RBWFM Review

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Big Picture: Framework

- Framework
  - RBWFM framework is risk-based, structured, and largely consistent with current state of wildfire risk science
  - Relatively simple, off the shelf, helps set priorities
  - SBPs afford flexibility and tailored approaches

- Concepts & Terminology – Reframe RBWFM

FAQ Quotes

- Two important quotes with cascading effects:
  - "Wildfire management is risk management that involves first analyzing both exposure and effects…"
  - "Many of the NLPR values used in the RBSRM analysis are surrogates for other national, State, and local values."

Concepts & Terminology

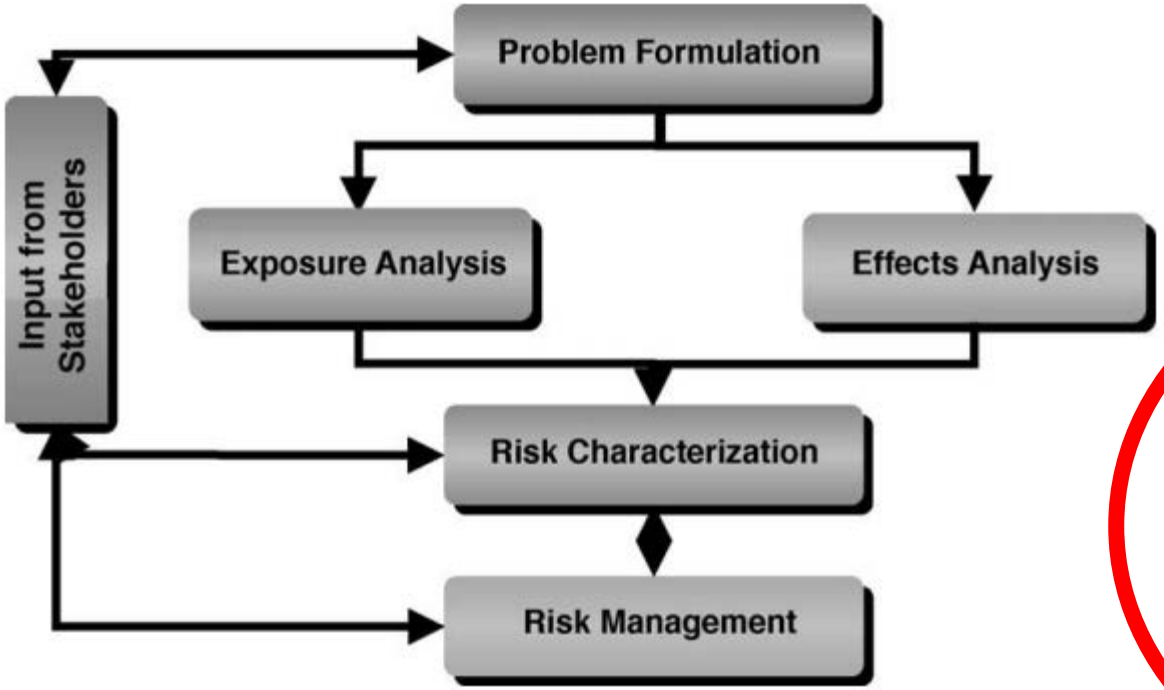


Fig. 1. Ecological risk assessment framework (U.S. EPA, 1992).

"Risk Triangle" is but one of many ways to depict risk assessment process

National Analysis does not use "risk triangle"

