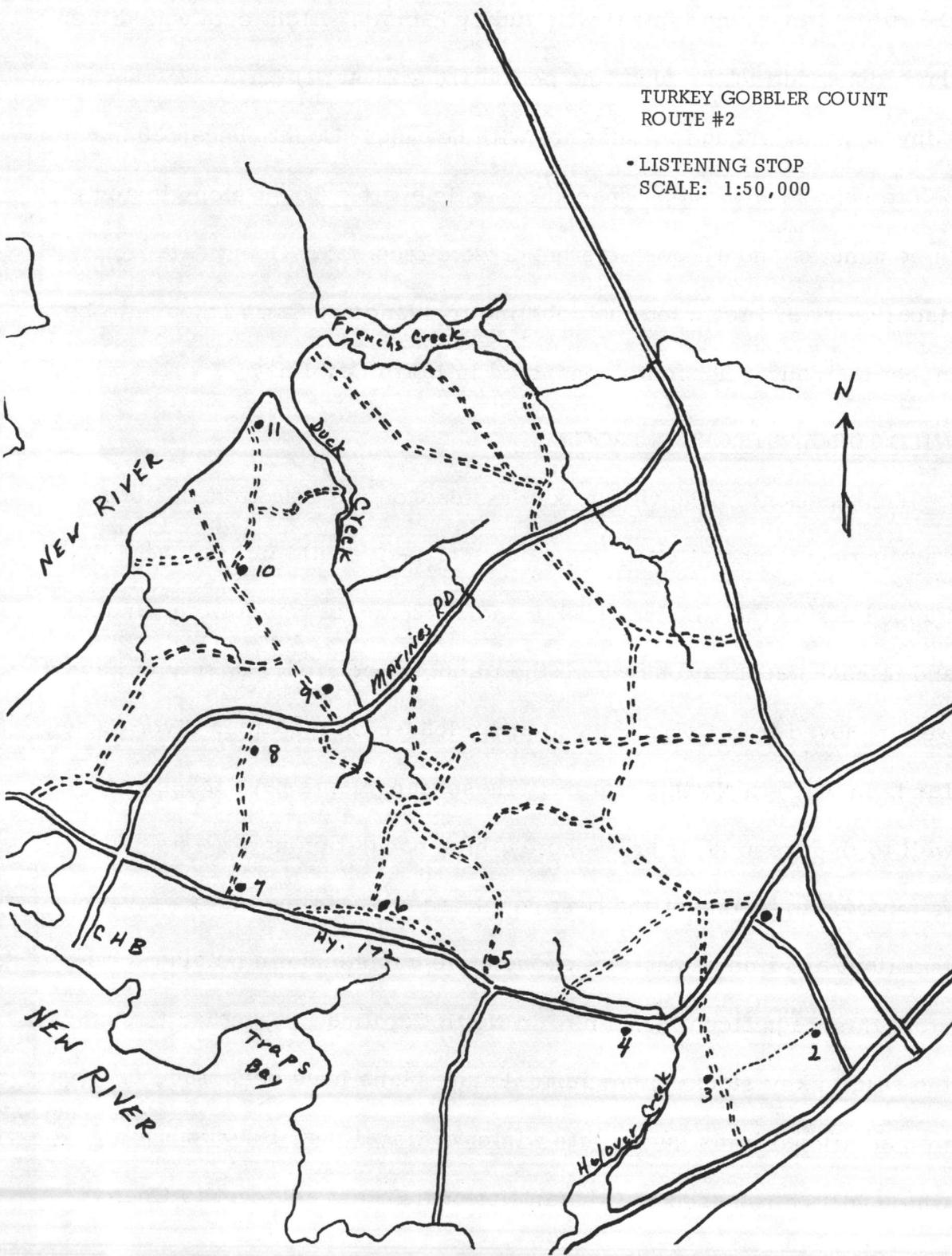


TURKEY GOBBLER COUNT
ROUTE #1

◦ LISTENING STOP
SCALE: 1:50,000

TURKEY GOBBLER COUNT
ROUTE #2

• LISTENING STOP
SCALE: 1:50,000



(10 miles) traversing typical wild turkey habitat. Each route was driven three times during the reporting period (16 - 21 April) during weather not rainy or windy enough to interfere with hearing. Counts began 30 minutes before sunrise with stops spaced one mile apart. Count stops lasted for three minutes and all gobblers heard were recorded. Count data from fiscal year 1973 revealed the gobbling incidence at Camp Lejeune to be higher than any other route conducted in North Carolina.

WILD TURKEY STOCKING PROGRAM

Enhancement of the wild turkey restoration project effort in North Carolina continued at Camp Lejeune. Forty-five wild turkeys were live-trapped during the winters of 1971 and 1972; ten of which were banded and released at locations where the trapping occurred. Twenty turkeys were removed from Camp Lejeune and released on the Green River Game Lands in western North Carolina. These transplants have taken very well to the Green River area where a high population now exists and is reported to be one of the best populated areas in the state. A very important and fine example of cooperative assistance in helping to restore this magnificent game bird in North Carolina is revealed through the wild turkey stocking program. Future plans have been made to live-trap additional birds during late winter of fiscal year 1974, some of which will be released in Croatan National Forest adjacent to Cherry Point Marine Corps Air Station.

WILD HONEYBEE PROJECT

The honeybee, a very beneficial and important insect found at Camp Lejeune, unknowingly performs an invaluable service to nature in cross pollinating flowers while collecting nectar and pollen for food. The continued existence of many wild flowers which are aesthetically ^{ly} phasing and numerous other plants which derive their beauty from colorful fruits, nuts, or berries is dependent upon pollinating insects such as the honeybee. These fruits, nuts, and berries, in turn, provide valuable food for many species of wildlife.

Honeybee colonies require some form of protective housing such as hollow trees for survival. During logging operations in which many hollow trees are ~~destroyed~~, ^{harvested. However, known to contain} those trees containing honeybee colonies are marked to avoid accidental cutting during future timber harvests. Thusly, the continued existence of the honeybee at Camp Lejeune is ensured.

Two wild honeybee colonies were saved from destruction during the summer of 1973 by removing them ^{when they were transferred to} to a standard beehives and then transporting the hive to a safe place in a forested area where they were protected from animal predators such as black bear. The first colony was removed from a fallen tree and the second was removed from a training

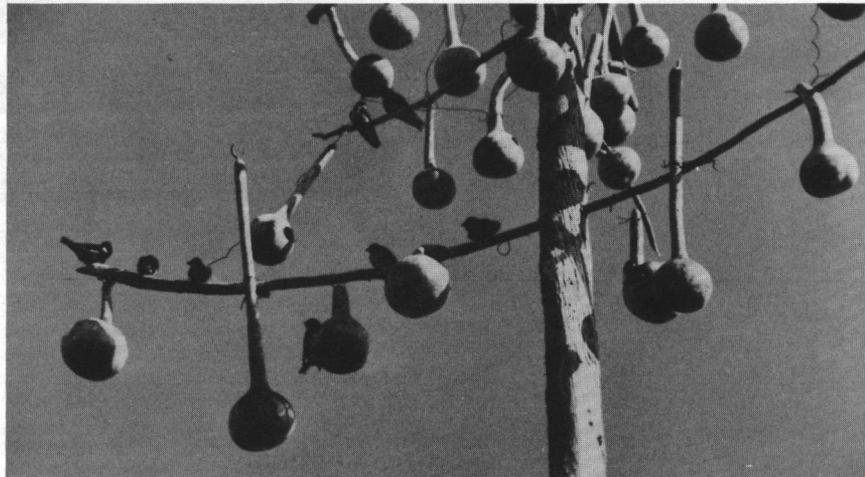
building where the bees were annoying troops. ^{Despite our efforts one colony was lost to bears.} Future plans are to ^{In 1974 the bees in the remaining colony were} further protect and preserve any colonies that might be so endangered. ^{divided and 5 new colonies were successfully started, a total of 6 colonies are now being managed in standard beehives. Future plans are to collect any swarms that are discovered and further protect and preserve any colonies that might be so endangered.}



CEMENT WALL OF AN ABANDONED TRAINING FACILITY PROVIDES A SANCTUARY FROM BLACK BEAR PREDATION FOR HIVES OF WILD HONEYBEES

PURPLE MARTIN

8 The purple martin, termed by some conservationists as America's most wanted bird because of its voracious appetite for flying insects, is found at Camp Lejeune. This bird will eat as many as 2,000 mosquitoes per day and can be attracted to any area by erecting good housing. Gourds suspended from a high pole provide good nesting sites, and future plans call for the erection of additional gourds and martin houses at Camp Lejeune.



NESTING GOURDS FOR PURPLE MARTINS WERE GROWN ON LOCAL WILDLIFE FOOD PLOTS

RACCOON TRAPPING PROGRAM

The first trapping season for controlling raccoon populations was established in 1973. Trapping was not permitted prior to 1973 and,

consequently, a very dense population of these animals occurred, as evidenced by the increasing number of raccoon visits to the housing areas in search of food. Large die-offs occurred through the years when populations reached critical densities. At present, the valuable raccoon resource is being retained from loss to the environment by trappers utilizing small leg-hold traps and live-trapping methods. Fifty-six raccoons have been made available to the North Carolina Wildlife Commission for further transporting to the mountains and release in improving populations there.

ENDANGERED SPECIES PROGRAM

The Endangered Species Act of 1966 directed the Departments of Interior, Agriculture, and Defense to protect endangered species and their habitats on lands which they administer when such actions are consistent with the mission of the area. Base regulations provide legal protection for endangered species and all nongame animals.

Recently, a program was initiated that does more than just protect these creatures. Surveys are being conducted to determine the number of animals present, whether the species is increasing or declining, and habitat requirements.

