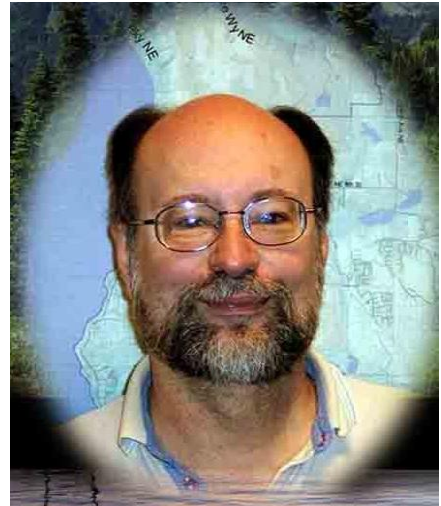


Fourth Annual Dick Thomas Memorial Student Presentation Competition & Award at the 2010 Washington GIS Conference



*Richard "Dick" Thomas
1947 – 2006*

WAURISA, the **Washington State Chapter of the Urban and Regional Information Systems Association**, held the fourth annual **Dick Thomas Memorial Award** on May 6, 2010 at this year's **Washington GIS Conference** (May 4 – 6, 2010) at the Meydenbauer Center in Bellevue. **WAURISA** established this award to honor Washington State GIS pioneer and mentor, **Richard 'Dick' Thomas** by continuing his work of encouraging students to excel in their studies and transition successfully into GIS careers.

WAURISA's goal with this award is to inspire students to present their original work related to GIS, geography, or geographic research in Washington State at the annual **Washington GIS Conference**. The competition comprised of two parts: the first was the selection of four (4) abstracts by the **WAURISA Student Presentation Competition Committee**. The second part was the judging of the 4 selected presentations during the Student Presentation Session at the **2010 Washington GIS Conference**. Abstracts used a maximum of 300 words to describe the proposed presentations. The presentations were limited to 25 minutes, with an additional 5 minutes for questions.

The competition was limited to current students enrolled at least 6 hours in a relevant curriculum at a secondary school, community college, technical school, or university program. Submitters did not need to join **WAURISA**, but all students are encouraged to become **WAURISA** student members at a special student rate. Entries were the original work by the students, they conducted as school projects or under the supervision of a professor while enrolled in a GIS, geography, technology, or related academic program. Subjects for papers were related to geography, GIS, or an allied technology, as applied to natural resource, hazard mitigation, archaeology, animal habitats, energy, social, business, government, or other similar issues in Washington State.

Abstracts and presentations were judged on the following criteria:

- Demonstration of expertise and understanding of geographic concepts
- Demonstration of expertise and understanding of GIS, related technology, and its application
- Explanation of how the work presented relates to the topic and contributes to greater understanding or knowledge of the topic and GIS
- Demonstration of an innovative approach and/or critical thinking
- Quality of the written abstracts
- Quality of the public presentations

This year's entries:

This year's four entries presented an array of topics. **Stephan Gmur** discussed his work in developing a GIS tool to look at large scale connectivity questions by identifying habitat connectivity networks based on stream network and core habitat characteristics. **Harry Rich, Jr., Dave Muller, Sage Miller, Sara Bloom, and Richard Lewis** presented their work on spatial risk analyses to show the direct (planned/unplanned) and possible catastrophic effects of

development that a proposed large-scale mine may have on the salmon populations and wildlife around Iliamna Lake in Bristol Bay, AK. **Micah Babinski & Phil Murray** spoke about their work on using statistical and geodemographic methods to evaluate Seattle's bike lane implementation based on criteria of equity and efficiency. **Kari Hiser, John Willard and Elaina Snyder** discussed their project on the development, design and implementation of a wildlife habitat and corridor network map for the City of Mercer Island.

First Place: Stephan Gmur

Stephan Gmur is a student at the University of Washington. His project was done under the guidance of Alex Fremier at the Geography Department of the University of Idaho. Stephan's presentation was "**As the fish swims: Improved habitat connectivity between wilderness areas using the river network**".

