

PRE- & POST-FIRE PLANNING: CLIMATE CHANGE & AQUATIC RESOURCES

Shasta-Trinity and Wenatchee-Okanagon National Forests

Earth Systems Institute

NetMap

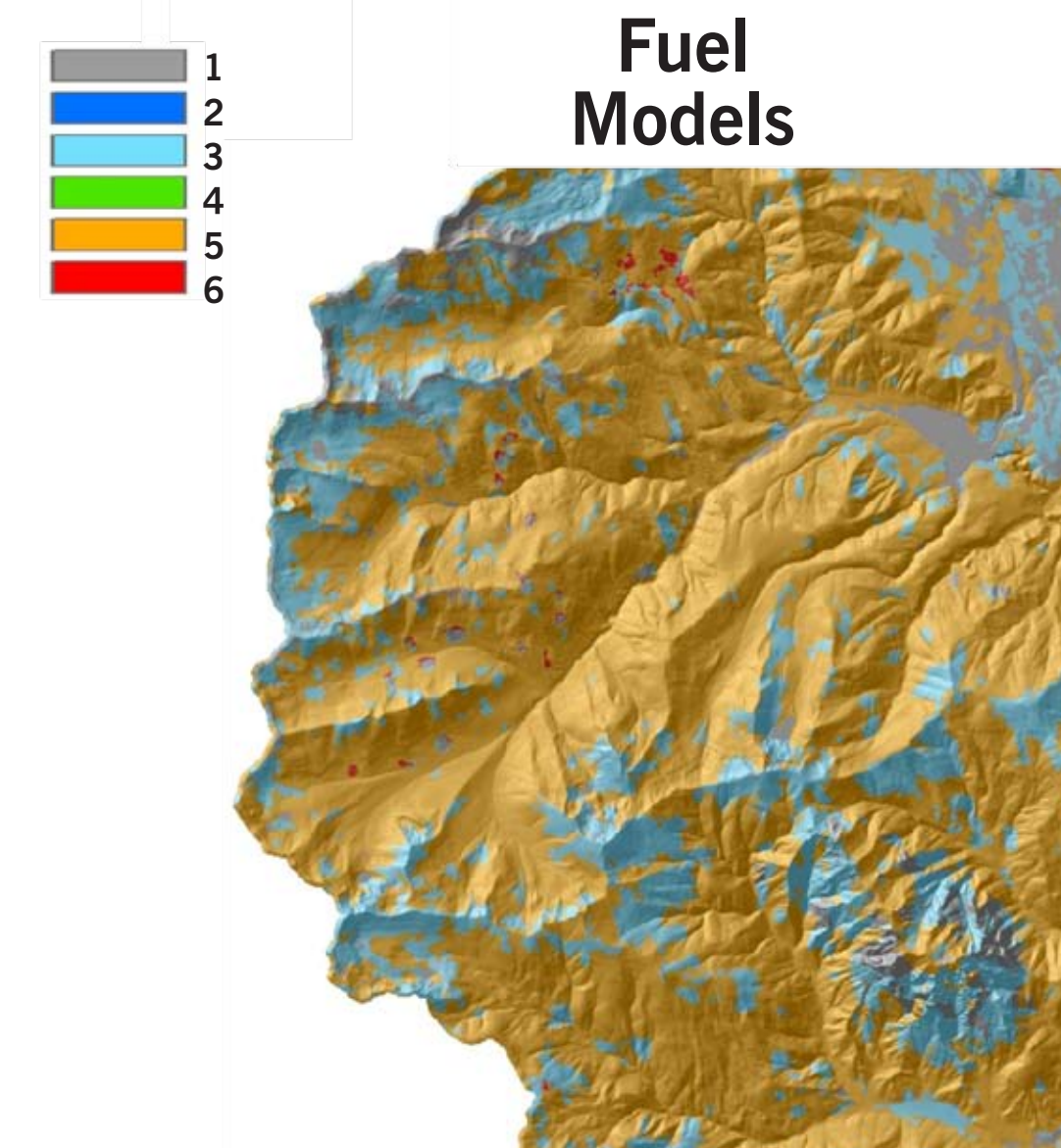
Community Digital Watersheds & Shared Analysis Tools (www.netmaptools.org)

PRIORITIZE PRE-FIRE TREATMENTS ACCORDING TO THREAT TO AQUATIC RESOURCES

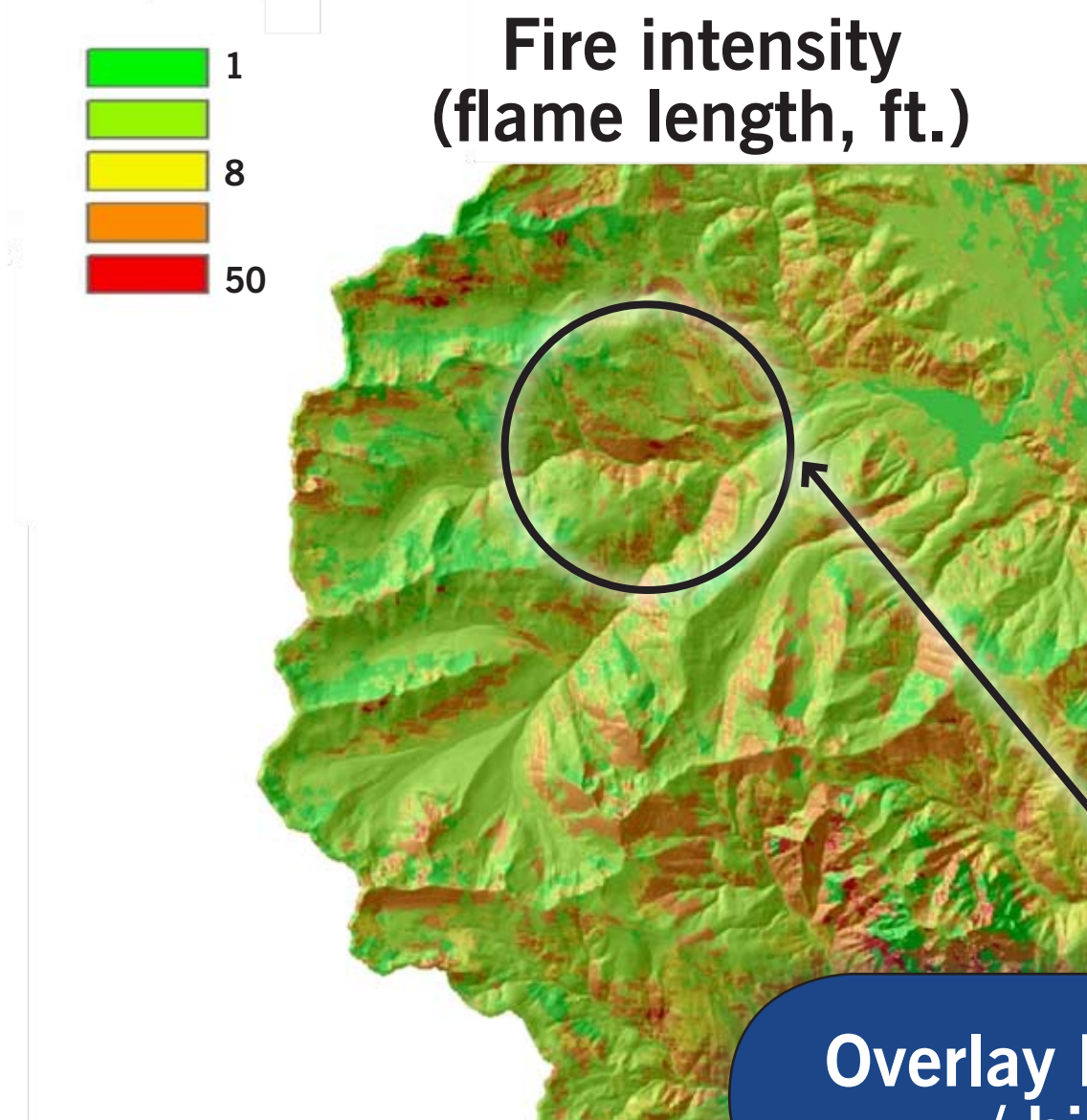
Fires pose an increasing threat to water quality and aquatic ecosystems including threatened and endangered fish species. The risk to aquatic species, particularly for isolated populations such as Bull Trout, may be increasing due to heightened fire risk resulting from climate change.

