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<td>Analysis of Lake St. Clair Water Quality Indicator Data in Relation to Distance from the Clinton River</td>
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<td>9:00am-9:20am</td>
<td>Lori Ivan</td>
<td>GIS-based Modeling of Spawning Habitat of Fall Run Chinook Salmon and (Oncorhynchus tsawwyscha) and Steelhead (Oncorhynchus mykiss) in the Muskegon River</td>
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<td>9:20am-9:40am</td>
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<td>Land Cover Spatial Pattern – A Change-Method assessment</td>
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<td>9:40am-10:00am</td>
<td>Betsy Severtsen</td>
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<td>Sylvia Amsler</td>
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<td>Vindhya Tamada</td>
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<td>2:00pm-2:20pm</td>
<td>Yi-Chen Wu</td>
<td>Using GIS for Exposure Assessment of Air Pollution in South Durban, South Africa</td>
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<td>Susan Dieterlen</td>
<td>At Home in the Heartland: Latinos and the Landscape of Midwestern Neighborhoods - Adrian, Michigan Portion</td>
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<td>2:40pm-3:00pm</td>
<td>Zhifang Wang</td>
<td>Exploratory Research about the Role of GIS into Aesthetic Prediction</td>
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<td>3:00pm-3:20pm</td>
<td>Haejin Han</td>
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<td>Amy Anstead</td>
<td>Using GIS to Identify Watersheds and to Interpolate a Thaw Depth Survey in Northern Alaska</td>
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<td>3:40pm-4:00pm</td>
<td>Saul Alarcon</td>
<td>Comparison of Landscape Metrics in Protected and Unprotected Land and the Relationship Between Raptor Distribution and Habitat Characteristics in the Trans-pecos Region in Texas</td>
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<td>4:00pm-4:20pm</td>
<td>Minako Kimura</td>
<td>Prediction of Land Use Changes using Logistic Regression and Markov Chain model in Rouge River Watershed of Oakland County in Michigan</td>
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<td>4:20pm-4:40pm</td>
<td>Shaw Lacy &amp; Tristan Raymond</td>
<td>Trials and &quot;Trib&quot;ulations: Data Collection, Modeling Nightmares, and the Yamuna River</td>
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<td>TBA, Week of Dec 8th</td>
<td>Khemarith So</td>
<td>Integrating Public Participatory Geographical Information Systems (PPGIS) and Multiple Criteria Decision Making Methods for Estuarine Wetland Restoration Site Prioritization: Applications to the Nehalem and Umpqua Estuaries in Oregon</td>
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Abstracts available online at http://www.snre.umich.edu/nre540
Analysis of Lake St. Clair Water Quality Indicator Data in Relation to Distance from the Clinton River

Amy Komendera (akomende@umich.edu)

The Clinton River drains a 760 square mile area that has a surrounding estimated population of 1.5 million people spanning across Macomb, Oakland, Lapeer and St. Clair counties. Land use in this area is changing due to urban expansion which alters natural drainage leading to an increase in water reaching Lake St. Clair from storm water systems. In 1997, the Macomb County Health Department began monitoring water quality in Lake St. Clair due to elevated levels of pollutants found in the lower Clinton River watershed basin. Near shore sample sites have been established at 23 major outfalls to the lake. Water chemistry data was evaluated to see if a relationship could be found between distance from the Clinton River and water quality. Results should indicate pollutant indicators are at their highest concentrations closest to the Clinton River.

GIS-based Modeling of Spawning Habitat of Fall Run Chinook Salmon and (Oncorhynchus tshawytscha) and Steelhead (Oncorhynchus mykiss) in the Muskegon River

Lori Ivan (lnivan@umich.edu)

