

Assessing Ecosystem Services and Biodiversity

The Need for Assessment

As in any market, it's important for buyers and sellers to know what is being bought and sold. Currently, markets exist for ecosystem services such as wheat and timber, where there are clear economic signals for supply and demand. There are other ecosystem services that are valuable to our well-being, such as water purification and pollination, however, we lack mechanisms to value them in a marketplace. A market approach is important because it can help us make better land use decisions, can encourage sustainable practices and can diversify the economy through economic incentives for desired ecosystem services and biodiversity. In order to value ecosystem services and biodiversity in a market, we need to better understand the supply and value of them.

To address this challenge, the Alberta Biodiversity Monitoring Institute (ABMI) has developed the Ecosystem Services Assessment (ESA).

Ecosystem Services Assessment

The Ecosystem Services Assessment uses models to measure and map the supply and the value of ecosystem services and biodiversity across Alberta. The models are used to simplify complex information such as number of species, ecological processes and human influences to measure the ecosystem services we expect to find in that landscape and then also predict future supply and value of those services if a management action was implemented. We can use these model simulations to make informed business decisions for our farms, or, more broadly, for better land-use decisions overall.

The ES assessment can be portrayed as a map that shows the environmental, social and economic conditions of a particular landscape or area of interest. For example, for an ecosystem service such as pollination, the map shows and estimated proportion of annual canola yield (economic condition) that can be attributed to pollination by wild bees (environmental condition). The assessment can help us identify where something is being produced, who are the people using it and what the cost is to produce it. By creating several ES maps in the same region, we can see a suite of services and compare and contrast them to determine effects of a certain management action. To date, ABMI has assessed water purification, pollination, forest timber production and carbon storage, rangeland forage production and carbon, and biodiversity.

Alberta has world-class monitoring and information systems that can be used to map and measure ecosystem services. We have the ability to help land managers and government make informed decision to manage our landscapes in a way that can grow our industries and achieve environmental outcomes.

Increased Understanding of Beef Production Impacts on Biodiversity

New knowledge is needed to increase understanding of the positive and negative impacts on biodiversity from producing beef. Grazing native rangeland and pasture can increase biodiversity, and is important for some at-risk species. Researchers from the ABMI, the University of Alberta, the Government of Alberta, and Agriculture and Agri-Food Canada are assessing biodiversity responses to livestock grazing in Alberta's grasslands. This project uses existing biodiversity and landscape data combined with producer information on grazing management system to determine the relationship between grazing system and biodiversity. This new knowledge can be used to make better decisions when it comes to land management and/or regional planning. It would also be relevant information for beef producers to participate in a biodiversity or conservation offset program, should the opportunity exist in the future. Through this assessment, we will improve our understanding of the gains and losses of biodiversity (supply), we'll be better prepared to manage our landscapes, and be in a position to maximize opportunities for market-based incentives including a sustainable beef industry.

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