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## Mark Piorecky M.Sc., R.P.Bio.

Mark is the co-founder of Valhalla Consulting Inc. And a Registered Professional Biologist (R.P.Bio.) with over 12 years of academic and professional work experience for a variety of industrial clients, government agencies, non-government organizations and environmental consulting companies. This diverse clientele has led to participation in projects throughout western Canada. His interest in threatened species and habitat selection issues has resulted in professional opportunities with numerous sensitive species (e.g. loggerhead shrike, piping plover, burrowing owl, tailed-frog, etc.), and led to the completion of his thesis on the abundance and habitat selection of northern pygmy and barred owls in the eastern slopes of the Alberta Rocky Mountains. Mark specializes in ornithology and 'sensitive' species surveys, although he conducts a wide variety of other field programs. Core projects consist of terrestrial biophysical assessments, environmental impact assessments, wildlife indicator species habitat modelling, identification of appropriate mitigation alternatives and technical report writing.

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## Areas of Speciality

- Sensitive species management and conservation
- Wildlife habitat selection and movement modelling
- Biophysical assessment
- Wildlife ecology, impact mitigation and monitoring
- Ornithology

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## Employment History

<b>Valhalla / Canyon Wren Consulting Inc.</b> , Coldstream - Lumby, BC	<i>Sept. 2006 – Present</i>
<b>Jacques Whitford – AXYS Environmental Consulting Ltd.</b> , Calgary, AB	<i>Sept. 2004 – Sept. 2006</i>
<b>Great Eastern Ecology Inc.</b> , New York, NY	<i>Jan. 2004 – June 2004</i>
<b>Independent Environmental Consultant</b> , Edmonton, AB	<i>June 2002 – Sept. 2003</i>
<b>Alberta Sustainable Resource Development</b> , Red Deer, AB	<i>April 2001 – March 2002</i>
<b>Alberta Conservation Association</b> , Edmonton, AB	<i>April – Aug. 1999 &amp; 2000</i>
<b>Bighorn Environmental Design Ltd.</b> , Hinton, AB	<i>April – Nov. 1998</i>
<b>Canadian Wildlife Service</b> , Edmonton, AB	<i>Jan. – March 1998</i>
<b>Geowest Environmental Consultants Ltd.</b> , Edmonton, AB	<i>June – Dec. 1997</i>
<b>Westworth Associates Environmental Ltd.</b> , Edmonton, AB	<i>April – May 1997</i>
<b>University of British Columbia</b> , Vancouver, BC	<i>Feb. – April 1997</i>
<b>North American Waterfowl Management Plan</b> , Edmonton, AB	<i>April – Aug. 1996</i>
<b>University of Alberta, Dept. of Renewable Resources</b> , Edmonton, AB	<i>April – Aug. 1995</i>

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## Education

<b>M.Sc. Resources and the Environment</b> , University of Calgary	2003
<b>B.Sc. Environmental &amp; Conservation Sciences</b> , University of Alberta	1996

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## Professional Associations and Committees

**R.P.Bio** – British Columbia Association of Professional Biologists (**APB**) and College of Applied Biology (**CAB**)

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## Select Publications

Piorecky, M.D., and D.R.C. Prescott. 2006. Multiple spatial scale logistic and autologistic habitat selection models for northern pygmy owls, along the eastern slopes of Alberta's Rocky Mountains. [Biological Conservation](#), 129: 360-371.

Piorecky, M.D., and D.R.C. Prescott. 2004. [Distribution, abundance and habitat selection of northern pygmy and barred owls along the eastern slopes of the Alberta Rocky Mountains](#). Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Report No. 91, Edmonton, AB. 26 pp.