A brief discussion of the animals included in the Base's endangered species program follows:

The red-cockaded woodpecker's range is confined to the coastal plains of the southeastern states. An overaged pine infected with red-

heart is required for a nesting site. Its decline is due to forest management practices that call for removal of all overaged pine trees.

Management practices at Camp Lejeune have been modified to leave suitable nesting trees wherever found. Seventeen nesting trees have been located and marked to ensure nonremoval during future timber operations. Base forestry personnel are trained in the identification of nest trees and assist in locating new sites.

The Camp Lejeune area of North Carolina is near the northern boundary of the alligator's range. Several alligator sightings aboard Base are reported each year and, apparently, the population is on the increase. The habitat best suited for the alligator is on the upper reaches of the salt water creeks and the tributaries of New River where there is deep and brackish water. A nesting site was discovered near Freeman Creek which probably has been used for several years.



ESTUARINE HABITAT FOR ALLIGATOR IS ABUNDANT
AT CAMP LEJEUNE

Other endangered species which might visit the Base include the brown pelican, southern bald eagle, dusky seaside sparrow, ivory-billed woodpecker, and Carolina panther. It is interesting to note that a cougar was seen at Camp Lejeune on 11 October 1972 by Charles D. Peterson, Base Wildlife Manager.

Several other species inhabit Camp Lejeune that are not considered endangered but require special management considerations. This category of animals has been entitled "Species in Need of Help." Camp Lejeune's representatives are the osprey, eastern bluebird, and black bear. To date, approximately forty osprey nests have been located and plotted on a map with recorded observations concerning breeding, nesting, feeding, etc. More detailed information concerning the number of young per nest will be obtained this spring by use of a helicopter. Data previously collected has been forwarded to the North Carolina Fish and Wildlife Service to aid in their bald eagle/osprey survey.

The eastern bluebird is also on the "Species in Need of Help" list. In order to enhance nesting facilities, twenty-five 6-foot juniper posts were established in open areas. Nesting cavities were drilled into the posts in preference to "bluebird houses" due to their natural appearance.



FLEDGLING OSPREYS ON THE NEST

Another animal requiring special management consideration is the black bear. During the past several years, a steady decline has been noted in the number of bears taken by hunters. Several areas throughout North Carolina have been designated as bear sanctuaries. Camp Lejeune added the black bear to its list of protected animals in 1969.

In order to gain information on the number of bears inhabiting the Base, with the assistance of North Carolina Wildlife Resources Com-

mission and Naval Medical Field Research Laboratory, natural resources
personnel conducted a bear-tagging program during fiscal year 1973. *and again in 1974* Eight ⁹
bears were trapped, tagged, weighed, aged, and released. The first bear
trapped (May 1973) was equipped with a radio transmitter in a telemetry
study to determine movement and home range. Telemetry data indicated an
approximate home range of nine square miles (May-September). The last
attempt to make radio contact with this bear from aircraft produced negative
results (December 1973). Technical assistance for this study was provided
by the North Carolina Wildlife Commission.



TRANQUILIZED BEAR FITTED WITH RADIO TRANSMITTER COLLAR

FISH MANAGEMENT

OBJECTIVES

Fish management practices are programmed to produce optimum yields and ensure continued harvest of desirable fish species for the sports fisherman.

FISH RESOURCES

A wide variety of fresh and salt water species inhabit the fresh water ponds, streams, salt water bays, and the Atlantic Ocean adjoining the Base. Principle freshwater game species are largemouth bass, bluegill, robin, redear sunfish, warmouth, pumpkinseed, yellow perch, redbfin pickerel, jack pickerel, and channel catfish. Appendix D contains names of fresh water fish common to the Base and Appendix E contains management records for fiscal year 1972. Salt water species include flounder, weakfish, bluefish, spot, croaker, whiting, drum, mackeral, tarpon, marlin, and sailfish.

MANAGEMENT TECHNIQUES

Eleven freshwater ponds totaling 33 acres are currently under management. Eight of these were natural ponds which were of very poor quality when first reclaimed, but are now providing quality sports fishing. Ponds under management:

<u>Name</u>	<u>Acreage</u>	<u>Productivity</u>	<u>Fishing Use</u>
Hickory	4.5	Average	Heavy
Henderson	14.0	Average	Heavy
New pond (unnamed)	3.0	Above Average	Open fiscal year 1974
Prince	1.0	Average	Medium
Hogpen	1.0	Above Average	Light
Oak	.5	Below Average	Light
Mile Hammock	1.5	Average	Heavy
Cedar Point	2.0	Above Average	Intense
Ward	1.5	Average	Medium
Powerline	2.0	Above Average	Medium
Courthouse Bay	1.5	Average	Light

POND FERTILIZATION

Commercial pond fertilizers are applied at the rate of 40 pounds per surface acre to produce a "bloom" of plankton algae that prevents the development of filamentous algae and shades out submerged aquatic vegetation. The microscopic "bloom" consists of organisms that are eaten by insect larvae which is the main food supply for small fish.

FEEDING FISH

Channel catfish are stocked in some ponds which have no other species present and are fed commercial foods. Floating commercial catfish pellets are used exclusively to eliminate feeding problems which are associated with the use of the sinking pellets. Floating pellets provide a visible indicator of over-feeding and of the physical well-being of the fish. Pellets are broadcast inside 2-inch plastic feeding rings eight feet in diameter which float in approximately two feet of water. Feeding rings permit the floating pellets to remain in the prescribed area until completely utilized by the channel catfish.



EXCAVATION FOR CORE OF HENDERSON POND DAM



AERIAL VIEW OF HICKORY POND (L) AND HENDERSON POND

STOCKING

Initial stocking in fresh water ponds was at the rate of 400 bass and 1,500 bluegill-redear sunfish per surface acre. Initial stocking of channel catfish was 2,000 fingerlings per surface acre when on a feeding schedule. Channel catfish stocking is at the rate of 200 per surface acre as necessary in ponds stocked with other game fish. Additional stocking rates are determined by seine and creel samples.

FISHING AND BOATING ACCESS

Fishing and boating access areas are maintained as necessary. Trash disposal containers were provided at several sites where littering has become a problem. Boat launching facilities available to the public include Marshden Landing, Maple Creek Landing, and Onslow Beach Bridge Landing.

SHORELINE DEVELOPMENT

Shoreline maintenance of the Base ponds consists of chemical spraying and mechanical removal of brush to permit access for fishermen and management work. Littering continues to be a problem but noticeable improvement was noted during 1973.

SEINE SAMPLE ANALYSIS

Hand seines and gill nets are used to determine fish weights, reproduction data, and size. Population controls are regulated periodically to reduce population density difficulties before they arise.

FISH STOCKING PROGRAM - 1973

<u>Species</u>	<u>Number Stocked</u>	<u>Source</u>
Channel Catfish	1,000	Fish and Wildlife Service
Largemouth Bass	4,800	Fish and Wildlife Service
Largemouth Bass	1,400	N. C. Wildlife Commission
Bluegill	10,000	N. C. Wildlife Commission

WATER CHEMISTRY STUDIES

All ponds are sampled periodically to determine pH, dissolved oxygen and carbon dioxide content, as well as total hardness. Applications of lime and fertilizer are made when necessary to maintain fertility and productivity at the desired level.

AQUATIC WEED CONTROL

Local aquatic weed pests are controlled through proper application of aquatic herbicides to provide optimum productivity of present fish species.

RECREATIONAL USE OF FISH AND WILDLIFE

FISHING

Approximately 50,000 man-days of fishing for fresh water species was provided during fiscal year 1972. It is estimated that salt water fishermen spent 100,000 man-days fishing in Camp Lejeune waters. With continued extensive management of fresh water ponds and the addition of fresh water pond acreage, this outdoor activity should increase in the future.



BASS (5 lb 12 oz) AND BREAM TAKEN FROM HICKORY POND
9 APRIL 1973

HUNTING

Hunters enjoy a wide variety of game birds and animals which offer many hours of sporting opportunities at Camp Lejeune. Appendix F indicates recreational participation for hunting by civilian guests, civilian employees, and military personnel. Appendix F also indicates the number of game species harvested during fiscal years 1971-73. Wild turkey and raccoon are species which are underharvested and programs will be initiated to increase harvesting of these species.

Adequate harvest of deer is essential to keep the herd within carrying capacity of the Base. Examination of key browse species (cyrilla and yaupon) indicates present hunting techniques have been successful in controlling the population. Antlerless deer are usually harvested every other year. TABLE 2 - Deer Herd Reproductive Rates, 1959-74, and TABLE 3 - Age Structure of Antlerless Deer, 1973-74, indicate sufficient harvest of deer.

TABLE 2

DEER HERD REPRODUCTIVE RATE

	<u>1959-60</u>	<u>1960-61</u>	<u>1963-64</u>	<u>1966-67</u>	<u>1968-69</u>	<u>1970-71</u>	<u>1973-74</u>
Female Deer Sampled	43	31	38	75	64	45	
Reproductive Rates*	.73	1.09	1.14	1.22	1.22	1.40	

*Reproductive rates expressed as fawns per adult doe

TABLE 3

AGE STRUCTURE OF ANTLERLESS DEER, 1973-74

<u>Age Class</u>	<u>Number Deer Weighed</u>	<u>Avg. Whole Weigh</u>
Male Fawns	9	61.4 lbs.
Female Fawns	11	49.5 "
Female 1-1/2	9	79.8 "
Female 2-1/2	14	81.8 "
Female 3-1/2	6	84.5 "
Female 4-1/2	2	92.8 "
Female 5-1/2	3	91.9 "
Female 6-1/2	2	93.4 "
Female over 6-1/2	1	91.8 "



WHITE-TAILED DEER PROVIDES RECREATION FOR BOTH THE HUNTER AND THE PHOTOGRAPHER

OTHER UTILIZATION OF RESOURCES

Most wildlife species are protected and are never hunted in any manner. These species occupy important places in the environment and serve many useful purposes. Nature study, bird watching, conservation education, and individual well-being are enhanced by the preservation of wildlife. Students from Camp Lejeune Schools, Girl and Boy Scouts, and students of Coastal Carolina Community College enjoyed field trips for observing numerous species present in the area.

