

Soarin' Hawk Raptor Rehabilitation Center
February 24, 2024

Prescribed Fire Workshop



Photo Courtesy: Jessica Merkling



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SOARIN' HAWK
RAPTOR REHABILITATION CENTER

Outline

 Why do we burn?

 Fire Behavior

 Planning a Burn

 Equipment/Safety

 How to Burn

 Resources

Why do we burn?

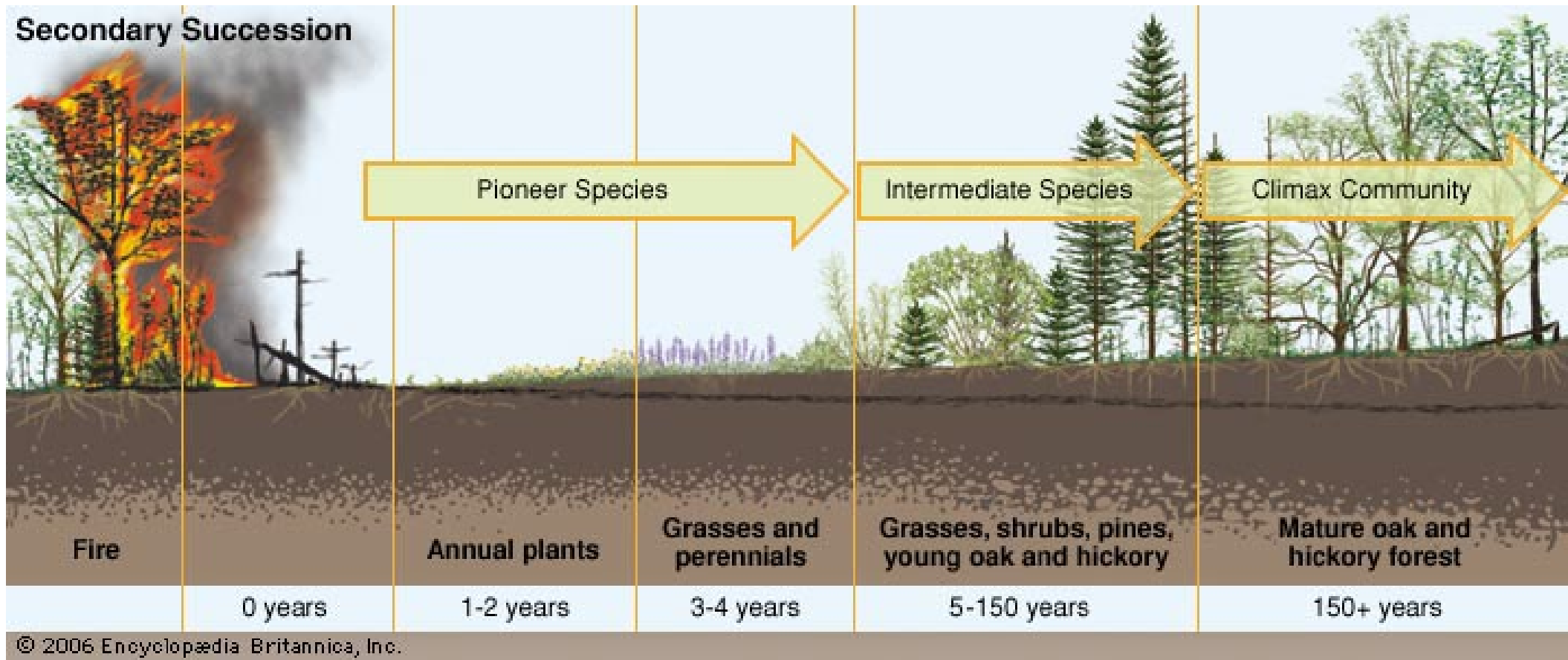
- One of the most effective methods of managing plant communities
 - Removes thick litter layer
 - Stimulates germination of beneficial plants
 - Releases nutrients in dead, organic material
 - Prepare for other treatments



Photo Courtesy: DFW

Why do we burn?

- Control natural succession
 - Remove woody growth



Prescribed Fire ≠ Wildfire

Prescribed Fire

- Set intentionally
- Considerations for safety of people and wildlife
- Set to achieve objectives
- Controls in place
 - Barriers
 - Trained personnel
 - Proper equipment
 - Burn plan

