



NICHOLAS SCHOOL OF THE
ENVIRONMENT AND EARTH SCIENCES
DUKE UNIVERSITY



ENVIRON 761: Section 4

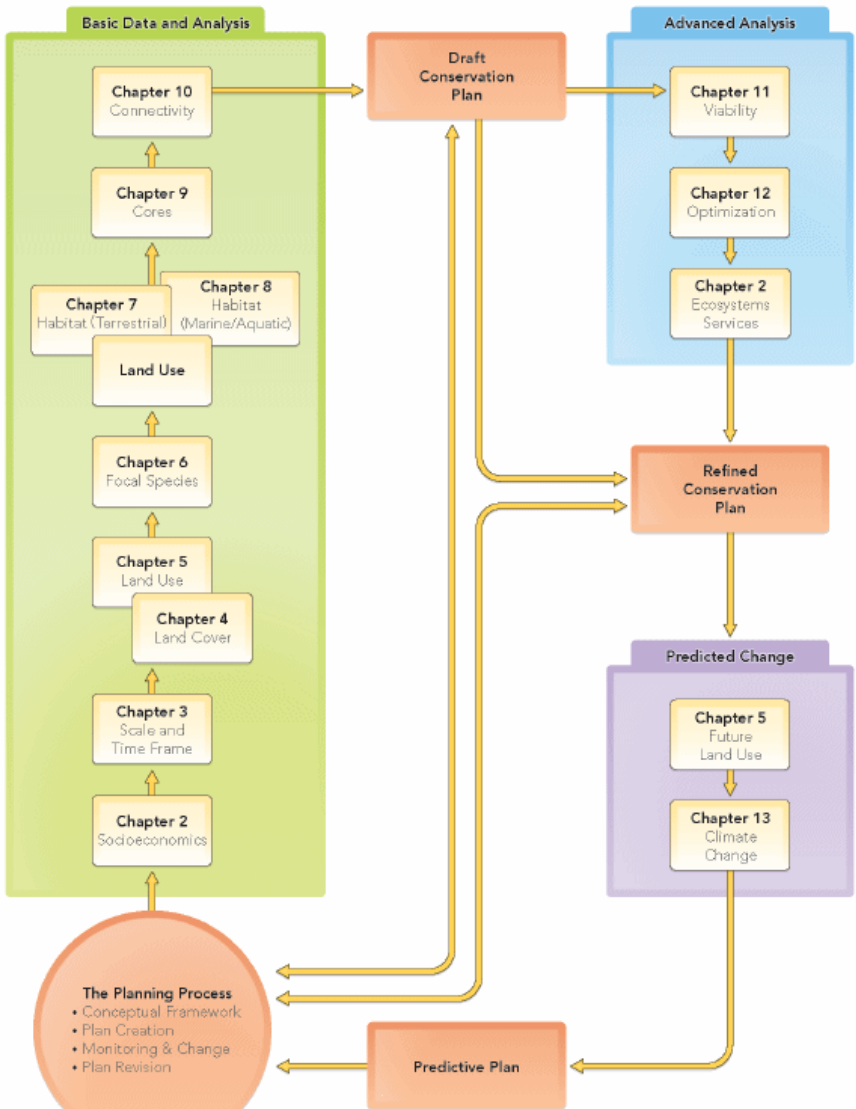
Landscape Assessment

Central question

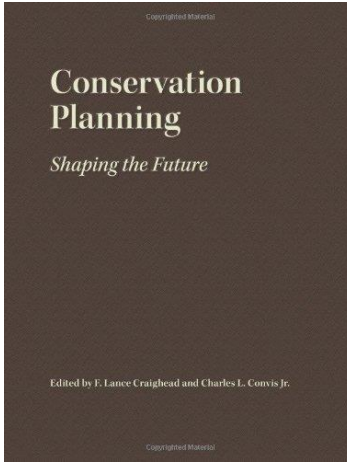
If we can't feasibly protect all the habitat for a given species, what characteristics of "habitat" might lead us to favor protecting some habitat areas over others?



