ABACOA
MANAGEMENT PLAN

SECTION D: PRESCRIPTIVE FIRE

CONTENTS

1.0 INTRODUCTION

Of the options available for management of the insitu Upland Preserve System, no one management initiative is as important a determinant of the direction of successional values of these associations than the use of Prescriptive Fire Management. The attributes of fire are linked to the ecosystem process level of pine flatwood systems historically within peninsula Florida. Timing and frequency of prescriptive fires in association with fuel loads and species composition, has a role as a selecting agent for cover and species population (small mammals, birds, reptiles, amphibians, and anthropods) which are affected by vegetative cover and density.

All research and available data suggest that the reduction in frequency of low-intensity fires in flatwood systems has long-term detrimental consequences for the nutrient balances of these ecosystems at this latitude. Ramifications of the exclusionary processes attenuated from fire suppression affect all parts of the food-chain dynamics of the pine flatwood system more than any other factor, except possibly water resource availability of a site.

The Prescriptive Fires that will be utilized at Abacoa are specific to the Gopher Tortoise Management Areas for generating a more open understory, with increased species richness in grasses and forbs, which are essential to the long-term survival requirements of the onsite gopher tortoise (Gopherus polyphemus) population and the overall maintenance of the pine flatwood areas supportive to the species. Specific burn plans will be prepared for each burn unit with respect to management ranges prior to conducting a prescribed burn. Timing of fires will in most cases coincide with the natural sequences of fire season, May to October. However, where fire has been suppressed for a long period of time and fuel loads have become heavy, prescribed winter fires may be utilized to begin restoration of the fire regime.

2.0 PRESCRIPTIVE BURN PROCESS

The Prescriptive Fire Process is three-fold and follows a sequential order:

1. Initial/analysis Preparation Phase
2. Initiation/Ignition Phase
3. Final/Post Burn Evaluation Phase

These Phases and subsets apply to each managed range and specific burn units of those ranges where Prescribed Fires are conducted over any given time interval. They will become a sequential checklist for any given Prescriptive Fire.

2.1 INITIAL/ANALYSIS PREPARATION PHASE

The following steps shall be utilized in preparing Ranges or Sites within the Prescriptive Fire Process:

1. Establish Fuel Breaks. The size and type of the fuel breaks shall be established by determining the type of fire Planned and fuel conditions within the interior and exterior of the Range and/or site.

2. Establish Ingress and Egress points.

3. Repair existing fenceline or establish new fenceline.

4. Establish Prescriptive Fire Plan to include the following:

   A. Detailed Map (vegetative distribution and profile) including a description of the Stand (insitu vegetative, abiotic components) indicating, at a minimum:

      1. Overstory: type, density, size (height to bottom of crown)
      2. Understory: type, density, height
      3. Dead fuels: type, density, age, volume
      4. Existing water table
      5. Soil types and topography
      6. Wildlife utilization spectrum

   B. Range or Site descriptions with an analysis of the following pre-burn factors:

      1. History of smoke sensitive areas
      2. Moisture content of fuel source
      3. Firing techniques to be utilized (specified for each Range/Site)
         a. Backing fires
         b. Strip Heading fires
         c. Flanking fires
         d. Point Source fires
         e. Ring firing
      4. Establishment of control lines (possible utilization of temporary point wells)
      5. Regulations that apply (Florida Statute Section 590.026 under Florida Prescribed Burning Act, became law on 10/1/90)
      6. Crew size, equipment needs, contingency (specified for each Range Unit)

   C. Prescriptive Fire Objectives

D. Special Precautions

E. Preferred Weather in relation to the following factors:

1. Surface wind (speed and direction)
2. Transport wind (speed and direction)
3. Stability/stagnation index
4. Minimum atmosphere mixing height
5. Dispersion index
6. Minimum humidity
7. Maximum temperature
8. Fine-fuel moisture (existing vegetation)
9. Past rain regimes (lapse and amounts)
10. Burning index
11. Drought index

F. Predicted Fire Behavior in relation to the following factors:

1. Type fire
2. Best month to burn
3. Time of day to start burn
4. Numbers of hours to complete
5. Flame length
6. Rate of spread
7. Fireline intensity
8. Inches of litter to leave

G. Photograph points established for pre-burn and post-burn evaluation.

H. Establish burn rotation.

5. Establish future defensible fuel profile zones (DFPZ's)

6. Coordination with the following groups/agencies as necessary:

A. Florida Division of Forestry

B. Applicable county regulators

C. Surrounding Homeowners Groups/Associations

D. Immediate residences within defined affected radius area

7. Establish future sampling transects.

8. Document (photograph) Range and/or Site for Prescriptive Fire.

2.2 INITIATION/IGNITION PHASE

The following steps shall be utilized in Ranges or Sites for the Ignition Phase of the Prescriptive Fire Process:

1. Notice to homeowners within the defined affected radius notified.

2. Notification of Prescriptive Fire initiation given to: Florida Division of Forestry, Palm Beach County Fire & Rescue and the Town of Jupiter.