NetMap tools can evaluate pre fire risk in the context of erosion potential, water quality impacts and fisheries w/ or w/out climate change (Steps 1-5).

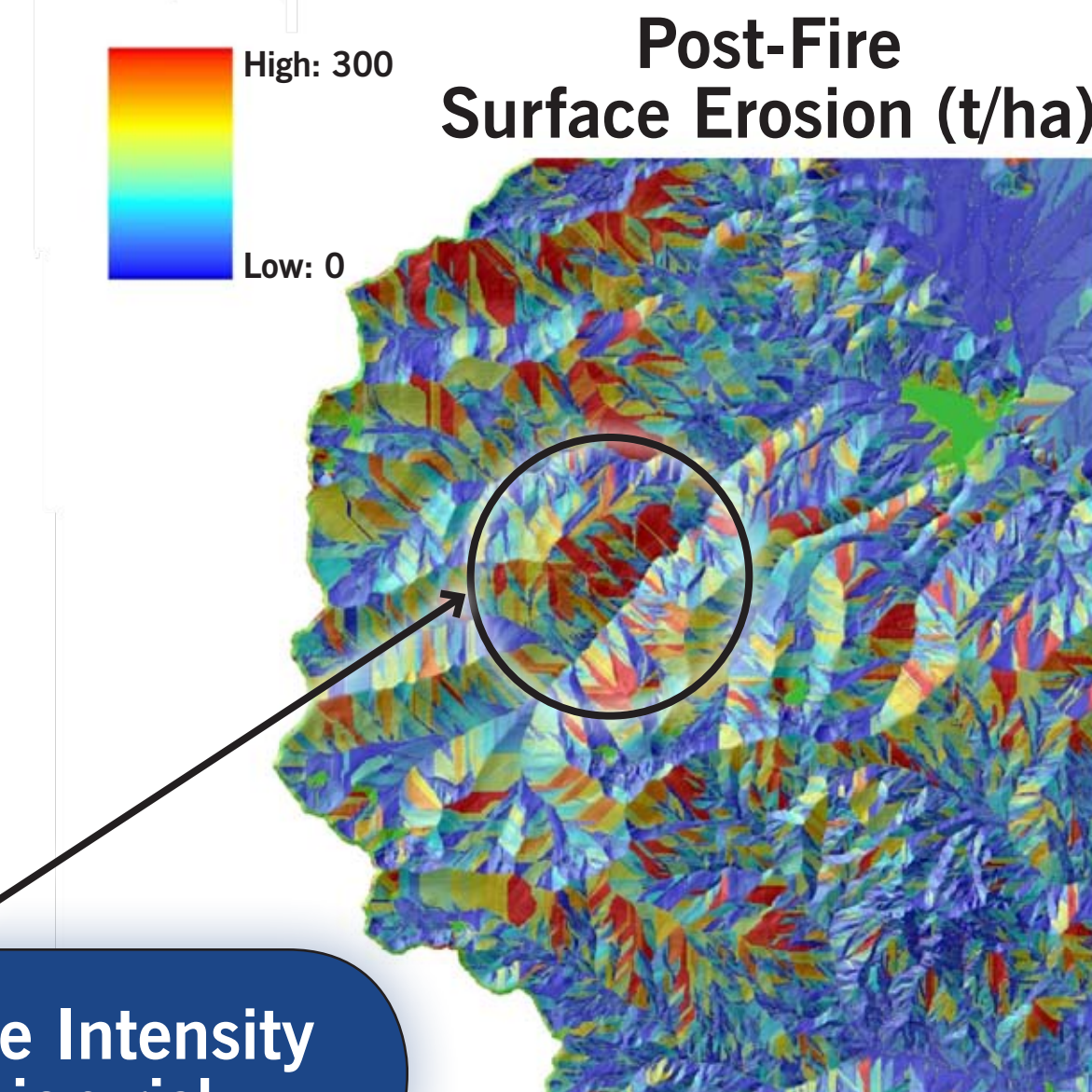
Step 1: Define Fuels



Step 2: Predict Fire Intensity (Flammap or Other), That Can Consider Climate Change