Conservation planning



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- [2-Socioeconomics](#)
- [3-Scale & Time](#)
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- [5-Land Use](#)
- [6-Focal Species](#)
- [7-Habitats: Terrestrial](#)
- [8-Habitats: Marine/Aq](#)
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- [10-Connectivity](#)
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- [14-Processes & Tools](#)
- [15-Summary](#)

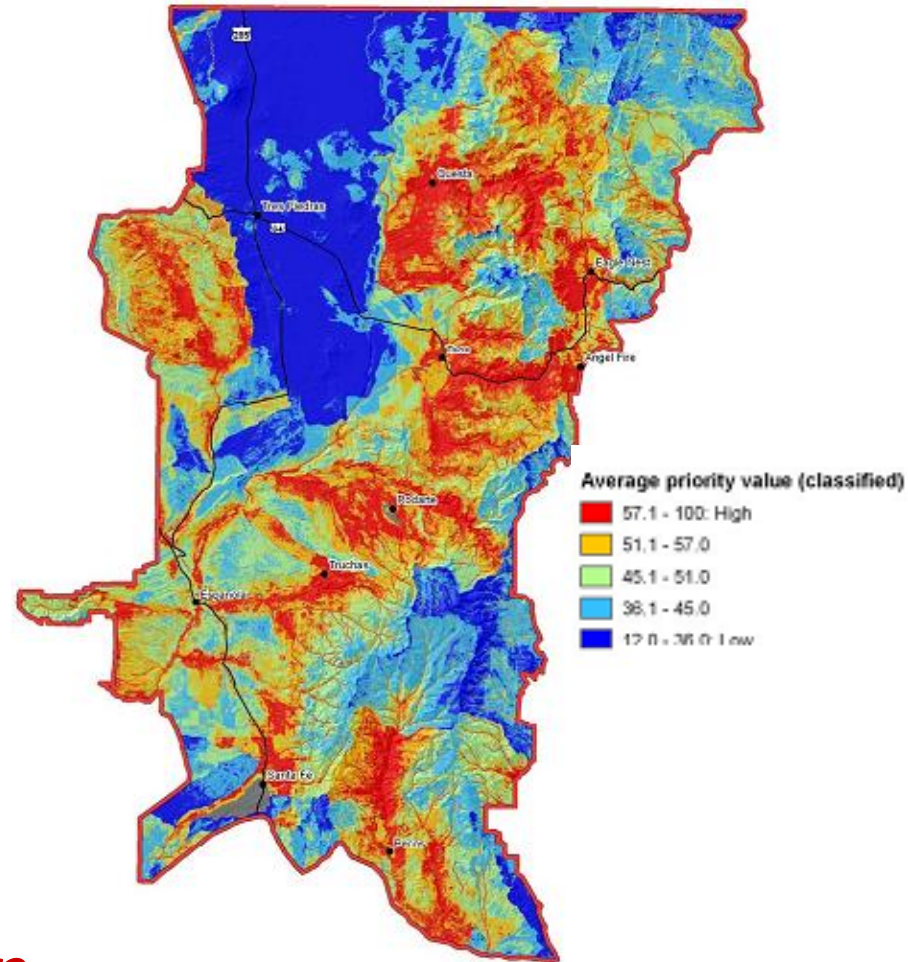


Conservation Planning *(Craighead)*

- Think like a grizzly bear. (modeling ecology and behavior)
- How big is your world? (scale and conservation planning)
- Get the lay of the land. (land cover: the foundation for planning)
- Which animals represent the landscape? (focal species)
- Where is the best habitat on land (& in water)? (habitat analysis)
- Where are the best blocks of good habitat? (mapping habitat cores)
- Getting there from here. (corridor mapping/connectivity)
- How much is enough? (population viability/metapopulation analysis)
- What is the best of the best? (optimization, prioritization)
- Valuation of natural landscapes (biodiversity & ecosystem services)
- Changing landscapes (land use projections – development/climate)

ENV 761 -- Landscape Assessment

Q: How do we select portions of a species habitat to protect when we simply can't protect it all?