The ability to predict habitat availability for fishes during spawning migrations is an important component for management of migrating species such as Chinook salmon (Oncorhynchus tshawytscha) and Steelhead (Oncorhynchus mykiss). I attempted to predict the available spawning habitat to Chinook salmon and Steelhead, two important sport fishes, into the Muskegon River, a tributary of Lake Michigan, using GIS techniques and known habitat suitability indices (HSI) from the Fish and Wildlife Service. Substrate, velocity, and depth were all used to estimate suitable spawning habitat from Croton Dam (the lowest dam on the river) to the city of Newaygo. Thiessen polygons and Inverse Distance Weighting (IDW) were used to create maps of each microscale variable. Using HSI, a final map with locations of available habitat was constructed for both Thiessen polygons and IDW microscale maps. Results between IDW and Thiessen polygons were then compared to each other and to results obtained through the Consumers Power reports own habitat suitability model for this section of river. While both methods of interpolation predicted similar percentages of suitable habitat available for spawning, these areas were not necessarily in the same locations. Results from the Consumers Power report for Steelhead were smaller than those obtained here, although their definition of suitable habitat may have been different from mine, which may account for my over-estimate of available habitat. Obtaining this fine scale information is difficult and time-consuming and predicting spawning habitat may be easier using macroscale variables such as slope, Darcy, land cover, and surficial geology. An effort should be made to extend this model using these macroscale variables. Future work should include validating these predictions with data obtained from spawning fishes and extending this process to the remainder of the river system and other life stages of these important sport fishes.

Land cover spatial pattern: A change-method assessment

Jason Taylor (jayt@umich.edu)

The project presented is a component of a larger study evaluating the changes in spatial pattern and characteristics of a local landscape resulting from a shift in land use policy. The goal here is to present the proposed change-method and evaluation procedure used to determine the change-methods effectiveness for representing the actual land cover change from 1992 to 2001. The change-method employed utilizes geographic information systems (GIS) and 1992 aerial photography as the basis for delineating the 1992 and projecting 2001 land cover. The 1992 land cover was screen digitized from the photos and encoded with land cover classifications including agricultural, forest, mixed, open field, water, wetlands, roads, and residential. The 2001 land cover was established using a change-method that included an intersection of the 1992 agricultural and open-field categories with the average effective extent buffer of the residential category from the 2001 road centerlines. Three of the twenty study sites in Fenton Township, Genesee County, Michigan were evaluated. These sites were chosen for their state of completeness in 2001 in attempt to capture the full effect of residential development. The residential category from the change-method output was compared to actual residential extent from 2001 aerial photography. Output comparison of this change-method for the three sites produced Kappa values of 0.83, 0.81, and 0.68.
Mapping an Exotic Species Invasion using High Resolution Remote Sensing

Betsy Severtsen (eseverts@umich.edu)

This study aims to investigate the spatial and spectral characteristics of *Elaeagnus umbellata* (autumn-olive) in relation to the new generation of high spatial resolution sensors. Autumn-olive was imported from Japan, China and Korea for cultivation and was introduced to many natural areas of the central and eastern United States as a source of wildlife food and cover (Ebinger & Lehnen, 2001). The species quickly escaped cultivation and became naturalized, most prominently in the Midwestern United States and Canada. This study will focus on an autumn-olive invasion within old fields of the E.S. George reserve, located in Livingston County, Michigan.

Using a cloud-free IKONOS image (4-meter resolution, multispectral) collected over the George Reserve in June 2001, two remote detection methods for mapping *Elaeagnus umbellata* were assessed. These methods included a supervised classification using image spectra and an object-based patch delineation (i.e., image segmentation).

The classification results for both methods were fair, though the results of the image segmentation method were more accurate overall. Limitations of these detection methods and characteristics of the plant species that both support and hinder accurate classification will be discussed.

Downtown Flint: Why People Don’t Stay and How That Could Change

Patrick Sloan (plsoan@umich.edu)

This project is being done in conjunction with my capstone class (Urban Planning 634). One of the major goals of this capstone project is to develop strategies for encouraging people who work in downtown Flint to live in the downtown area. According to the 2000 Census the City of Flint has lost more than 11 percent of its population since 1990. This is a continuation of a trend that has been happening in Flint and in many other Michigan cities for the past several decades.

Downtown Flint, while hollow, is not dead. In it are many historic buildings and employment centers. Each weekday, thousands of employees, students, and city residents travel to downtown to work, attend U of M-Flint, or conduct business at a bank or government building. However, between 5pm and 6pm downtown Flint empties out. Most people don’t stay in downtown Flint after 5pm because there is no reason to. At nighttime it is difficult to find a good restaurant or cultural attraction in the downtown area. Also, much of the housing downtown is old and falling apart, which deters potential buyers who would like to live close to work.

