



Activities of the YGS

by Grant Abbott

The YGS completed another successful field season with 24 projects undertaken. They are listed below along with other ongoing or recently completed projects.

Bedrock mapping

1. Lee Pigage continued work in southeast Yukon near Toobally Lakes where studies last year revealed significant new information on lower Paleozoic structure and stratigraphy with implications for our understanding of the mineral potential of southeast Selwyn Basin.

2. Don Murphy continued work in Watson Lake map area, outlining the belts of volcanic rocks in Yukon-Tanana Terrane that host VMS deposits in the Finlayson Lake district, and determining both the internal structure of the terrane and its relationships to Slide Mountain Terrane and the rocks of the North American continental margin.

3. Maurice Colpron mapped in the Livingstone Creek area where a lode source for gold placers in the area has yet to be found. This work builds on previous studies of Yukon-Tanana Terrane farther north and will help to set the stage for a future mapping program immediately to the west in the northern Whitehorse Trough.

4. Steve Israel continued mapping in the Kluane Ranges to better define the setting of magmatic copper- nickel- platinum group element deposits like Wellgreen. This project is also investigating the possibility that Windy Craggy stratigraphy occurs in the project area by focusing on the relationship between Alexander and Wrangell terranes and the Triassic volcanic successions found within both terranes. A secondary study of neotectonics within and surrounding the Alaska Highway corridor is also underway in partnership with the US Geological Survey.

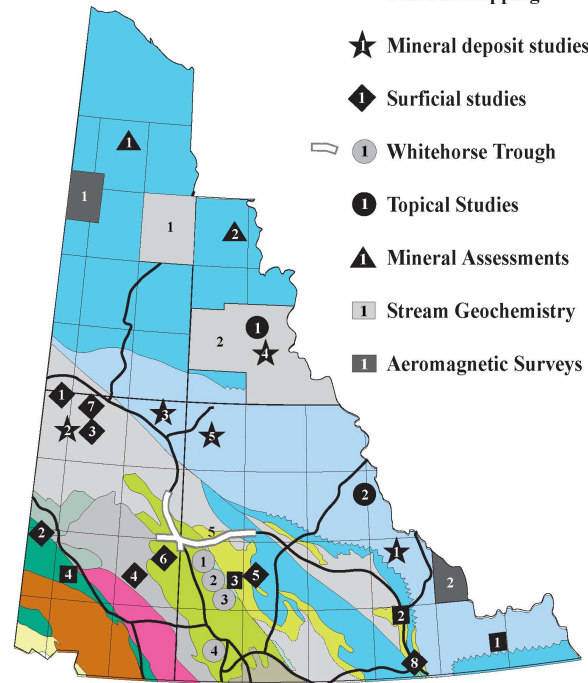
Mineral Deposit Studies

1. Craig Hart and Lara Lewis continued to gather data on tungsten and beryl properties for future compilations. Fieldwork in the Hyland River area concentrated on the numerous gold properties in this undermapped area that appear to be structurally controlled rather than intrusion-related.

2. Jim Mortensen (UBC) and Bill LeBarge are studying trace element characteristics of placer gold in the Klondike to identify distinct populations and potential lode sources.

3. John Mair (MDRU/YGS), who is undertaking a post-doctoral fellowship, is developing a database of the lithological, geochemical, and isotopic characteristics of Cretaceous igneous rocks in the Yukon

2005 Field Projects



to help to differentiate mineralized plutons from unmineralized ones.

4. Julie Hunt continued her studies of iron oxide-copper-gold occurrences associated with the Wernecke Breccias. This work is expanding on earlier research that identified lithological, structural and fluid compositional influences on mineralization in the Wernecke Mountains with a focus on uranium.

5. Jake Hanley (U of Toronto) with partial support from YGS is beginning a post-doctoral study at the University of Toronto of the evolution and generation of magmatic fluids and their relationship to gold mineralization.

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Activities of the YGS Continued...

Whitehorse Trough Oil and Gas Potential Project

1. Grant Lowey continued studies of the sedimentology and stratigraphy of the Laberge Group and Tantalus Formation.
2. Darrel Long (Laurentian U.) continued studies of the Lewes River Group and Tantalus Formation.
3. Steve Piercey (Laurentian U.) is studying the chemistry and origin of volcanic assemblages in the Trough.
4. Amy Tizzard (U. Victoria) is nearing completion of her M.Sc. thesis on the tectonic evolution of the western margin of Stikinia.
5. GSC/ YGS Seismic Survey across northern Whitehorse Trough is now processed and results will be published in various publications over the next year.