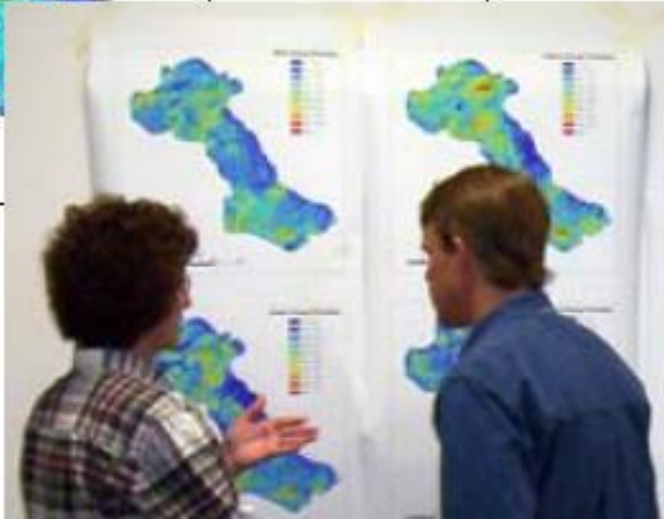
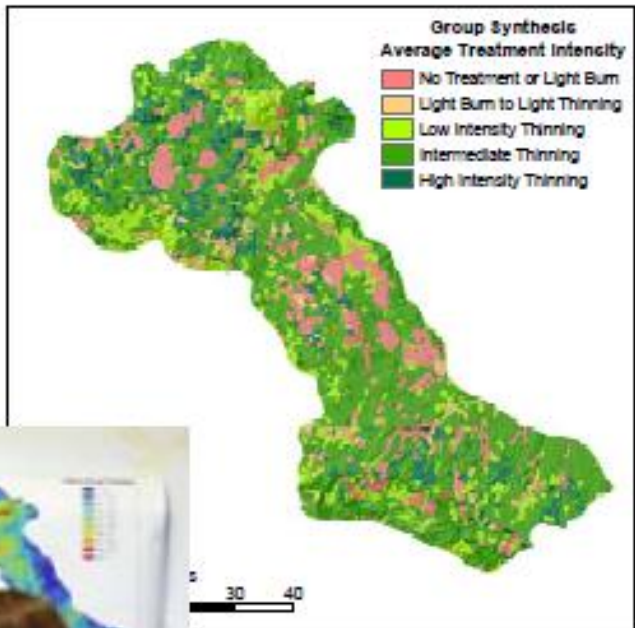
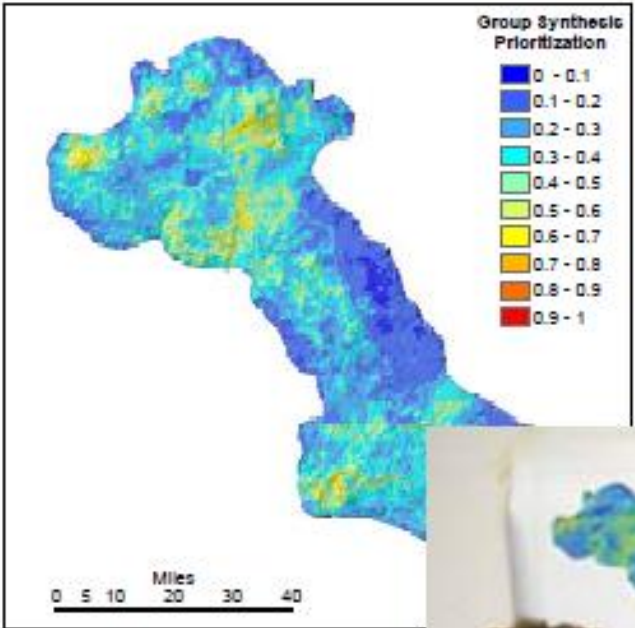


A: Landscape prioritization...

Map created by ForestERA 1 April 2007, based on data developed October 2006, for the North-Central New Mexico Landscape Assessment.