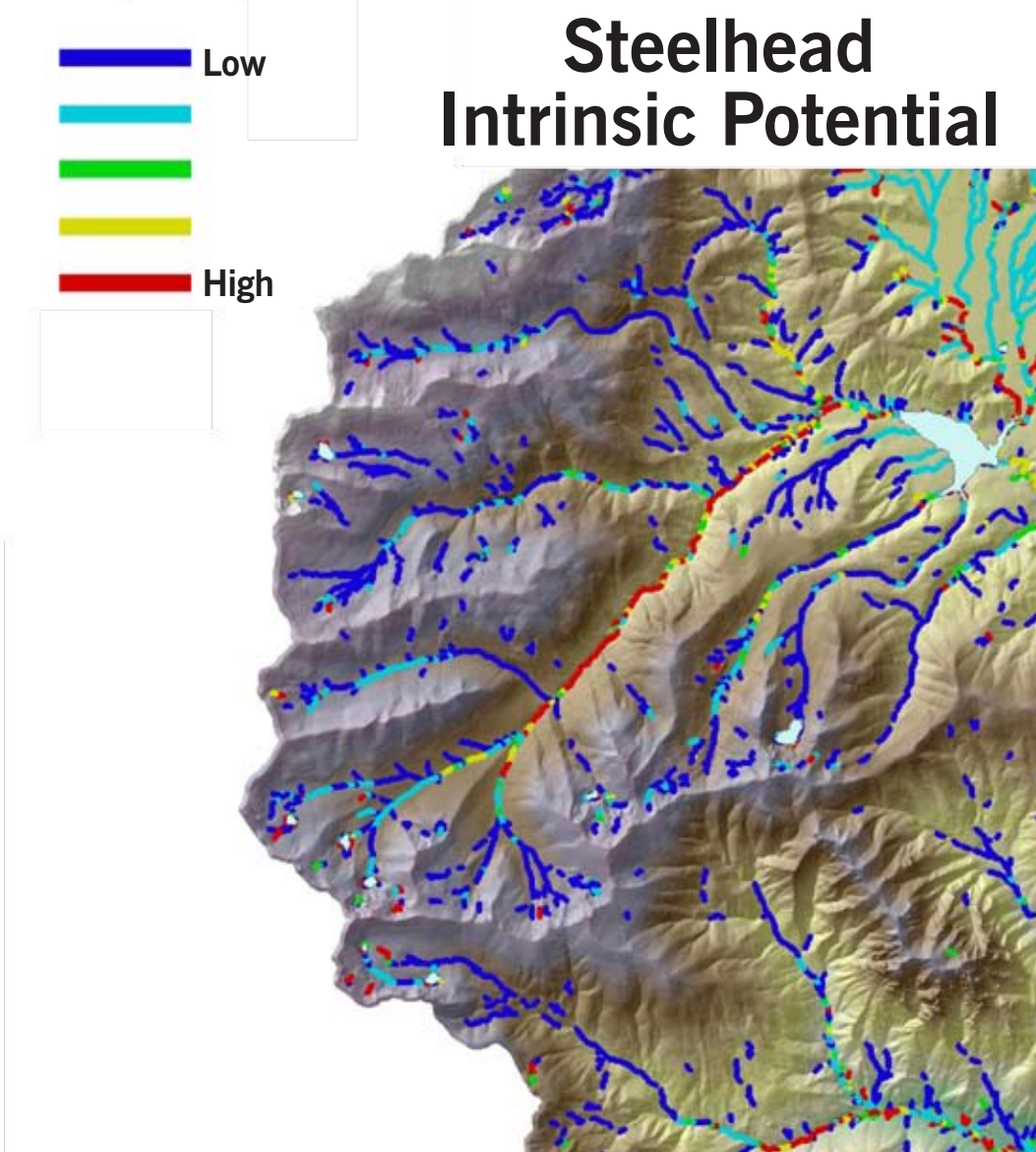


Step 3: Predict Post Fire Erosion (WEPP or Other) at Watershed Scale

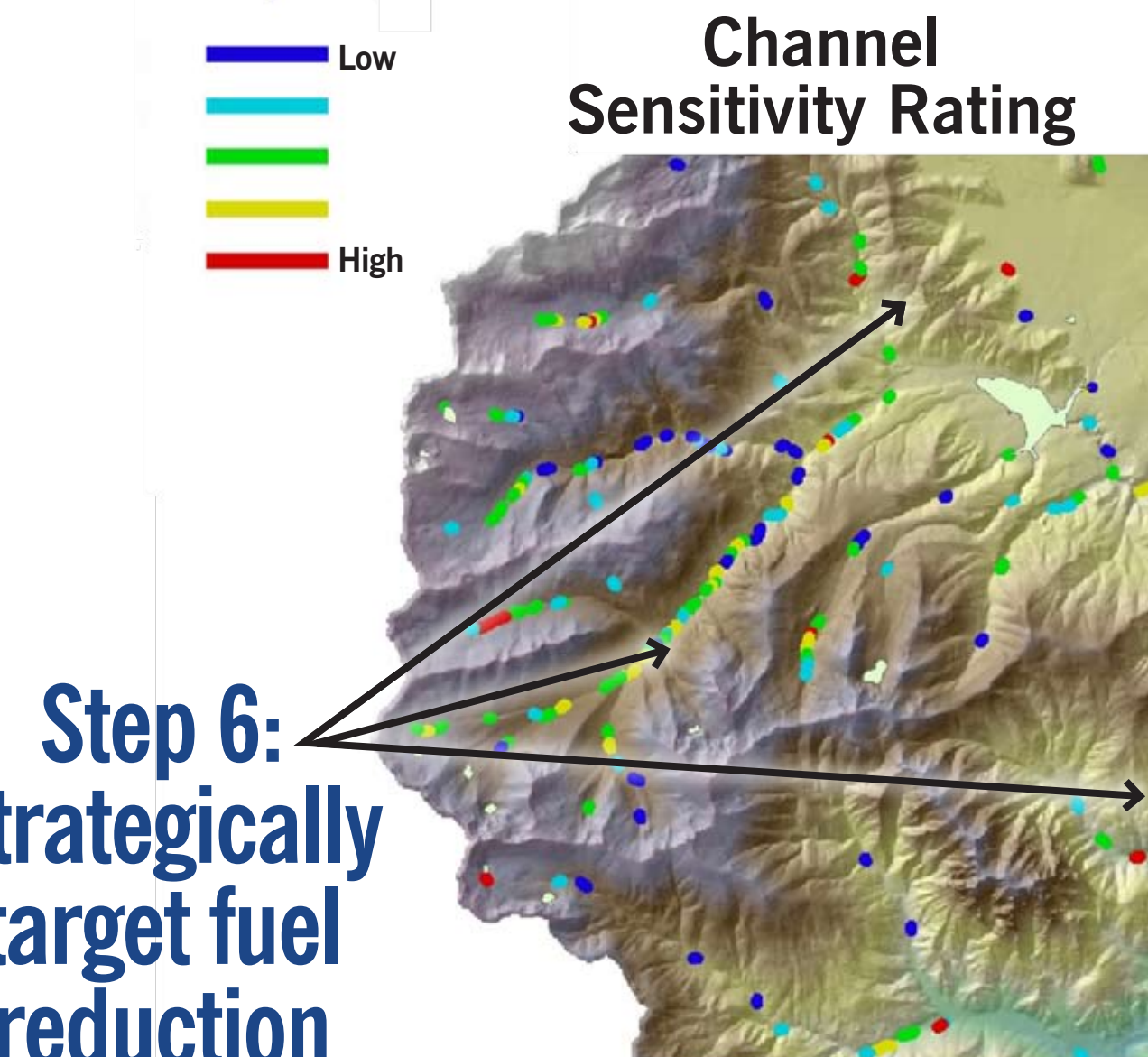


Overlay high fire intensity w/ high erosion risk

Step 4: Predict Habitat Potential/Sensitivity



Step 5: Search for Overlaps Among High Fire Intensity, High Erosion Potential, and Sensitive Channels.