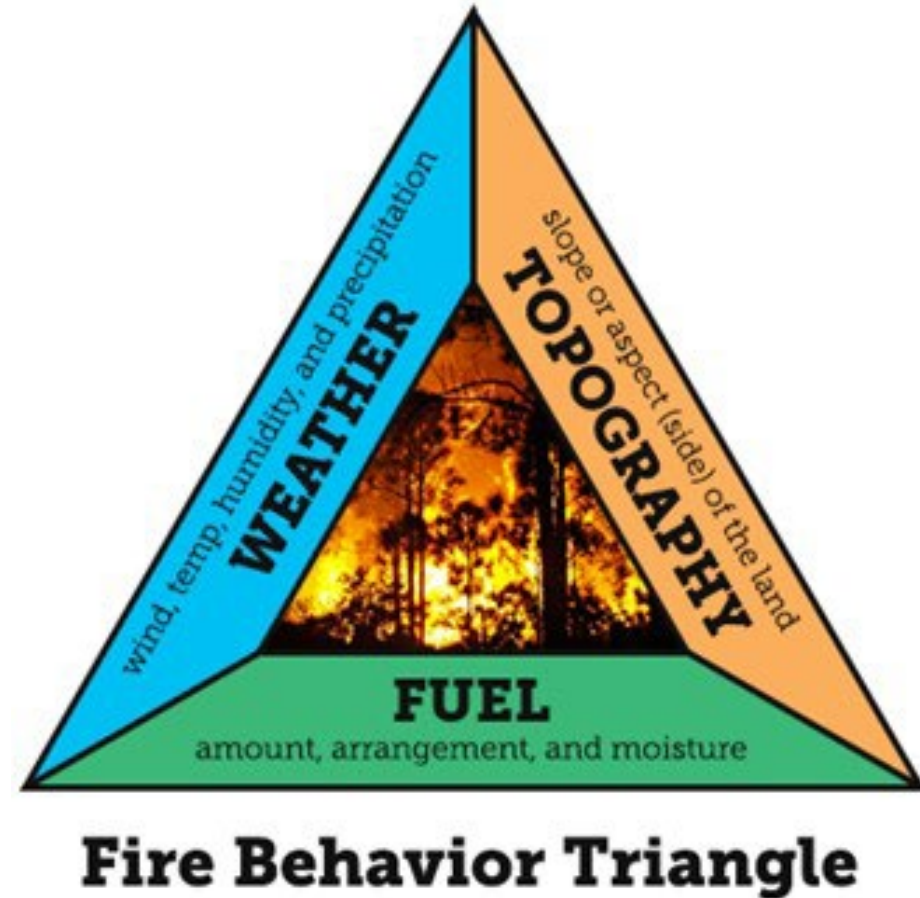
Wildfire

- Set accidentally
- Threatens lives and property
- Can do great harm

Fire Behavior

Understanding Fire Behavior

- **Weather**
 - Wind
 - Temperature
 - Relative Humidity
- **Timing**
 - Season
 - Time of Day
- **Surrounding Areas**
 - Neighbors
 - Roads
 - Sensitive Areas
- **Site Conditions**
 - Fuel Load
 - Fuel Moisture
 - Soil Moisture
 - Content
 - Size
 - Fire Breaks
- **Topography**
 - Slope
- **Available Resources**



Fire Behavior: Wind

Fire is more predictable with steady wind speed and direction.

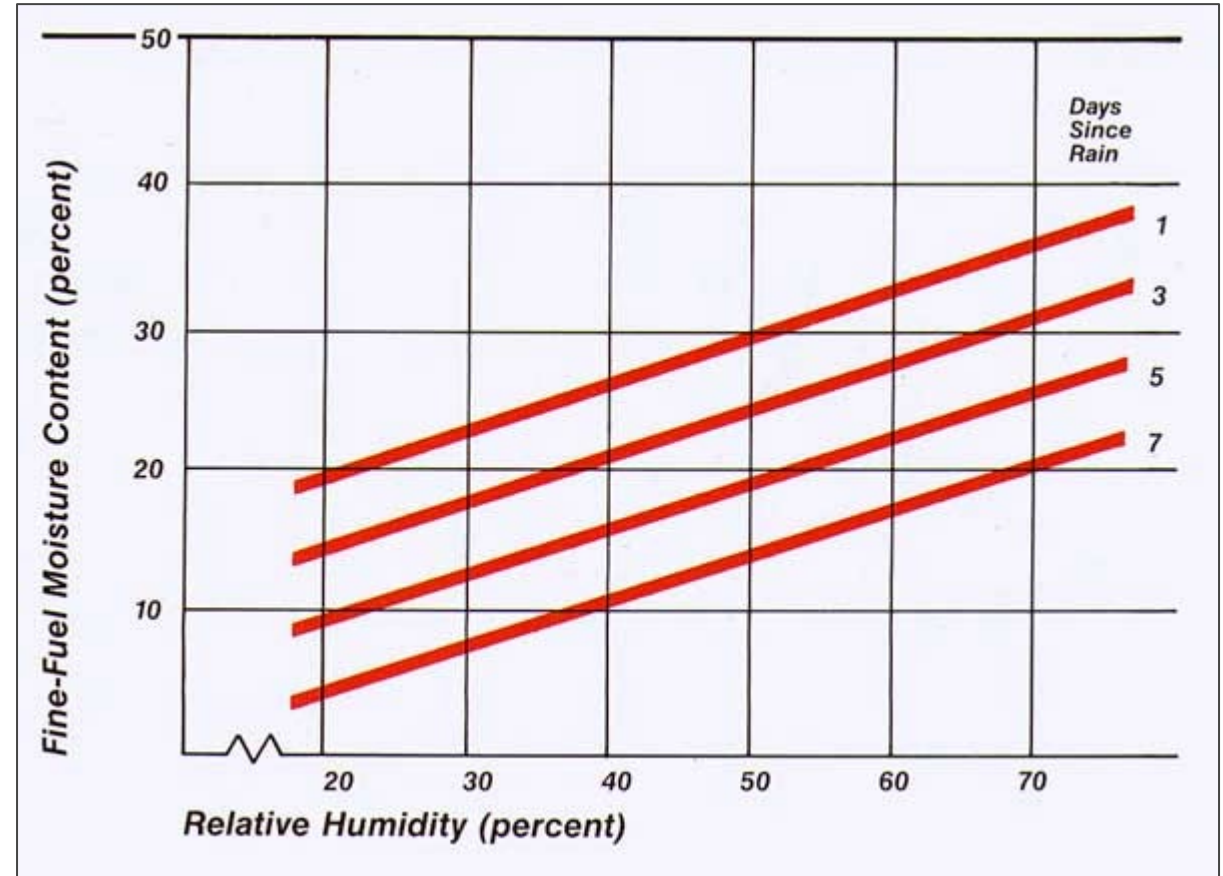
- Measured at 20 ft. above ground level
 - Usually forecasted by local weather stations
 - 6-8 mph for good smoke dispersal, 1-3 mph on the ground
- Take site conditions into consideration
- Light and variable winds are not favorable!



Photo Courtesy: DFW

Fire Behavior: Relative Humidity (RH)

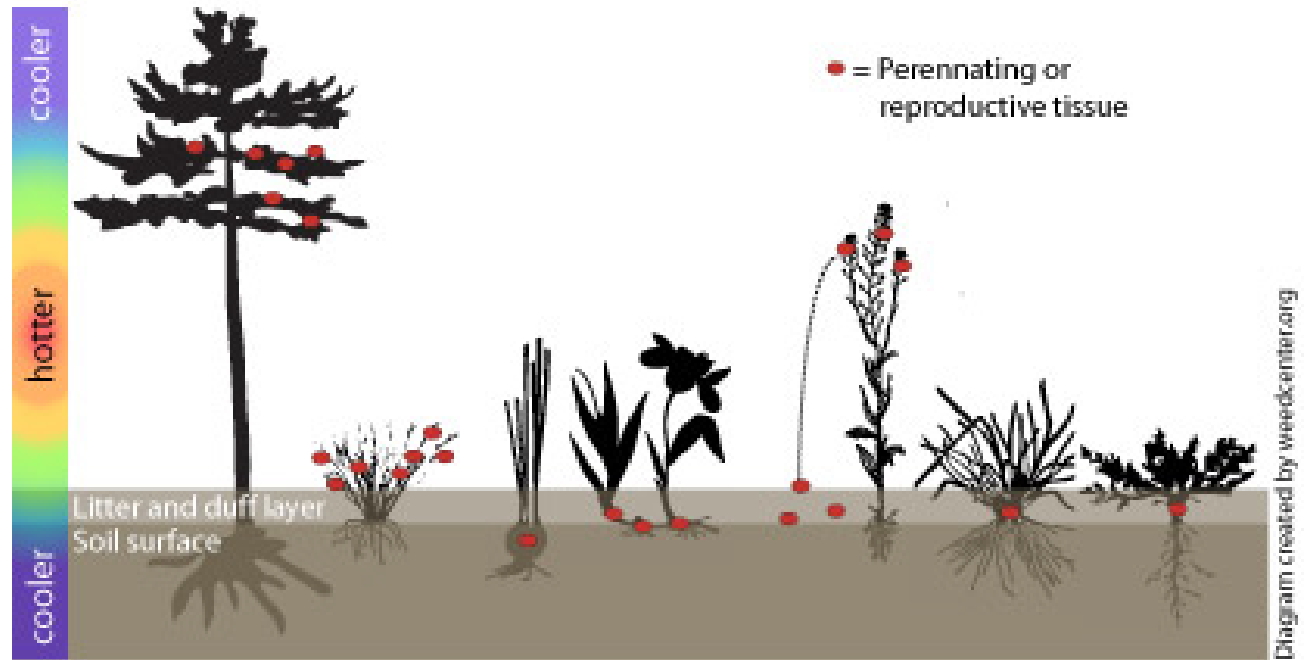
- Influences the moisture content of fuels
 - ↓RH, fuels become drier
 - ↑RH, fuels retain moisture and are less apt to burn
 - For every 20°F increase in temp, RH decreases by half
- Goal range from 40-55%
 - <30%, can become dangerous
 - >55%, unburned areas