Here is his abstract:

Continuing changes in global climate and fragmented habitats hold unknown consequences for many species of wildlife. Current wilderness and other protected areas provide valuable habitat for many species that are predicted to migrate asynchronously across the landscape in response to changing habitat conditions [1 <]. This is of great conservation concern for areas surrounding wildernesses, including other protected areas, are rapidly being developed. Historically rivers and riparian areas provided connectivity across the landscape, yet today, record levels of human development, especially along river corridors, this functional role has significantly diminished. These changes have decreased connectivity of the wilderness landscape in unknown ways [2 <]. Scientific understanding of wildlife utilization of corridors has predominately been applied to overland terrestrial movement, leaving aquatic and semi-terrestrial connectivity relatively unknown [3 <]. The RiSLaR lab is developing a GIS tool to address large scale connectivity questions by identifying habitat connectivity networks based on stream network and core habitat characteristics. Implementation uses the geoprocessing framework of ArcGIS Desktop 9.3.1 using Python 2.5 with ArcToolbox. The stream network is modeled using Network Analyst, using NLCD and the National Inventory of Dams, capturing a travel cost per stream segment based on human development and infrastructure, providing a detailed representation of the theoretical resistance species will encounter.

Questions that are addressed with the tool include:

- 1) Which wilderness areas are the most disconnected on the existing landscape, based on aquatic, semi-terrestrial and terrestrial movement?
- 2) Where on the network would a newly protected area improve the overall reserve connectivity?
- 3) Where on the network are the areas predicted to see the largest changes in climate and concurrent influence by surrounding land development?
- 4) What wilderness areas will be most impacted by climate change due to high levels of habitat fragmentation through land use, dams or other human-related alterations?

Works Cited

1. Prediction climate-induced range shifts: model differences and model reliability. Lawler, Joshua J, et al. 2006, *Global Change Biology*, Vol. 12, pp. 1568 - 1584.
2. Use of Riparian Corridors and Vineyards by Mammalian Predators in Northern California. Hilty, Jodi A and Merenlender, Adina M. 1, 2004, *Conservation Biology*, Vol. 18, pp. 126 - 135.
3. Faunal indicator taxa selection for monitoring ecosystem health. Hilty, Jodi and Merenlender, Adina. 2000, *Biological Conservation*, Vol. 92, pp. 185 - 197.

Stephan's rewards included:

- Award Plaque
- \$1000 cash
- One year membership in **WAURISA**
- Free registration to the **2010 Washington GIS Conference**
- Publication of his paper in *The Summit* (Washington GIS Newsletter)

Stephan's paper was published in the Summer 2010 issue of *The Summit*. In addition, his professor, Alex Fremier, was awarded a cash prize of \$500.

Second Place: Harry Rich, Jr., Dave Muller, Sage Miller, Sara Bloom, and Richard Lewis

Harry Rich, Jr., Dave Muller, Sage Miller, Sara Bloom, and Richard Lewis, with the University of Washington Extension, GIS Certificate Program, presented "**Iliamna Lake - Fish First Project: Sustainable fisheries and a proposed large-scale mine in Bristol Bay, AK**". Their advisor was Jaime Crawford.

Here is their abstract:

The Pebble Mine project is a copper-gold-molybdenum porphyry deposit that is in the advanced exploration stage. The project is located in the Bristol Bay region of southwest Alaska, situated near the headwaters of two of the five main sockeye salmon river districts comprising the Bristol Bay commercial fishery.

The Bristol Bay metapopulation is the world's largest sustainably managed and commercially exploited run of wild sockeye in the world. The fishery has an average return of 30 million sockeye, with an ex-vessel value ranging between \$100-200 million annually. The Bristol Bay region is home to the largest subsistence harvest of salmon in Alaska, with over 80% of subsistence harvest comprised of sockeye salmon. The region is also home to world class sport fisheries and unspoiled habitat for several species of wildlife.

Pebble consists of two contiguous deposits, totaling 7.5 billion metric tons which will be removed, pulverized and disposed of. The diffuse nature of the deposit will generate large amounts of waste rock and require the use of cyanide leaching procedures; toxic waste products will need to be retained in perpetuity. Tailings ponds will be created with a series of earthen dams over 700 feet high and 4 miles wide. Additionally, massive road and power generating projects need to be installed in this pristine wilderness.

The University of Washington's Fisheries Research Institute (FRI) and the Alaska Department of Fish and Game (ADF&G) have been collecting data on the abundance and distribution of sockeye salmon throughout the region since the mid 1950's. We built a geodatabase incorporating data on adult sockeye salmon abundance, distribution to spawning grounds, and juvenile rearing areas in the lake. We conducted spatial risk analyses to show the direct (planned/unplanned) and possible catastrophic effects this mine's development may have on the salmon populations and wildlife around Iliamna Lake.

Their rewards included:

- Award Certificates

- \$300 cash
- One year membership in **WAURISA**
- Free registration to **2011 Washington GIS Conference**

Third Place: Micah Babinski & Phil Murray

Micah Babinski & Phil Murray were students at the University of Washington, in the Geography Department. Their advisor was Sarah Elwood. The presentation was on "**A Geodemographic and Statistical Analysis of Bike Lane Access in Seattle, WA**".