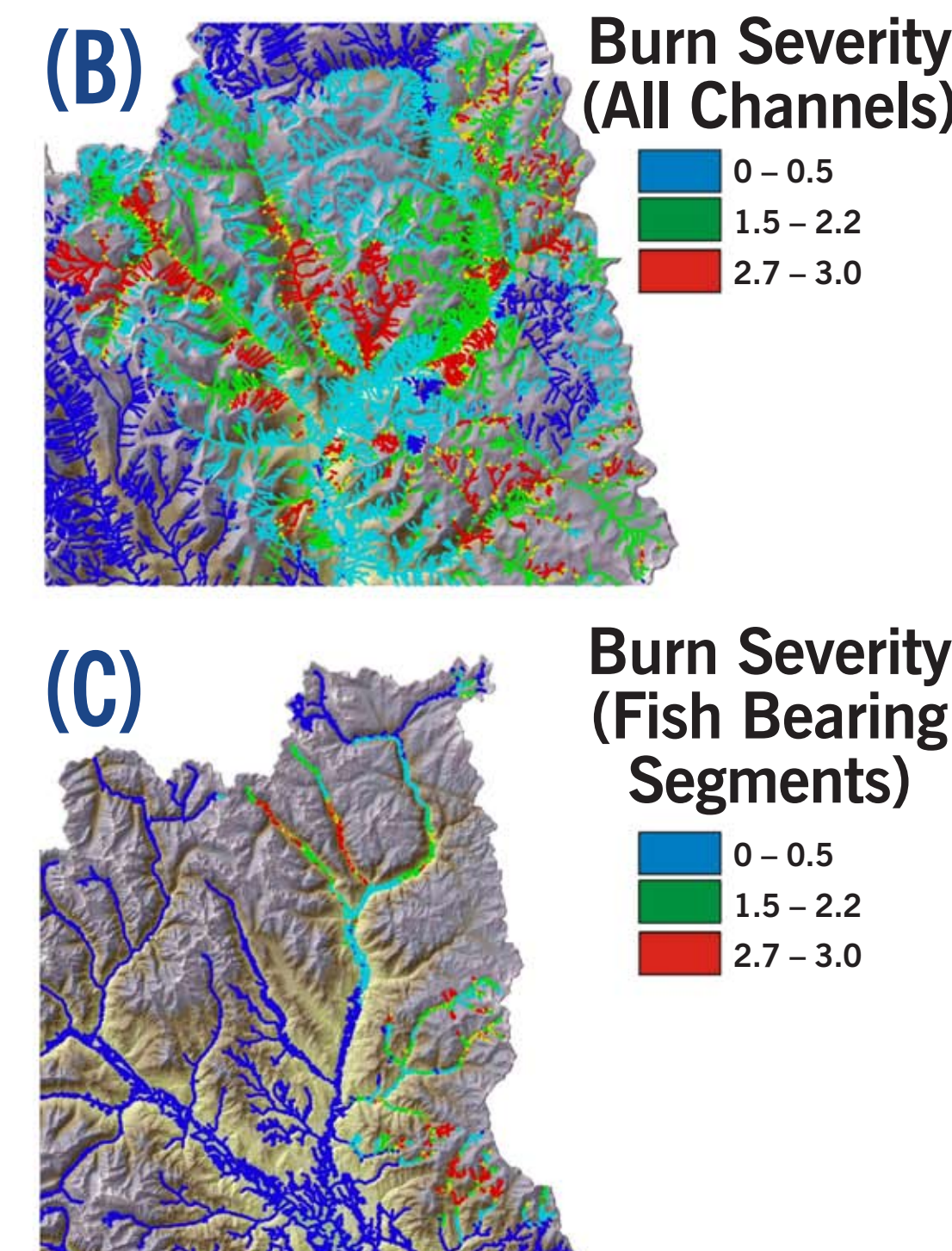
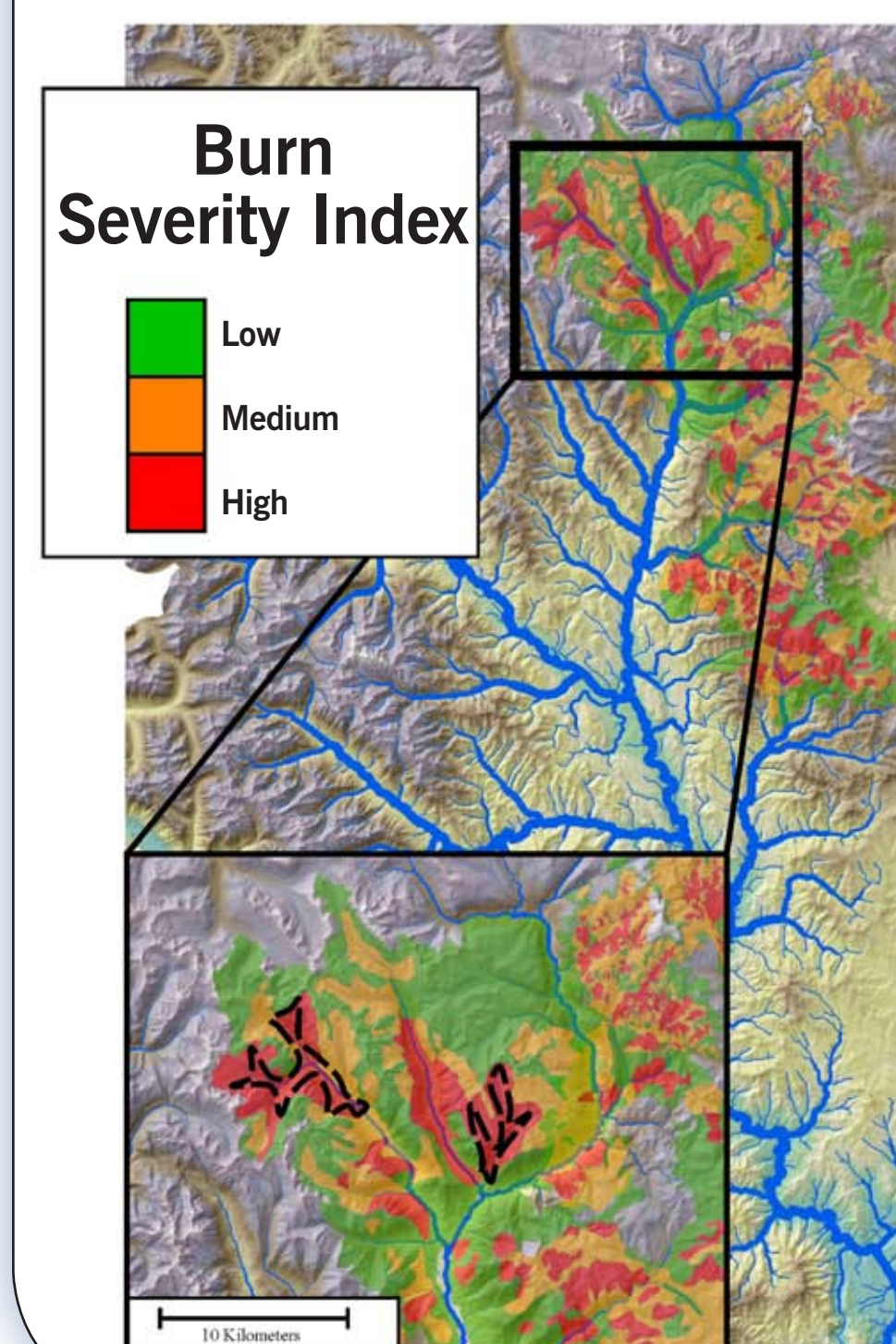
Step 6: Strategically target fuel reduction

POST-FIRE PLANNING (BAER)

NetMap also can be used in post fire planning (BAER). (1) Ratings of burn severity (A) are reported to stream channels (at the scale of 100 m segments) and they are routed downstream (B,C). (2) Search for convergence among burn severity, erosion potential, and habitat to identify areas where post fire erosion could threaten aquatic resources (A-D). Restoration, including road maintenance or abandonment, could target high risk areas (E).

