

Incorporating land use change and development into landscape planning and ecological assessments in the Upper Deschutes area, Oregon

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Challenges in providing land use change analyses to support landscape planning and ecological assessments: experiences from Oregon (USA)

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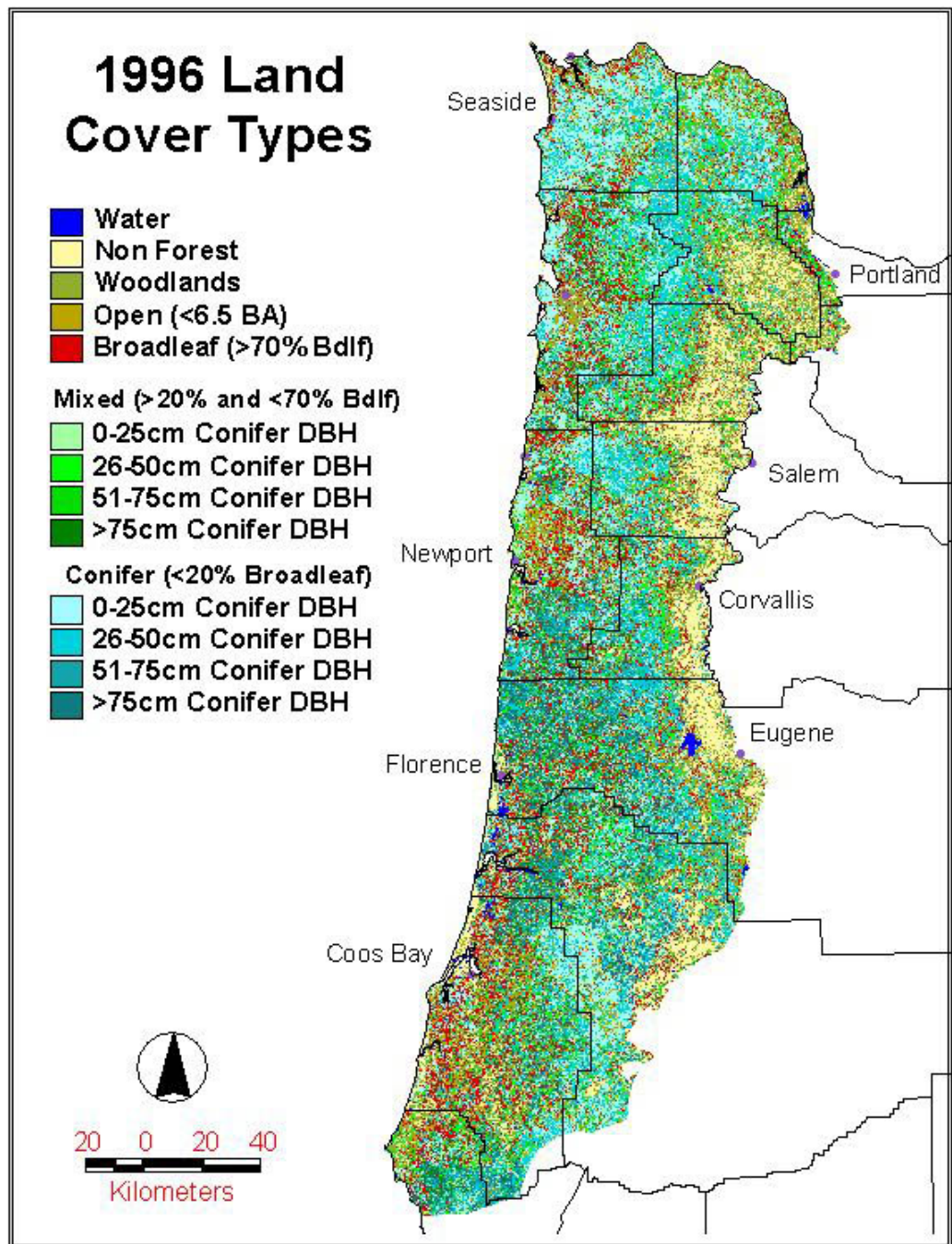
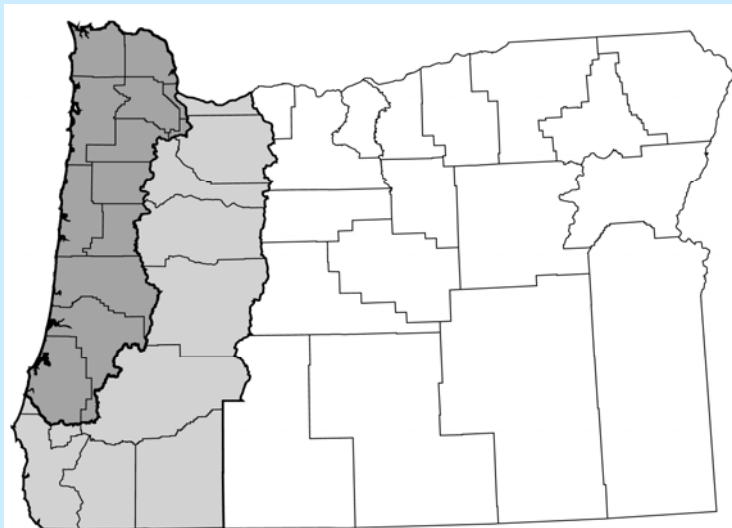