Instead consider **Exposure & Effects Analysis**

Concepts & Terminology

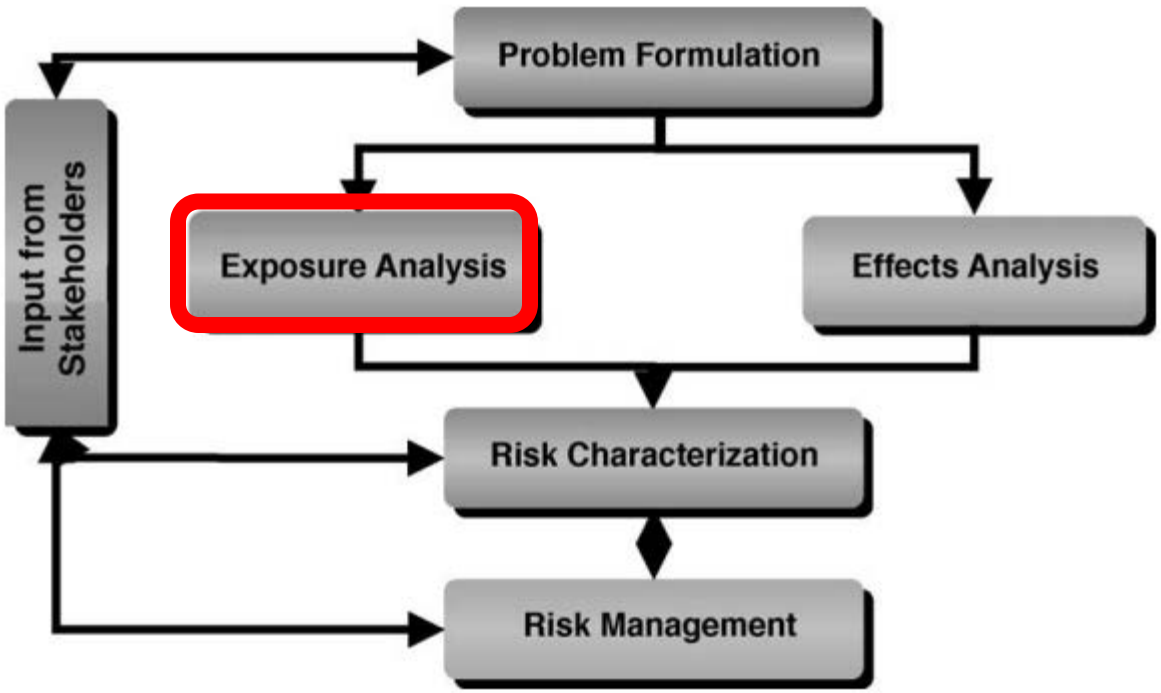


Fig. 1. Ecological risk assessment framework (U.S. EPA, 1992).

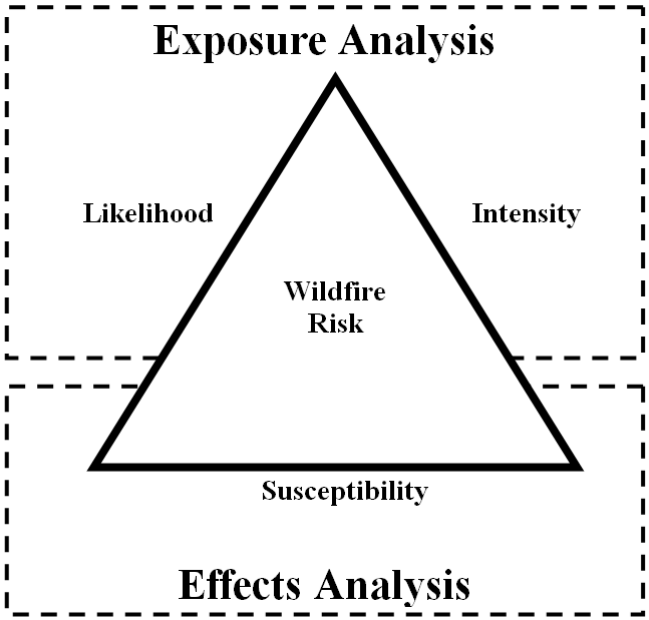
National-scale RBWFM is perimeter-based Exposure Analysis

EVAB is measure of exposure

EVAB doesn't indicate whether NLPR exposure is positive, neutral, or negative

EVAB doesn't indicate relative importance across NLPRs

Concepts & Terminology



Linking the risk triangle with the risk assessment framework

The risk triangle has the fundamental components needed to quantify risk

The risk assessment framework has the analytical steps needed to quantify risk

Concepts & Terminology

Given current state of NLPRs, I would advise against calculating "risk" at national-level

BUT, "risk triangle" could be a foundational component for SBPs

Each bureau can identify more specific LPRs

- More specificity in mapping
- More specificity in susceptibility
- More specificity in relative importance

Big Picture: Analysis

- Analysis
  - Basic process is systematic and consistent with state-of-art exposure analysis
  - EVAB represents a reasonable risk-based profile across DOI lands (with caveats)
  - There are potential biases in the approach
- Recommendation
  - Wait until 2015 FSim results available
  - Re-run analysis with some changes (described in following slides)

Potential Biases to Consider

- Known FSim Issues
- NLPR layers (especially Forests-to-Faucets)
- NLPR density (under-representing exposure)
- DOI ignitions (less clear connection to fuels)

