



# Effects of forest disturbance and green tree retention on upland habitat suitability of wood frogs

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## Forest Disturbance and Green Tree Retention

- Boreal landscapes have been shaped by natural disturbance (predominantly fire)
- Green tree retention aims to emulate patterns of natural disturbance during resource extraction
- Features retained and spatial patterns depend on conservation and management targets

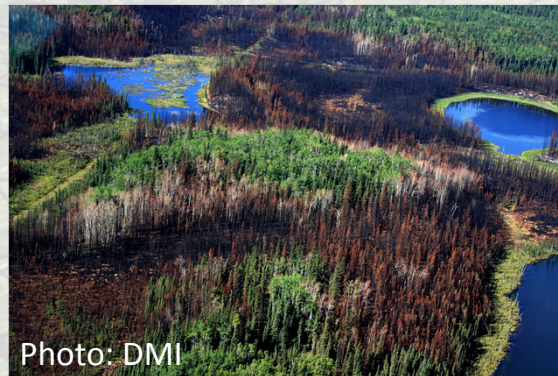


Photo: DMI



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## EMEND - Ecosystem-based Management Emulating Natural Disturbance - Experiment

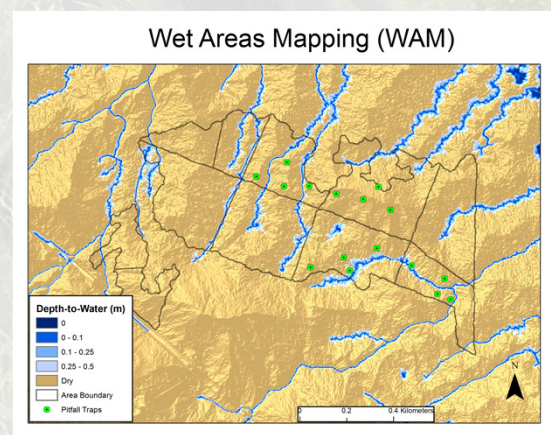
- Large-scale disturbance-based forestry experiment in Northwestern Alberta
- Compares different levels of green tree retention to harvest stands that have arisen due to natural disturbance
- Goal: determine retention levels and patterns that maintain stand structure, species diversity, and ecosystem function in managed forests
- Insights relevant to managing biodiversity in boreal forests, including oil sands

## Wood Frog Upland Habitat Use

- Amphibians require both aquatic and terrestrial habitat
- Upland forest environments are important for dispersal, migration, foraging and overwintering
- Wood frogs are associated with closed forest canopy, coarse woody debris (CWD), leaf litter, and understory plant cover
- Wet Areas Mapping (WAM) provides further information on wood frog habitat based on Depth-to-Water
- Human disturbances such as timber harvesting can alter microhabitat features and put populations at risk



Photo: M. Robinson



## Objectives

- Assess patterns in wood frog abundance across different green tree retention levels at EMEND
- Determine forest microhabitat features that limit upland habitat use in post-harvest retention stands
- Assess factors affecting the success of ephemeral pools as breeding habitat

## Methods

- Use pitfall trapping arrays to live capture frogs across different retention levels
- Characterize microhabitat features near trap sites including CWD, leaf litter, and understory vegetation
- Use microhabitat data and proximity to water features to explain seasonal abundance patterns
- Locate and map ephemeral pools to determine success as breeding sites and assess influence on surrounding upland abundance patterns

## Expected Results

- Higher retention levels should have greater canopy cover and greater inputs of CWD and leaf litter, resulting in more wood frogs using upland habitats
- This may, however, be partially compensated by regeneration in lower retention stands
- Abundance patterns are expected to be closely tied to proximity to water features based on WAM information

## Significance

- Findings will help inform industry on best management practices for maintaining suitable amphibian habitat while allowing for sustainable resource extraction

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