## Select Professional Work Experience

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### Environmental Assessments

- **Ellison Subdivision Environmental Impact Assessment.** Valhalla conducted a detailed EIA, which included the identification of both terrestrial and aquatic Environmentally Sensitive Areas, impact determination and mitigation identification, as required by the Regional District of the Central Okanagan.
- **AltaLink 551L Transmission Line.** Valhalla conducted the wildlife portion of a CEAA Environmental Screening Report dealing with determining the impacts of tree-freeing sections of an existing transmission line ROW between Banff and Lake Louise.
- **Bear Mountain Wind Transmission Line Environmental Assessment.** As a requirement of the British Columbia Environmental Assessment Act (BCEAA) and the Canadian Environmental Assessment Act (CEAA), Valhalla personnel conducted wildlife surveys, habitat modelling, impact determination and report writing on the EA, for a proposed 7 km transmission line in Northern BC.
- **Canadian Lake View Estates Phase 12.** As a requirement of the City of Vernon's Environmental Development Permit Area approval process Valhalla personnel conducted an EA for a proposed residential development expansion. Existing vegetation and wildlife resources were assessed, and the extent of environmentally sensitive areas was determined. Project related impacts and site specific mitigation strategies, were then determined.
- **Town of Banff Recreation Multiplex Environmental Site Analysis.** As a member of the Bow Valley Environmental Consulting Group, Valhalla personnel conducted a detailed comparative analysis of wildlife resources and issues at two proposed multiplex recreation centre sites.
- **AltaGas CEAA Screening Environmental Assessment.** Valhalla personnel collaborated with two additional firms, conducting wildlife surveys, analysis, habitat modelling and report writing on a screening level EA, for a proposed 100 km sour gas pipeline in Northern BC and Alberta.
- **Canadian Pacific Railway Environmental Assessments.** Valhalla personnel conducted vegetation and wildlife components of the EAs at seventeen sites across Alberta, Saskatchewan and BC. Responsible for identification of sensitive and invasive plant locations, as well as conducting pre-construction assessments of wildlife habitat on or near the project footprint. Habitat assessment focused on waterfowl and sensitive species, including the following: northern leopard frog, plains spadefoot toad, great plains toad, swift fox, burrowing owl, ferruginous hawk, Sprague's pipit, loggerhead shrike and long-billed curlew.
- **Kearl Lake Oil Sands Project Environmental Impact Assessment.** As an employee of JW-AXYS I collaborated in developing the approach, implementing and writing the wildlife, habitat and biodiversity section of the EIA. Primary responsibilities included: development of regional and site-specific wildlife habitat models for selected wildlife species, modelling habitat availability at multiple development scenarios (base, project and future cases), the interpretation of model results and the assessment of project impacts at three spatial scales of resolution (species, community and landscape levels).
- **Detailed Site Assessment for a Proposed Nexen Sour Gas Exploration and Development Project.** Conducted the wildlife component of the DSA, for JW-AXYS. Responsible for documenting and reporting of existing conditions in the proposed project area. Special emphasis was placed on habitat characteristics, conditions and occurrence of sensitive species and species for which government-recommended timing and spatial restrictions on industrial activities have been developed.
- **Environmental Assessment for EnCana's Koomati Shallow Gas Well Drilling Program, Suffield Base.** Participated in the wildlife component of this JW-AXYS EA. The project identified key habitats for a number of sensitive prairie species (great plains toad, Ord's kangaroo rat, sharp-tailed grouse, burrowing owl, swift fox) and identified mitigation options.
- **Enbridge Gateway Pipeline Environmental Impact Statement.** As an employee of JW-AXYS, I was a primary collaborator in developing and implementing the approach to assessing impacts to wildlife from a pipeline proposed to run from Edmonton, AB to Kitimat, B.C. Primary responsibilities included: conducting selected baseline surveys, development of regional and site-specific wildlife habitat models for selected wildlife species (eg. caribou, moose, tailed frogs, northern goshawks, etc), modelling habitat availability, identifying and modelling barriers to movement (least-cost path analysis) and fragmentation



issues occurring at multiple development scenarios (base, project and future cases), the interpretation of model results, effects classification and the assessment of residual project impacts at multiple spatial scales.