The purpose of this project is to use Geographic Information Systems to map: 1. *Why* people do not stay downtown? (Building abandonment; Low property values; Lack of adequate housing; Nothing to do), and 2. *What* can be done to increase the demand for housing and redevelopment? (Build on existing assets e.g. employers, U of M-Flint, good neighborhoods; Use tax incentives like those offered by the existing Renaissance Zone). The geographic data used will be a combination of data taken from the U.S. Census and GIS data borrowed from the City of Flint.
This study estimates home range size for an unusually large chimpanzee community at the Ngogo study area in the Kibale National Park, Uganda. I make comparisons with estimates from other chimpanzee research sites and characterize differential habitat use by males and females of the Ngogo community. Behavioral and locational data were collected on males from 1995 - 2003 and on females from 2002 - 2003. GPS coordinates were entered into ArcView GIS 3.3 for analysis using the animal movement extension (Hooge & Eichenlaub, 1997).

Chimpanzee territories are large and variable. Several factors may affect the size of a community's home range, including the number of community members, the number of adult males (Boesch & Boesch-Achermann, 2000; Goodall, 1986), pressure from surrounding communities (Doran, 1997; Boesch & Boesch-Achermann, 2000; Williams, in press), and habitat quality. I used MCP, grid cell, and fixed kernel methods to estimate the home range size of the Ngogo community. These methods were chosen for comparison with estimates at other chimpanzee sites. The estimated home range size of the Ngogo community is smaller than expected, based on comparison with other chimpanzee communities, given the large group-size and number of males. I suggest that a high density of resources at Ngogo may account for the large group size that the home range can support.

Chimpanzees exhibit a fission-fusion social organization, such that each individual member of the community may range over an area smaller than the size of the community home range. Based on sexual selection theory, I expected female chimpanzees to range alone or in small parties in order to reduce feeding competition (Chapman & Wrangham, 1993). I expected females to show shorter day path lengths and to occupy smaller individual ranges than males, in order to feed more efficiently and reduce feeding competition. Males, on the other hand, were expected to range in larger parties in order to exclude mating competitors (Chapman & Wrangham, 1993), thereby needing to range over larger areas than females to obtain sufficient food. As predicted, male core areas were larger and daily path lengths longer than those of females. Males also traveled at faster speeds than females.

Williams, J. M. in press. Why do male chimpanzees defend a group range?
Preserving Michigan’s Automobile History: Using GIS to develop Heritage Trails in Wayne County, Michigan

Vindhya Tamada (vtamada@umich.edu)

Ford Motor Company Piquette Avenue Plant – the story of this landmark is unknown to most of the area inhabitants who are quietly moving through their lives and the story becomes faded as generations pass. Henry Ford built his first motorized vehicle (Model T) in a one-story brick workshop at the intersection of Piquette and Beaubien in the late 1890s. Today, this building is used as a warehouse and is not listed on the State or National Historical Registry. Sites such as this are scattered throughout the landscape of Michigan especially in and around Detroit. Individually they are inconsequential and lack restoration and interpretive intrigue. But together they become one of the most significant historical accounts of automotive and labor history in the world. MotorCities-Automobile National Heritage Area (MotorCities-ANHA), located in Southeastern and Central Michigan, is an affiliated area of the National Park System (NPS) and one of twenty-three national heritage areas designated by the U.S. Congress. MotorCities-ANHA is dedicated to preserving, interpreting and promoting Michigan's rich automotive and labor heritage. Wayne County Parks in partnership with ANHA and the State of Michigan propose to develop a trail system connecting historic sites that have played a significant role in Michigan’s automotive and labor history. This project uses Arcview, desktop GIS software to view and analyze spatial data to visually display the location of such sites.

The GIS project involves converting an inventory of sites from an excel file into a dbase file. The geographic data consisting primarily of street addresses has been geocoded-using Arcview to visually display sites on a County map. Geocoding is the process by which you add point locations defined by street address or intersection, to the map. About 90 sites have been geocoded based on available data. Sites with incomplete or no address have been inserted into the map at appropriate places manually using various search engines and aerial maps to track their location. It has been found that most of the sites are located in either Detroit or Dearborn. The sites were laid over a road grid, and other natural features such as water bodies and green parcels (parks and preserves) and a few possible trail routes have been suggested in the city of Dearborn. This is by no means the final stage in the development process. The graphical data will now be provided to Wayne County Parks. Further analysis of maps generated as part of this project will help the Parks department explore alternate routes for the development of heritage trails throughout the county. The developed trails will help to increase tourism, encourage revitalization, and improve the quality of life in the region.