Challenges for land use analysts

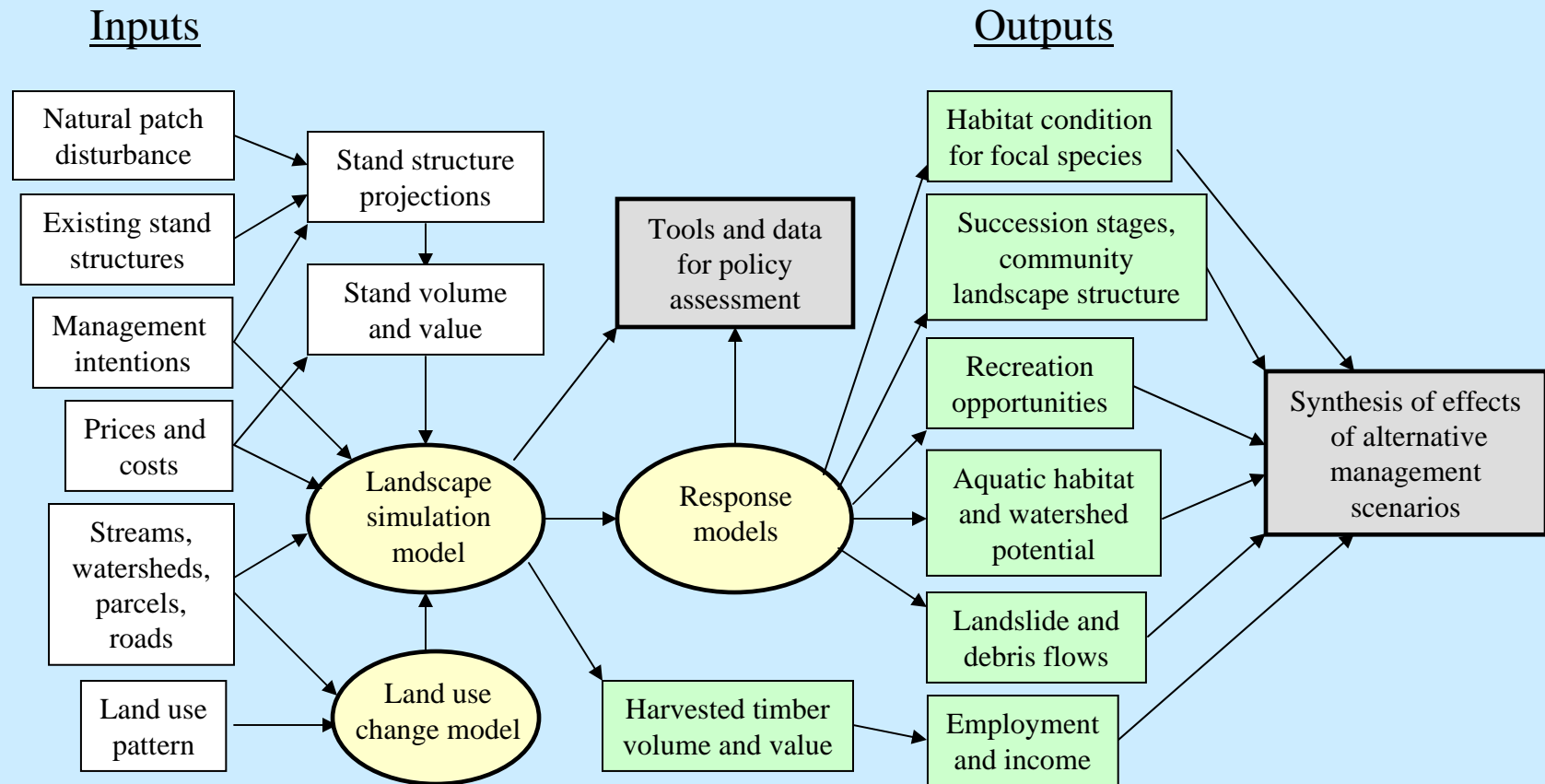
- Getting invited to the table.
 - Obtaining appropriate and useful land use data.
 - Obtaining supporting data.
 - Working with multidisciplinary teams.
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Coastal Landscape Analysis and Modeling Study




CLAMS

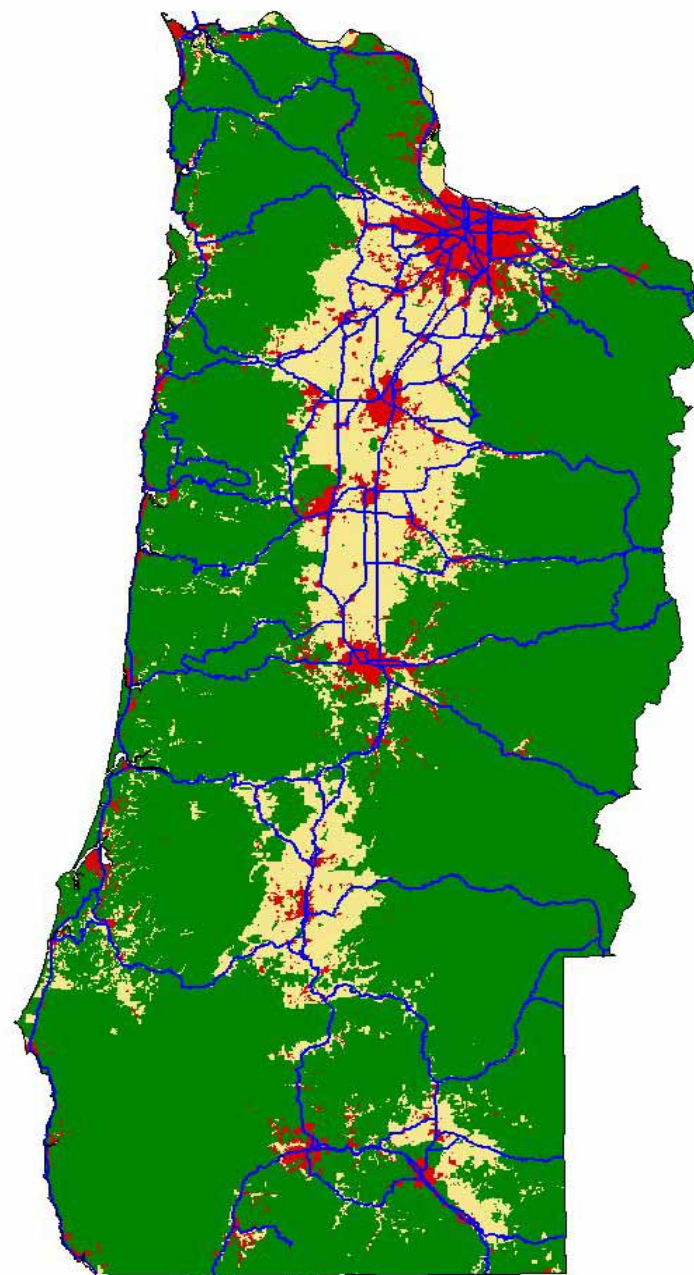
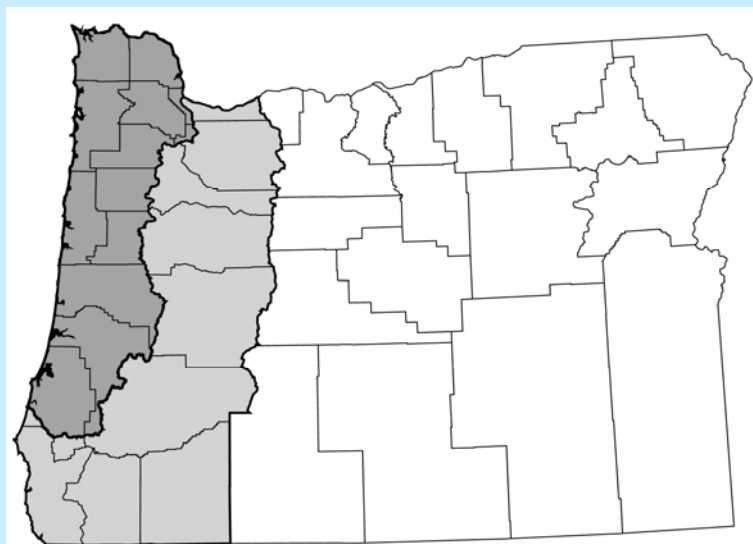