COOPERATION WITH STATE AND FEDERAL CONSERVATION ORGANIZATIONS

Management specialists from the N. C. Wildlife Resources Commission, the Bureau of Sport Fisheries and Wildlife, and the U. S. Soil Conservation Service made numerous visits to the Base during fiscal year 1973.

The State Small Game Biologist provided 750 pounds of annual seed mixtures and 5,000 shrub lespedeza seedlings for planting.

The wild turkey restoration project leader provided valuable management assistance for the wild turkey program. The endangered species program was also planned with the assistance of these specialists. Soil Conservation Service personnel in North Carolina provided seedlings and grass seed for wild turkey and assistance in planting. Fish and wildlife specialists from the Bureau of Sport Fisheries and Wildlife provided assistance through on-site inspections.



TURKEY HUNTER - "doing his thing"



RESULTS - enough said !

WILDLIFE LAW ENFORCEMENT

10 The Base Game Protector position, formerly within the Base Provost Marshal office, has been transferred to the Fish and Wildlife Branch, Natural Resources and Environmental Affairs Division, Base Maintenance Department. Personnel include a gunnery sergeant, sergeant, and twelve volunteer deputies. Citations totaling 221 (hunting - 154/ fishing - 67) were issued during 1973. Aside from law enforcement, duties consist of administering hunting license tests, issuing fishing and hunting licenses, and disposing of road-killed deer.

During the hunting season, each hunter must obtain a permit for the specific area in which he wishes to hunt. This permit, which is issued by the Base Game Protector, must be returned by one hour after sunset on the same day issued. This method has several advantages: collection of harvest data through completion of forms listing the number of each species taken and number of hours spent hunting; deer kills are weighed and the lower jawbone removed for aging; and, from a safety standpoint, the number of hunters per acre can be regulated allowing immediate action to be taken in locating any hunter failing to return his permit.

Wildlife Law Enforcement program was improved during fiscal year 1972 through establishment of a Base Conservation Board with the accompanying issuance of punishment guidelines for disposition of infractions of State, Federal, and Base regulations.

FOREST MANAGEMENT

INTRODUCTION

It is the policy of this command to maintain a sustain-yield multiple-use forest management program that is commensurate with military training requirements. This program correlates timber management with the best wildlife habitat possible; Base recreational and natural study areas; and the ever expected aesthetic value of our forests. The following narration will express this policy.

ANALYSIS OF FORESTED AREAS UNDER MODIFIED MANAGEMENT

Timber producing areas are under even-aged management with the exception of areas along major streams and swamplands. These areas are under a modified even-age management system so that maximum coordination and benefits may be given to wildlife management and erosion control. Also included within this modified management system are roadside zones parallel to major transportation arteries running through the Base; Base Archery Range; Special Services bridle trails; Camp Lejeune Boy Scout area; areas surrounding Special Services recreation camp sites; and forested areas parallel and surrounding building complexes throughout the Base. Smaller areas are managed for enhancement of "endangered" wildlife species particularly the red-cockaded woodpecker and osprey.

MANAGEMENT TECHNIQUES

Approximately 60,552 acres are under management at Camp Lejeune.

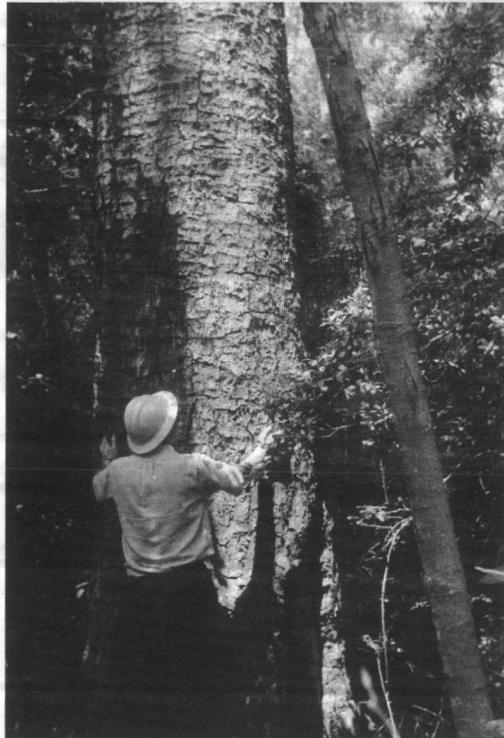
Timber management methods and techniques are similar to those used on other large acreages in the surrounding areas. Wherever practical, natural regeneration is utilized. This process occurs mainly through seed tree cuttings in blocks of 125 acres or less. Artificial reforestation is used on clear-cut areas in blocks not exceeding 50 acres and on areas being converted into timber producing lands after other nonproductive uses. Management practices include mixtures of pine-hardwood with ratios of 70% pine minimum on pine producing sites, and a maintenance of 90%-plus hardwood in hardwood producing sites. During site preparation operations in seed tree and clear-cut areas, scattered clumps of mast producing and fruiting hardwoods are left unharmed to produce food for wildlife. Older stands are thinned to provide ample sunlight for increased vegetative growth.



AERIAL VIEW - SEED TREE CUT



SITE PREPARATION FOLLOWING A CLEAR-CUT; AREAS LIMITED TO 50 ACRES IN SIZE WILL BE PLANTED IN PINE TREES.



"WHOPPER"
CAMP LEJEUNE'S LARGEST AND PROBABLY OLDEST
PINE TREE

The forest at Camp Lejeune is divided into 60 compartments, and each compartment into stands; six compartments receive annual silvicultural treatments. A prescription for each compartment, modifying the long range management plan, is prepared by a professional forester. These prescriptions take into consideration the following multiple-use factors:

- a. Military training
- b. Timber production
- c. Wildlife habitat and production; possible fish pond sites
- d. Recreation and enhancement of natural beauty
- e. Soil erosion and stream pollution
- f. Site preparation needed after treatment (including prescribed burning)
- g. Protection of endangered wildlife species

After completion of prescription work, timber stands requiring treatment are marked, and products are placed for public bid. Other stand treatments occur in compartments which are closed following the sales.

REFORESTATION

Reforestation is increasing yearly to keep abreast with the even-age management plan and to keep every acre under fiber production where possible. Reforestation is carried out in two distinct methods - natural and artificial. Future plans are to have more natural regeneration through seed tree cuttings.

NATURAL REFORESTATION

Natural reforestation (or natural regeneration) is the method of seeding a prepared area through seeds cast from surrounding trees, particularly the *Pinus* species, or from trees left scattered over cut areas. Seed trees usually are located 60' x 60', 12 per acre. Approximately 643 acres were prescribed for natural regeneration over the past three years. (Equipment used in preparing the areas is described later in the report.)

ARTIFICIAL REFORESTATION

Artificial reforestation is the method whereby seedlings are actually planted in clear-cut, bare, or nonproductive areas. Seedlings, normally of one-year old stock purchased from a local N. C. State Forestry Nursery, are transplanted in the prepared areas by a tractor-towed planting machine. In areas where the planting machine cannot be utilized, hand planting with dibbles is done. Seedlings are transplanted in rows spacing 8' x 8', 680 per acre. Approximately 518 acres were prescribed over the past three years.



PINE PLANTATION

TIMBER STAND IMPROVEMENT

Improvement in even-aged timber stands is accomplished by sanitation and salvage thinnings so that weakened trees are removed while yet harvestable. Major stand improvement work is accomplished by heavy equipment subsequent to clear-cuttings and seed tree cuttings. Undesirable debris such as logging slash, undergrowth, and unwanted species is removed from the sites by use of a KG blade. This debris is wind-rowed and either burned or allowed to decay. Occasionally, an 8,000-pound tandem disk is used in conjunction with the KG blade. Areas which are sparsely covered with debris may be single or double disked for seed bed/planting preparation. Planting experience has proved that the better the soil is prepared, the more vigorous the seedling growth is, for the first few years. A total of 1,161 acres of site improvement was prescribed in the past three years. In coordination with wildlife management, several clumps of mast and berry producing hardwoods are left scattered throughout the area during site preparation. In some instances, strips extending across the complete length of a prepared site are left for wildlife purposes. These clumps or strips produce game food annually, thus providing wildlife usage while reforestation needs on the same site are being met. The strips also provide cover while the large openings provide excellent bugging and dusting for wild game birds and browse for deer.

TIMBER HARVEST

The Forestry Branch, Natural Resources and Environmental Affairs Division, is a self-sustaining unit and provides a large excess in profits used in support of other Department of the Navy forestry programs.

TIMBER HARVEST FOR CALENDAR YEARS 1971 - 1973

1971

<u>Product</u>	<u>Volume</u>	<u>Gross Income</u>
Pine sawtimber	4,355,087 MBF	\$209,596
Pine pulpwood	6,890 Cds	42,939
Hardwood sawtimber	266,654 MBF	6,668
Hardwood pulpwood	1,210 Cds	1,879
		<u>\$261,082</u>

1972

Pine sawtimber	2,723,763 MBF	\$151,763
Pine pulpwood	4,925 Cds	41,997
Hardwood sawtimber	471,390 MBF	18,856
Hardwood pulpwood	1,595 Cds	4,299
		<u>\$216,915</u>

1973

Pine sawtimber	3,628,515 MBF	\$484,286
Pine pulpwood	4,492 Cds	84,123
Hardwood sawtimber	178,697 MBF	13,403
Hardwood pulpwood	844 Cds	9,524
		<u>\$591,336</u>

Grand total 1971 - 1973: \$1,069,333

Since the value of this timber as an end product is about \$8,000,000, approximately \$1,500,000 was injected into the local economy by contracting

timber companies. All income was generated and planned work was accomplished on a budget of \$325,801, including salaries and equipment costs. Acreage involved in timber sales totaled approximately 5,683 acres.