Here is their abstract:

Much is known in the academic and urban planning communities about the benefits of active lifestyles and efficient transportation networks. The layout of the urban landscape has tremendous influence on the levels of walking, biking, and other alternative modes of transportation. Community-oriented coalitions such as Active Living by Design (ALbD) work to encourage urban planners and policy makers to implement projects aimed at increasing 'walkability' and access to bike lanes within Seattle and other major cities. This project uses GIS software and correlation testing to evaluate two demographic factors based on their predictive influence on bike lane access in Seattle.

We gathered King County census information and tailored it to represent population and median income data for the census tracts of Seattle. We then performed a spatial join of Seattle bike lane data to the Seattle census tracts, allowing us to represent the percentage of total bike lane access for each tract. We calculated z scores for each tract representing per-tract variation in population, median income, and bike lane access. We performed two regression analyses based off of the z scores, to find the correlation coefficients for the associations between population and bike lane access, and between median income and bike lane access. Essentially, we used statistical and geodemographic methods to evaluate Seattle's bike lane implementation based on criteria of equity and efficiency.

We conclude that both median income and population have low to moderate associations with bike lane access, and that both associations are significant at a .05 significance level. We also observe that the correlation coefficient for median income is slightly higher than the coefficient for population. This study would be useful to groups like ALbD to determine which factors contribute to below-average levels of bike lane access in certain parts of the city.

Their rewards included:

- Award Certificates
- \$200 cash
- One year membership in **WAURISA**

Honorable Mention: Kari Hiser, John Willard and Elaina Snyder

Kari Hiser, John Willard and Elaina Snyder were students at the University of Washington, Geography Department. Their advisor was Joe Brentin. They presented their work on "**Mercer Island Certified Wildlife Habitat & Corridor Project**".

Here is their abstract:

The objective of our GIS course project will involve the development, design and implementation of a wildlife habitat and corridor network map for the city of Mercer Island. Mercer Island is a community located on Lake Washington and connected to Seattle to the west and Bellevue to the east by Interstate 90. The boundaries of our project site will be contained within the island's 6.2 square miles, with a primary focus on areas with current sustainable habitat and wildlife passages. Our sponsor Rita Moore is a member of IslandVision, a nonprofit sustainability-focused organization on M.I., and the main project stakeholder. In addition to Moore, secondary stakeholders will include M.I. residents, IslandVision committee members, green businesses, developers, and other local cities interested in wildlife corridor preservation and habitat certification.

The primary goal of our project will be to provide Moore and IslandVision with an electronic and hard copy map of potential and current M.I. corridor habitat. Our project deliverables will assist Moore and IslandVision with prioritizing public outreach efforts and certifying M.I. as a Wildlife Habitat Community. In order to receive certification, M.I. must meet a list of environmental standards provided by the National Wildlife Federation. In addition to the NWF list, we will use site observations, sponsor recommendations, and native species criteria to help prioritize our cost-analysis for both current and potential corridors.

To develop our corridor map, we will build a geodatabase consisting of primary and secondary data layers. Some examples of primary layers will be DEM, drainage basin, stream network, soil type/erodability, and riparian maps of M.I. The secondary layers will include surface vegetation, zoning boundaries, and road maps. From our research, we will perform multiple cost distance and cost-benefit analyses to assess areas of current and future sustainable wildlife habitat.

Adam and Shelby's rewards included:

- Honorable Mention Certificates

Every year the entries continue to be better and better. This year was no exception. All of the students did a professional job of presenting their work. The future seems for these students and our profession.

I would like to send my heartfelt gratitude to everyone that made possible this year's Dick Thomas Student Presentations and Award. I would like to thank this year's entrants, **Stephan Gmur, Harry Rich, Jr., Dave Muller, Sage Miller, Sara Bloom, Richard Lewis, Micah Babinski and Phil Murray**, for the great work they demonstrated in their abstracts and quality presentations.

I would like to thank the judges, Marty Balikov with ESRI, Whitney Bowerman with Public Works Dept. at the City of Olympia and Rick Lortz with the Lakehaven Utility District for their work judging all of the abstracts and the presentations.

Finally, I would like to thank the professors who encouraged their students to enter the competition. These presentations would not have happened without your support.

The fifth annual Dick Thomas Memorial Student Presentation Competition and Award will be Wednesday, May 11, 2011 at next year's Washington GIS Conference (May 9 – 11, 2011) at the Lynnwood Convention Center. Look for the upcoming announcement and guidelines!

Amanda Taub, GISP
Dick Thomas Award Coordinator