Schematic of CLAMS inputs, models, and outputs



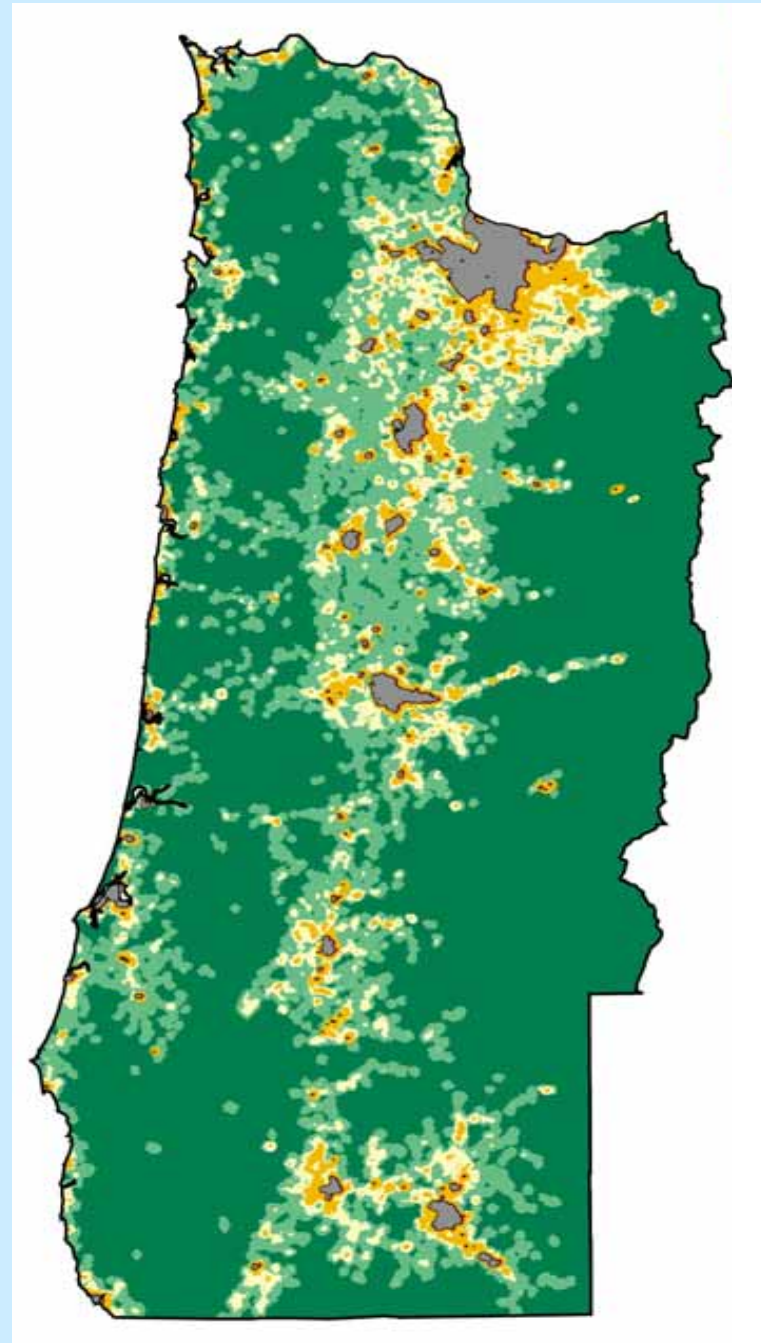
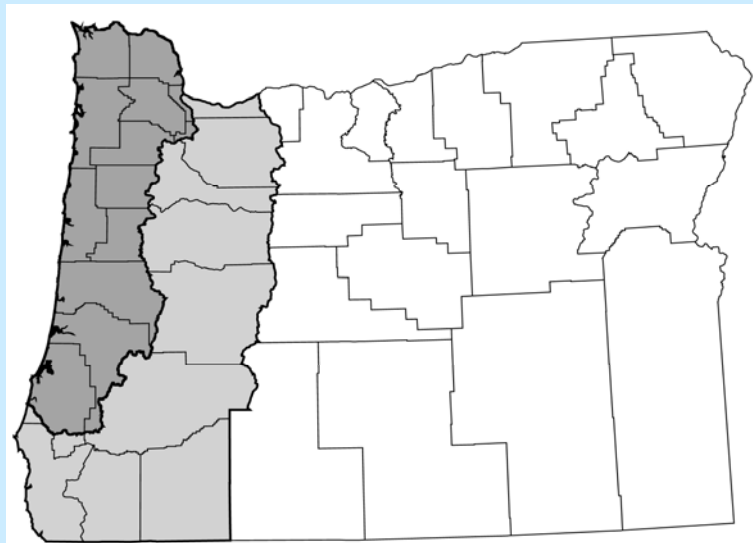
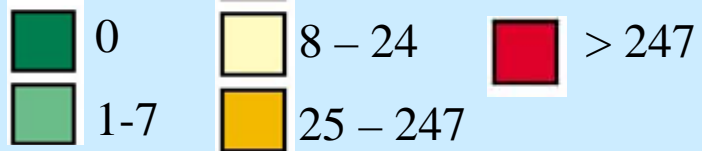
CLAMS land use data