EROSION CONTROL

An area previously utilized as a heavy equipment compound was released recently from further use and was placed under forest management. Approximately 15 of the total 56 acres had been affected by a slow erosion problem. Slash and longleaf pine seedlings were planted over the area for erosion control and site stabilization. The longleaf seedling area will be replanted later for better erosion prevention.

PRESCRIBE BURNING

Prescribe burning, contrary to much adverse public opinion, has proven to be a very effectual and cheap silvicultural tool. Approximately 17,000 acres were prescribed and treated during the winters of 1971 and 1973. This burning is done as part of the multiple-use management system. Benefits derived: reduction of rough buildup; control of undesirable species that clutter the understory of the forest; control of brown spot disease in beginning natural longleaf pine stands; provision for better seed beds for natural regeneration of pine; stimulation of new shrub sproutings and grasses in spring and summer months; and opening of the understory for better game and bird utilization.



FORESTER OBSERVING A PRESCRIBED BURN

ACCESS ROADS

Approximately five miles of access roads were constructed over the past three years for timber accessibility. After sale closure, these roads eventually will be disked and sown with a perennial grass such as Bahia for wildlife use and erosion control. Access roads are used readily for military training, wildlife feeding, openings for bugging and dusting, hunter access, and fire breaks.

3-P FOREST INVENTORY

During the period October - December 1972, a timber inventory was conducted of the 60,552 acres under management. This inventory, normally occurring at 10-year intervals, furnishes vital information in sustain-yield forest management. The 3-P sampling system is new to forest managers, but is a much faster, a more accurate, and a money-saving method. Two hundred established continuous forest inventory (CFI) plots were selected by random sampling for application of this system. Accumulated field plot data was forwarded to computers which randomly selected a certain number of trees on these field plots to be measured by a dendrometer. The final phase of accumulating field data by using the dendrometer was accomplished in the early spring and winter of 1973. Upon compilation of the work sheets, the information was forwarded to the U. S. Forest Service, State and Private Division, Atlanta, Georgia, for final computation of total volume of timber on the Base as to size, class, and forest type.



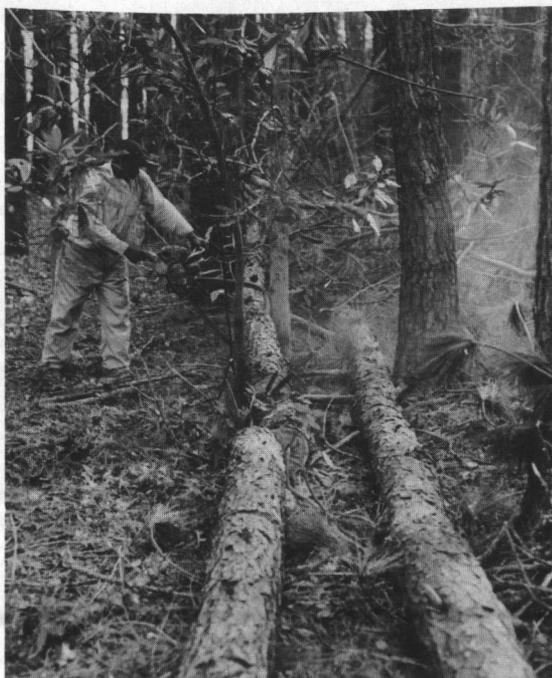
DENDROMETER BEING OPERATED BY FOREST
TECHNICIAN IN COLLECTING DATA FOR 3-P
FOREST INVENTORY

INSECT PROTECTION

Weather-wise, the autumn of 1973 was in a drought condition. For the first time since the 1967-70 epidemic, the southern pine beetle became prevalent at Camp Lejeune. According to N. C. Forest Service Pest Control Newsletters, this has been the worst southern pine beetle epidemic in the past twenty years in the south. Almost all of our attacked pine timber was salvaged and sold to local markets. Approximate statistics are recorded as follows:

Pine sawtimber	714.4 MBF	\$ 96,265
Pine pulpwood	1,589.0 Cds	<u>26,417</u>
Total products income		\$ 122,682

Continued surveillance is being maintained for further outbreaks.



TREES KILLED BY SOUTHERN PINE BEETLE ARE
BEING HARVESTED FOR PULPWOOD

BASE CONSERVATION ORGANIZATIONS

ROD AND GUN CLUB

The purpose of this Club is to assist the Commanding General in conservation, restoration, and development of fish and other wildlife and their habitats; to obtain better fishing and hunting for personnel serving at Camp Lejeune, utilizing maximum resources available locally and with the full cooperation of private, local, county, state, and federal agencies; to cooperate in promoting proper fellowship among sportsmen through instructive and demonstrative measures; to promote interest among non-sportsmen where such interests are conducive to better sportsmanship; to develop and restore natural resources; and, to support individual or group efforts of other organizations in the fight to improve the environment.

PARTICIPATION

During the period covered by this report, the Rod and Gun Club participated in the following activities at Camp Lejeune:

Sponsored attendance of two members each year at the Annual North Carolina Wildlife Federation Convention.

Sponsored and conducted a National Rifle Association-approved Hunter Safety Course for young hunters 10 through 16 years of age.

Sponsored and conducted the annual oyster-clam roast for Club members, their families, and guests.

Provided a window display in the Marine Corps Exchange for National Hunting and Fishing Day (23 September 1972).

Invited representatives of the Base and North Carolina Wildlife Resources Commissions to address the membership.

Provided annually three huntsmasters and three assistant huntsmasters for proper control of the three organized deer hunts conducted weekly during the hunting season.

Provided six members to act as assistant deputy game protectors to assist the Base Game Protector in enforcing game and wildlife regulations.

Movies on conservation, hunting, fishing, boating, and safety were shown each meeting night to the membership.

Sponsored a Big Buck Contest and awarded fifteen prizes.

Annually promoted military and civilian harmony by hosting unaffiliated civilian personnel on organized deer hunts including the special hunt held annually in December.

Contributed \$1 from each member's dues to the North Carolina Wildlife Federation.

Hosted the Annual Base Conservation Meeting with State and Federal Wildlife officials at the Rod and Gun Clubhouse.

Hosted Department of Defense Conservation Award Team along with Federal, State, and Base representatives for a dinner in conjunction with the acceptance by Camp Lejeune of the Department of Defense Conservation Award.

BASE SPECIAL SERVICES

The Recreation Section, Base Special Services, operates one of the largest and most varied recreation programs within the Armed Forces.

Military personnel, their dependents, and guests daily utilize and enjoy the many recreational facilities and natural resources available to them at Camp Lejeune.

The Base Stables is one of the more popular facilities offering the

outdoorsman a variety of activities to enjoy. Some of the organized activities include the annual 3-day rodeo, horse shows, and early morning breakfast rides that climax with a hearty meal of steak, eggs, and grits. There are 55 horses and ponies available for rent and boarding facilities for 50 privately owned mounts. Classes are available to the individual in Western and English riding.

The Base Archery Range, consisting of a practice area and a nationally approved 28-target field course, is another popular facility during the spring and summer months. The Archery Range is located in a beautifully wooded area just west of the Base Drive-in Theater.

Gottschalk Marina, located on Wallace Creek which is a tributary of New River, is a haven for would-be sailors during the spring and summer months. Equipment available includes 25 motorboats of various sizes, 24 sailboats in Rebel, Lightning, and Sunfish classes, 40 canoes, and water skiing equipment, plus berthing facilities for privately owned craft. Classes are also conducted to qualify individuals in the safe use of the equipment. Trailer-mounted boats and motors are also available for check out for use in other areas, both on and off Base. The Summer Youth Program conducted each year takes full advantage of the Marina and equipment and offers classes in water safety, small boat operation, and water skiing as part of its program. Other boating facilities located aboard Base include the smaller, but popular, Courthouse Bay boating facility.

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The Base Skeet and Trap Range, recently renovated, caters to many shotgun enthusiasts, both recreationally and competitively. Shotguns and reloaded ammunition are available to the shooters for a nominal fee. Skeet matches including state and invitational matches are conducted each year.

Onslow Beach, a popular spot from April through September, plays host to thousands of military personnel, their dependents, and guests. Twenty-eight completely furnished beach cabanas are available for a nominal fee to those who would enjoy a 3- or 4-day stay at the beach. In addition, three large pavilions offering food and drink are located along the scenic 1-1/2 miles of beach. Qualified lifeguards and beach personnel are assigned each year to Base Special Services to ensure safe and efficient operation of the beach.

During the summer months, the PIRATE, a 65-foot, twin diesel, deep sea, fishing boat operates daily out of Swan Point Marina. Fishermen may book passage for a day's deep sea fishing for \$9 to include rods, reels, bait, and ice.

Skin and scuba diving equipment is available also for those who qualify to use it. The Scuba Club offers instructions in the safe operation of this equipment, and the close proximity of several shipwrecks makes this an enjoyable recreational opportunity.

Paradise Point Golf Course offers two of the finest 18-hole courses in this part of the country.

Thirty-two campers are available for a nominal fee for those who would enjoy a weekend in the great outdoors. Trailer hitches to fit most cars are available at no cost. In addition, two major camp sites are located in the Onslow Beach area with 28 camping sites in one and 24 in the other. These camping sites are adjacent to swimming, surfing, and fishing areas and are equipped with sanitary facilities and water. Shelters, water, electricity, and barbecue grills have been installed in the camp sites for the convenience of campers.

BOY SCOUTS

The Boy Scout Program includes Cub Scout to Explorer Scout levels. Adult participation is commendable with individuals acting as Cubmasters, Scoutmasters, Commissioners, and Unit Committeemen.

The Scout camping area on the Base is a beautiful spot in the area of Northeast Creek. This site provides an excellent location to perfect camping and woodsmanship skills and increasing their knowledge of the environment. Scout troops from other areas are usually hosted at this camp site.