Fire Behavior: Temperature

- Strongly influences moisture of fuels
- High temps dry fuel via solar radiation
- For late winter to early spring should be 20-60°F
- To kill woody vegetation, temperatures may need to be >60°F
- The time of day affects the temperature

Location of Vulnerable Plant Structures Relative to Temperature During a Fire



Fire Behavior: Rainfall/Soil Moisture

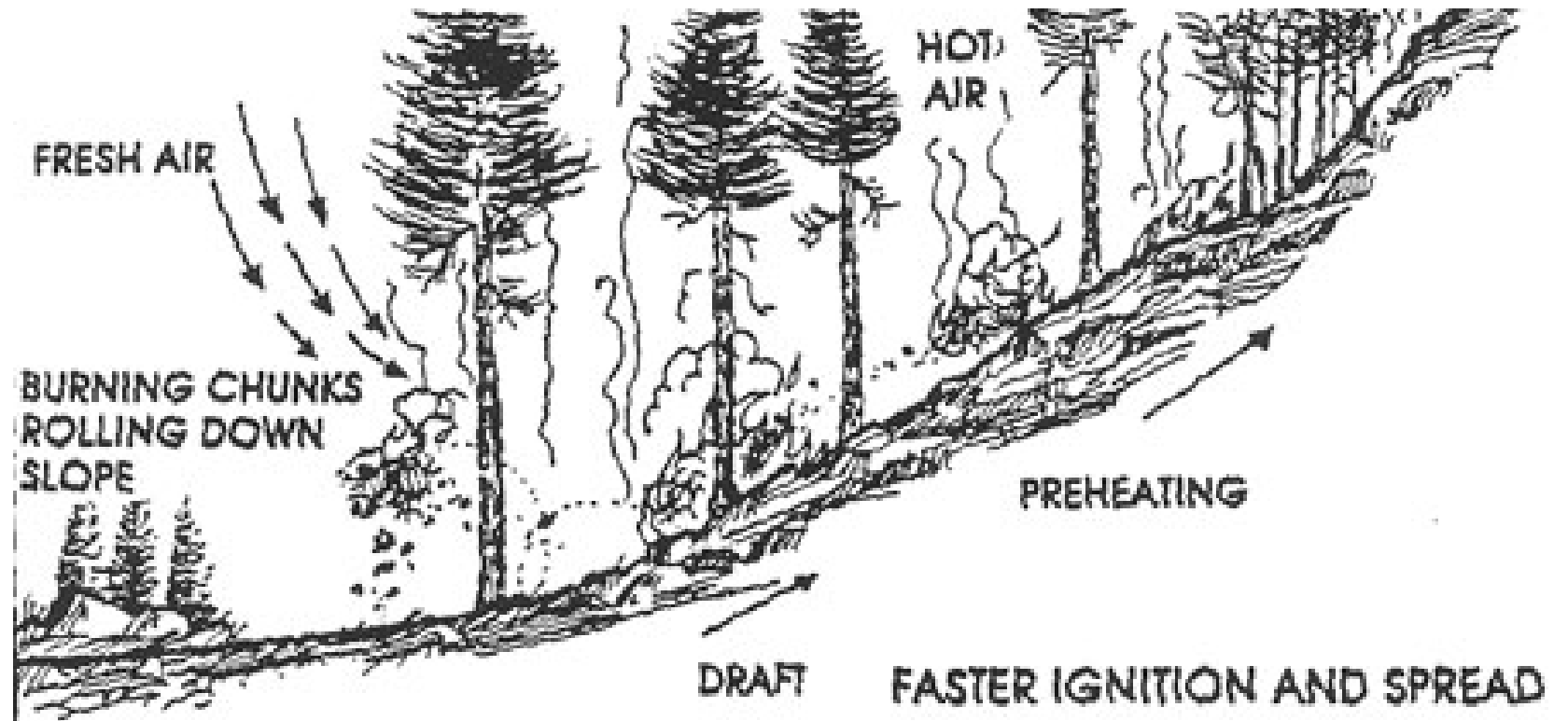
- Affects both soil and fuel moisture
- Damp soils protect root zones of grasses, forbs, and trees from being damaged
- Soil should be damp to moderately wet



Photo Courtesy: Jessica Merkling

Fire Behavior: Topography

- Aspect, slope, and terrain influence burn
 - Aspect is the direction the slope is facing
 - Slope is the degree of the incline
 - Terrain is the shape or “lay of the land”



Planning a Burn

Planning a Prescribed Burn

4 Main Components

Prescribed Burn Management Plan

1. Regulation Review
2. Evaluation of Prospective Burn Site & Objectives
3. Preparing a Burn Plan for the Site
4. Pre-Burn Site and Equipment Preparation

Prepared For:

*Soarin' Hawk c/o Mike Dobbs
(burn site) 17688 Lima Rd.
Huntertown
IN 46748
(260) 402-9627*

Burn Unit Legal Description

<u>County</u>	<u>Section</u>	<u>Qtr/Sec</u>	<u>Township</u>	<u>Range</u>
<i>Allen</i>	<i>7</i>	<i>NE</i>	<i>32 N</i>	<i>12 E</i>

Acres: 2

1. Regulation Review

- Review the applicability and requirements of any state, county, and local ordinances that might regulate prescribed burning in your locality!
 - Information from county sheriff or local fire department
 - County health department
 - IDEM
 - Others?