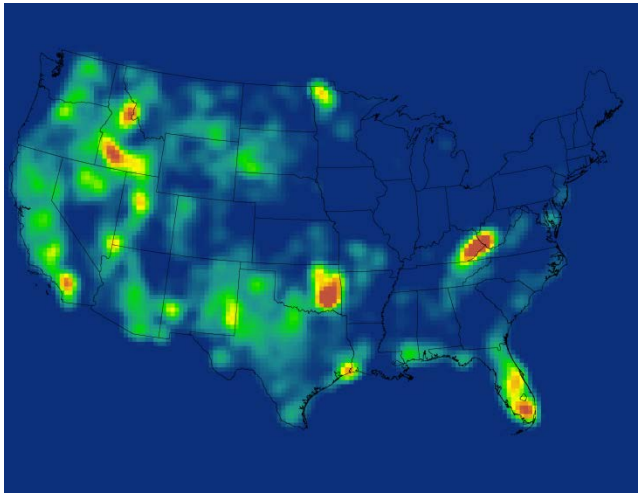
FSim Issues

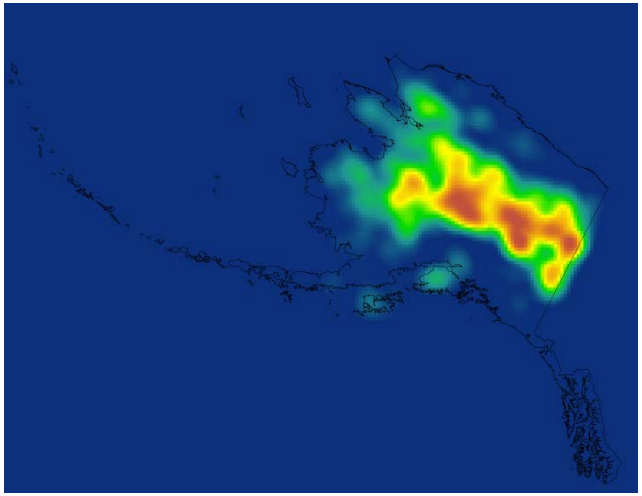
- Crown Fire Switch
  - Under-predicts crown fire – fire activity moved to grass & shrub fuel types
  - Changes - more activity in forest types
  - Changes in size, shape, location

- Alaska
  - Very coarse and many caveats
  - Other options available?

FSim Issues

- Ignition Density Grid
  - 2 types of runs: variable ignition density & uniform (for FPA statistical purposes)
  - Some of FPUs used uniform (random) ignitions
  - Could be changes relative to uniform





NLPR Layers

These 3 layers account for 85% of all NLPR acres added

F2F alone is 55% of all NLPR acres added
F2F adds more acres to BLM than all NLPR acres combined for other 3 bureaus

F2F mapped everywhere is arguably not a high value resource, yet driving results

+Forest Areas[3,8a] Continental, HI, PR	245,325	50,421	155,614	16,151	23,139
Cumulative Percentage of Risk Profile	100%	20.6%	63.4%	6.6%	9.4%
Acres Added	158,705	36,249	100,880	4,427	17,149
% Acres Added	100%	22.8%	63.6%	2.8%	10.8%
+Drinking Water[3,10] National	821,631	181,031	547,077	33,451	60,073
Cumulative Percentage of Risk Profile	100%	22.0%	66.6%	4.1%	7.3%
Acres Added	522,669	127,278	373,265	11,353	10,773
% Acres Added	100%	24.4%	71.4%	2.2%	2.1%
+Sagebrush Steppe[3,11] Continental	955,287	182,266	676,504	35,612	60,905
Cumulative Percentage of Risk Profile	100%	19.1%	70.8%	3.7%	6.4%
Acres Added	133,656	1,235	129,427	2,162	832
% Acres Added	100%	0.9%	96.8%	1.6%	0.6%

ArcGIS Forests To Faucets

MODIFY MAP Sign In

Details | Basemap | Share Print Measure Find address or place

Legend

US Forest Service Forests To Faucets

Surface Drinking Water Importance Index

National Extent

- 0 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 60
- 61 - 70
- 71 - 80
- 81 - 90
- 91 - 100