Using GIS for Exposure Assessment of Air Pollution in South Durban, South Africa

Yi-Chen Wu (ycw@umich.edu)

Geographic Information Systems (GIS) are increasing applied to the fields of environmental exposure assessment and environmental epidemiology. The purpose of this project is to apply GIS to evaluate air pollution sources and concentrations in the city of Durban, South Africa, and to estimate the population exposures. Two GIS software packages, namely ArcView GIS 3.3 and ArcGIS Desktop 8.2, are used to produce maps of pollutants such as sulfur oxide (SOx) and particulate matter (PM). These maps illustrate the pollutants in the study area. Then, several spatial analysis techniques including Thiessen polygons and Kernel method are used to transfer point data to the broader area. Geostatistical techniques including inverse distance weighted (IDW) and Kriging are applied to refine the spatial interpolation. Lastly, models and demographic data are used to predict population exposures. The results (maps) show that pollutants are mainly released from the southeast industrial area along the coast. According to the annual emission data, the major PM sources are Tongaat Hulett Sugar Refinery (4845 ton/yr) and Sasol Fibers Company (1806 ton/yr). The major SOx sources are two petroleum refineries, Engen Petroleum Ltd. (18446 ton/yr) and Shell & BP SA Petroleum Refineries (14400 ton/yr). Several high density residential areas, including Lamontville, Isipingo, and Austerville, are adjacent to these facilities. Comparing to the maps of IDW, Kriging, the results of the dispersion model, EPA Industrial Source Complex (ISCST3) model, show similar results that the high concentration areas are Jacobs and Stanvac, where are northeast to the airport, along the cost. Therefore, ambient air pollutant exposure is a major concern for the residents in these areas. These results can further support the selection of monitoring/sampling sites, and can help select sites for epidemiology study and for risk assessment.
At Home in the Heartland: Latinos and the Landscape of Midwestern Neighborhoods - Adrian Portion

Susan Dieterlen (sdieterl@umich.edu)

In the fields of landscape architecture and cultural studies, landscape is generally considered a cultural artifact. Differing cultures produce different landscapes. If this is true, the landscapes of Midwestern neighborhoods should be changing in response to the dramatic growth of the Latino population. This study tests this theory by comparing the front yards of Anglo and Latino households in Adrian, Michigan. A photo survey is used to inventory landscape signatures in samples taken from both the Latino population and the Anglo (non-Hispanic white) population. The occurrence and frequency of traditionally Latino signatures and traditionally Anglo signatures are measured in both Latino and Anglo yards. Percent present scores from the instrument indicate that signatures common to the residential landscape of Mexico and the U.S. border region occur with greater frequency in Midwestern Latino yards. GIS mapping is used to further compare and analyze the spatial distribution of specific signatures.

Exploratory research about the role of GIS into aesthetic prediction

Zhifang Wang (zhifangw@umich.edu)

Aesthetic quality tends to be an environmental value of increasing concern, particularly in decision making of environment management. One pragmatic requirement of management is how to evaluate intrinsic aesthetic quality objectively (Zube 1982). Many effects have been concentrating in generating aesthetic indicators, which are relatively objective to be used in aesthetic prediction and visual resource management. These aesthetic indicators could be categorized into two groups: physical indicators generated directly by calculation, such as percentage of land uses, present of special physical features; and perceived indicators based on opinions of respondents, for example, mystery, coherence, legibility. Sometimes, some indicators could have both dimensions, e.g. naturalness, complexity and spaciousness. Definitely, GIS is a powerful tool in analyzing physical indicators. However, whether GIS could be helpful in aesthetic prediction depends on the following two questions: 1) the interaction between physical and perceived indicators, that is, whether physical indicators could effectively represent what people think in mind. 2) Are physical indicators or perceived indicators more powerful related with aesthetic values? Besides, since GIS has the function of spatial interpolation, I assume it should be useful in aesthetic prediction considering those indicators strongly related with aesthetic values. This research attempts to address these issues based on 25 pictures from Norway. Data in use includes a topographic map, a land use map, and 25 points with perceived diversity and aesthetic values (Perceived diversity and perceived attractiveness of each landscape is rated by survey). Several methods are applied to generate different results for one indicator, diversity of land use. Diversity is calculated within a circle neighborhood (radius 100meter and radius 250 meter considering both near and medium distance zones(Bishop and Hulse 1994)), visible neighborhood within two distance zones, and land use variety considering the angle of views within two distance zones. The results indicate that physical diversity generated within visible areas in near distance zone has the strongest correlations with perceived diversity. Meanwhile, perceived diversity is stronger to predict landscape attractiveness than physical diversity calculated by GIS. This indicates more sophisticated GIS calculation of physical indicators is necessary before using them directly into aesthetic prediction. Spatial kriging results using ordinary kriging and co-kriging (based on both physical and perceived diversity) are a little bit frustrating. This might be due to limited sample points in my research.