-  Forest
-  Farmland
-  Urban



CLAMS building density data

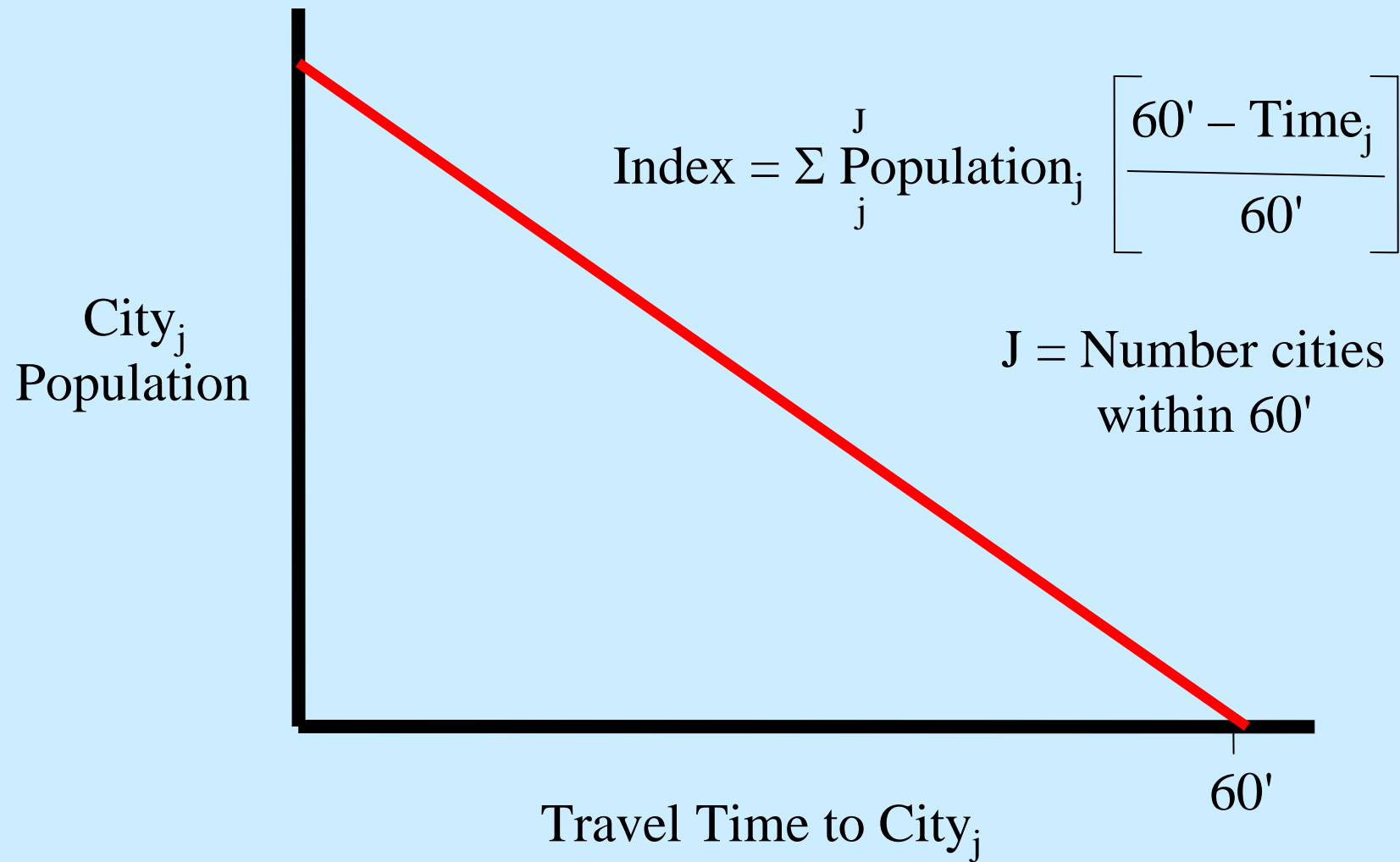
Buildings per square kilometer



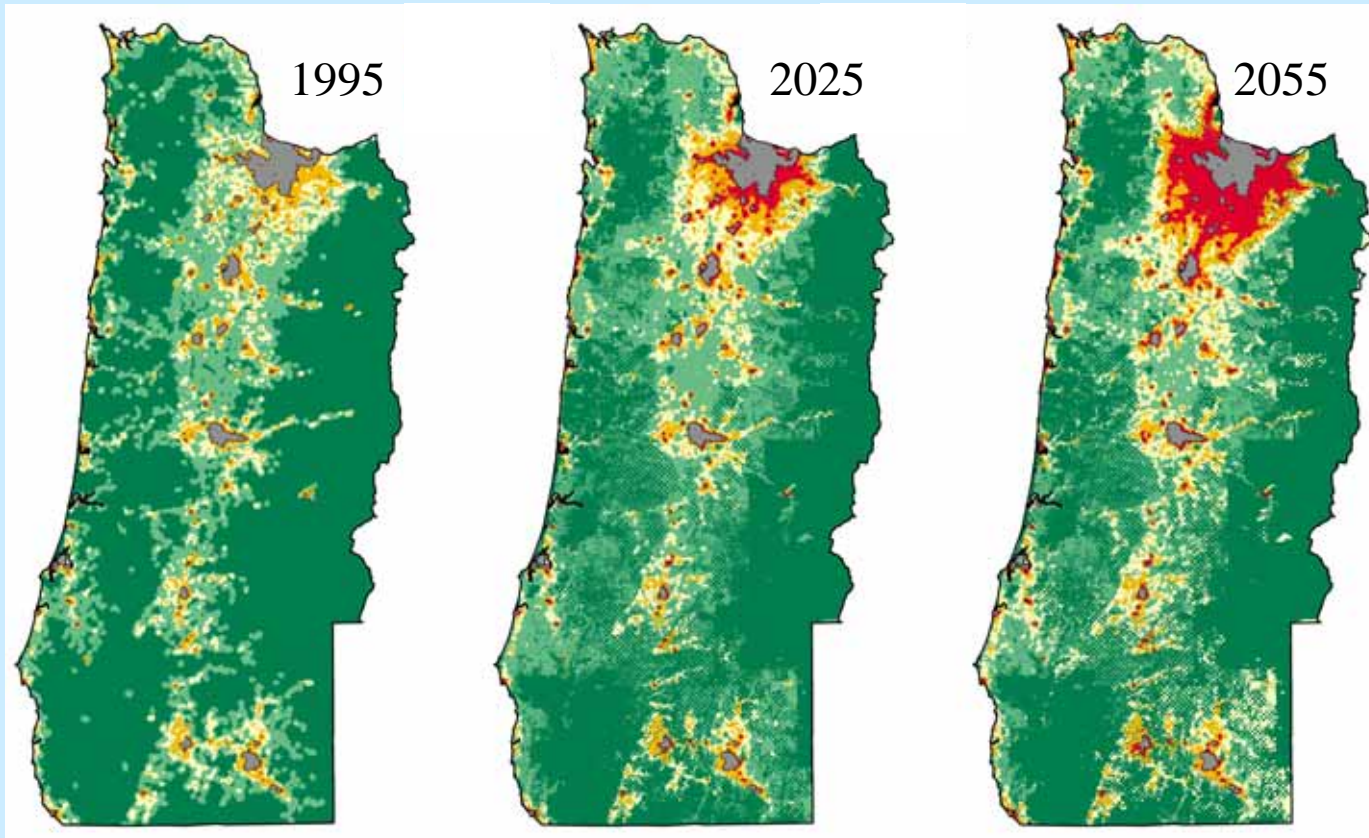
CLAMS building density model

$$\Delta \text{Buildings} = f(\text{Gravity Index}, \text{Gravity Index}^2, \text{Building Density}, \text{Building Density}^2, \text{Slope}, \text{Elevation}, \text{Land Use Zoning})$$