Landscape Assessment

Western Mogollon Plateau Adaptive Landscape Assessment (WMPALA) Report



Pronghorn Antelope Distribution Model



ForestERA
Forest Ecosystem Restoration Analysis

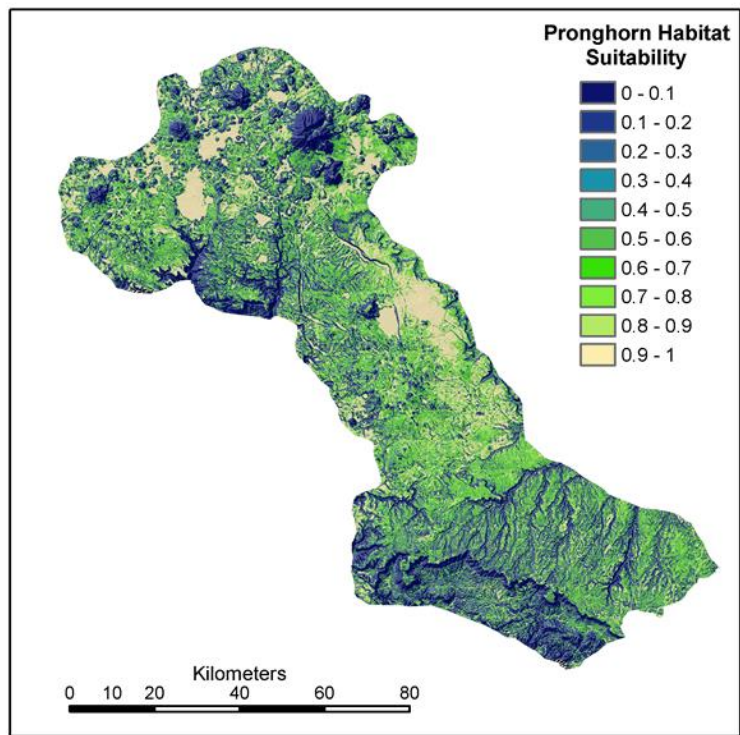
Landscape-scale solutions for forest ecosystem restoration in the American Southwest

Overview Tools Data and Maps Workshops Updates Search

home > data and maps > derived data > pronghorn habitat suitability

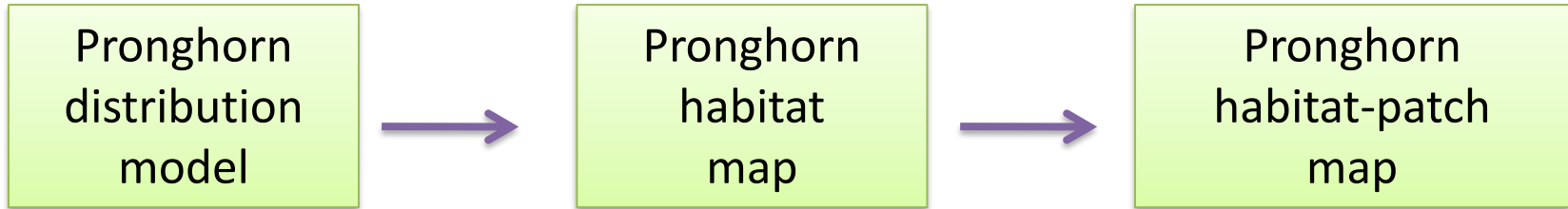
ForestERA Data Layer Overview - Pronghorn Habitat Suitability

- Data and Maps
- Overview
- Foundational
- Derived
- Supplemental
- Unavailable
- Downloads
- Glossary

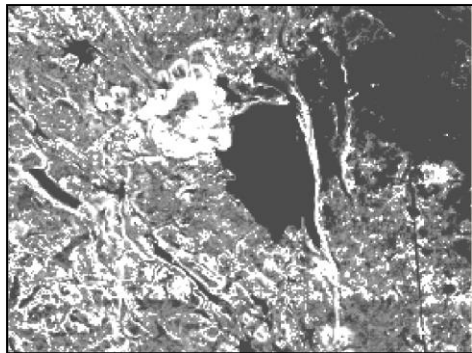


http://www.forestera.nau.edu/WestMogPlateauLandscapeAssmt_AZ.html

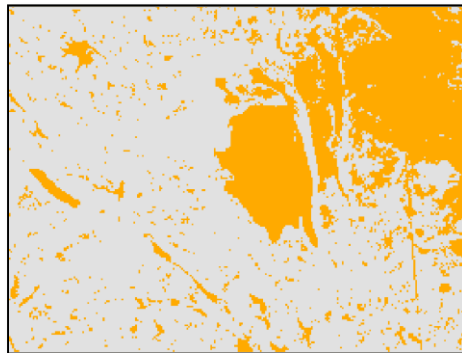
Habitat and Habitat Patch maps



Continuous:
Pronghorn habitat suitability (0.0-1.0)