Contributions to the conservation program by Boy Scouts have proven to be timely and effective. Examples include the planting of 1,500 pine seedlings near Landing Zone DOVE and 4,000 at Camp Hatcher. Under-

brush clearing projects and area clean-ups have been accomplished in several locations.



CHOW IS EAGERLY AWAITED BY THESE SCOUTS

GIRL SCOUTS

Active participation in conservation projects by the Girl Scouts has been evidenced on many occasions. In addition to picnic area clean-ups and flower planting projects, the Girl Scouts participated in a well coordinated and effective cleanup of Onslow Beach.

Since March of 1972, Girl Scouts have collected used paper on the last Saturday of each month in conjunction with the Ecology Club. To date, in excess of 51 tons of paper have been collected and disposed of through recycling channels.

Not to be overlooked in both the Boy and Girl Scout Programs is the importance of the educational benefits derived. Emphasis on sportsmanship, woodsmanship, camping, and wildlife helps build our environmental and conservation minded citizens of the future.

COMMUNITY RELATIONS

Utilization of Brown's Island as an impact area during military training operations has been a necessity for years, resulting in many claims for property damage by residents of nearby communities. Since the use of Brown's Island as a training area could not be discontinued, a workable solution had to be ascertained. Studies at Elgin Air Force Base, Florida, indicated that under certain atmospheric conditions, explosion overpressures could cause unexpected damage. Thusly, since February 1972, all bombing runs have been canceled when unfavorable atmospheric conditions prevail thereby minimizing complaints of damage.

During the Fall of 1972, Mutual Fire Fighting Assistance Agreements were entered into with the city of Jacksonville, North Carolina, Onslow County, and the U. S. Department of Agriculture Forest Service. In addition, the existing agreement with the North Carolina Department of Natural and Economic Resources was updated. Under these agreements, mutual available fire fighting support is rendered when required. In April 1973, over a period of four days, 130 Marines helped control a large forest fire in an adjoining county.

Appropriate personnel attend wildlife, forestry, and environmental meetings, training sessions, and symposiums sponsored by private, state, or federal agencies in these fields. Professional personnel attend the meetings and conventions of the Society of American Foresters.

Cooperation with state and federal authorities in planning, developing, maintaining, and coordinating fish and wildlife management programs has been discussed separately in this report, as has the guest speaker program, news articles, etc., provided by the Base.

On 2 July 1973, a dedication ceremony formally naming/opening Henderson Pond was held at the pond site. Friends and the family of the late Mr. W. N. HENDERSON were invited to attend the ceremony wherein Mrs. Henderson was presented a plaque by the Commanding General honoring her late husband, who served as the first civilian game protector at Camp Lejeune.



MRS. HENDERSON MAKES THE FIRST "OFFICIAL" CAST INTO THE POND NAMED FOR HER LATE HUSBAND

Under sponsorship of the Marine Corps Human Relations Program, approximately 30 Marines voluntarily constructed a nature trail and planted several hundred pine trees for a nearby public elementary school. The nature trail, located in a wooded area adjacent to the school, is proving invaluable to the school in teaching the basics of conservation. The pine trees were planted as a border around a bare portion of the school grounds.

CONSERVATION EDUCATION

GUEST SPEAKER PROGRAM

In addition to conservation education programs concerning proper and safe handling of guns, water safety, sportsmanship, and woodsmanship conducted by Base clubs and organizations (separately discussed in this report), personnel of the Natural Resources and Environmental Affairs Division take an active part in guest speaking engagements.

One of the most popular methods of providing information to groups desiring knowledge in the conservation field has been the guest speaker program. Guest speaking engagements, accompanied with slides, have been very much in demand by units, school classes, and civic organizations. In 1973, fifty-four presentations were made to a total of 2,569 people. In addition, three appearances were made on local television stations wherein wildlife conservation, forestry management, and pollution abatement were discussed. It is believed that explanations of Base plans and accomplishments in the conservation field are especially beneficial in fostering community relations and the exchange of ideas.

POLLUTION ABATEMENT EDUCATION

The educational process will be used in 1974 in an effort to promote the pollution abatement program at Camp Lejeune. Classroom time was requested and granted for a slide/lecture presentation on the environment

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to be routinely included as a part of the Motor Transport School Company, Montford Point, student training program. The Base Ecologist will make the presentations with special emphasis being placed on oil pollution. By making each student more aware of the oil pollution problem, it is hoped that more desirable habits and better attitudes will be developed, resulting in better Marines and eventually better civilians.

FORMAL ADULT EDUCATION

Formal education on the Base for this period included an 8-week course in Ecology conducted by Lieutenant Commander R. H. Grothaus, MSC, USN, of the Naval Medical Field Research Laboratory for the benefit of Camp Lejeune personnel and the community. Lieutenant Commander Grothaus holds a PhD in the Biological Sciences, with specific training in general ecology, plant ecology, animal ecology, and entomology. Topics discussed included Ecological Definitions and Terms; Principles of Ecology; Energy Flow and Competition; Pollution and the Environment; Populations and the Future; Ecological Cost of Technologically Developing Nations; and Will the Earth and Man Survive?. Classes were well accepted by the thirty persons that attended and constituted another facet of the overall education program.

BASE SCHOOL SYSTEM

Teaching students to live in harmony with their environment is an important aspect of Camp Lejeune's educational program. Elementary

students are learning and understanding more about the interaction between organisms and the environment through the Science Curriculum Improvement Study (SCIS) program recently adopted by Camp Lejeune's school system. This new program consists of a physical science sequence and a life science sequence. The life science sequence covers such areas as organisms, life cycles, populations, environment's communities, and ecosystems. Several workshops and classes have been conducted to train teachers. Grades 1 - 3 presently are using the program with grades 4 - 6 scheduled to start the program in the fall.

In addition to the formal science program at the Junior High School, the Ecology Club placed 15 trash cans made from painted 55-gallon oil drums throughout the school grounds and assumed the responsibility of emptying them. The Club also constructed several benches for use during noon hours. All scrap paper is collected at the Junior High School for recycling.

Also, the Junior High School will again sponsor an Ecology Seminar. Representatives from other local schools will meet to discuss programs and problems concerning environmental enhancement.

Plans for nature areas at each of the schools at Camp Lejeune are being developed. Two individuals from the Science Division of the State Department of Education visited each potential site and made appropriate recommendations. Personnel of the Natural Resources and

Environmental Affairs Division will provide technical assistance. The new horticultural class has renovated the nature trail by cleaning and the installation of new identification signs on trees.

PROJECT TRANSITION

Project Transition provided conservational benefits to approximately thirty-three military personnel during the year. These personnel received on the job training in both forestry and wildlife management, instilling a feeling for conservation goals and procedures in its broad aspects as well as practical experience in the field.