326 IAC 4-1-4.1 Open burning approval; criteria and conditions

Authority: IC 13-15-2-1; IC 13-17-3-4

Affected: IC 4-21.5; IC 13-12; IC 13-17-9

Sec. 4.1. (a) Burning not exempted by section 3 or 4 of this rule may be authorized by the issuance of an approval by the commissioner or the commissioner's designated agent after consideration of an approval application. Such burning may be authorized for, but not limited to, the following:

(1) Burning for the purpose of fire training.

(2) Burning of natural growth derived from a clearing operation, such as removal of natural growth for change in use of the land.

(3) Burning of highly explosive or other dangerous materials for which no alternative disposal method exists or where transportation of such materials is hazardous.

(4) Burning of clean wood products.

(5) Burning of natural growth for the purpose of land management.

(b) The following criteria may be considered for approval under this section:

2. Burn Site Evaluation

- Completed 6 months to 1 year prior to burn
 - Define objectives
 - Increase forbs/flowers
 - Control woody Invasion
 - Establish fire breaks
 - Contact with neighbors
 - Equipment needs
 - What type of fire is needed



Photo Courtesy: John Maxwell
Site: 08/11/2023

2. Burn Site Evaluation (Cont.)

- Information about the amount and type of fuels to be burned.
 - The amount and type of fuels **in** and **out** of the area
 - Topography and location of property boundaries
 - Make map of area, walk entire site-mark location of roads, trails, water bodies, natural fire breaks, smoke sensitive areas, utility lines, poles, fences, buildings, homes, trash piles, etc.



Photo Courtesy: Jessica Merkling
Site: 08/11/2023



Willow Creek

fort wayne bonsai club



17688 Lima Rd



3. Prepare Burn Plan

- Document including:
 - Description of burn unit
 - Equipment needs
 - Special concerns/hazards
 - Firing sequence
 - Map
- Burn plan will help the landowner carefully and thoughtfully prepare for the prescribed burn.

Prescribed Burn Management Plan

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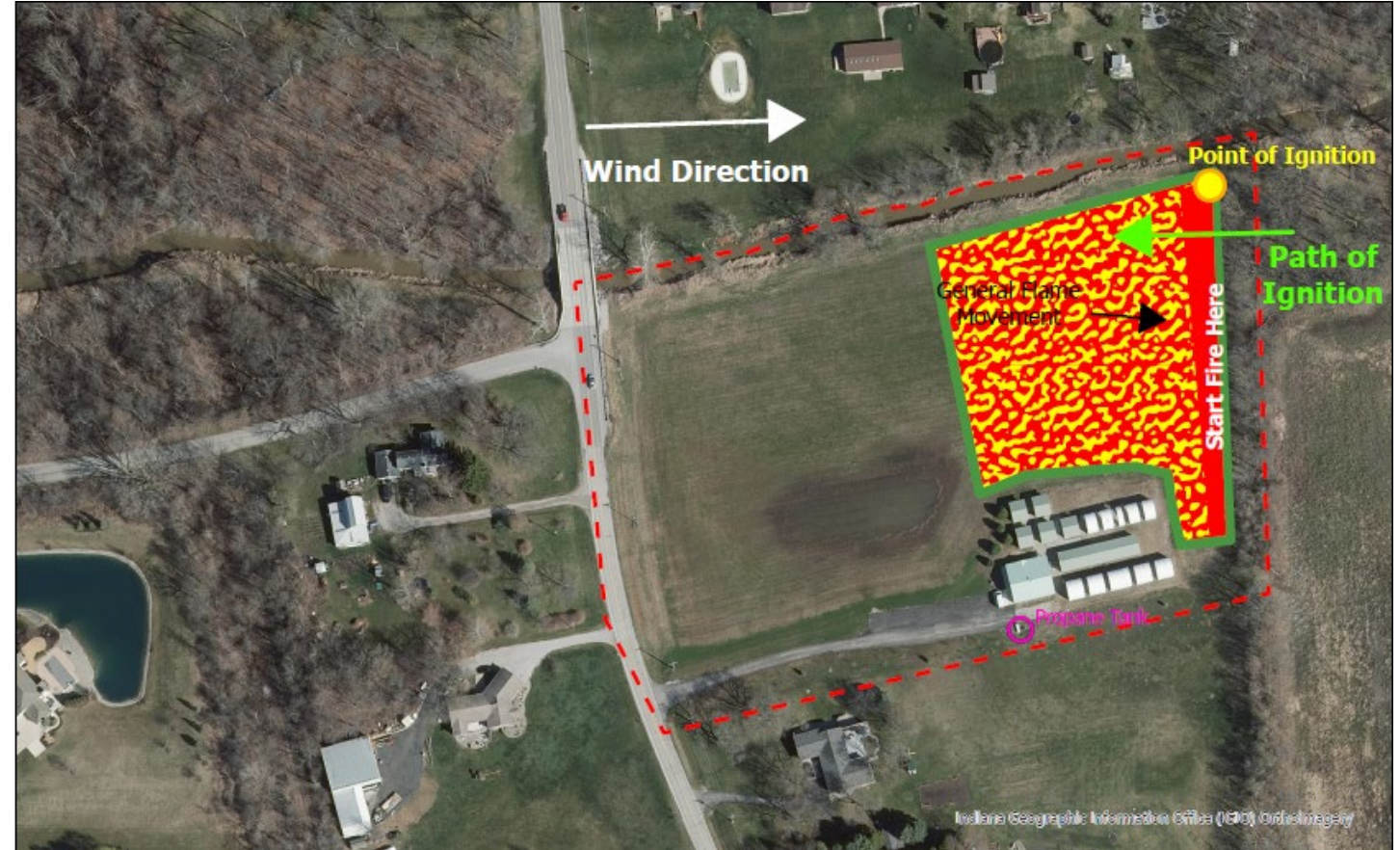
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Acres: 2

3. Prepare Burn Plan (Cont.)

- **Maps:** boundaries of burn area, sequence of fires to be set, and any special identifiers.
- **Burn Objective:** States objective(s) of burn
- **Burn Unit Description:** Types of fuels, areas wet or dry, and topography
- **Adjacent Land Description:** Types of fuels and topography that are adjacent to burn unit including landowners, roads, and other potential conflicts or areas of special concern.