### **Wildlife Ecology and Habitat Management**

- **BC MoE and MoF - Ecosystem Restoration Reconnaissance.** Valhalla conducted surveys at four sites with the aim of identifying appropriate restoration activities and methods of minimizing likely impacts to sensitive plants, ecosystems and wildlife species.
- **Kiewit – Toba/Montrose Hydroelectric Project: Songbird Nest Surveys.** Valhalla personnel conducted songbird nest surveys along transmission lines that were to be cleared for this IPP project. Active nests were marked, appropriate buffers were established, and nests were monitored to determine when clearing could safely proceed.
- **Husky Energy Inc. Wildlife Reconnaissance Surveys.** Valhalla personnel conducted ongoing wildlife surveys to assess the potential impacts of proposed wellsites, access roads and pipeline on Alberta's sensitive species, and to provide mitigation alternatives designed to minimize those impacts.
- **EnCana Foster Creek Thermal Recovery Project Wildlife Monitoring Program.** Collaborated in conducting field programs (winter track, nocturnal owl surveys) and reporting for the third year of a wildlife environmental monitoring program required as part of EnCana's terms and conditions of approval.
- **Sheldrake River Stream and Lake Habitat Restoration, Westchester County.** As an employee of Great Eastern Ecology (GEE), I participated in the initial assessment and identification of the following three project objectives: to remove sediments from Garden's Lake and enhance shoreline habitat; to stabilize stream banks along a stretch of the Sheldrake River as it crosses Bonnie Briar Country Club; and to create new fish, amphibian and avian habitat throughout the system using bio-engineering techniques.
- **Glen Cove Re-development Project, Long Island.** Participated in the conceptual phase of this GEE project, which involved designing the ecological, environmental and habitat enhancement strategy for the Glen Cove Harbour re-development plan. The plan is to create residential and commercial developments on two former Superfund Sites and a former New York State radioactive hazardous waste site, with the goal of creating, enhancing and restoring a variety of habitats including inter-tidal wetland, freshwater wetland, beach/dune habitat and upland habitat. Enhancement activities include installing artificial reefs and fish ladders to improve fish breeding habitat, converting former industrial buildings into tidal habitat, planting a variety of native plants to improve butterfly and bird habitat, and developing a two mile nature walk with an environmental education centre
- **Independent Environmental Consultant.** Conducted sensitive species surveys and developed mitigation alternatives for proposed pipeline routes and well sites. Species routinely surveyed for included: burrowing owls, ferruginous hawks, loggerhead shrikes, long-billed curlews, western spadefoot and Great Plains toads.
- **Alberta Sustainable Resource Development Piping Plover Recovery.** Performed several roles relating to piping plover recovery. These included: compiling and editing the "[Alberta Piping Plover Recovery Plan: 2002-04](#)" assistance in coordination and implementation of the [2001 International Piping Plover Census](#), deployment of a management program designed to increase the breeding success of endangered piping plovers through the use of predator nest enclosures, and securement over \$100 000 in support of provincial recovery efforts.
- **Cardinal River Coal Ltd. Cheviot Mine Environmental Assessment.** As an employee of Bighorn Environmental Ltd., I monitored breeding populations of harlequin ducks on the McLeod and Whitehorn rivers. Responsibilities included: stream surveys, banding adults and monitoring females through radio telemetry
- **Alberta Conservation Association Habitat Enhancement Program.** Enhanced elk winter foraging habitat, west of Beaver Mines Alberta, through manual thinning of encroaching aspen vegetation.
- **North American Waterfowl Management Plan.** As a N.A.W.M.P employee, I conducted avian productivity surveys and nest searches in an attempt to determine the effects of cattle grazing on the reproductive success of upland nesting bird species. Responsibilities included field logistics, preparation, data collection and equipment maintenance.



- **University of Alberta, Renewable Resources.** Examined habitat use of northern goshawks and barred owls within the Foothills Model Forest. Activities included vegetation surveys, blind watches of occupied nests, checking live traps, banding, radio collaring captured raptors and continual monitoring using radio telemetry.

