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An opportunity cost model for species at risk within Saskatchewan's milk river watershed

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Species at risk recovery strategies and action plans and their associated cost-benefit analyses have previously been completed on a species by species basis under the Species at Risk Act (SARA). The quality of cost-benefit analyses varies widely from species to species and often either benefits or costs, or both, are poorly accounted for in species' recovery strategies and action plans. The multiple species at risk (Multi-SAR) recovery strategy within Saskatchewan's Milk River Watershed provides a unique opportunity to conduct an in-depth analysis of the costs (both direct and opportunity costs) of protecting multiple species' habitat within the dry mixed grass and mixed grass prairie of south-western Saskatchewan. MARXAN (Marine Spatially Explicit Annealing) and ArcGIS 10 computer software are used to determine a conservation strategy that will secure the future of the area's species at risk at the lowest possible cost given the current information on oil, natural gas, and agricultural land values; beneficial management practices and their costs; current land use; species' threats; and species' habitat distribution. The result is a detailed understanding of the real costs incurred when habitat is protected using different stewardship initiatives. There are huge cost-savings possible if habitat designations for species are planned simultaneously and make use of overlapping habitat areas; the reduced costs of simultaneous planning are especially large if larger habitat patches are required for species at risk. While costs and benefits of species designation and protection are not legally required at the early stages (listing, recovery strategy creation, and critical habitat designation) of species protection under the Species at Risk Act, this study suggests the consideration of costs in the early stages of planning could improve the efficiency of habitat designation and protection.