Development of a custom user-interface for GIS-based Nitrogen Budgeting using Visual Basic for Applications (VBA)

Haejin Han (haejinh@umich.edu)

To examine relationships between anthropogenic N inputs and riverine N export, I constructed N budgets for the Lower Michigan peninsula and developed a custom GIS application for Nitrogen budgeting using VBA. Using data from the early 1990’s, I quantified inputs of N to each watershed from 1) application of nitrogenous fertilizers, 2) biological nitrogen fixation and 3) import N in agricultural products (food and feed). As there are many repetitive functions and procedures for calculating the N budgets for 35 watersheds over the Lower Peninsula of Michigan, I developed a GIS-based nitrogen budgeting tool by utilizing ArcGIS’s built-in macro language Visual Basic for Applications (VBA) to reduce repetitive calculations. I identified frequently used operations in nitrogen budgeting and developed an easy to use interface intended to simplify the frequently used operations, including feature and attribute editing and analysis, for example, aggregating the county-level data to each watershed data by weighting each county estimated by the ratio of land use. This customization of GIS-based nitrogen budgeting can allow me to extend various temporal and spatial scaled budgeting model to understand the relationship between the sources of N and patterns of the landscape, and to highlight how human activities impact N cycling in the Michigan.

Using GIS to Identify Watersheds and to Interpolate a Thaw Depth Survey in Northern Alaska

Amy Anstead (amarlowe@umich.edu)

The hydrological modeling tools in ArcView can be used to delineate the watersheds for an area. In addition, the tools can be used to draw the path of a raindrop over a landscape and to resolve the watershed for a specific point. The program uses a Digital Elevation Model (DEM) to calculate Flow Direction and Flow Accumulation and fills in any sinks in the DEM. It then uses elevation of the filled DEM to determine where the water flows. I determined the pour point watersheds from a 5 meter DEM for sampling points in a series of 9 lakes that flow into Toolik Lake, Alaska using the hydrological modeling tools in ArcView. A dataset of nutrient chemistry from 1991-1997 was used to examine the average nutrient concentration for each lake. I linked average nutrient chemistry data to each sampling point. I intersected the watershed shapefiles with the glacial geology coverage to determine the percentage of each type of geology in each watershed. I also looked more closely at the flow accumulation grid for two lakes in the series. I used the interpolate line tool in ArcView to look at a North-South transect across those same two lakes to possibly determine if there was a difference in the shape and steepness of the land around the lake.

As a side project, I used transect data of thaw depth to permafrost to interpolate thaw depth across a slope in Northern Alaska. I used the Kriging tool in the Geostatistical Analyst in ArcGIS to determine thaw depth between the points we measured. I used the Map Calculator to subtract the average July thaw depth from the average August thaw depth, giving an indication of where the greatest increase in thaw depth over the season occurs. I also used distance to water track to determine areas that are more exposed to water, where we would expect that the thaw depth would be greatest.

This was an exploratory project to determine whether there are any spatial trends in the data that we have been collecting for 10-15 years. These data have been explored, but never using GIS. I would continue to look further at these data and try to determine which trends could be investigated more efficiently and effectively using GIS than traditional methods.
Comparison of landscape metrics in protected and unprotected land and the relationship between raptor distribution and habitat characteristics in the Trans-pecos region in Texas.

Saul Alarcon Farfan (salarcon@umich.edu)

The persistence of organisms and the maintenance of biodiversity in a region are in many cases determined by the habitat in which these organisms live. The spatial structure of these habitats interacts with the behavior and perception of the organisms and may affect the dynamics of populations and communities. A common measure of the effect of land use on an ecosystem is to assess the condition of a group of organisms sensitive to environmental change. Predators may determine the structure of populations, communities and ecosystems, making them particularly helpful as indicators of disturbance or ecosystem status. Diurnal raptors are sensitive to changes in the quality and quantity of habitat, and the types and density of raptor species found in a place can indicate the overall biodiversity in that location. At the same time, the characteristics of habitats may be affected by the legal status (i.e. protected versus unprotected). This project was divided in two main parts: a) the comparison of several landscape metrics at the landscape and vegetation class level between protected areas and unprotected land, and b) the use of different habitat characteristics such as vegetation type, elevation, and subregion type to predict the distribution of raptors. The study area was the northern most part of the Chihuahuan desert, in a portion of Texas south of the Pecos River in the extreme western part of the state, which is commonly known as the Trans-Pecos.