Surficial Studies

1. Bill LeBarge visited active placer mining operations throughout the Yukon for the purposes of sampling pay gravel and heavy minerals, completing stratigraphic descriptions, and updating the placer database. Ongoing studies by Bill, coordinated with Mark Nowosad of Energy, Mines and Resources Client Services and Inspections branch, will further define the relationship between water quality and placer sediment on the Klondike, Indian, McQuesten, and Sixtymile rivers and to put the information gathered in the study into a geological context.
2. Erin Trochim and Panya Lipovsky, in partnership with the GSC, began compilation of Yukon Department of Highways borehole data from the Alaska Highway corridor as part of a national permafrost database compilation. This data will assist with development of predictive models for permafrost distribution and allow testing of geophysical techniques for detecting permafrost.
3. Jeff Bond began a study of element distribution patterns in soil profiles on the Lone Star, Clip and Lucky Joe properties. This project will aid understanding of how to interpret soil geochemical data obtained from the unglaciated terrain of west-central Yukon.
4. Brent Ward (Simon Fraser U.) in collaboration with Jeff Bond and John Gosse (Dalhousie University) sampled boulders for cosmogenic dating in the Aishihik Lake area in an attempt to determine the age of the Reid Glaciation. This information is essential to developing a clear understanding of placer deposit evolution in west-central Yukon. This study also addresses broader questions pertaining to northwestern North America's climate history.
5. Jeff Bond began a glacial history reconstruction project for the Big Salmon Range in order to describe the ice-flow history for the McConnell glaciation. This will better enable mineral exploration companies to trace float and soil anomalies to their sources and also provide insights into placer potential for the Big Salmon Range.
6. Panya Lipovsky monitored an active permafrost thaw-related landslide near Carmacks. She also monitored turbidity levels in the sediment-laden creek issuing from the landslide, which drains into an important salmon spawning ground.

7. Panya Lipovsky collaborated with Antoni Lewkowicz (U. of Ottawa) on studies documenting the effect of extensive recent forest fires on slope stability in areas underlain by permafrost. Large numbers of active-layer detachment slides have already increased sedimentation into drainages surrounding Dawson and could impact efforts to monitor the effects of placer mining on water quality. Dr. Lewkowicz is also studying the origin and dynamics of thermokarst lakes and palsas in the Wolf Creek watershed and developing new permafrost mapping techniques in southwest Yukon.

8. Panya Lipovsky recently completed a 1:50 000 scale surficial map at Watson Lake as a contribution to a Department of Environment project to develop standards for a biophysical mapping framework for south east Yukon. Biophysical mapping is an important planning tool that integrates physical and biological parameters to allow systematic classification of land for forest management and other activities.

Topical Studies

1. Dejan Milidragovic under the directions of Dr. Derek Thorkelson (Simon Fraser U.) began a petrologic study of lamprophyre dykes in the Wernecke Mountains.
2. Luke Beranek (UBC) under the direction of Dr. Jim Mortensen began a Doctoral study of Triassic sedimentary overlap assemblages in central Yukon to better understand the timing and nature of terrane accretion in the Canadian Cordillera.

Regional Stream Geochemistry

1. GSC in collaboration with Geoff Bradshaw completed an area in north Yukon, west of Fishing Branch Territorial Park to assist with development of the North Yukon Regional Land Use Plan.
2. GSC in collaboration with Geoff Bradshaw completed a survey of the Flat River map area, south of Cantung mine. This area has known high potential for tungsten and gold. The results of both surveys will be released in early summer of 2006.

Regional Aeromagnetic Surveys

Funding was awarded by DIAND under the Strategic Initiatives for Northern Economic Development Program (SINED) for Aeromagnetic surveys in the Wernecke/Mackenzie Mountains (1) and Eagle Plains area (2). The surveys are expected to take place early in 2006.

Mineral/Oil and Gas Assessments

Geoff Bradshaw and Lee Pigage are participating in regional land use planning for (1) North Yukon and (2) the Peel River Watershed to address mineral and oil and gas potential respectively. Geoff undertook regional mineral assessments that included field work in both areas to better understand mineral potential. Lee helped to interpret existing oil and gas assessments. The North Yukon Planning Commission is aiming for a draft plan by summer of 2006, whereas the Peel Planning Commission is in the early stage of collecting baseline data.

Grant Abbott Appointed Director of YGS

Energy, Mines and Resources is pleased to announce the appointment of Grant Abbott to the position of Director of the Yukon Geological Survey (YGS), effective January 19, 2006. Grant becomes the first director of this recently formed branch.