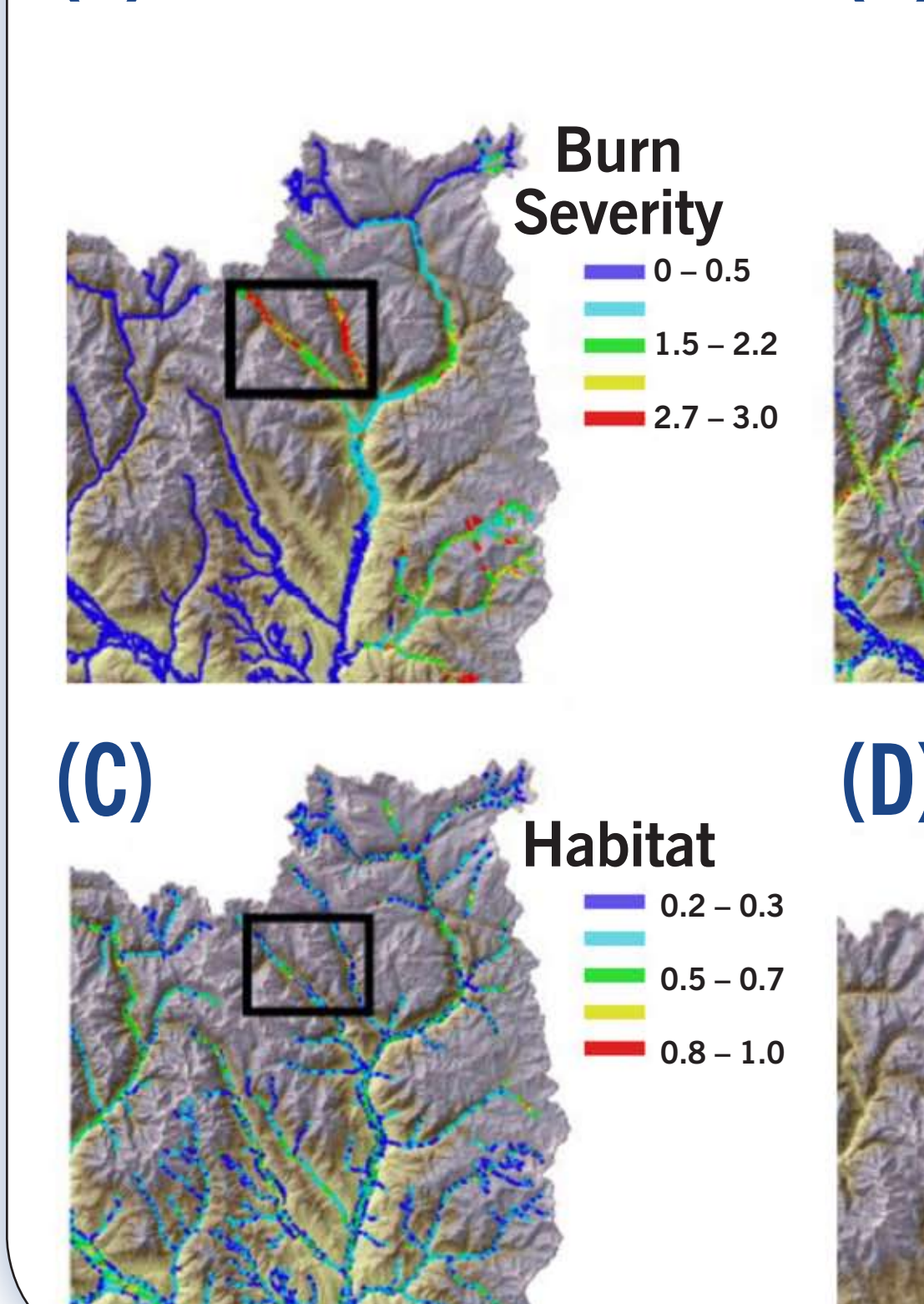
(3) All fire, erosion and habitat parameters can be aggregated up to the scale of user defined subbasins in NetMap with a click of a mouse thereby facilitating watershed classification.

(A) Recent Fires in the Methow Basin (2000-2006)

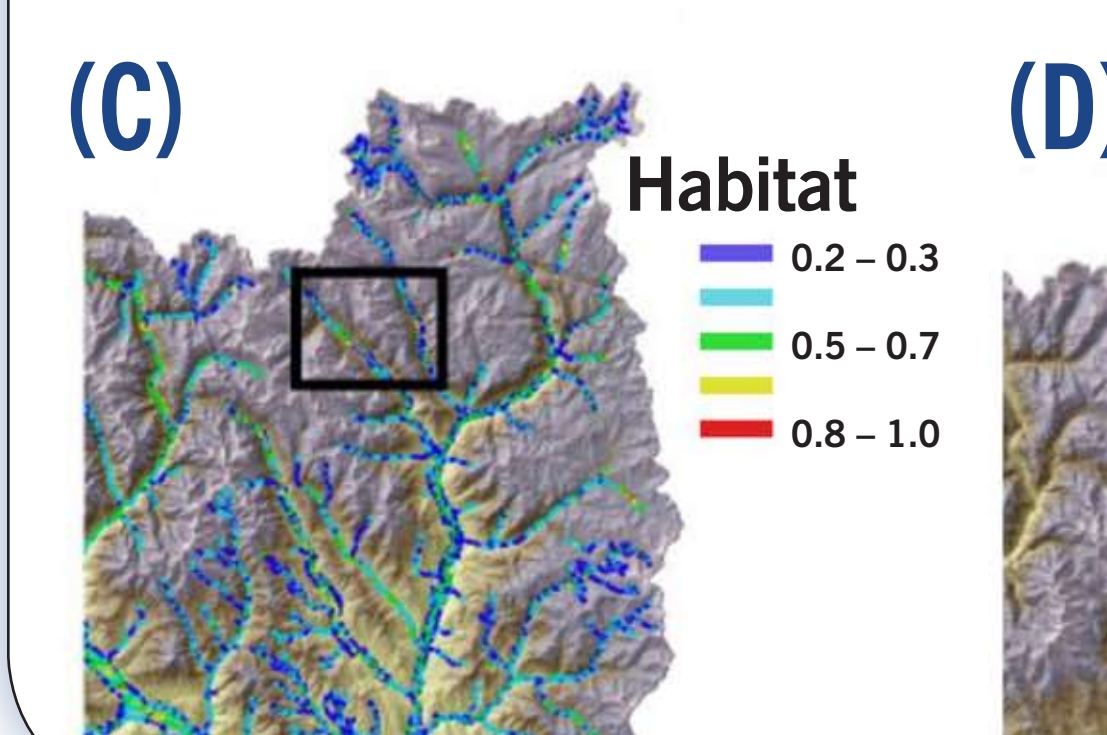


1

(A) (B)