Prediction of Land Use Changes using Logistic Regression and Markov Chain model in Rouge River Watershed of Oakland County in Michigan

Minako Kimura (mkimura@umich.edu)

With the advent of urban sprawl, impervious surfaces have become a key environmental management issue due to their impact on habitat health. Recently, impervious surfaces have been considered to be a significant reason in the decline of amphibian diversity and abundance in urbanized riverine and associated palustrine wetlands. As cities developed, the amount of impervious surfaces increased, such as, roads, houses, and parking lots. In these case studies, prediction of those impervious surface changes from 1951 through 1998 is a goal. Census Data of block boundaries, houses, and population will be used. Dates used are 1951, 1968, 1973, 1990 and 1998, and were converted to ASCII data to use in IDRISI. In this project, Logistic Regression and Markov Chain model were used to predict impervious surface changing. Four variables which are distance to roads, DEM, potential contributing surface area (pcsa), and slope, were used in logistic regression. Markov Chain model will predict proportions of impervious surface. The Rouge River case is an example that indicates development growing along township roads, leading to an increase in impervious surfaces, and associated environmental impacts.
Trials and “Trib”ulations: Data Collection, Modeling Nightmares, and the Yamuna River

Shaw Lacy (slacy@umich.edu) & Tristan Raymond (tiraymon@umich.edu)

Issues confounding the smooth completion of a satisfactory project usually include a number of unfortunate stochastic events. Data collection for the Yamuna River and its basin was not smooth sailing. Data is not publicly available, nor easily accessible when available, is of low resolution, usually outdated, is of inconsistent data quality, and completely lacking in one component highly important in river modeling: flow. The deficiencies of the available data for Indian rivers illustrate the areas of data that need to be collected during future field research.

However, with available data from the Indian Pollution Control Board (PCB) through IndiaStats.com, and from the Yamuna Action Plan (YAP), we have prepared a mainstem-based and watershed-delimited series of shapefiles of the Yamunaic basin. VMAP-1 and VMAP datasets were georeferenced from the original U.S. military intelligence lat/long maps, as well as to the provided DEM layer. Layers included in the Yamunaic delineation are all rivers (vector and polygon), political boundaries (national, state, and district), lakes (polygon), roads (vector), railroads (vector), digital elevation model layer, and cities (point, polygon). The watershed was delineated by hand using the river course as a guideline. Data collection points used by the PCB and YAP, were georeferenced using the best available data.

The Yamuna River mainstem and major tributaries were split into zones based on physical/environmental and anthropogenic factors. Corroboration of the subjective nature of assigning these zones will be done through future fieldwork.

Integrating public participatory geographical information systems (PPGIS) and multiple criteria decision making methods for estuarine wetland restoration site prioritization: applications to the Nehalem and Umpqua Estuaries in Oregon

Khemarith So (kjso@umich.edu)

Tidal wetlands of the Pacific Northwest are considered critical habitat for many marine and anadromous fish, migratory birds and of high ecological importance (Seliskar and Gallegher 1983). In Oregon's seventeen largest estuaries, the amount of tidal wetland decreased from 2 to 91 percent between 1870 and 1970 (Oregon State 2000). To restore function and health to the coastal ecosystem and natural resources, many governmental and non-governmental organizations are looking for opportunities to reverse this loss by restoring tidal wetlands and other estuarine intertidal habitats. The goals of this study are to identify current and historic estuarine wetlands within the Nehalem and Umpqua estuaries and to rank areas that would be appropriate for restoring estuarine habitat. There have been four efforts in Oregon that either identified and/or prioritized tidal wetlands for restoration at a site specific level (EPA 1988; Lebovitz 1992, Brophy 1999; Simensted et al. 1999). This study builds upon previous efforts by identifying and prioritizing tidal wetlands by using a GIS-based multiple criteria decision making model. Sites are identified through analysis of existing wetlands inventories, soil survey and ownership data, air photo interpretation, and field work. Criteria for prioritization include size of site, current habitat condition, landscape position, connectivity to other sites and wetlands, restoration feasibility, fish use, and public input. Public input into the prioritization process occurs within the context of a public participatory GIS.