3. Monitor site specific weather.

4. Crews assembled on site.

5. Conduct pre-burn conference with the assembled team.

6. Set ignition fire lines.

7. Document site (photograph).

8. Evaluate in process fire behavior.

9. Adjust & juxtapose with circumstances dictated by fire.

10. Patrol lines & spot fires.

11. Evaluate ability to meet set Objective/Goals.

12. Suppression of fire.

13. Patrol burn site.

2.3 FINAL/POST BURN EVALUATION PHASE

The following steps shall be utilized in Ranges or Sites during the evaluation Phase of the Prescriptive Fire Process:

1. Assess direct fire effects (Cursory).
2. Assess acreage & type burned.
3. Assess spotting & distance.
4. Record escapes.
5. Ascertain the degree in which Objectives were met.
6. Smoke analysis.
7. Determine the percentage of overstory vegetation consumed.
8. Determine the percentage of understory vegetation consumed.
9. Determine the percentage of soil oxidation.
10. Assess adverse effects.
11. Document site (photograph).
12. Establish confirmation of computer model. Adjust and expand for site specific application.
13. Prepare report.

3.0 MAINTENANCE/MONITORING

3.1 POST-BURN EVALUATION/TRANSECT SAMPLING

The following steps shall be utilized in Ranges or Sites during the post-burn evaluation:

1. Evaluations and sampling along established transects to evaluate the following:

   A. The percentage of regeneration of overstory and understory.

   B. Soil composition.

C. Fuel load reduction.

D. Vegetative cover.

E. Duff retention

2. Photographic documentation

3. Prepare written report.

3.2 FUTURE EVALUATION/INTERIM PHASE

The following steps shall be utilized in Ranges or Sites for future evaluations:

1. Establish, from all collected information, future/interim fire cycle regimes and intervals to be conducted on site.

2. Establish revised, desired forest stand conditions.

3. Introduce additional long-term management strategies which shall address:

   A. Seeding
   B. Re-stocking wildlife
   C. Habitat structures
   D. Forest re-planting
   E. Species stacking

4. Revise Prescriptive Fire Plan & Interfacing with other land holdings.

5. Additional coordination meetings as necessary.

6. Initiation of additional Prescriptive Fires within the following criteria:

   a. The prescriptive analysis for parameters will be formulated by several disciplines (U.S. Forestry Service, Game and Freshwater Fish Commission, and applicable biological consultants and specialists).

   b. General guidelines will be augmented into final prescriptive formula for Prescribed Fires for Preserve Areas as part of a holistic approach to the overall Upland Preserve Management Plan.

c. Fire and the resultant smoke (Clear Air Act · · · Public Law 95-95) is an integral part of the following initial text parameters. Each parameter combined will form the Prescribed Fire Plan which, ultimately, will dictate conditions, and general practices and criteria that will be initiated during and after burns.

4.0 SUMMARY

Prescriptive Fire Management has been an endorsed means of maintaining ecological integrity of the pine flatwood systems for more than a century, in an effort to maintain an open understory feature that reduces catastrophic fire events while improving range and habitat essential for the long-term survival of adaptive species exclusive to this habitat. Prescriptive Fire Management and Prescriptive Fires within Abacoa's Upland Preserve Areas will coincide with the following periodicity and timing:

1. Late fall and winter control succession (SW, SE wind directions).

2. Spring and Summer burns for flower production, recycling of nutrients (prevailing SE wind direction)

3. Cycle between 3 - 7 years according to bio-mass/fuel load accumulation, conducive benefits derived from mowing/burn combination in reducing bio-mass and fuel loads, and successes derived from first initial burns.

4. Reduce leaf litter, fuel ladder height, and density/coverage (bio-mass/fuel-load) substantially after initial burn, thus reducing subsequent intensity, duration and amounts of fire and smoke.

5. Compartmentalized fire cells into large tracts (20 - 40 acres) initially to facilitate efficiency levels, followed by smaller 5 to 10 acre burns during cycling fire regimes (3 - 7 years).

6. Have durations of 5 - 6 hours (start to finish) in normal 20 - 40 acre burns. Small incremental fires of 5 - 10 acre will have 3 - 4 hour durations (start to finish) in accordance with moisture levels.

7. Have burn prescriptions written which optimize burn scenarios projected for completion of burns over the shortest duration of time to complete task.