“Grant has been with the YGS in its many incarnations for over 25 years and he has worked in the Yukon for more than 35 years,” said Lois Craig, Assistant Deputy Minister of the Oil and Gas and Mineral Resources division. “He is a valued and well respected colleague and we are very fortunate to have him on our team.”

Grant received his Masters in Science from Queens University in Kingston Ontario in 1977. He wrote his dissertation on the structure and stratigraphy of the Mt. Hunderere area in southeastern Yukon.

He began working in the Yukon in 1970 as a geologist with Archer Cathro and Associates when he discovered the Williams Creek Copper deposit. Over the decade Grant also worked as a geological assistant with the Geological Survey of Canada undertaking regional mapping, including fieldwork for his masters thesis at the future Sa Dena Hes Mine.

Grant first worked with the precursor to the YGS – Exploration and Geological Services Division of the federal government’s Northern Affairs Program – in 1980 as a minerals geologist. Since 1984 he acted as scientific authority for the Geology Program of the Canada-Yukon Mineral Development Agreement and subsequent federal funding agreements with Yukon government.

From 1997 to 2003, Grant held the role of regional manager of the division. Upon devolution of the federal Northern Affairs Program to Yukon government, he was elevated to chief scientist of the newly formed Yukon Geological Survey and then acting director, when the YGS became a stand-alone branch in 2005.

During his extensive time in the territory, Grant has authored and co-authored a plethora of publications, geological maps, geophysical surveys and abstracts.

In his position, Grant will be responsible for program content, planning and priority-setting; supervising 24 staff, including 17 professionals, in the scientific conduct of projects; setting scientific standards; liaison with the Geological Survey of Canada and other provincial and territorial Geological Surveys (Committee of Provincial Geologists, National Geological Surveys Committee).

Please join us in welcoming Grant as Director of the Yukon Geological Survey.

Yukon Geological Survey High Achievers



Craig Hart and Julie Hunt

Congratulations to Julie Hunt on completing her PhD at James Cook University, Queensland, Australia. She wrote her thesis on *The Geology and Genesis of Iron Oxide Copper-Gold Mineralisation Associated with Wernecke Breccia, Yukon, Canada.*

Julie Hunt presented at two prestigious events in Toronto in November, 2005: the Al Kulan Memorial Lecture at the University of Toronto, and a careers talk at the Bishop Strachan school.

Craig Hart too recently completed his PhD at the University of Western Australia. He wrote his thesis on *Mid-Cretaceous Magmatic Evolution and Intrusion-related Metallogeny of the Tintina Gold Province, Yukon and Alaska.*

Craig won two awards at this year’s annual meeting of the Geological Association of Canada (GAC). He won the Julian Boldy Certificate Award, which is given to authors of the three most significant and creative papers presented at the Mineral Deposits Division session. Craig’s paper was on classifying, distinguishing and exploring for intrusion-related gold systems. Craig also received a Distinguished Service Award for his outstanding contribution to GAC as editor of GEOLOG, the Association newsmagazine.

The YGS won the BC & Yukon Chamber of Mines Safety Award. It recognizes the achievement of completing one year of exploration activities without a lost workday accident.

New Publications, Databases, Maps, Open Files

Annual Reports:

Emond, D.S., Bradshaw, G.D., Lewis, L.L. and Weston, L.H., 2006. Yukon Exploration and Geology 2005. 339 p., \$10

Burke, M., LeBarge, W., Traynor, S., Abbott, G., Colpron, M. and St. Amand, J., 2006. Yukon Mining, Development and Exploration Overview 2005. 75 p., free.

Traynor, S. (compiler), 2005. Yukon Mineral Deposits 2005. 16 p., free.

Traynor, S. (compiler), 2005. Yukon Mineral Property Update 2004. 81 p., available on website only or in the Yukon EMR library.

Databases:

Deklerk, R. and Traynor, S. (compilers), 2005. Yukon MINFILE 2005 – A database of mineral occurrences. CD-ROM, \$30.

LeBarge, W.P. and Coates, J. (compilers), 2005. Yukon Placer Database 2005 – Geology and mining activity of placer occurrences. CD-ROM, \$30.

Geoscience Maps:

Bond, J., Morison, S. and McKenna, K., 2005. Surficial Geology of Carcross (NTS 105D/2), Yukon (1:50 000 scale). YGS Geoscience Map 2005-2, \$5.