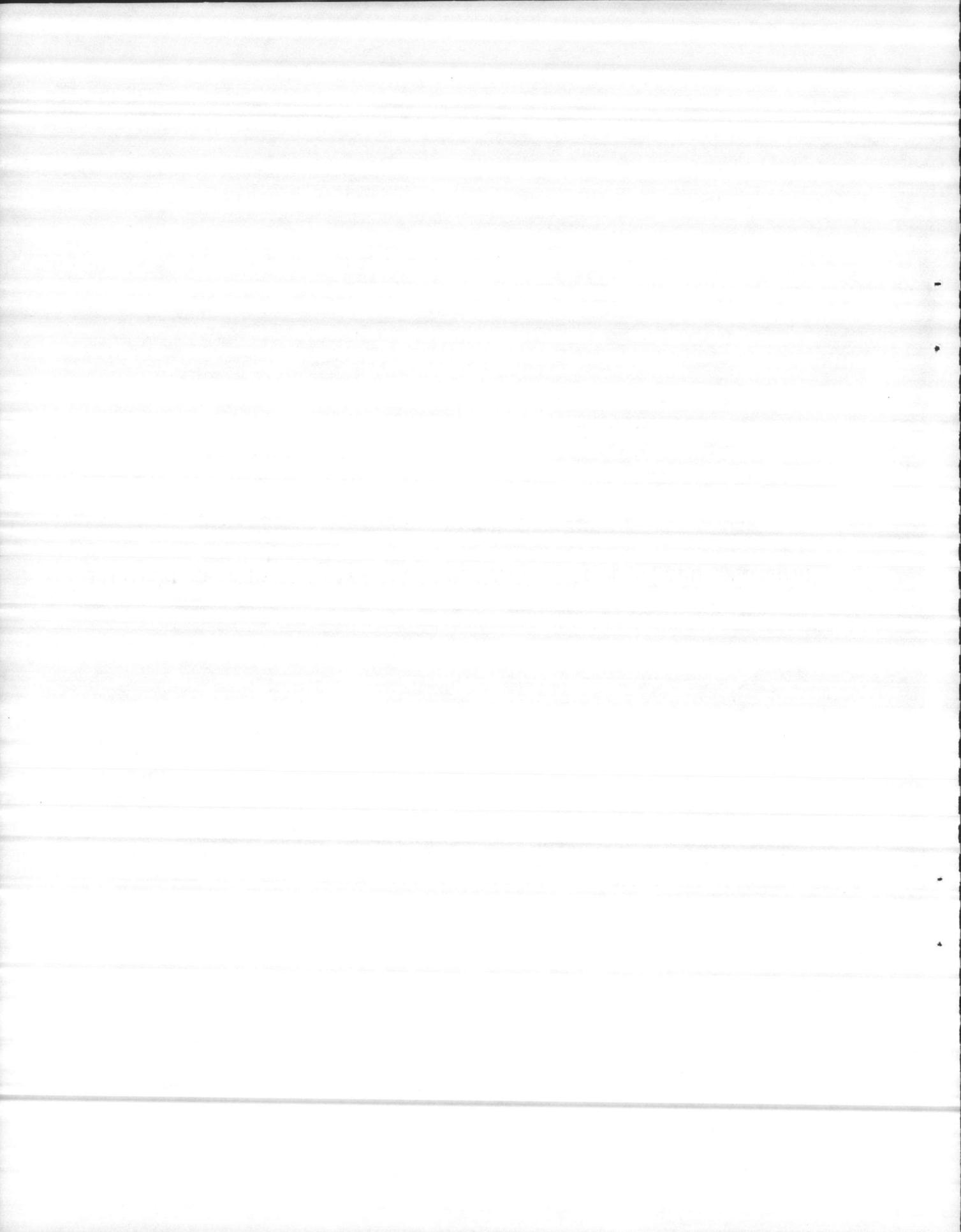


BASE FORESTER IDENTIFIES THE RARE CARNIVOROUS PLANT "VENUS FLY TRAP" FOR BIOLOGY STUDENTS FROM A NEARBY COLLEGE



APPENDIX A

RESPONSIBILITIES OF THE ENVIRONMENTAL ENHANCEMENT COMMITTEE



RESPONSIBILITIES OF THE ENVIRONMENTAL ENHANCEMENT COMMITTEE

1. Conduct annually a comprehensive review of the Base hunting, fishing, boating, and trapping regulations and make recommendations to the Commanding General regarding changes, additions, or deletions required.
2. Review recommendations submitted by the Rod and Gun Club regarding organized deer and bear hunts, and make appropriate recommendations to the Commanding General regarding same.
3. Prepare annually for the Commanding General's approval a schedule and procedures for the conduct of organized and controlled hunts for all types of wildlife.
4. Prepare annually for the Commanding General's approval a schedule for open seasons and bag and creel limits in consonance with current federal, state, and county laws and regulations.
5. After consultation with federal, state, and county fish and wildlife authorities and officially chartered conservation agencies, make recommendations to the Commanding General regarding annual harvest of fish and wildlife on the Base.
6. Provide command liaison and establish procedures for scheduling and

conducting frequent meetings between representatives of federal, state, and county fish and wildlife agencies and officially chartered conservation organizations. The committee will take the initiative to seek out help and to work effectively and in harmony with the above agencies and/or organizations. A full report of such meetings will be included in the minutes of the committee.

7. Ensure, when feasible, that local sportsman groups are invited to attend meetings of the committee as guests. The importance of establishing, maintaining, and improving Base-community relations cannot be over-emphasized.

8. Review annually the cooperative plan between the Base, the Regional Director of the U. S. Fish and Wildlife Service, and the Executive Director, N. C. Wildlife Resources Commission and make recommendations to the Commanding General for any desirable changes in the Wildlife Management Plan.

9. Monitor and make frequent reports to the Commanding General concerning all aspects of the Base Wildlife Food Plot Program.

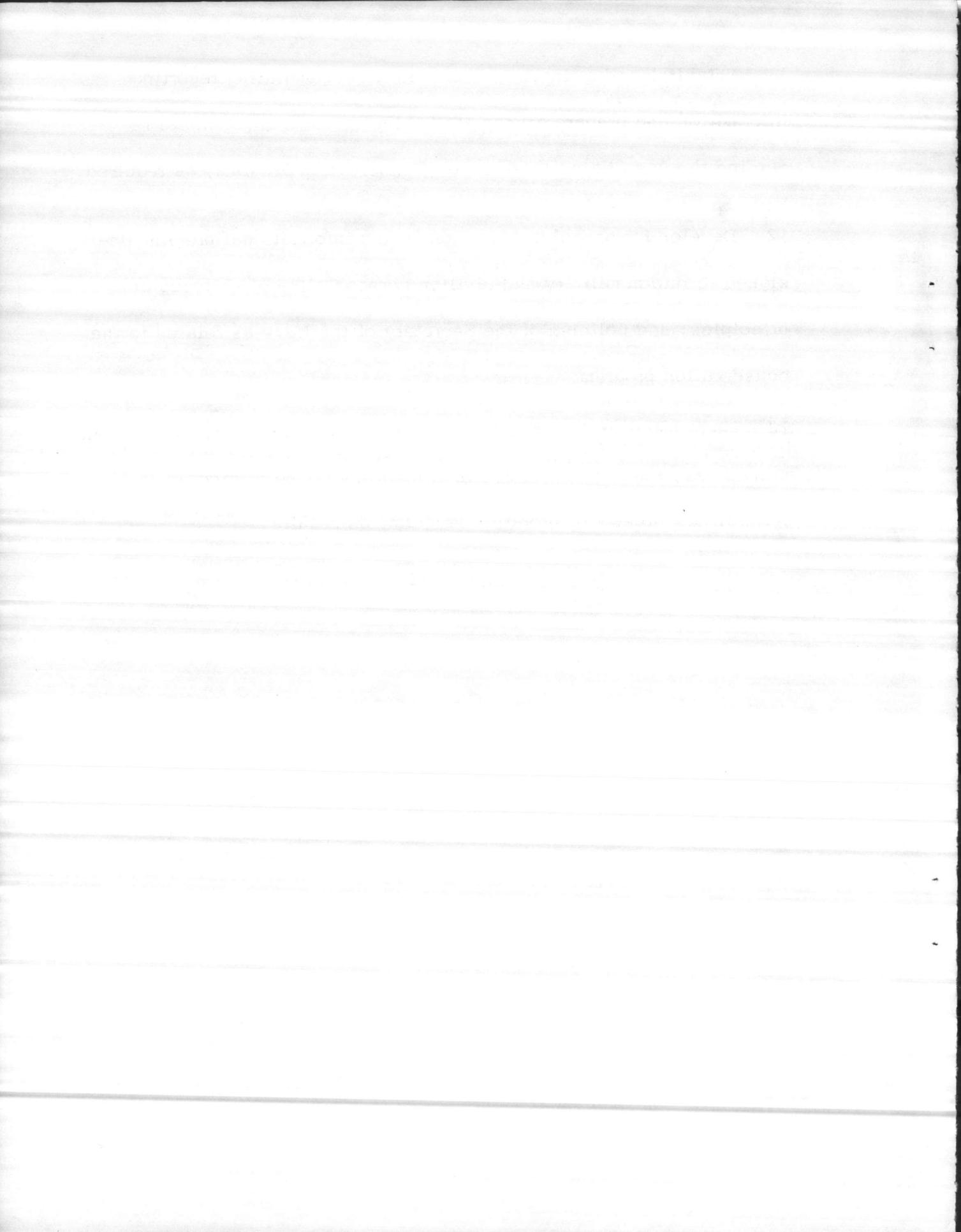
10. Act as command representatives for any inspecting individual or group visiting the Base in connection with the Natural Resources Conservation Program.

11. Establish and maintain procedures for accumulating reporting information and prepare all reports for the Commanding General regarding the Base Natural Resources Conservation Program, as required.

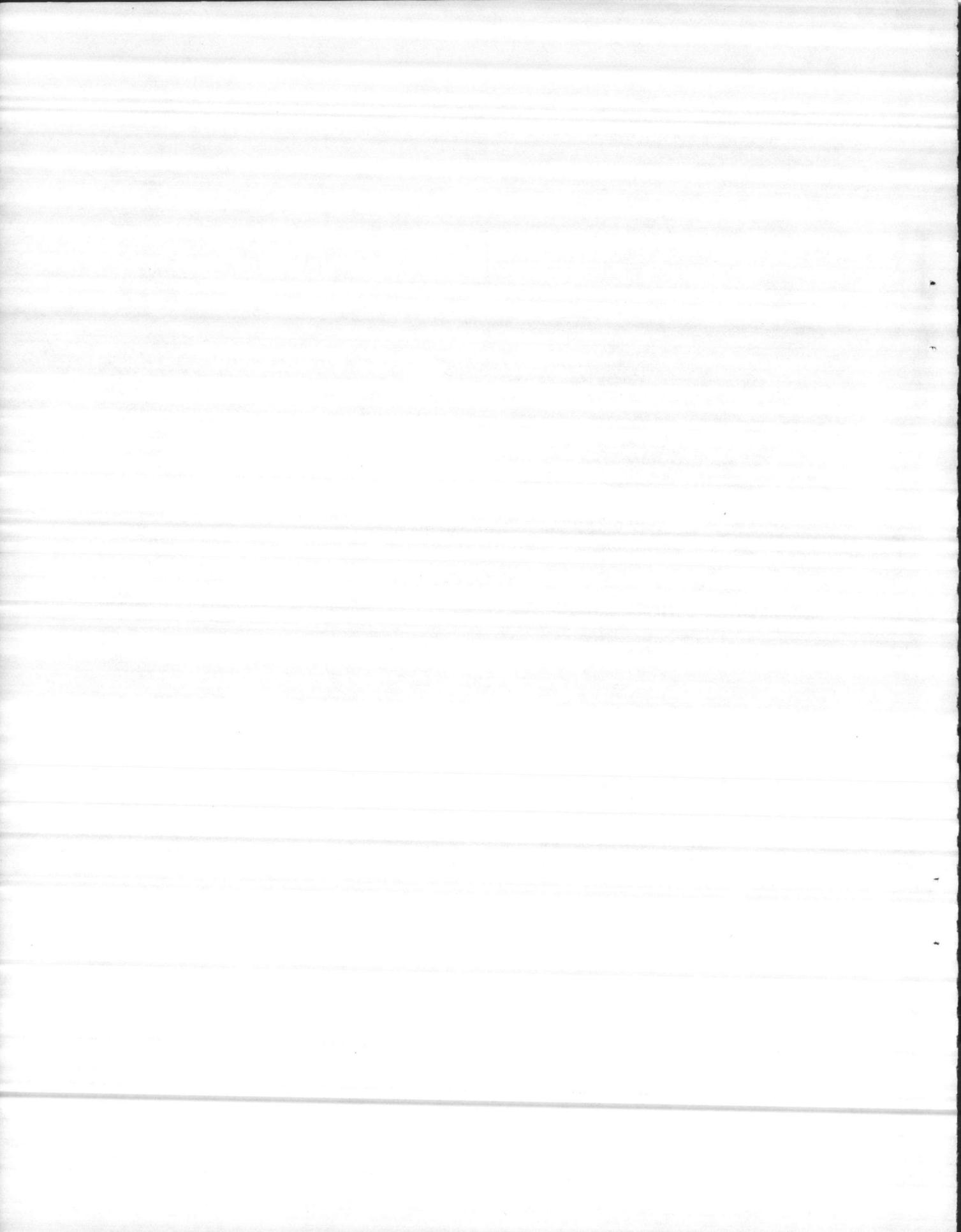
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12. Develop for promulgation a continuing informational program designed to inform military and civilian persons alike of philosophies, principles, and policies of the Secretary of the Navy as related to the conservation program.