Binary:
Separates pixels into suitable and non-suitable classes



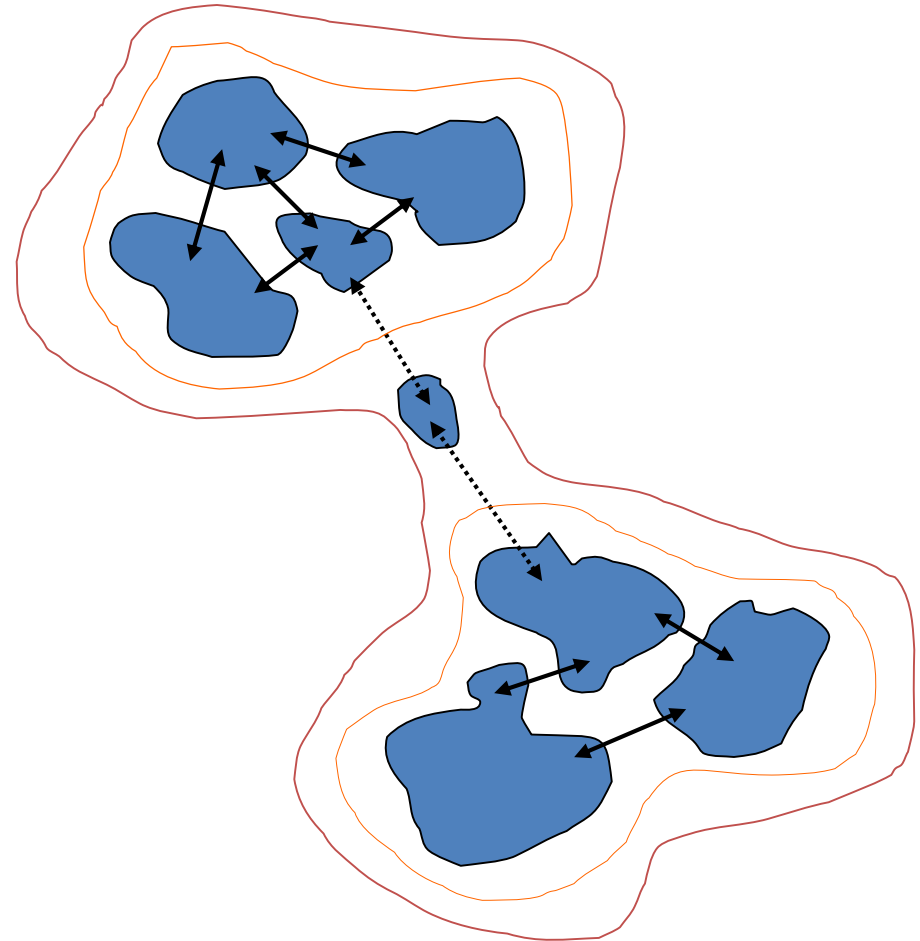
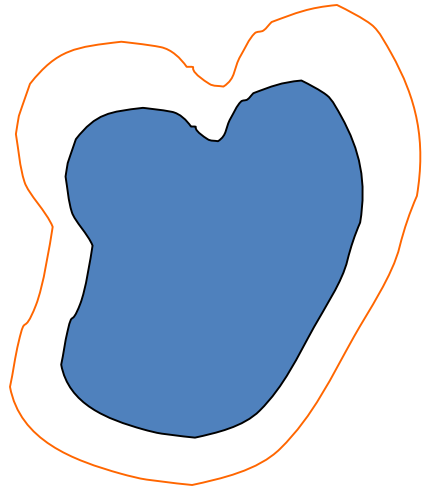
Nominal:
Clusters of connected habitat cells are grouped and given a unique ID



Part 1 - Patch geometry

- Patch size, shape, and distribution
 - Area, compactness, core:area ratio
- Patch corridors and connectivity
 - Least cost paths; corridors; and effective proximity
- Patch sensitivity and proximity to threats/stresses
 - Mapping threat density and magnitude

