RM-CESU PROJECT COMPLETION REPORT

Cooperative Agreement H1200090004 Task Agreement FBMS# P10AC00068 Project number MSU-221

<u>Project Title</u>: National Park Service Vital Signs Inventory and Monitoring: technical and operational support to the Greater Yellowstone Network parks

Park/Unit: Greater Yellowstone I&M Network

Funding Sources: Greater Yellowstone Network, Inventory and Monitoring Program, \$89,962

Dates: 7/1/2010 - 9/30/2013

NPS ATR:

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University Partner, PI:

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Project Description:

This project with Big Sky Institute provided a wide range of technical and administrative support to assist the Greater Yellowstone Network on designing and implementing scientifically robust and credible monitoring protocols.

Students participating in this project:

One undergraduate student – Chris Olsen: 2013 degree in GIS and Urban Planning from Montana State University.

One Masters student – Cynthia Hollimon: 2013 Masters of Science in mathematics and statistics from Montana State University.

Project Results:

Bingham, B., M. Britten, L. Garrett, P. Latham, and K. Legg. 2010. Enhanced monitoring to better address rapid climate change in high-elevation parks: a multi-network strategy.

Natural Resource Report NPS/IMR/NRR—2011/285. National Park Service, Fort Collins, Colorado.

https://irma.nps.gov/App/Reference/DownloadDigitalFile?code=423640&file=NPS_Hig hElevParks_ClimateMonitoring_Strategy_NRR_2011_285

- Gould and others. 2012. Estimating Occupancy in large landscapes: evaluating Amphibian Monitoring in the Greater Yellowstone Ecosystem. Wetlands DOI: 10.1007/s13157-012-0273-0. https://irma.nps.gov/App/Reference/DownloadDigitalFile?code=464377&file=Gould_et_al_2012 Wetlands_Estimating_Occupancy_in_Large_Landscapes_Evaluation_of_Amphibian_Monitorin g_in_the_GYE_2193195.pdf.
- Irvine, K.M., C. H. Hollimon, E. Shanahan, and K. Legg. [date pending]. Conservation implications for synergistic effects of an introduced pathogen and native bark beetle on Whitebark pine. In peer review.
- Jean, C., M.T. Tercek, R. Daley, and C.W. Olsen. 2012. Greater Yellowstone Network: 2011 climate data summary report. Natural Resource Data Series NPS/GRYN/NRDS— 2012/409. National Park Service, Fort Collins, Colorado. https://irma.nps.gov/App/Reference/DownloadDigitalFile?code=460244&file=NPS_Cli mate_2011_GRYN_NRDS_nrss.pdf.
- Tercek, M., C. Jean, R. Daley, and K. Legg. 2013. Greater Yellowstone Network upland vegetation monitoring protocol: Narrative, version 1.0. Natural Resource Report NPS/GRYN/NRR—2013/623. National Park Service, Fort Collins, Colorado. <u>https://irma.nps.gov/App/Reference/DownloadDigitalFile?code=464291&file=NPS_GR YN_NRR_2013_623_BICA_UplandVegetationMonitoringProtocolNarrativeVersion1_0. pdf.</u>
- Various authors: 2011. The Great Northern Landscape Conservation Cooperative. Web Brochure dated April 2011. <u>http://greatnorthernlcc.org/sites/default/files/documents/GNLCC_Brochure_Web.pdf</u>