13. Recommend to the Commanding General supplementary instructions, procedures, regulations, etc., regarding any phase or facet of the Natural Resources Conservation Program, as required.



APPENDIX B
VEGETATION



VEGETATION

Native plants common to Camp Lejeune that are useful to wildlife are listed below:

TREES

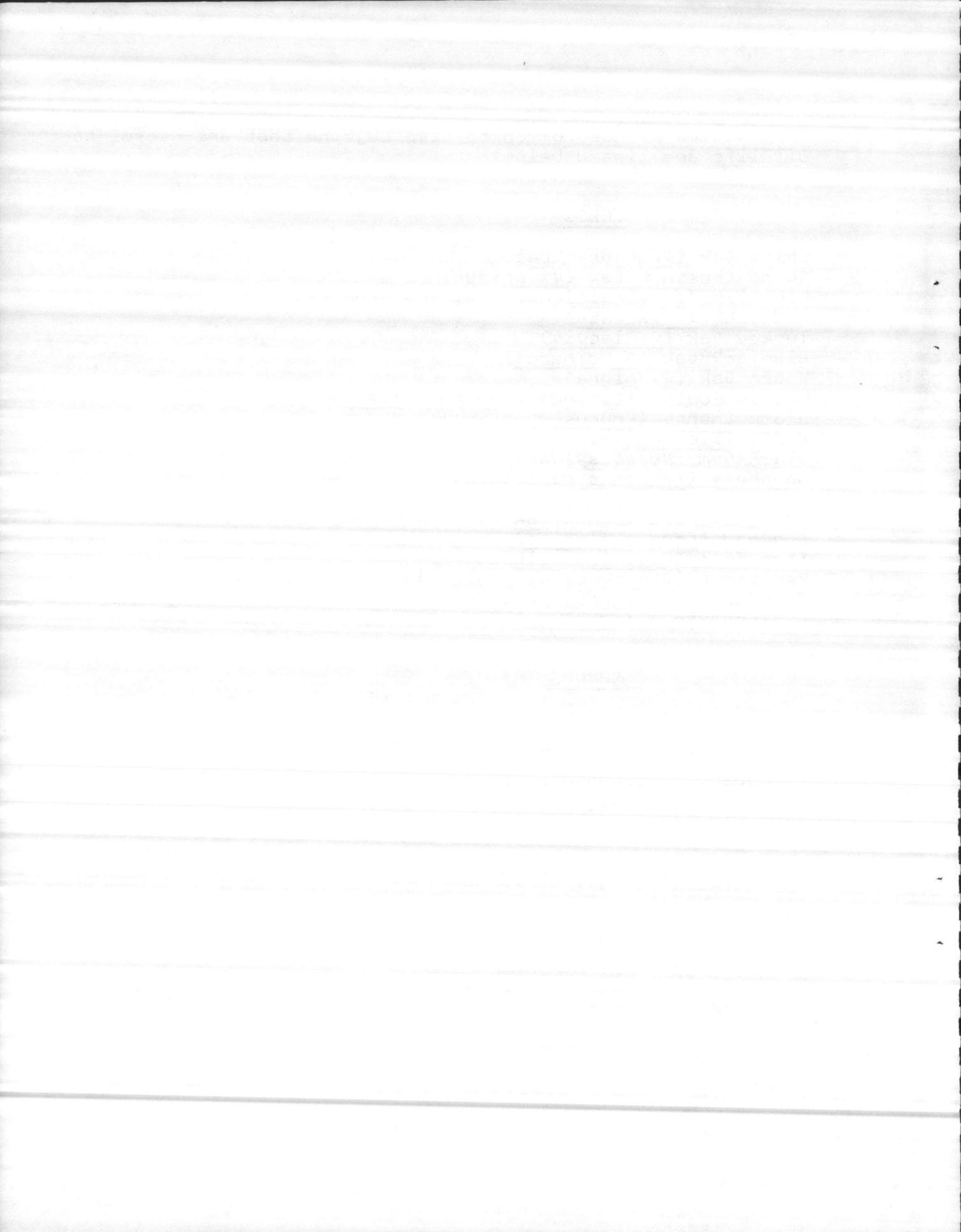
White Oak {Quercus alba}
Swamp Chestnut Oak {Q. prinus}
Live Oak {Q. virginiana}
Red Oak {Q. falcata}
Turkey Oak {Q. laevis}
Bluejack Oak {Q. cinerea}
Water Oak {Q. nigra}
Yellow Poplar {Liriodendron tulipifera}
Black Cherry {Prunus serotina}
Holly {Ilex opaca}
Black Gum {Nyssa sylvatica}
Hornbeam {Carpinus caroliniana}
Longleaf Pine {Pinus palustris}
Loblolly Pine {Pinus taeda}
Dogwood {Cornus florida}
Sassafras {Sassafras albidum}
Persimmon {Diospyros virginiana}
Sourwood {Oxydendrum arboreum}
Ash {Fraxinus nigra}

SHRUBS

Gallberry {Ilex glabra}
Yaupon {Ilex vomitoria}
Cyrilla {Cyrilla racemiflora}
Chinquapin {Castanea pumila}
Hawthorn {Crataegus Spp.}
American Beautybush {Callicarpa americana}

VINES AND HERBS

Partridge Pea {Cassia fasciculata}
Beggar Weed {Desmodium Spp.}
Lespedeza {Lespedeza Spp.}
Milk Pea {Galactia volubile}
Grape {Vitis Spp.}
Blueberries {Vaccinium Spp.}
Green Brier {Smilax Spp.}
Honeysuckle {Lonicera japonica}
Yellow Jasmine {Gelsemium sempervirens}



APPENDIX C

BASE ORDER 11090.1



MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542

BO 11090.1
15A/CFR/lp
29 Sep 1972

BASE ORDER 11090.1

From: Commanding General
To: Distribution List

Subj: Spill Prevention, Containment, and Countermeasure Plan
for Oil and Other Hazardous Substances

Ref: (a) MCO P11000.8
(b) BO 5100.13A

Encl: (1) Spill Prevention and Containment Plan
(2) Contingency Spill and Countermeasure Plan

1. Purpose. To publish the Spill Prevention, Containment, and Countermeasure Plan for Oil and Other Hazardous Substances for Marine Corps Base, Camp Lejeune, North Carolina, and assist the Commanding General in the implementation of reference (a) with respect to pollution abatement.

2. Policy. It is the continuing policy of the Commanding General to actively participate in environmental pollution abatement and take positive planning and programming action to control petroleum products pollution on this Base from installations, equipment, vehicles, and other Marine Corps facilities. This Base will conform to the provisions of the Oil Pollution Act of 1961, as amended, and the Federal Water Pollution Control Act, as amended, insofar as the acts prohibit the discharge of oil and regardless of whether the acts pertain specifically to naval vessels and shore activities. The intent of this policy is to prohibit the discharge of all oil, oily mixtures, and other hazardous substances except in designated areas by qualified personnel.

3. Responsibilities

a. Base Maintenance Officer is charged with the overall responsibility of carrying out the various measures of this order.

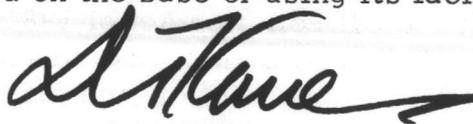
(1) Environmental Control Director (telephone 5003) is responsible to the Base Maintenance Officer for the day to day monitoring, surveillance, and up-channel reporting of events concerning pollution caused by oil or other hazardous substance spills.

b. Area/Unit Commanders are charged with the responsibility of preventing spills of oil or other hazardous substances within their own areas/units and will develop local plans for containment in case of accidental spills.

c. Base Fire Chief or his senior representative will act as the On-Scene Coordinator (OSC). He will make the initial response to any contingency spill and will be in overall charge at the scene until relieved by the arrival of the Environmental Control Director.

4. Action. Discharge of oils or other hazardous substances into ditches, culverts, or receiving streams is prohibited. Special attention will be directed to areas where vehicles and equipment are serviced. Cognizant officers will take necessary action to assure compliance. Area/Unit Commanders shall conform to the standards and criteria as set forth in enclosures (1) and (2).

5. Applicability. Having received the concurrence of the Commanding General, 2d Marine Division, FMF; the Commanding General, Force Troops, FMFLant; and the Commanding Officer, Naval Hospital, Camp Lejeune, this order is applicable to those commands and all civilian personnel employed on the Base or using its facilities.