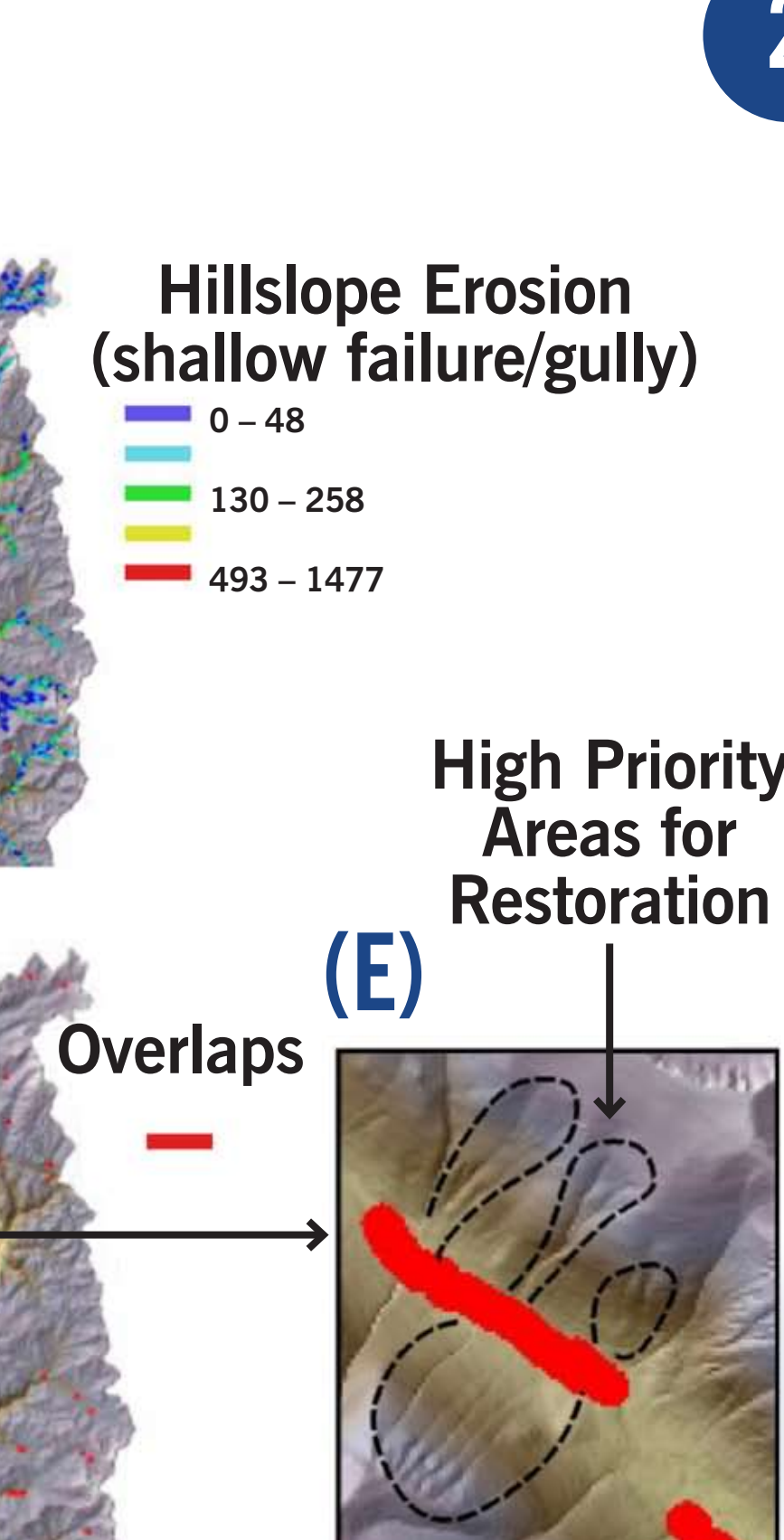


(B)