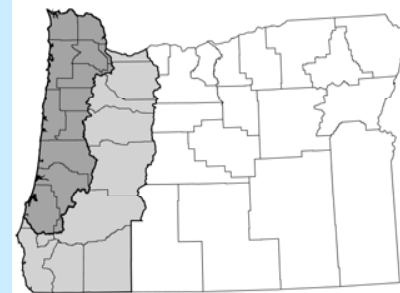
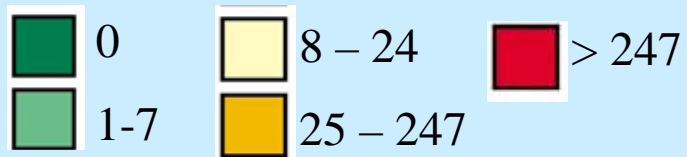
Gravity index of development potential



CLAMS projected building density, western Oregon

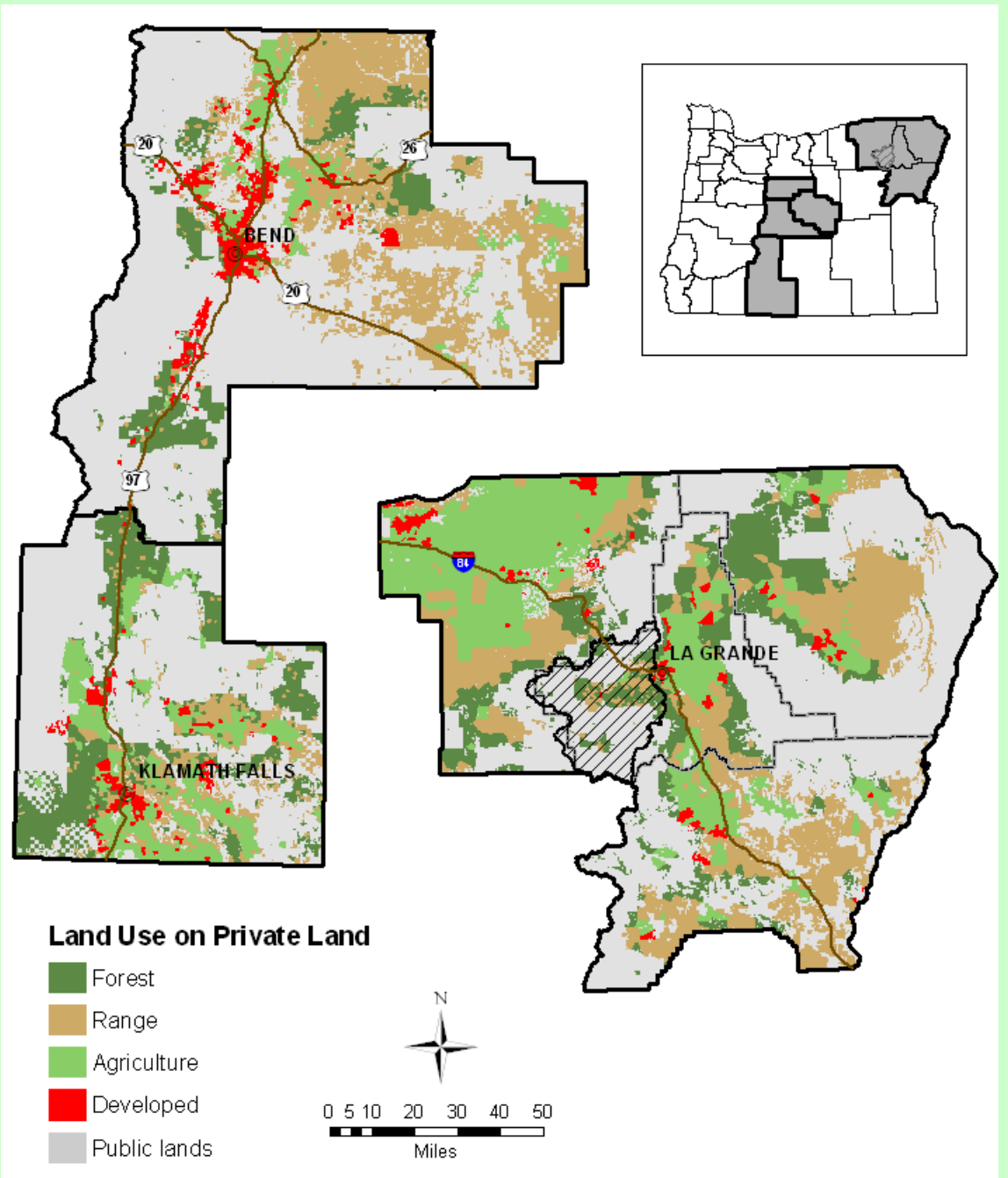


Buildings per square kilometer