3. Prepare Burn Plan (Cont.)

- **Areas of Special Concern:** Describe all areas in and outside the burn area that might pose safety, health or smoke hazards and measures needed to mitigate the concerns.
- **Pre-Burn Site Preparation:** States preparation needed before implementing the burn
- **Equipment Needs:** List equipment that should be on-site at the time of the burn.

PART D: POTENTIALLY AFFECTED PERSONS	
Property Owner Name and Mailing Address: Julianne Striggle 17846 Lima Rd. Huntertown, IN 46748	Property Owner Name and Mailing Address: Scott & Minnie Webb 2603 Simon Rd. Huntertown, IN 46748
Property Owner Name and Mailing Address: Gregory M. & Tianna L. Matney 2531 Simon Rd. Huntertown, IN 46748	Property Owner Name and Mailing Address: Unknown 2511 Simon Rd. Huntertown, IN 46748
Property Owner Name and Mailing Address: Jerry W. & Darlene K. Kittle 17725 Lima Rd. Huntertown, IN 46748	Property Owner Name and Mailing Address: Leo R. Heiman & Donna S. McEvoy 17703 Lima Rd. Huntertown, IN 46748
Property Owner Name and Mailing Address: Jacob P. Hathaway 17429 Lima Rd. Huntertown, IN 46748	Property Owner Name and Mailing Address: Adam D. & Amy L. Sheefel 17612 Lima Rd. Huntertown, IN 46748
Property Owner Name and Mailing Address: David R. & Cheryl A. Ewers 17540 Lima Rd. Huntertown, IN 46748	Property Owner Name and Mailing Address:
Property Owner Name and Mailing Address:	Property Owner Name and Mailing Address:

3. Prepare Burn Plan (Cont.)

- **Personnel Needs:** List all the personnel that will be needed to safely and efficiently carry out the prescribed burn
- **Persons To Be Contacted:** List neighbors, local law enforcement, local fire department names and phone numbers. Contact during plan preparation and on the day of the burn.



Photo Courtesy: DFW

4. Pre-Burn Checklist

- Range of conditions that **MUST** be met for fire to occur.
 - Time of Year: February/March
 - Time of Day: Time so the entire job, including follow-up work, can be completed before sunset
 - Relative Humidity Range: 40-60%
 - Wind Speed: 4-8 mph
 - Temp: 20 to 79°F

Day of Burn Check List

☐ Does the weather forecast meet the "Acceptable Burning Parameters" listed above?

WARNING! If a front is expected to pass through the area on the day the burn is planned, DO NOT BURN!

(Fill in blanks below)

Expected Lowest Relative Humidity _____
Expected Maximum Wind Speed _____
Expected High Temperature _____
Days Since Last Measurable Rain _____
Expected Wind Direction _____

- ☐ If the burn requires IDEM approval, is the approval on site?
- ☐ Have all "Persons To Be Contacted" been properly notified?
- ☐ Have all "Pre-Burn Site Preparations" been completed, checked and functional
- ☐ Do you have all the "Equipment Needed" on site and is it functioning properly?
- ☐ Do you have all the "Personnel Required" on site?
- ☐ Are all personnel physically fit to perform potentially strenuous activity?
- ☐ Have all personnel been briefed on the prescribed burn plan and know their assignments?
- ☐ Are all personnel wearing "Appropriate Burning Apparel"?
- ☐ Is there an air quality action day issued for the area?
- ☐ Has there been a burn band declared for the area? <https://www.in.gov/dhs/bumban/>
- ☐ Is the weather forecast expected to be favorable throughout the entire proposed burn time?
- ☐ Do you have a working cellular phone with the telephone number of the local fire department?
- ☐ In your opinion can the burn be carried out according to the plan in a safe manner?

4. Pre-Burn Checklist (Cont.)

- **Soil Moisture:** Soil should be damp to moderately wet.
- **Allowable Wind Direction:** Only wind directions that will achieve the burn objectives in a safe manner.
- **Firing Methods:** Only those firing methods that will achieve the burn objectives.
- **Fire Escape Plan:** Step by step contingency plan – Who will do what in case fire escapes. Who to contact and escape routes.

In Case Of An Emergency Or Escaped Fire

If a fire escapes outside of an area intended to be burned, all ignition stops until the escape is contained, unless needed to control the fire. Standard fire suppression methods will be used to control the escaped fire, if they do not work, other tactics like backfires will be used. If neither methods work, emergency numbers will be called and an emergency will be declared by Mike Dobbs.

In case of an emergency or escaped fire:

- * Call 911 (this number should also be used if anyone experiences a medical emergency on site regardless if it is related to fire).
- * In the event of an escaped fire that cannot be contained, call the Huntertown Fire Department (260) 449-3698.
- * Move all persons to safety zones, such as:
 - Man-made firebreaks,
 - Paved, gravel, or dirt roads,
 - Permanent bodies of water, or
 - Areas already blackened by fire.
- * Contact all neighbors that may be potentially effected. Please see the additional list of addresses that need to be contacted from form 49635 attached.

4. Pre-Burn Checklist (Cont.)

Day of Burn Check List

☐ Does the weather forecast meet the "Acceptable Burning Parameters" listed above?

WARNING! If a front is expected to pass through the area on the day the burn is planned, DO NOT BURN!

(Fill in blanks below)

Expected Lowest Relative Humidity _____
Expected Maximum Wind Speed _____
Expected High Temperature _____
Days Since Last Measurable Rain _____
Expected Wind Direction _____

☐ If the burn requires IDEM approval, is the approval on site?

IF ANY OF THE ANSWER IS "NO" ON ANY QUESTIONS IN THE CHECKLIST, DO NOT BURN!!!

- ☐ Are all personnel physically fit to perform potentially strenuous activity?
- ☐ Have all personnel been briefed on the prescribed burn plan and know their assignments?
- ☐ Are all personnel wearing "Appropriate Burning Apparel"?
- ☐ Is there an air quality action day issued for the area?
- ☐ Has there been a burn band declared for the area? <https://www.in.gov/dhs/bumban/>
- ☐ Is the weather forecast expected to be favorable throughout the entire proposed burn time?
- ☐ Do you have a working cellular phone with the telephone number of the local fire department?
- ☐ In your opinion can the burn be carried out according to the plan in a safe manner?

Equipment/Safety

Personal Protective Equipment (PPE)

- Natural Materials or NFPA-Approved
 - Cotton
 - Wool
 - Leather
 - Nomex®
 - Tecasafe®



Equipment: Basics



Equipment



Equipment



How to Burn

Establish Control Lines/Fire Breaks

Minimum firebreak width should be three times the height of the vegetation to be burned or 15 feet, whichever is greater.