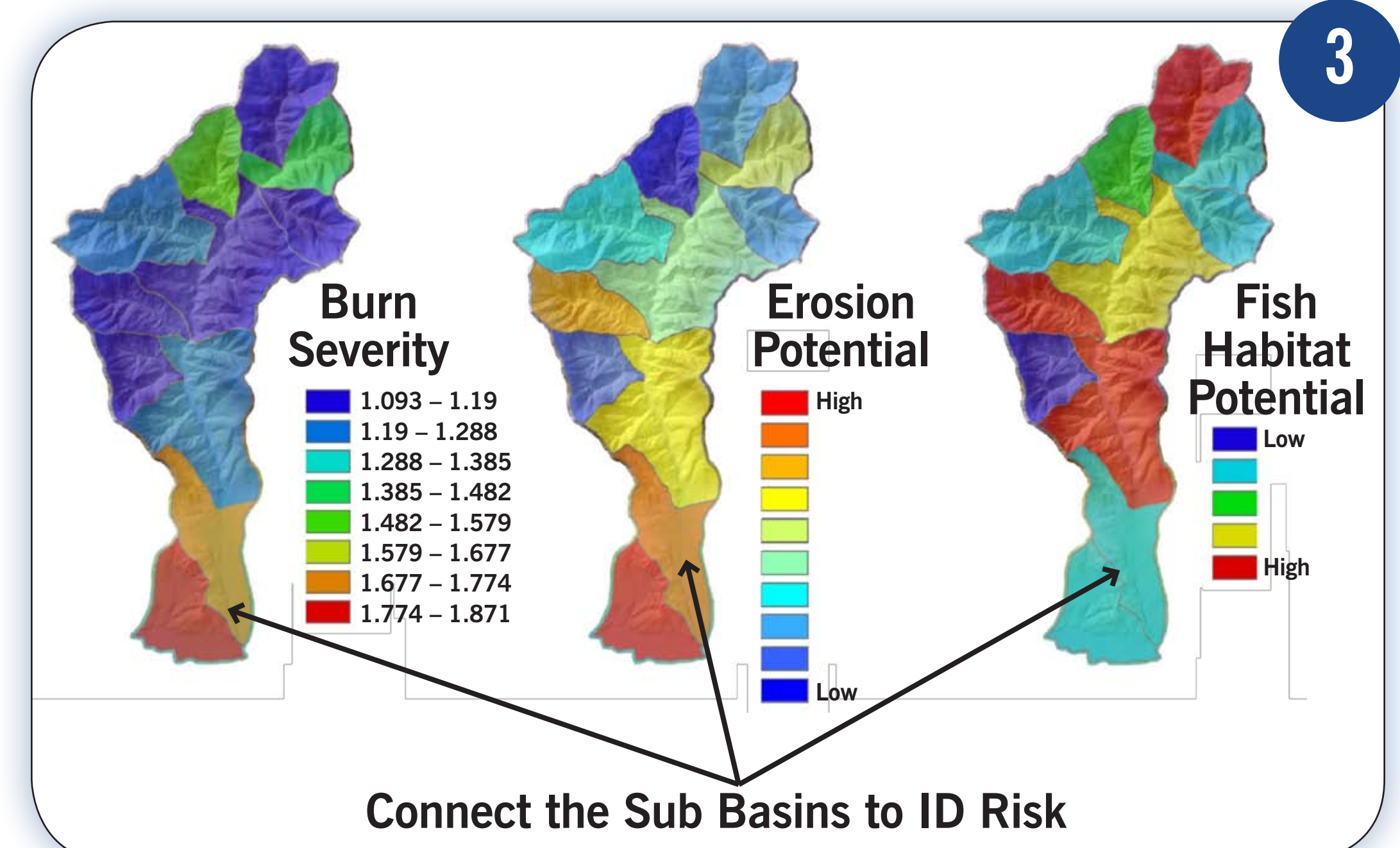


(D)

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3



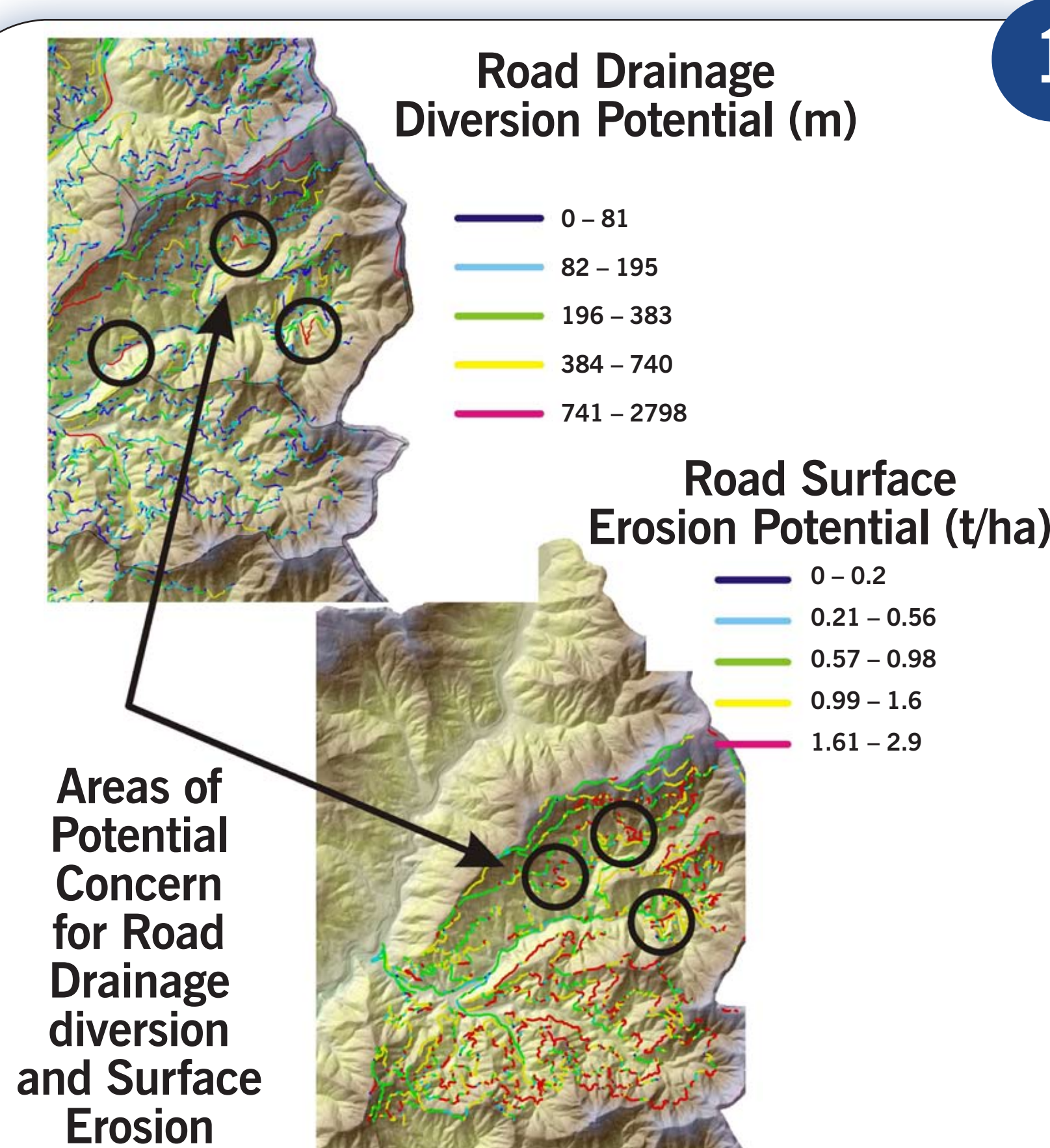
Connect the Sub Basins to ID Risk

CLIMATE CHANGE: Fire planning can also consider climate change effects in terms of heightened fire occurrence and severity. Thus fire planning can be integrated within climate change-landscape vulnerability assessments.