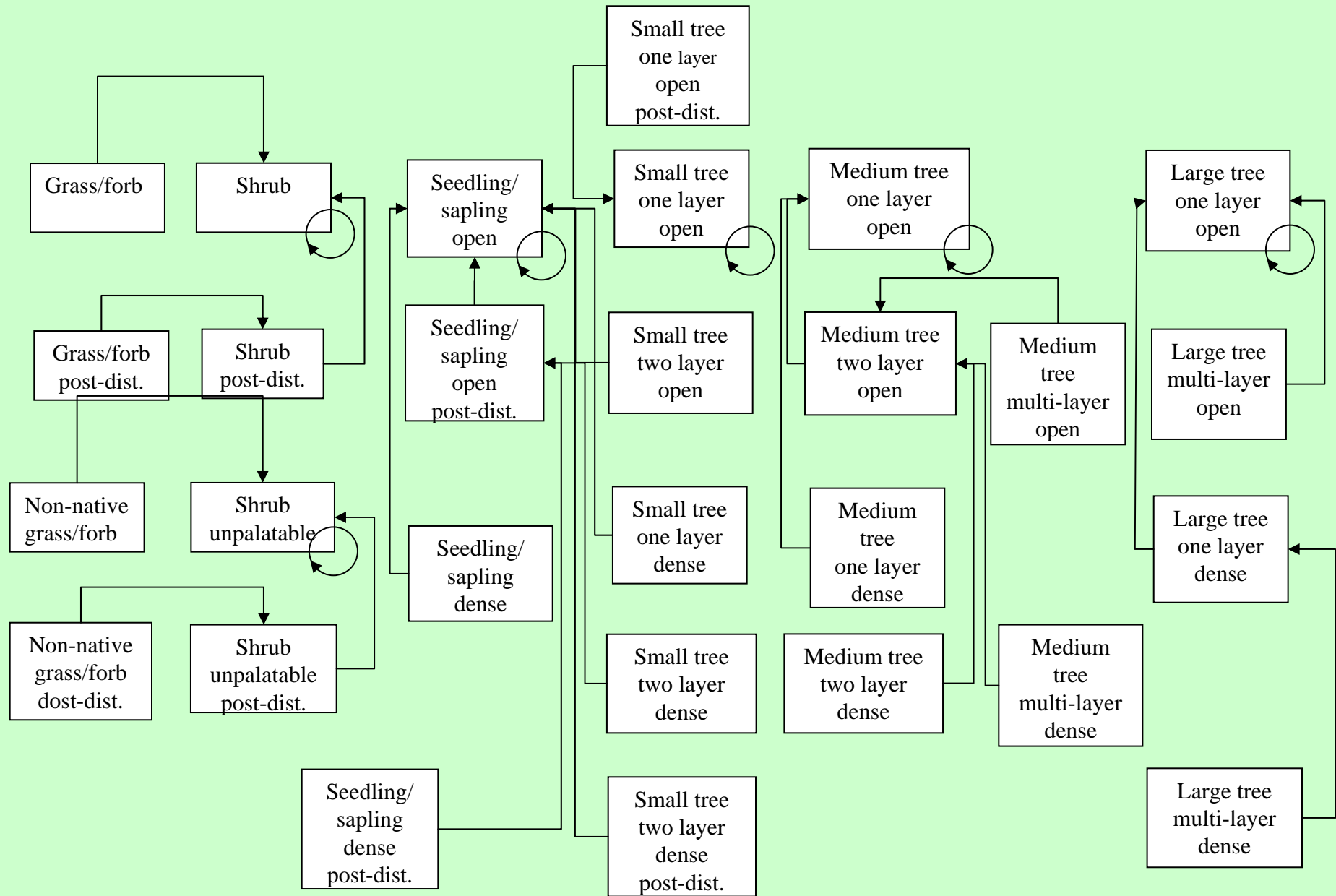


Interior Northwest Landscape Analysis System

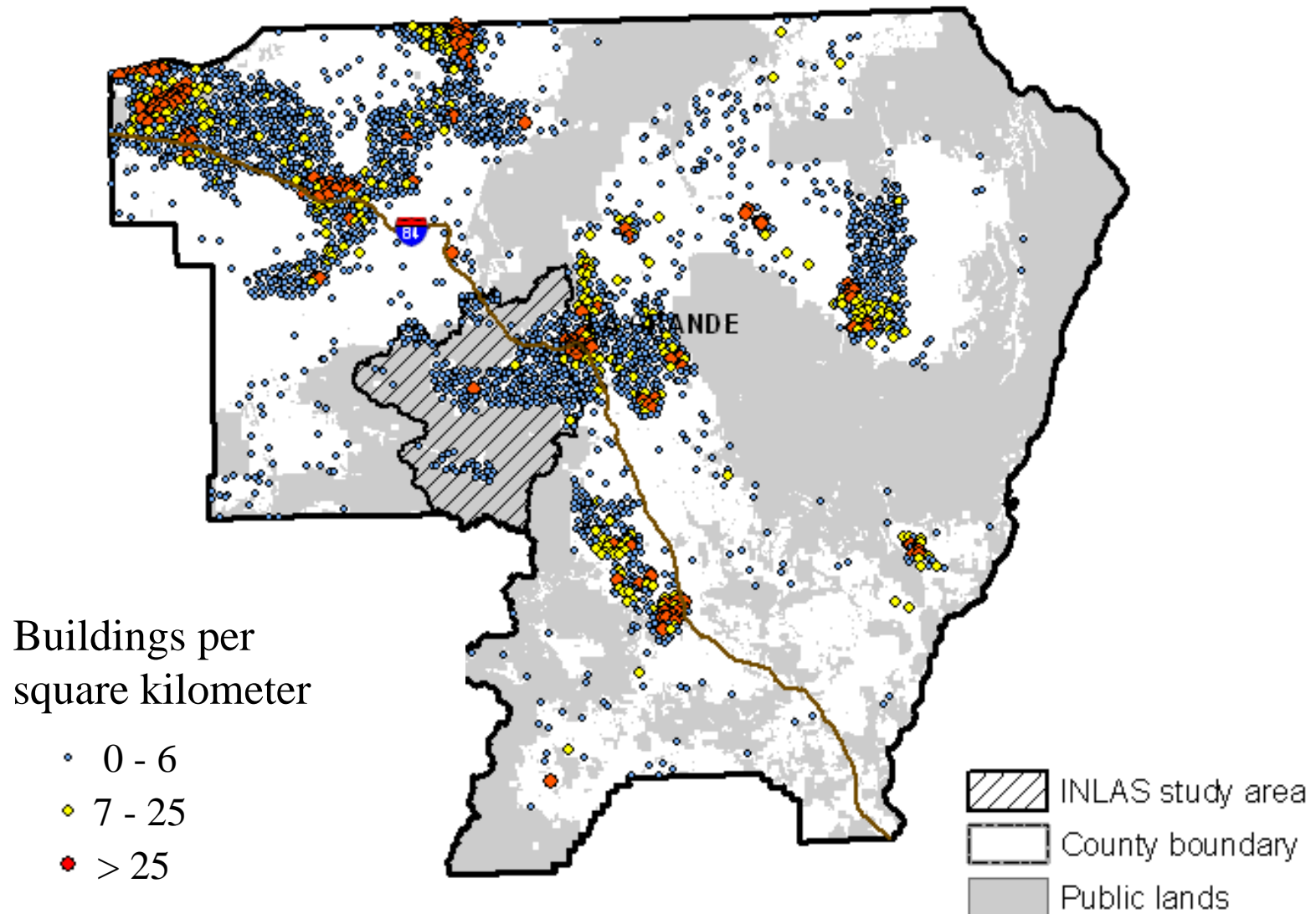
INLAS



INLAS state and transition vegetation model



INLAS observations of building densities

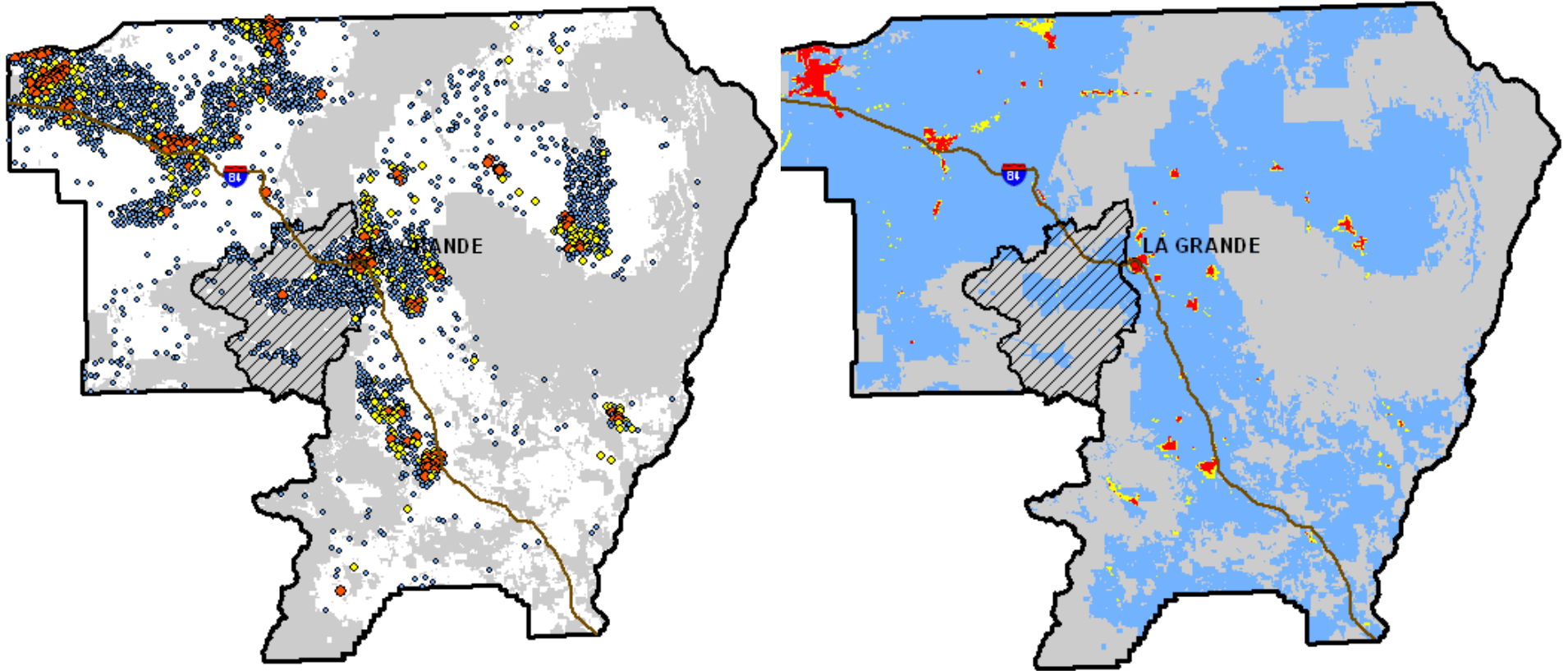


INLAS building density models

$\Delta\text{Buildings} = f(\Delta\text{Population Density},$
Distance to Market Center,
Building Density,
Slope, Elevation, Land Use Zoning)

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Distance to Market Center,
Slope, Land Use Zoning)

