DAVID P. HELMERS

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SUMMARY

Geographic Information Systems (GIS) Specialist and researcher with expertise in spatial analysis, geospatial data management, workflow automation, web application development, cartographic principles and theory, remote sensing and image processing techniques, statistics, and systems administration/Information Technology.

PROFESSIONAL EXPERIENCE

GIS Specialist / Senior Information Processing Consultant   **01/2008 to Present**

SILVIS Lab, Department of Forest and Wildlife Ecology, University of Wisconsin-Madison

- Provide technical support, training, and advice to principal investigators, collaborators, research associates, and graduate students, focusing on appropriate GIS methods and computing best practices and standards.
- Acquire, convert, and process large volumes of geospatial data, automate complex processes and data management workflows, and generate maps and tabular data to share with fellow researchers, decision-makers, and the public at large.
- Design, develop, and maintain the SILVIS lab website, including building web-mapping applications and services, and hiring/supervising developers to assist in development.
- Manage lab data infrastructure through server and workstation systems administration while also identifying computing needs and priorities and acting as main point of contact with campus I.T. professionals.

Programmer / Remote Sensing Analyst   **01/2005 to 12/2007**

Gower and FERST Labs, Department of Forest and Wildlife Ecology, University of Wisconsin-Madison

- Mapped changes in surface mining in the central Appalachians between 1976 and 2006 using logic-based multi-date land cover classification algorithms and image enhancement techniques while employing parallel processing methods.

Faculty Research Associate   **04/2002 to 12/2004**

Appalachian Laboratory, University of Maryland Center for Environmental Science

- Developed code linking ecological models simulating nutrient cycles in forests to a GIS, co-authored user guides, and packaged model software for public distribution.

GIS Modeler   **10/2000 to 08/2001**

Wisconsin Department of Natural Resources

- Linked spatial databases of lake nutrient status with surrounding land cover.

TECHNICAL SKILLS

GIS, Spatial Analysis, and Geospatial Data Management

Construct geodatabases from various spatial and non-spatial data sources, manipulating geospatial data through format conversions (raster/vector/tabular/binary) and matching map projections and spatial reference systems.

Advanced geoprocessing and scripting methods – selections, database cursors, overlays, proximity analyses, joins, map algebra, neighborhood operations, summary statistics, image enhancement, classifications, change detection, accuracy assessments.

- Applications: ESRI ArcGIS & ArcPro Advanced, Spatial Analyst, Google Earth Engine (GEE), Google Earth Pro, GDAL/OGR, PostGIS, QGIS, ERDAS Imagine

Scripting & Programming Languages

Write code for a variety of applications and analyses, from automating GIS and remote sensing workflows, updating geospatial and web databases, event-based web mapping applications, and Windows and Linux systems administration.

- Languages: Python, JavaScript, PHP, SQL, C++, BASH, DOS

Web Mapping Application Design and Deployment

Create OGC compliant web map services (WMS) & custom web mapping applications incorporating various APIs and coding languages.

- APIs: GeoServer, OpenLayers, Leaflet, ArcGIS Online, AppStudio for ArcGIS
- Example: http://silvis.forest.wisc.edu/data/wui-change/

Website Development and Database Management

Build and manage entire websites, from backend content databases to the front-end user interfaces.

- Back-end: MySQL, PostgreSQL, Microsoft Access, phpMyAdmin, REST API
- Front-end: WordPress, HTML5, CSS, Responsive Web Design (fit any device)

EDUCATION

University of Wisconsin-Madison

Bachelor of Science, Geography, 1999

Certificate in Environmental Studies, 1999

Distinguished Graduate (Top 20% of class)

Dean's List (4 times)

PUBLICATIONS

2020

1. Fuentes, M.M.P.B., Allstadt, A.J., Ceriani, S.A., Godfrey, M.H., Gredzens, C., Helmers, D., Ingram, D., Pate, M., Radeloff, V.C., Shaver, D.J., Wildermann, N., Taylor, L., Bateman, B.L. 2020. Potential adaptability of marine turtles to climate change may be hindered by coastal development in the USA. Regional Environmental Change (2020) 20:104.
2. Yin, H., A. Brandão, J. Buchner, D. Helmers, B. G. Iuliano, N. E. Kimambo, K. E. Lewińska, E. Razenkova, A. Rizayeva, N. Rogova, S. A. Spawn, Y, H, Xie, and V. C. Radeloff. 2020. Monitoring cropland abandonment with Landsat time series. Remote Sensing of Environment, 246: 111873.

2019

3. Carter, S.K., S. S. Maxted, T. L. E. Bergeson, D. Helmers, L. Scott, and V. C. Radeloff. 2019. Assessing vulnerability and threat from housing development to Conservation Opportunity Areas in State Wildlife Action Plans across the United States. Landscape and Urban Planning, 185: 237-245.
4. Radeloff, V. C., M. Dubinin, N. C. Coops, A. Allen, T. M. Brooks, M. Clayton, G. Costa, C. H. Graham, D. Helmers, A. R. Ives, D. Kolesov, A. M. Pidgeon, G. Rapacciuolo, E. Razenkova, N. Suttidate, B. E. Young, L. Zhu, and M. Hobi. 2019. The Dynamic Habitat Indices (DHIs) from MODIS and global biodiversity. Remote Sensing of Environment, 222: 204-214.
5. Suttidate, N., M.L. Hobi, A.M. Pidgeon, P.D. Round, N. C. Coops, D. P. Helmers, N. S. Keuler, M. Dubinin, B. L. Bateman, Volker C. Radeloff. 2019. Tropical bird species richness is strongly associated with patterns of primary productivity captured by the Dynamic Habitat Indices, Remote Sensing of Environment, 232, 111306.