#### **Ecological Site Classification**

- **Enbridge Gateway Pipeline Terrestrial Ecosystem Mapping.** Participated in the Terrestrial Ecosystem Mapping component of this JW-AXYS project. I was responsible for field navigation to remote sites, recording of aerial vegetation survey assessments and conducting habitat suitability assessments for a wide range of wildlife species, and life requisites.
- **B.C. Ministry of the Environment and Canadian Forest Products Ltd. Terrestrial Ecosystem Mapping.** Participated in several Terrestrial Ecosystem Mapping projects in central and northern British Columbia, as an employee of Geowest Environmental Consultants Ltd. I was responsible for field navigation to remote sites, determining transitions between Biogeoclimatic Ecosystem Classification (B.E.C.) zones and conducting habitat suitability and capability assessments, for a wide range of avian and mammalian species.
- **University of Alberta, Renewable Resources.** Completed vegetation surveys and site classification for all northern goshawk and barred owl nest sites in the Foothills Model Forest. Classification was made according to the Field Guide to Forest Ecosystems of West-Central Alberta (Corns and Anus 1986).

#### **Habitat Modelling and GIS Map Products**

- **MOTCA – Bear Creek Off-Highway Vehicle Recreation Area.** Valhalla was approached to assess wildlife resource values and provide management options to limit impacts to these resources during the formalization of vehicle staging areas, creation of new trails/access points and decommissioning/rehabilitating of others. This was accomplished by assessing the location, extent and ranking of Environmentally Sensitive Areas, initially within the Demonstration Project, and then extrapolating them to the entire recreation area.
- **Enbridge Gateway Pipeline Environmental Socio-economic Impact Assessment.** As an employee of JW-AXYS, I developed regional and site-specific wildlife habitat models for selected wildlife species (eg. caribou, moose, grizzly bear, marten, sharp-tailed grouse, short-eared owl, northern goshawks and coastal tailed frogs). This included: modelling of habitat availability, identifying and modelling barriers to movement (least-cost path analysis) and fragmentation issues occurring at multiple development scenarios (base, project and future cases) and the interpretation of model results, and residual project impacts at multiple spatial scales.
- **Kearl Lake Oil Sands Project Environmental Impact Assessment.** Adapted wildlife habitat models to correspond with available Alberta Vegetation Inventory data for the study area, and incorporated a dispersion coefficient for those species requiring different forage and cover habitats. Habitat availability was modelled at multiple development scenarios (base, project and future cases), and at three spatial scales of resolution (species, community and landscape levels).
- **Great Eastern Ecology Projects.** As an employee of Great Eastern Ecology I was responsible for all GIS data analysis and graphical representation in client work-products.
- **Independent Environmental Consultant.** As part of my Masters thesis and as a product for Sunpine Forest Products Ltd., I created logistic and autologistic regression models for northern pygmy and barred owls. Model variables and mapping outputs were prepared utilizing ArcGIS 8.3, ArcView 3.2 and various spatial datasets (i.e. Alberta Vegetation Inventory, DEM, road layers, survey point locations, etc.).
- **Canadian Wildlife Service.** Designed and compiled a shorebird database in MS Access for the Canadian Wildlife Service. When linked with GIS through ArcView this system provides quick access to historical and current species use of lakes, rivers, parks and other sites throughout the Prairie Provinces.

#### **Biophysical Inventory**

- **Manitoba Hydro Bipole III: Rare, Endangered and Neotropical Bird Surveys.** As a subcontractor to Wildlife Resources Consulting, Valhalla conducted breeding bird surveys along a 1300 km swath to assist in identifying hot spots for bird species of concern and thus aid in determining a route that will minimize adverse impacts of the Bipole transmission line to bird species of concern.