INLAS observed and model predicted buildings densities in 2000

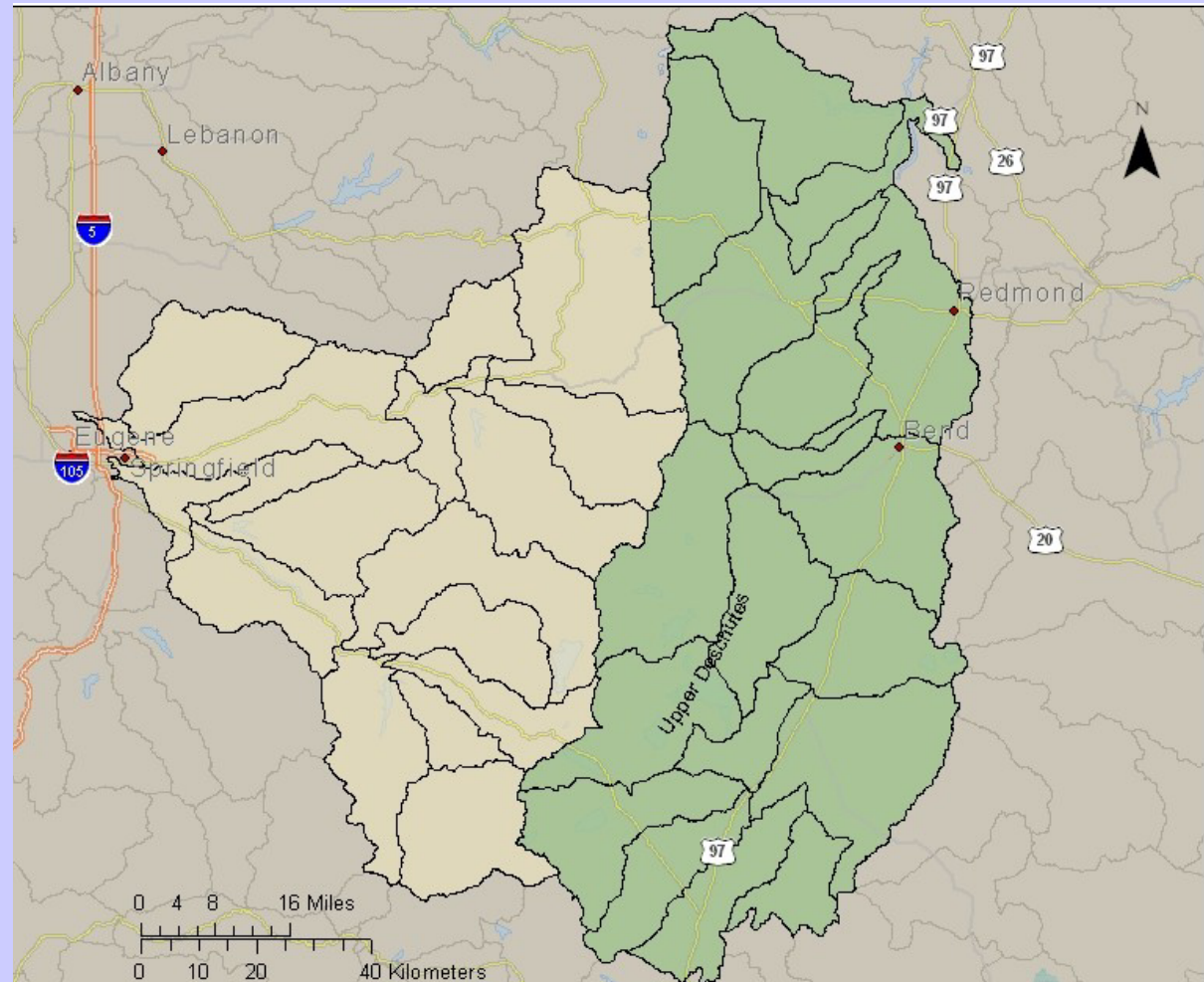


Buildings per
square kilometer:

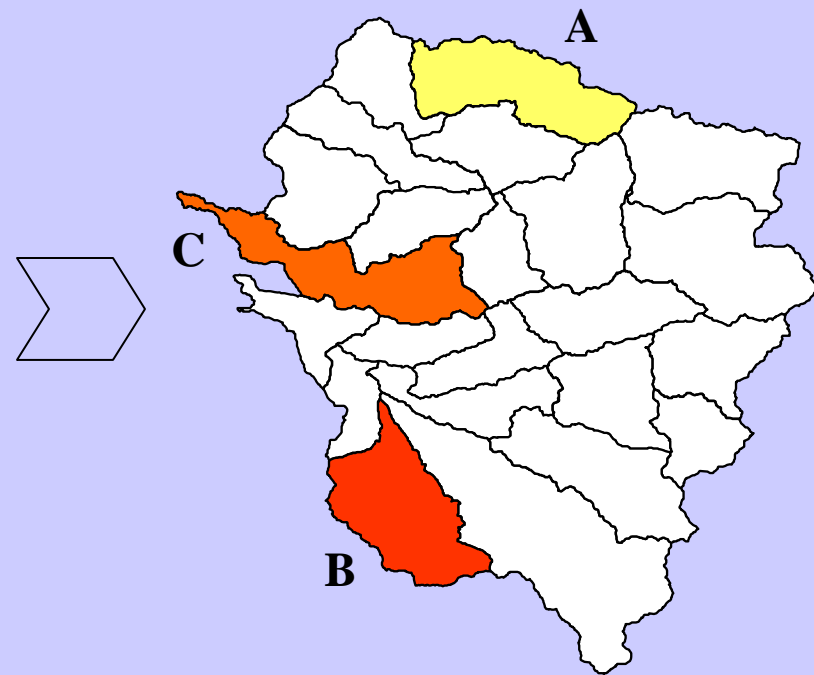
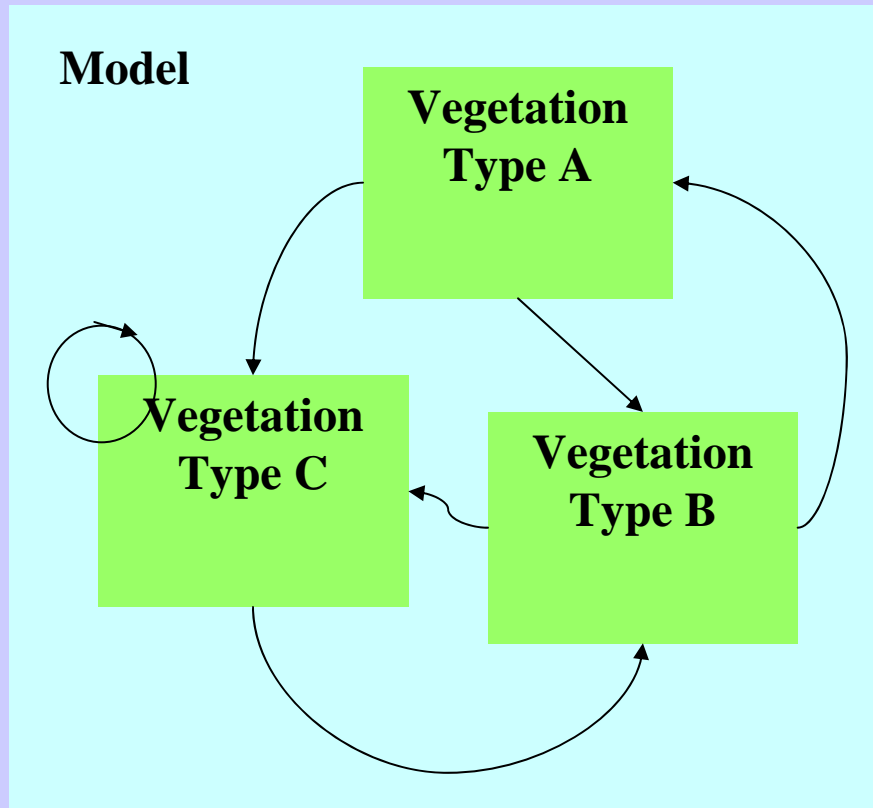
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Central Oregon pilot study area for the Interagency Mapping and Analysis Project

IMAP



Example state and transition model of vegetation within polygons



Example Markov conversion probabilities for key strata combinations examined by IMAP

Initial land use	Owner	Zoning	Sub-region	Annual conversion probability
Forest	Industrial	All	East and west	0.0000439
	Non-industrial	Developable	East and west	0.0180947
	Non-industrial	Resource land	West	0.0004803
	Non-industrial	Resource land	East	0.0029952

Advice for the enlisted

- Don't quickly settle on any one approach.
 - Consider issues to be studied.
 - Develop integrated conceptual framework.
 - Consider spatial scale and temporal scope.
 - Question the need for complexity.
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