2018

6. Radeloff, V. C., D. P. Helmers, H. A. Kramer, M. H. Mockrin, P. M. Alexandre, A. Bar-Massada, V. Butsic, T. J. Hawbaker, S. Martinuzzi, A. D. Syphard, and S. I. Stewart. 2018. Rapid growth of the U.S. Wildland Urban Interface raises wildfire risk. Proceedings of the National Academy of Sciences, 115(13): 3314-3319.

2017

7. Castro-Prieto, J., S. Martinuzzi, V. C. Radeloff, D. P. Helmers M. Quinones, and W. A. Gould. 2017. Declining human population but increasing residential development around protected areas in Puerto Rico. Biological Conservation, 209: 473-481.

2016

8. Fuentes, M. P. B., C. Gredzens, B. L. Bateman, R. Boettcher, S. A. Ceriani, M. H. Godfrey, D. Helmers, D. K. Ingram, R. L. Kamrowski, M. Pate, R. L. Pressey, and V. C.

Radeloff. 2016. Conservation hotspots for marine turtles nesting areas based on exposure to coastal development. Ecological Applications, 26(8): 2708-2719.

9. Hamilton, C. M., M. Baumann, A. M. Pidgeon, D. P. Helmers, W. E. Thogmartin, P. J. Heglund, and V. C. Radeloff. 2016. Past and predicted future effects of housing growth on open space pathways and habitat connectivity around National Wildlife Refuges. Landscape Ecology, 31:2175-2186.

10. Hmielowski, T. L., S. K. Carter, H. Spaul, D. Helmers, V. C. Radeloff, and P. Zedler. 2016. Prioritizing land management efforts at a landscape scale: a case study using prescribed fire in Wisconsin. Ecological Applications, 26(4): 1018-1029.

2015

11. Martinuzzi, S., V.C. Radeloff, L.N. Joppa, C.M. Hamilton, D.P. Helmers, A.J. Plantinga, and D.J. Lewis. 2015. Scenarios of future land use change around United States' protected areas. Biological Conservation, 184: 446-455.

12. Wood, E. M., A. M. Pidgeon, V. C. Radeloff. D. Helmers, P. D. Culbert, N. S. Keuler, and C. H. Flather. 2015. Housing development, protected areas, and avian community conservation. Journal of Applied Ecology, 52:1227-1236.

13. Martinuzzi, S., J. C. Withey, A. M. Pidgeon, A. J. Plantinga, A. A. McKerrow, S. G. Williams, D. P. Helmers, and V. C. Radeloff. 2015. Future land-use scenarios and the loss of wildlife habitat in the southeastern U.S. Ecological Applications, 25(1): 160-171.

2014

14. Wood, E. M., A. M. Pidgeon, V. C. Radeloff, D. Helmers, P. D. Culbert, N. S. Keuler, and C. H. Flather. 2014. Housing development outside protected areas erodes avian community structure within. Ecological Applications, 24(6):1445-1462.

15. Lawler, J., D. Lewis, E. Nelson, A. J. Plantinga, S. Polasky, J. Withey, D. Helmers, S. Martinuzzi, and V. C. Radeloff. 2014. Projected land-use change impacts on ecosystem services in the U.S.. Proceedings of the National Academy of Science.

2013

16. Beaudry, F., V. C. Radeloff, A. M. Pidgeon, A. J.Plantinga, D. J. Lewis, D. Helmers, and V. Butsic. 2013. The loss of forest birds habitats under different land use policies as projected by a coupled ecological-econometric model. Biological Conservation, 165:1-9.

17. Martinuzzi, S., V. C. Radeloff, J. Higgins, D. Helmers, A. J. Plantinga, and D. J. Lewis. 2013. Key areas for conserving United States' biodiversity likely threatened by future land use change. Ecosphere, 4(5):58.

2012

18. Neumann, W., G. Ericsson, H. Dettki, N. Bunnefeld, N. S. Keuler, D. P. Helmers, and V.C. Radeloff. 2012. Difference in spatiotemporal patterns of wildlife road-crossings and wildlife-vehicle collisions. Biological Conservation, 145:70-78.

19. Radeloff, V. C., E. Nelson, A. J. Plantinga, D. J. Lewis, D. Helmers, J. J. Lawler, J. C. Withey, F. Beaudry, S. Martinuzzi, V. Butsic, E. Lonsdorf, D. White, and S. Polasky. 2012. Economic-based projections of future land use in the conterminous United States under alternative policy scenarios. Ecological Applications, 22(3): 1036-1049.

2010

20. Radeloff, V. C., S. I. Stewart, T. J. Hawbaker, U. Gimmi, A. M. Pidgeon, C. H. Flather, R. B. Hammer, and D. Helmers. 2010. Housing growth in and near United States' protected areas limits their conservation value. Proceedings of the National Academy of Sciences, 107(2): 940-945.

2009

21. Townsend, P.A., D. Helmers, C. Kingdon, B. McNeil, K. de Beurs, K. Eshleman. 2009. Changes in the extent of surface mining and reclamation in the Central Appalachians: 1976-2006. Remote Sensing of the Environment, 113: 62-72.