- Exposed Soil Firebreaks
 - Disked lines
 - Rotovated field
- Burned Firebreaks
 - Previously burned areas
 - Creating a black line
- Green Firebreaks
 - Clover
 - Grass, typically cool season
- Mowed Firebreaks
 - Wet line
- Natural Firebreaks
 - Roads
 - Water – Pond, Lake, River



Photo Courtesy: DFW



Existing Physical Features



Tillage



Mowed Strip with Tillage



Green Crop Firebreak

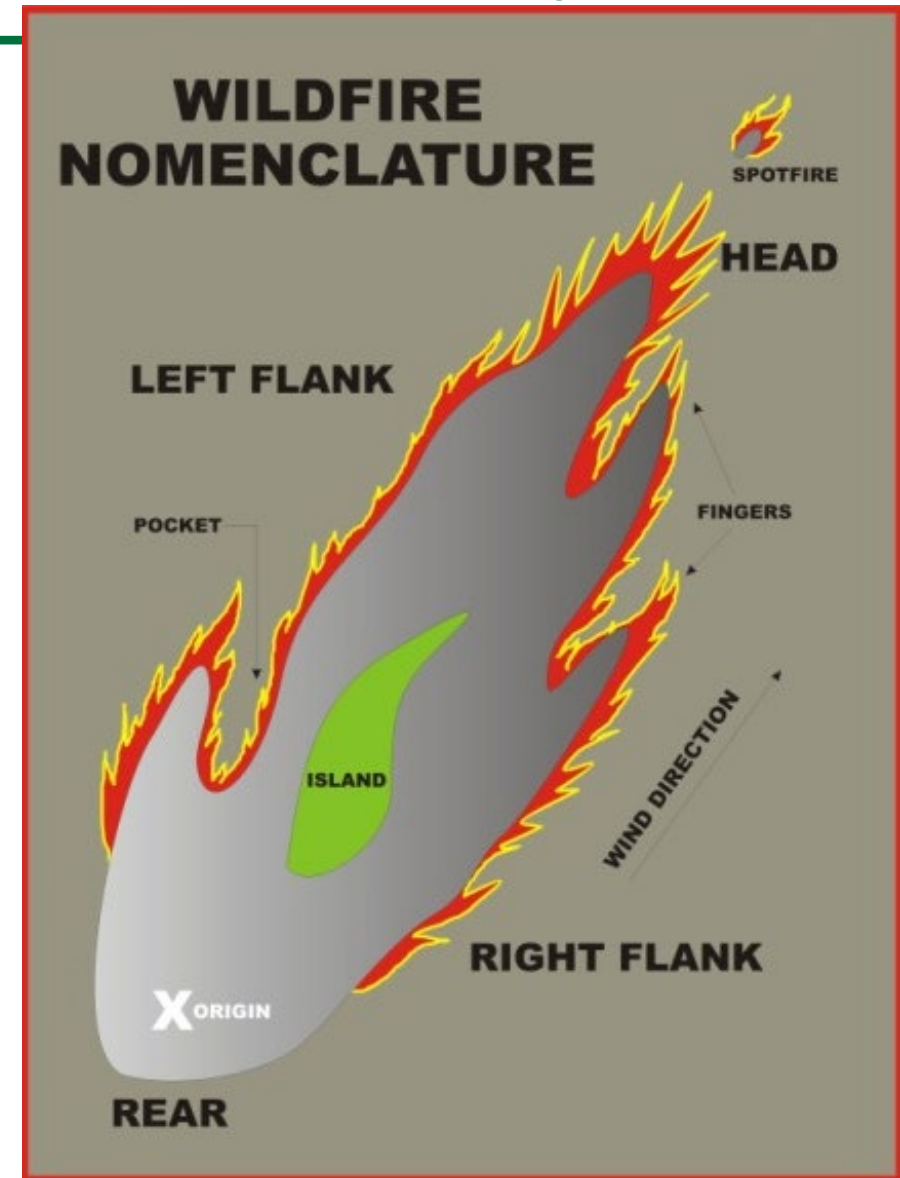
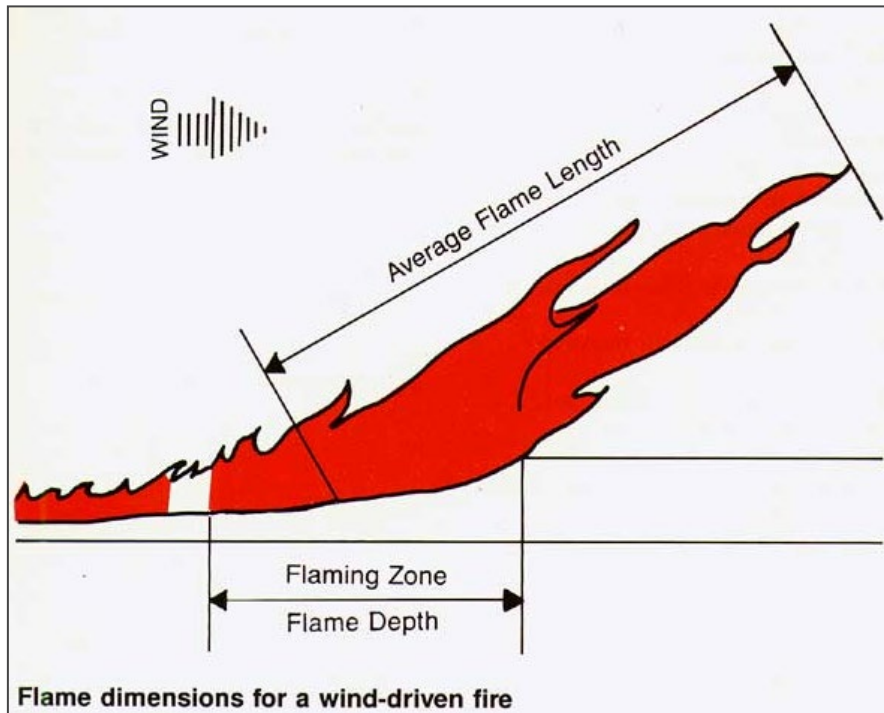