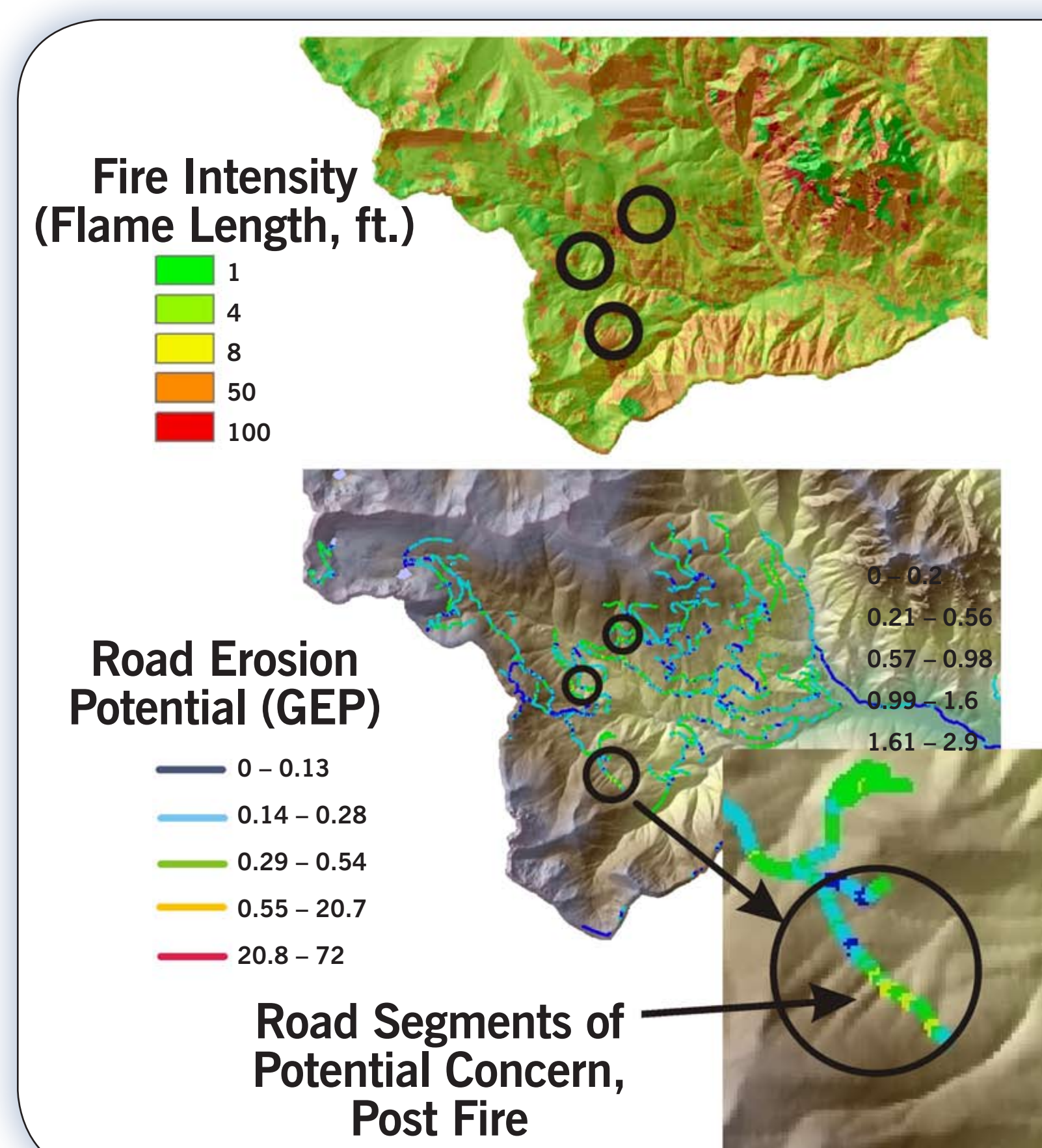
ROADS & FIRES

Roads may represent the greatest post-fire threat to water quality and fisheries. Quickly evaluate roads using NetMap tools, including during a BAER process: (1) Potential for road drainage diversion and road surface erosion.

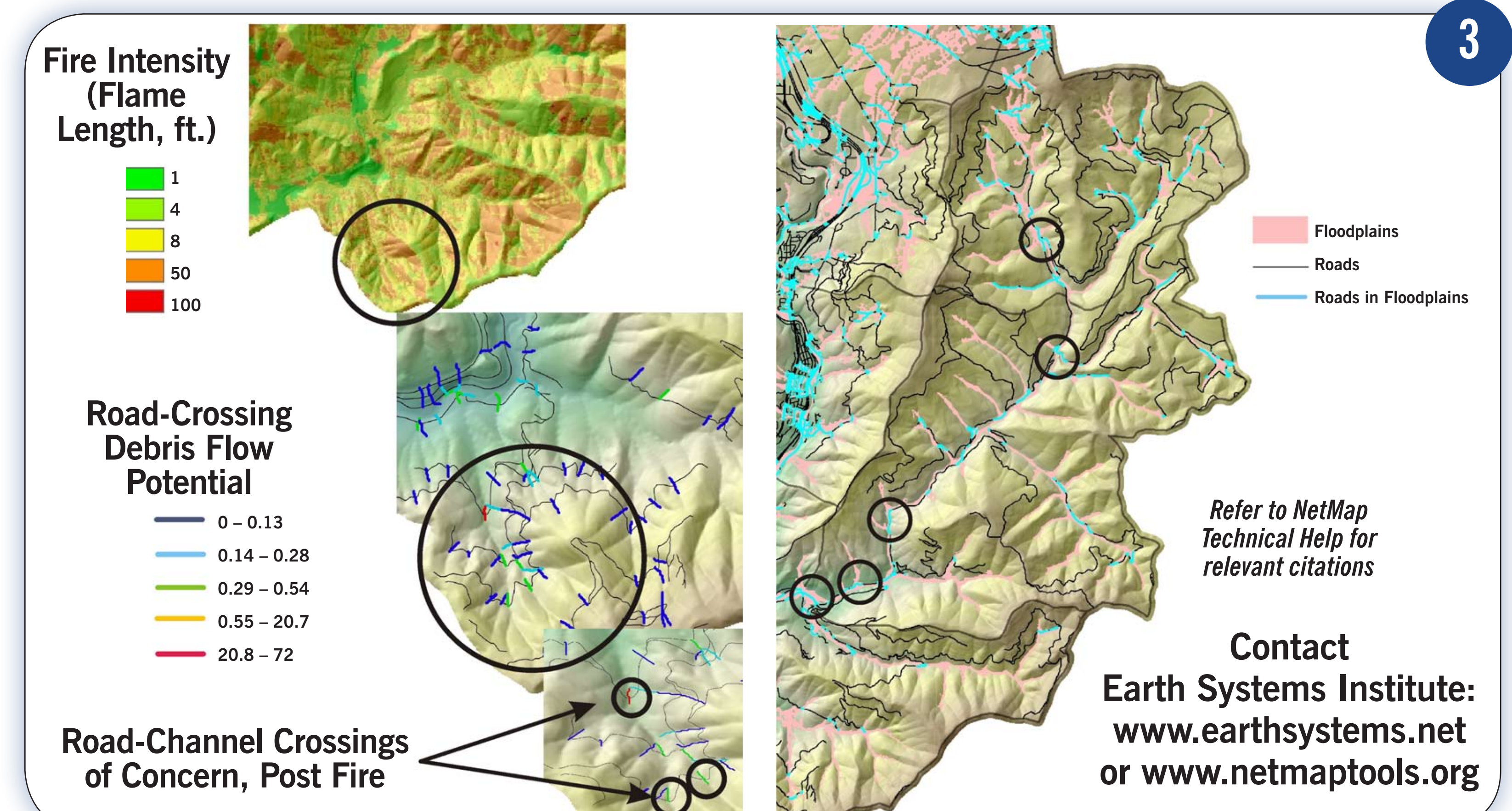
(2) Search for overlaps between predicted fire intensity (or mapped burn severity) and road erosion potential; (3) Search for overlaps between predicted fire intensity (or burn severity), roads, and debris flow potential; (4) Search for overlaps between roads and floodplains (e.g., flood damage).



1



2



3

Refer to NetMap Technical Help for relevant citations

Contact Earth Systems Institute: www.earthsystems.net or www.netmaptools.org