National University of Life and Environmental Sciences of Ukraine

Regional Eastern European Fire Monitoring Center

US Forest Service, International Programs

A Workshop Assessing Wildfire Risk and Exploring Mitigation Strategies for Chernobyl Affected Landscapes

June 28 - 29 Kyiv, Ukraine

Organized by:

- United States Forest Service International Programs
- Regional Eastern European Fire Monitoring Center (REEFMC) / National University of Life and Environmental Sciences of Ukraine, Kyiv

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The broad goal of the science workshop is to advance ongoing work to develop a comprehensive wildfire management plan for the Chernobyl exclusion zone that considers socio-ecological risk factors and incorporate state of the science wildfire risk modeling. A comprehensive wildfire management plan considers multifaceted risk abatement approaches including ignition prevention, fuels management, accelerating restoration to nonflammable vegetation, and effective wildfire response. Similar approaches are being used in the United States as part of the National Cohesive Wildland Fire Management Strategy and we propose to leverage this pre-existing work for developing a wildfire risk management strategy in the Chernobyl Exclusion Zone. Key baseline components for this work includes a comprehensive risk assessment, a social network analysis of agencies responsible for managing wildfire risk in the zone and findings from meeting of the Ukrainian National Coordination Task Force. The following agenda is designed for the purpose of advancing ongoing research that was initiated as part of previous visits. The agenda has four primary components

1. Status Report on Chernobyl fire model and demonstration
2. Science and modeling gaps to complete research paper
3. Social network analysis of Chernobyl
4. Discussion of cohesive strategy paper (in development) that combines both the wildfire risk assessment and the social network analysis

The workshop will last two days. Friday, June 30 will be reserved for follow up discussions with specific scientists on the four topics. We will develop the Friday agenda on Thursday afternoon

Day 1, Wednesday, June 28

09:00 – 09:15 **Outline and purpose of workshop (S. Zibtsev, R. Lasko, A. Ager)**

09:15 – 10:30 **Status Report on fire risk modeling for the contaminated areas (V. Myroniuk)**

1. Current modeling
    a. Fuel model atlas/maps and explanations/interpretations
    b. Ignition probability map
    c. Weather and fuel moisture scenario file
    d. Example simulation outputs and comparison with empirical data
        i. Fire perimeters
        ii. Burn probability
        iii. Fire intensity
    e. Identify gaps and data needs to complete modeling

10:30 – 12:00 **Additional science and modeling gaps to complete the risk assessment paper (A. Ager)**

Research Roundtable on science gaps for wildfire risk assessment and management in the Chernobyl exclusion. The goal will be to fill in gaps to finish the risk assessment paper. Scientists at the workshop will contribute information in a roundtable discussion of data gaps and needs to develop and validate fire modeling. Query scientists to get latest information to fill key gaps to model wildfire risk. ***Each scientist attending the meeting should be prepared to discuss their expertise in the following areas via a 5-10 minute PowerPoint presentation. The focus will be on obtaining scientific citations to support or answer each of the following questions***

Wildfire re-suspension of radioactive isotopes. Current estimates range from .01 to .4 in terms of the fractional amount of contamination resuspended by wildfire (S. Zibtsev, S. Kireev).
What data exist?
What is the best estimate?
How does vegetation type and fire intensity effect the suspension of radionuclides?
Is there sufficient data to build a response function that predicts changes in suspension from increasing flame length?
Is there post fire radiation monitoring that can help refine these estimates?
Forest successional pathways for forest and grasslands (V. Usenia, M. Kudin, S. Zibtsev, V. Gumeniuk).
What data exist on the successional pathways for abandoned fields?
How quickly will hardwood forests will become re-established?
What is the rate of succession of grasslands to hardwoods and does this raise or lower the wildfire risk?
Does the pattern of meadows, conifer and broadleaved forests affect burn probabilities and intensities across the landscape?
How does altering fuel continuity affect the growth of large fires in these vegetation types?
Are there documented examples of these effects?
Wildfire ignition prevention programs and suppression (M. Kudin, S. Zibtsev, V. Bogomolov)
Why specifically are there hotspots of ignitions?
What programs (e.g. tighter exclusion policy; education) could be put in place for ignition prevention?
Logging and wildfires (S. Zibtsev)
How are logging activities in the low contamination areas affecting wildfire risk?
Are increased ignitions from equipment offsetting fuel reduction?
Development of fuel and ignition management scenarios and testing with simulations (M. Kudin, S. Zibtsev, V. Bogomolov)
Where are existing fuel break strategies and what guides the placement of them?
Can we model enhanced fuel break strategy for the entire study area?
What are the health hazards and potential exposure mitigation practices for workers constructing fuel breaks?
Ignition prevention modeling – proposed alteration of ignition maps to simulate ignition prevention program
Discussion of other potential strategies?
What were historical vegetation and wetland conditions? What were the historical patterns of wetland, grassland and forest succession? (V. Gumeniuk)

12:00 – 13:00 Lunch

13:00 – 16:00 Continue above discussions on science and modeling gaps to complete paper and additional presentations (A. Ager)

DAY 2, , Thursday, June 29

09:00 – 10:00 **Discuss results of Social Network Analysis (Max Neilson Pincus, Portland State University)**

1. Presentation of findings from the study
2. How does social network analysis inform network risk governance?
3. What are the major gaps (missing connections) in the current network that potentially impede risk governance?
4. Discuss including Belarus in the social network analysis due to transboundary risk

10:00 – 12:00 **Developing a Cohesive Strategy to mitigate wildfire effects – research publication**

Design the development a long term Cohesive Strategy on contaminated zones that leverages work in the US on integrating fire prevention, fuels management, fire suppression, and public safety measures. End product is a set of maps and discussion about where each strategy has the most levelrage. The goal of this is a research paper lead by Zibtsev. Up for discussion is whether there are fuel break and ignition prevention simulation s included in the paper or whether this is a separate paper

1. Overview of cohesive strategy research in US (A. Ager)
2. Present paper outline (R. Lasko, S. Zibtsev)
3. What is the current distribution of efforts and where are they allocated within CEZ
    a. 15 minute presentation from Zibtsev showing maps of various risk indicators
4. How can the effectiveness of each of the wildfire risk mitigation drivers be enhanced through synergy?
5. How are these efforts organized among the various risk management agencies?
6. How can risk governance be improved?
7. What other constraints, social or biophysical affect potential implementation and outcomes of different strategies?
    a. Suppression
    b. Fuel management and fuel breaks
    c. Ignition prevention
    d. Accelerated restoration to hardwood forests
    e. Public safety measures
    f. Prevention

12:00 – 13:00 **Lunch**

13:00 – 17:00 **Discuss steps for paper completion**

1. Continue and expand above discussions on cohesive strategy
2. Present outline of paper and fill in the gaps
3. Assign writing various sections