Green Crop Firebreak



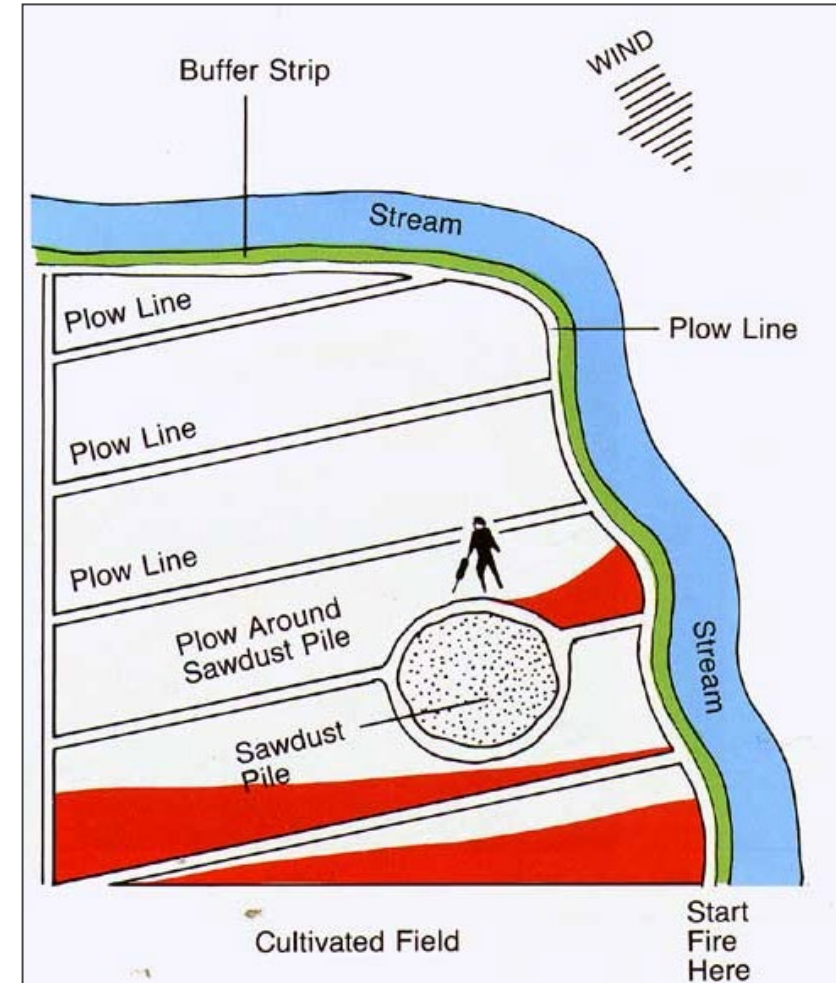
Black Lines

Fire Terms and Vocabulary



Firing Techniques: Backing

- Backing Fire:
 - Easiest & safest method
 - Always started along a firebreak or other barrier at the most leeward (downwind) edge of the burn areas and allowed to back burn into the wind.
 - Burn an area at least equal in width to the expected average flame length, prior to setting any other fires (in general 20 feet wide).



Backing Fire



Photo Courtesy: DFW

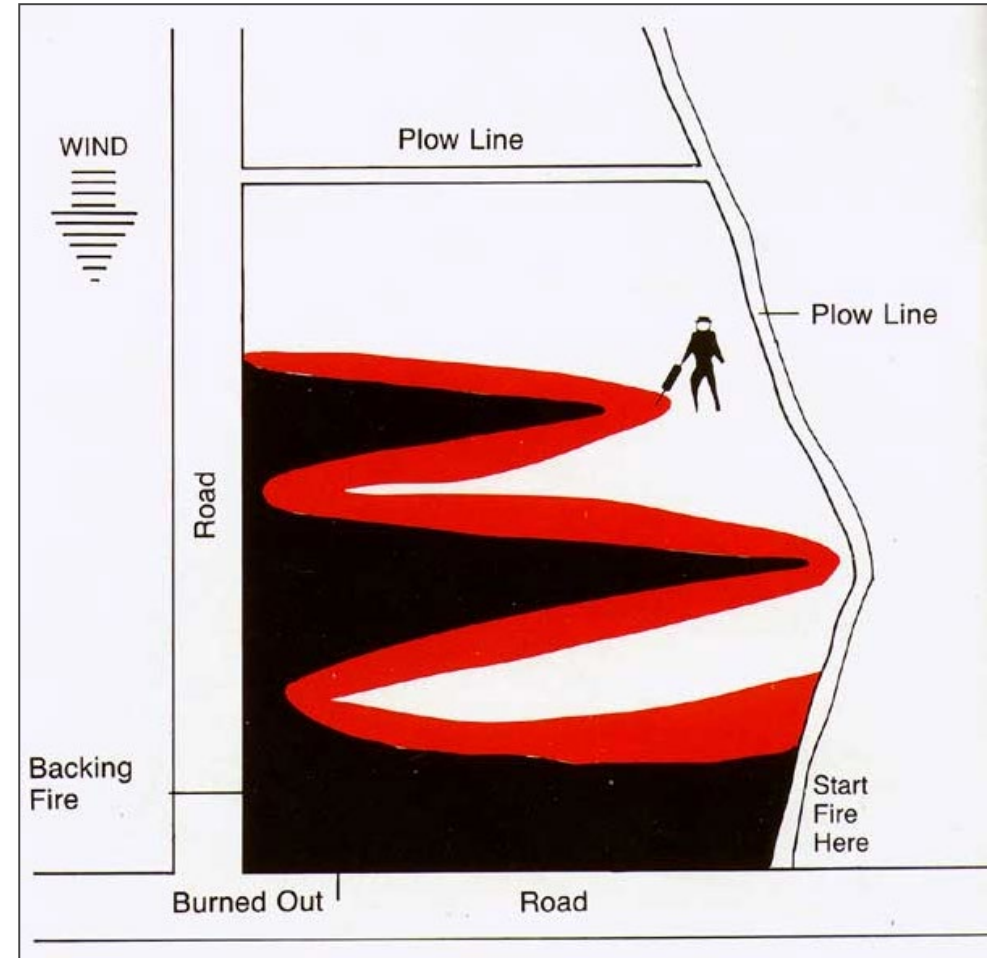
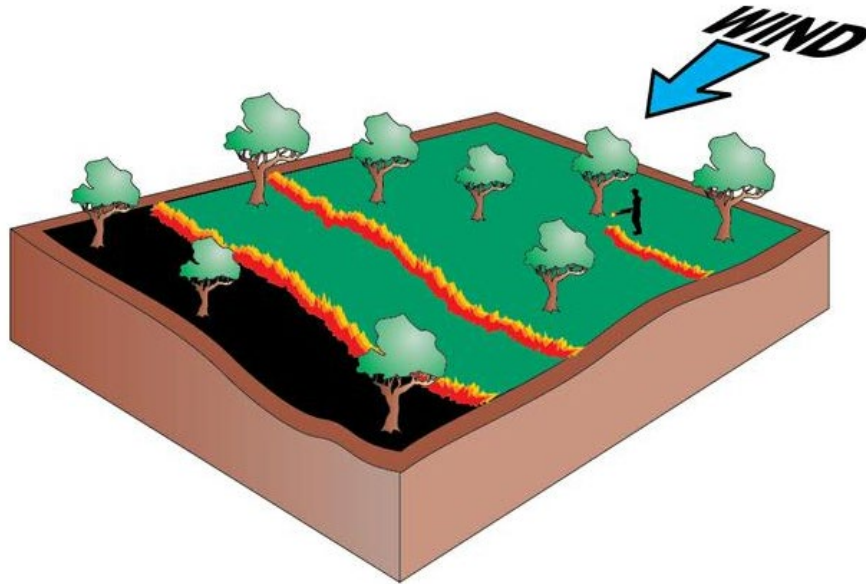
Firing Techniques: Strip-Head