- **Alberta Biodiversity Monitoring Institute – Winter Tracking Surveys.** Together with Corvidae Environmental Consulting Inc., Valhalla conducted winter tracking programs in the Slave Lake, Chinchaga and Peace River areas. All 10 km transects were completed and GPS'ed by snow machine using methodologies identified within the ABMI Terrestrial Data Collection Protocols.
- **Yellowhead Mining Inc. - Breeding Bird Surveys.** Conducted breeding bird surveys as part of the Impact Assessment for this proposed open-pit mine near Vavenby, BC.
- **Finevera Renewables Wind Energy Project Baseline Surveys.** Valhalla personnel participated in conducting winter track surveys at numerous proposed wind farm sites. Surveys were aimed at determining turbine site placement resulting in the least impact to sensitive wildlife species, including woodland caribou.
- **Petro-Canada Sullivan and Savanna Creek Oil & Gas Field - Baseline Wildlife Surveys.** As an employee of JW-AXYS, I managed and participated in survey selection, design, execution and reporting of a full suite of baseline wildlife surveys. Surveys included the following: pellet group, forest hawk, amphibian / tadpole, breeding bird, winter tracking and harlequin duck surveys.
- **Imperial Oil Resources Mackenzie Valley Pipeline – Shorebird Nesting Surveys.** As an employee of JW-AXYS, I conducted shorebird nesting surveys on plots distributed throughout proposed development areas within the Mackenzie River Delta
- **Enbridge Gateway Pipeline Baseline Study.** Conducted coastal tailed-frog and northern goshawk broadcast surveys according to protocols identified by the Resources Information Standards Committee, conducted data analysis and completed the coastal-tailed frog technical data report.
- **Kearl Lake Oil Sands Project Baseline Study.** Took part in winter ungulate aerial surveys and spring toad surveys, conducted data analysis and concluded the baseline reporting.
- **Independent Environmental Consultant.** Consulted on a variety of environmental projects for private clients, including Alberta Fish & Wildlife ([Loggerhead Shrike Inventory](#)), Athene Environmental Ltd. (burrowing owl trend block surveys, City of Lethbridge proposed expansion on a local coulee) and Harbinger International (submissions of 2 and 3 D pipeline projects for provincial approval).
- **Alberta Sustainable Resource Development Status and Distribution Determination.** As an employee of ASRD and the Alberta Conservation Association, I acted as crew lead on a number of projects designed to increase provincial population status and density knowledge of specific species. We conducted surveys for and/or collected: [aquatic gastropods](#) in Alberta's Parkland Natural Region, Virginia and yellow rails at historic and probable occurrence sites throughout Alberta, great horn owl pellets throughout the province to determine small mammal distributions.
- **Luscar Sterco Ltd. Coal Valley Mine Proposed Site Expansion.** As an employee of Bighorn Environmental Ltd., performed breeding bird surveys, pellet-browse transects and general wildlife sign surveys to determine baseline wildlife use of the proposed expansion area.
- **Swan Hills Waste Treatment Plant.** As an employee of Westworth and Associates Ltd, I participated in an intensive small-mammal trapping program designed to monitor tissue contaminant levels at various permanent sampling locations.
- **University of British Columbia.** Conducted winter bird surveys with the goal of discerning the long-term effects of forest fragmentation on avian diversity and density within the AI-Pac FMA area. Responsibilities included field logistics, preparation, data collection and equipment maintenance.
- **University of Alberta, Biological Sciences.** Performed raptor trapping and banding, on a project designed to monitor raptor population changes due to forest fragmentation.

#### **Additional Technical Reporting**

- **Restoration Brochure and Website, Westchester County.** While at Great Eastern Ecology, I was instrumental in designing a brochure and website summarizing the status of all restoration projects and activities throughout Westchester County. The brochure will be distributed to visitors of all parks in the county. The website is accessed over 10 million times per year. [Link](#)



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## Skills and Certifications

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### Fieldwork Skills

- Aerial surveys (ungulate, raptor nesting, etc.)
- Amphibian breeding surveys
- Breeding bird surveys
- GPS/aerial photo navigation
- Helicopter safety awareness
- Mist-netting/bird banding
- Small mammal trapping/tagging
- Vegetation and community identification
- Winter snow tracking

### I.T. Skills

- GIS, CAD (ArcGIS, AutoCad)
- Web page development
- Office suite competency (Word, OpenOffice)
- Statistical analysis software (R, SPSS)

### Courses and Certificates

- ATV and Snowmobile Safety Training
- Bear Awareness Training
- Ecological Approaches to Invasive Plant Management
- Environmental Monitoring for Construction Projects
- Erosion and Sediment Control
- Riparian Area Regulation
- Wildlife /Danger Tree Assessor – Parks and Rec Module
- Standard First Aid and CPR Level C
- Swiftwater Rescue
- Wildlife /Danger Tree Assessor – Parks and Rec Module
- WHMIS/TDS