Index of Forest Importance to Surface Drinking Water

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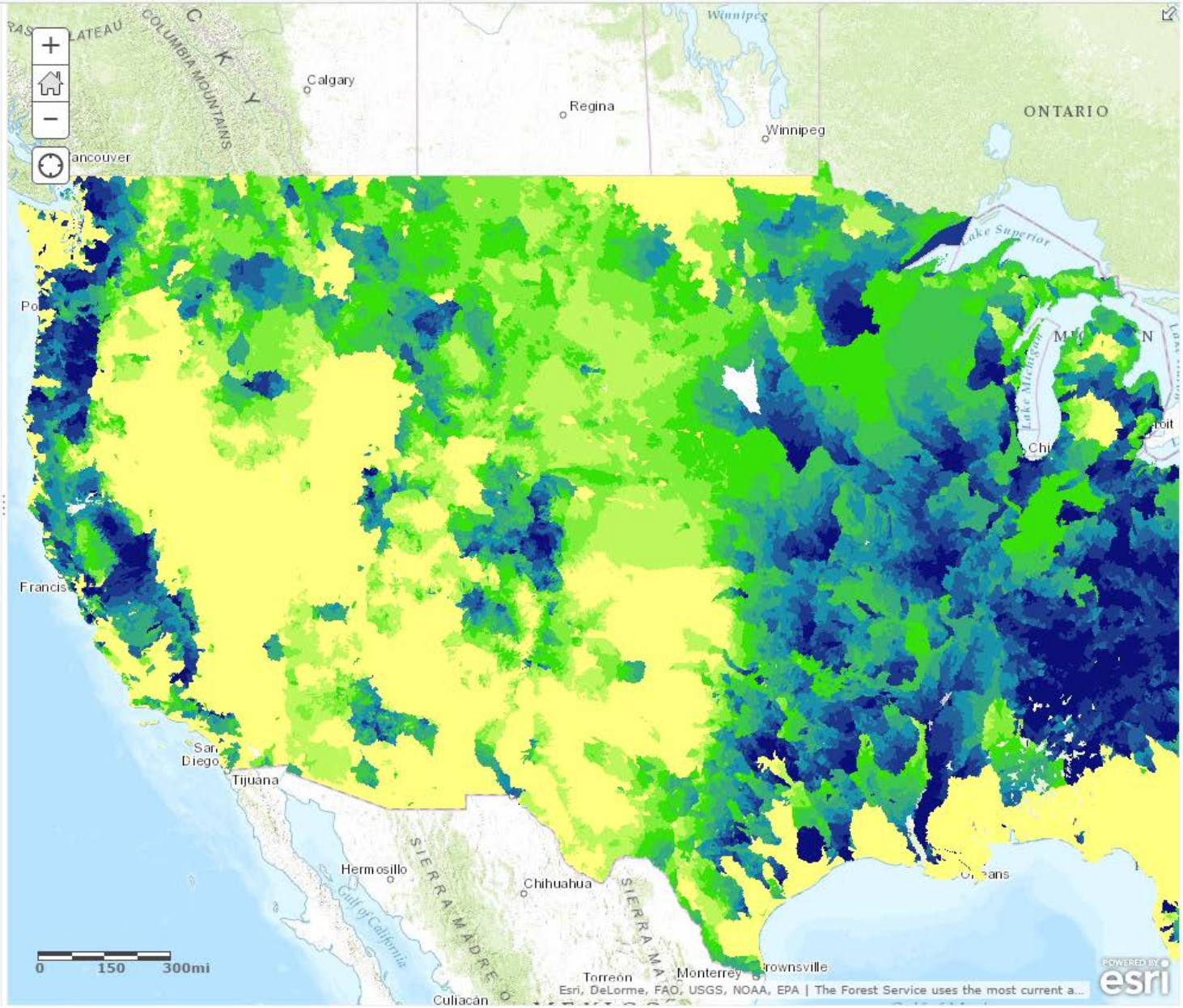

NLPR Density

- NLPRs broadly mapped (~90% of land base)
- Only considers presence/absence of NLPRs
  - Ignores variable densities of NLPRs
  - Could significantly underestimate exposure levels in some locations
- Analysis is closer to a Hazard Assessment
  - ~Area burned by bureau
  - Fire activity, bureau acreage & NLPR acreage
- Goes against principle of not every acre is equal

DOI Ignitions

- Excluding off-DOI ignitions
  - Could underrepresent exposure of key NLPRs, with potentially significant implications for fuels management
- Fuels treatments don't stop fires, and you may not want (or be able) to place them where fires start
  - Fuels are designed to reduce localized intensity and when located strategically across the landscape can limit fire spread potential
  - Might be more logical to focus on where exposure is located, not its source
  - Simpler and more streamlined analysis, but does create different approaches

Analysis – Additional Thoughts

- Doesn't need to be a single system or tool:
  - What can each bureau do?
  - Explore risk mitigation opportunities
  - How to integrate workload and complexity?

- How might results change? Examine assumptions & sensitivities

SBPs

- Recommended emphasis areas
  - Implement “risk triangle” – at least qualitatively – consider fire regimes, vegetation and ecosystem response to fire, etc.
  - Long-term visioning of alternative futures
    - Changing climate, development, disturbance
    - With and without treatments (including maintenance)
    - If fire exclusion continues
  - Transparently evaluate tradeoffs
    - E.g., fire-exclusion in fire-dependent systems
  - Spatial fire planning
    - Clear objectives for response, based on risk and other factors

Measuring Success

- Relating PMs to RBWFM national analysis
  - Desired condition & condition class?
  - WUI acres vs. LandScan?
  - Difficult to move away from outputs
  - Rely on bureau reporting up the chain

- Invest in monitoring actual outcomes
  - Spatial fuel treatment reporting
  - Fire-on-treatment interactions

- Using RBWFM framework presents challenges
  - What is baseline?
    - Changing NLPRs, FSim, succession, treatments, etc.
  - Rely on “no one single system or tool” principle