- Strip-Head Fire:
 - Employs the use of a backing fire, followed by a series of strip fires set in sequential order along lines upwind from the control line and perpendicular to the wind.
 - Timed so no strip of fire becomes too robust before it meets a downwind firebreak or another line of fire and dissipates.
 - Typically set 20 to 50 feet apart.



Photo Courtesy: DFW

Strip-Head Fire Technique



Strip-Head Fire



Photo Courtesy: DFW

Smoke Management

Responsibility of those conducting a burn to minimize any effects that smoke from the fire might create.

- Use the most up-to-date weather information.
- Burn on days when conditions allow the smoke to rise and dissipate quickly.
 - Not into roads or buildings
- Doing a small test fire is helpful
- Burn middle of day
- Break large units into smaller units
- Do not burn on organic soils
- Be prepared to extinguish!



Photo Courtesy: Jessica Merkling

After the Burn

After the burn has been completed, inspect the area to see if the prescribed burn met its objectives.

- Ask:
 - Were firebreaks effective?
 - Did I have the necessary equipment and personnel?
 - Did I get the results I was expecting?
 - Make a list of things you would do differently next time.
 - Return to the site multiple times to assess the success of the burn.



Photo Courtesy: DFW

Resources

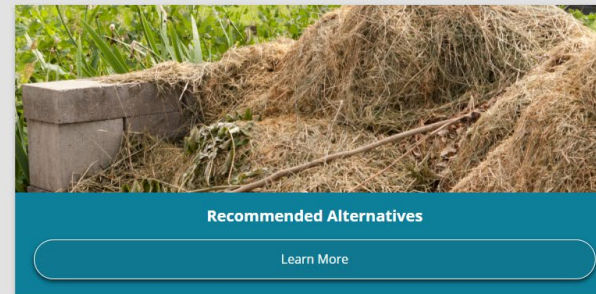
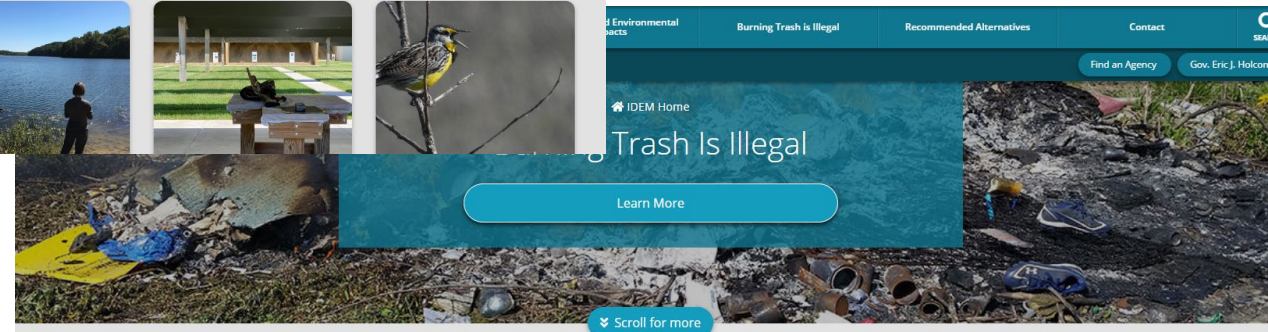
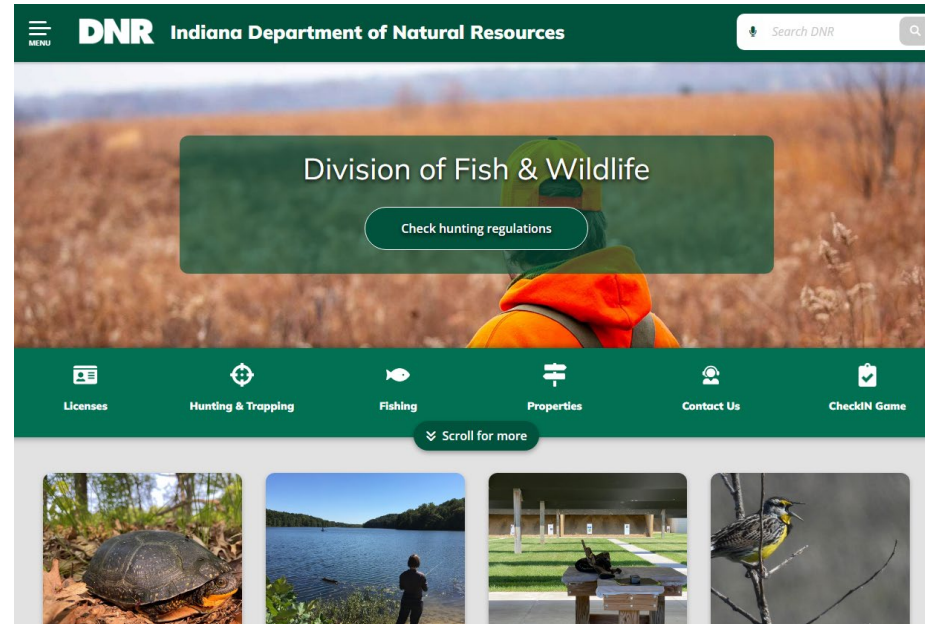
Resources (Cont.)

wildlife.IN.gov

- Find a Biologist
 - Burn Plan
 - Equipment
 - Potential Funding
- Habitat Factsheets
 - Habitat Types
 - Species Preferences
 - Prescribed Fire Factsheet

IDEM.IN.gov/openburning

- Rules and regulations



Thank You! Questions?



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