Bond, J., Morison, S. and McKenna, K., 2005. Surficial Geology of Fenwick Creek (NTS 105D/3), Yukon (1:50 000 scale). YGS Geoscience Map 2005-3, \$5.

Bond, J., Morison, S. and McKenna, K., 2005. Surficial Geology of Alligator Lake (NTS 105D/6), Yukon (1:50 000 scale). YGS Geoscience Map 2005-4, \$5.

Bond, J., Morison, S. and McKenna, K., 2005. Surficial Geology of Robinson (NTS 105D/7), Yukon (1:50 000 scale). YGS Geoscience Map 2005-5, \$5.

Bond, J., Morison, S. and McKenna, K., 2005. Surficial Geology of MacRae (NTS 105D/10), Yukon (1:50 000 scale). YGS Geoscience Map 2005-6, \$5.

Bond, J., Morison, S. and McKenna, K., 2005. Surficial Geology of Whitehorse (NTS 105D/11), Yukon (1:50 000 scale). YGS Geoscience Map 2005-7, \$5.

Bond, J., Morison, S. and McKenna, K., 2005. Surficial Geology of Upper Laberge (NTS 105D/14), Yukon (1:50 000 scale). YGS Geoscience Map 2005-8, \$5.

Devine, F., Murphy, D.C., Carr, S.D., Kennedy, R. and Tizzard, A., 2005. Geological map of the southern Campbell Range (NTS 105H/3 SW), southeastern Yukon (1:20 000 scale). YGS Geoscience Map 2005-1, \$5.

Open Files:

Abbott, J.G. (ed), 2005. Yukon Geoscience Needs: Results of the third Yukon Geoscience Planning Workshop. YGS Open File 2005-4, 55 p., \$5.

Colpron, M. (compiler), 2006. Tectonic assemblage map of Yukon-Tanana and related terranes in Yukon and Northern British Columbia (1:1 000 000 scale). YGS Open File 2006-1, \$5

Colpron, M., 2005. Geological map of Livingstone Creek area (NTS 105E/8), Yukon (1:50 000 scale). YGS Open File 2005-9, \$5.

Fonseca, A. and Bradshaw, G., 2005. Yukon Mineral Deposit Profiles. YGS Open File 2005-5, available on website only or in the Yukon EMR library.

Israel, S., Tizzard, A. and Major, J., 2005. Geological map of the Duke River area (parts of NTS 115G/2,3,5,6,7), Yukon (1:50 000 scale). YGS Open File 2005-11, \$5.

Kennedy, K., 2005. Surficial Geology of Seagull Creek (Parts of NTS 105F/10 and 7, Yukon (1:50 000 scale). YGS Open File 2005-1, \$5.

Lipovsky, P.S. and McKenna, K., 2005. Local Scale Biophysical Mapping for Integrated Resource Management, Watson Lake (NTS 105A/2), Yukon. YGS Open File 2005-6, \$40.00, includes 2 maps (YGS OF 2005-7 and 8) and CD-ROM (YGS OF 2005-6(D)) with digital files of report, 2 maps, photos, database CD-Only \$30.00.

Lipovsky, P.S., McKenna, K. and Huscroft, C.A. Surficial geology of Watson Lake (NST 105A/2), Yukon (1:50 000 scale). YGS Open File 2005-7, \$5.

McKenna, K., Lipovsky, P.S. and Huscroft, C.A., 2005. Preliminary biophysical map of Watson Lake area (NTS 105A/2), Yukon (1:50 000 scale). YGS Open File 2005-8, \$5.

Mortenson, J.K. and Murphy, D.C. (compilers), 2005. Bedrock geological map of

part of Watson Lake area (all or part of NTS 105A/2, 3, 5, 6, 7, 10, 11, 12, 13, 14), southeastern Yukon (1:150 000 scale). YGS Open File 2005-10, \$5.

Osadetz, K.G., Chen Z. and Bird T.D., 2005. Petroleum Resource Assessment, Eagle Plain Basin and Environs, Yukon Territory Canada. YGS Open File 2005-2; also known as Geological Survey of Canada Open File 4922, 88 p., \$5.

Osadetz, K.G., MacLean B.C., Morrow D.W., Dixon J. and Hannigan P.K., 2005. Petroleum Resource Assessment, Peel Plateau and Plain, Yukon Territory, Canada. YGS Open File 2005-3; also known as Geological Survey of Canada Open File 4841, 76 p., \$5.

Geoscience Information & Sales

Most of these materials can be downloaded free of charge www.geology.gov.yk.ca.

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