D. T. KANE
Chief of Staff

DISTRIBUTION: "A" less 3,4,5,6 Cat IV

SPILL PREVENTION AND CONTAINMENT PLAN

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1. Oil spill prevention is the responsibility of all organizations/activities. Each unit commander will ensure all personnel are indoctrinated in order to make them thoroughly conscious and aware of the environmental impact of oil spills and other hazardous substance discharges.
2. All activities will guard against the creation of possible oil spills and hazardous substance discharge situations and necessary action shall be taken to assure containment.
3. Disposal of oil, gasoline, kerosene, paint thinner, organic solvents, deteriorated cleaning solutions, poisonous chemical waste, corrosives, acids, and pesticides through any drainage system (either surface or subterranean) is prohibited. Waste oil will be disposed of in accordance with paragraph 7 below. Other substances mentioned herein will be disposed of as outlined in reference (b).
4. Disposal of empty or damaged containers of all types in wooded areas, drainage ditches, and other areas that might cause environmental damage is prohibited. All empty 55-gallon drums will be disposed of through Redistribution and Disposal Branch, Base Materiel Battalion. Other containers will be disposed of at the sanitary landfill, or prepared for recycling if practical.
5. Storage of pesticides, insecticides, herbicides, and other hazardous materials shall be in a secure area. They shall be neatly stacked and labeled to provide easy identification and ready access. All storage areas shall be provided with adequate mechanical ventilation. They shall be dispersed under the supervision of certified personnel as outlined in reference (b). Used containers of these materials shall be punctured or crushed so as to prevent reuse and disposed of at the sanitary landfill.
6. Oil and gasoline storage tanks larger than 500-gallon capacity will be properly diked. The dike will be properly equipped with a

BO 11090.1
29 Sep 1972

drainage line and valve(s). Only authorized personnel will be permitted to open and close said valve(s). After each drainage, the valve(s) will be closed and locked.

7. Waste oil will be collected in a tank of at least 250-gallon capacity equipped with a funnel, strainer, and cover so as to prevent entrance of trash, water, and other foreign matter. When the container requires emptying, the officer in charge will call Base Maintenance Department (telephone 3001) and a truck will be dispatched to remove the oil.

ACCIDENTAL SPILL AND COUNTERMEASURE PLAN

1. Reporting. Spills, accidental or otherwise, of oil or other hazardous substances will be reported immediately to the Base Fire Department (on Base - telephone 3333/off Base - telephone 451-3333) giving location, substance spilled, and approximate amount.
2. Response. Upon receiving a report of a significant oil or other hazardous substance spill, the Base Fire Department will dispatch a regular fire fighting unit to the scene. The Base Fire Chief or his senior representative will also report to the scene as soon as possible. Upon arrival, the Base Fire Chief or his senior representative will:
 - a. Assume the role of On-Scene Coordinator (OSC).
 - b. Take necessary steps to eliminate any fire hazard developed from the spill.
 - c. Notify Environmental Control Director (telephone 5003).
 - d. Evaluate the situation and request necessary logistic support from the Base Maintenance Officer to contain the spill and facilitate recovery or mopping up action.
 - e. Upon arrival at the scene, the Environmental Control Director or his representative will assume command and will direct further containment and clean-up activities.
3. Supplies and Materials. Base Maintenance Officer will provide the basic materials and equipment necessary to contain and mop up on-Base spills. The U. S. Coast Guard will be contacted for equipment and assistance in the event of a major spill.
4. Reports. A report of oil spills and other hazardous substance discharges in the inland navigable waters of the United States and the coastal waters including between 3 and 12 miles from the coast

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will be made immediately by the Environmental Control Director or his representative to:

- a. Base Maintenance Officer.
- b. Assistant Chief of Staff, Facilities, Marine Corps Base.
- c. Captain of the Port, Room 101, Federal Building, Wilmington, North Carolina 28401 (telephone 919-763-9435).
- d. Commandant of the Marine Corps.

In every case, a report of the incident will be made to the Commandant of the Marine Corps (Code COA). Incidents of a serious nature, which require urgent action at the Headquarters level, or may result in adverse news coverage or public relations, will be reported by message.

5. Small Spills. Occurrence of small gasoline and fuel oil spills on refueling aprons is very common. Gasoline and fuel oil spilled on refueling aprons will not be flushed into any ditch or storm sewer. To reduce the pollution and fire hazard, the spill will be covered with sand obtained from a nearby storage bin. As the sand absorbs the fuel, it will be taken up and returned to the storage bin after evaporation or placed into the sanitary landfill as required. Sand can be obtained by calling Base Maintenance Department (telephone 3001).

6. Restoration of Damaged Area. Grounds around grease racks and maintenance buildings that have been severely damaged by oil and grease will be restored to their natural state. If necessary, the contaminated soil will be removed and replaced with clean soil and reseeded.

APPENDIX D

WILDLIFE RESOURCES



WILDLIFE RESOURCES

Wildlife species most common to Camp Lejeune, their population size estimate, and their relative range condition are listed below:

Species	Population (Estimated)	Range Condition
<u>Game Birds and Animals</u>		
Whitetailed Deer (<i>Odocoileus virginianus</i>)	3,100	Good
Black Bear (<i>Ursus americanus</i>)	Common	Fair
Squirrel (<i>Sciurus Spp.</i>)	Very abundant	Good
Rabbit (<i>Sylvilagus Spp.</i>)	Abundant	Fair
Gray Fox (<i>Urocyon cineroargenteus</i>)	Abundant	Excellent
Quail (<i>Colinus virginianus</i>)	Abundant	Fair
Turkey (<i>Meleagris gallopavo</i>)	750	Good
<u>Fur-Bearing Animals</u>		
Mink (<i>Mustela vison</i>)	Common	Excellent
Otter (<i>Lutra canadensis</i>)	Common	Excellent
Muskrat (<i>Ondatra zibethicus</i>)	Common	Fair
Skunk (<i>Mephitis mephitis</i>)	Abundant	Excellent
Raccoon (<i>Procyon lotor</i>)	Very abundant	Excellent
Opossum (<i>Didelphis marsupialis</i>)	Very abundant	Excellent
Bobcat (<i>Lynx longirostris</i>)	Common	Excellent
<u>Migratory Game Birds</u>		
Dove (<i>Zenaidura macroura</i>)	Abundant	Fair
Woodcock (<i>Philohela minor</i>)	Abundant	Good
Rail (<i>Rallus longirostris</i>)	Abundant	Excellent

Waterfowl

Wood Duck (*Aix sponsa*)
Black Duck (*Anas rubripes*)
Canada Goose (*Branta canadensis*)
Mallard (*Anas platyrhynchos*)
Green-winged Teal (*Anas carolinensis*)
Ruddy Duck (*Oxyura jamaicensis*)
Hooded Merganser (*Lophodytes cucullatus*)
Canvasback (*Aythya valisineria*)
Bufflehead (*Bucephala albeola*)
Lesser Scaup (*Aythya affinis*)
Pintail (*Anas acuta*)
Greater Scaup (*Aythya marila*)
Ring-neck Duck (*Aythya collaris*)
Coot (*Fulica americana*)

Game Fish

Largemouth Bass (*Micropterus salmoides*)
Bluegill (*Lepomis macrochirus*)
Redbreast (*Lepomis auritus*)
Pickerel (*esox* Spp.)
Redear (*Epomis microloplus*)
Warmouth (*Chaenobryttus gulosus*)
Black Crappie (*Pomoxis nigromaculatus*)
Yellow Perch (*Perca flavescens*)
Pumpkinseed (*Lepomis gibbosus*)
Flier (*Centrarchus macropterus*)
Striped Bass (*Roccus saxatilis*)

Non-game Fish

Carp (*Cyprinus carpio*)
Bowfin (*Amia calva*)
Shad (*Dorosoma cepedianum*)
Catfish (*Ictalurus* Spp.)
Longnose Gar (*Lepisosteus osseus*)

APPENDIX E
MANAGEMENT RECORD



MANAGEMENT RECORD

<u>Name</u>	<u>Acres</u>	<u>Species Managed</u>	<u>Stocking Record</u>		
			<u>Species</u>	<u>No.</u>	<u>Average Length</u>
Powerline Pond	2.0	LMB, RSF, BLG			
Cedar Point Pond	2.0	LMB, RSF, BLG			
Ward Pond	1.5	LMB, RSF, BLG			
Hickory Pond	5.5	LMB, RSF, BLG			
Mile Hammock Bay	1.5	LMB, RSF, BLG			
Oak Pond	5	CCF			
Courthouse Bay	1.5	LMB, RSF, BLG			
Prince Pond	1.0	CCF	CCF	500	5
Hogpen Pond	1.0	CCF	CCF	500	5
Henderson Pond	14.0	LMB, RSF, BLG			
New Pond (unnamed)	3.0	CCF, LMB, RSF, BLG	LMB	300	2
			CCF	500	5

CHEMICALS USED IN CONTROL

	<u>Chemical</u>	<u>Target</u>	<u>Lbs. Active Ingredient</u>	<u>Surface Acres</u>	<u>Acre Ft. Treated</u>
Ward Pond	Diquat	Horned Pondweed (Zannichellia)	2-1/2 gal	1.5	3
Powerline Pond	"	"	2 gal	2.0	3
Prince Pond	"	"	1/2 gal	1.0	1.5
Cedar Point Pond	"	"	2 gal	2.0	6.0



APPENDIX F

HUNTER CLASSIFICATION AND WILDLIFE SPECIES HARVESTED



HUNTER CLASSIFICATION AND WILDLIFE SPECIES HARVESTED

<u>Type Permits</u>	<u>Fee</u>	<u>Number Issued</u>
Civilian Guest (seasonal)	\$10	279
Civilian Guest (daily)	2	226
Military Hunting and Fishing	2	1,513
Civilian Employee Hunting and Fishing	2	68
Military and Civilian Employee Fishing	1	1,092
Trapping	3	<u>15</u>
		3,228
Total: \$7,311		

	<u>Man-Days of Hunting</u>
Civilian Guest	3,016
Military and Civilian Employee	11,067

Species Harvested (1971 - 1973)

White tailed deer	1,514
Wild Turkey	25
Squirrel	7,027
Rabbit	29
Quail	487
Dove	546
Raccoon	137
Rail	279
Woodcock	59
Waterfowl	1,250 (estimated)