Part 2 - Patch connectivity

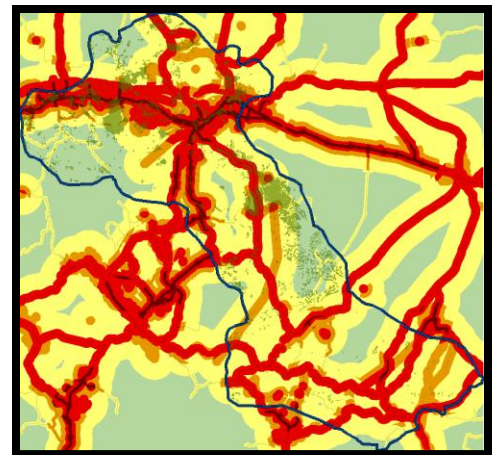
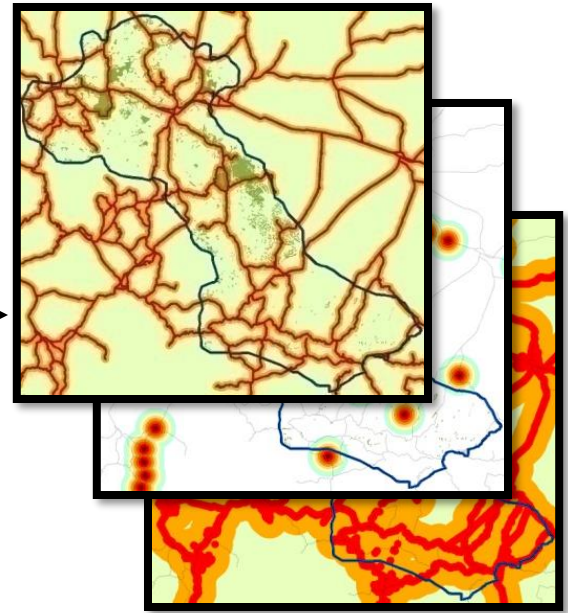
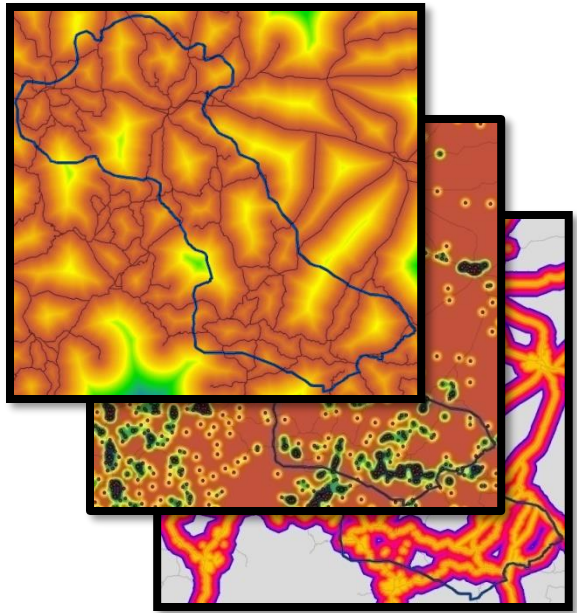


Part 3 - Patch viability/threat mapping

Continuous
single
threat maps

Categorical
single
threat maps

Weighted overlay
threat maps



Next Section... Conservation Planning

Summary Statistics

Input Table: HUCPatches

Output Table: C:\Temp\Exercise4_BiodiversityInProgress\Scratch\HUCStats

Statistics Field(s):

Field	Statistic Type
PATCHAREA_HA	SUM
PATCHAREA_HA	MEAN
COREAREA_HA	SUM
COREAREARATIO	MEAN
SHAPEINDEX	MEAN
CONNECTEDAREA	SUM
DEGREE	MEAN

Case field (optional): HUC12_90M

Field	Value
Class value	2
Pixel value	98
Rowid	96
COUNT	17224
HU_12_NAME	Walnut Creek-Upper Lake Mary
FREQUENCY	12
SUM_PATCHAREA_HA	1176.93
MEAN_PATCHAREA_H	98.0775
SUM_COREAREA_HA	213.03
MEAN_COREAREARAT	0.084475
MEAN_SHAPEINDEX	2.869969166666667
SUM_CONNECTEDARE	280168
MEAN_DEGREE	100.75
MEAN_BETWEENNESS	2.557716666666667
MEAN_CLOSENESS	4.333333333333333E-04

OK Cancel

