Integrating pastoral and biodiversity values in the high country

A MAF Sustainable Farming Fund research project with financial support from the High Country Accord Trust, High Country Section Federated Farmers and Merino Inc.

The project in summary

This project is evaluating the role of whole-property management plans as the basis for ensuring long-term sustainable management of the different values (economic, biodiversity, etc) that occur within a high country property without the need to split the property between Crown and private (freehold) ownership and control. This newsletter provides a summary of project progress during 2005 (see www.highcountryaccord.co.nz/biodiversity/ for further details).

Management planning

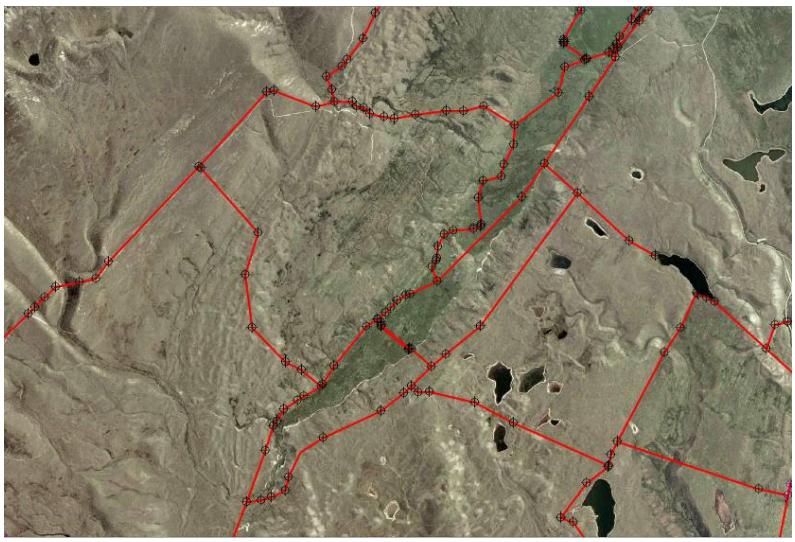
Considerable work has gone into developing the framework for whole-property management planning, with presentations on this being made to two high country farming meetings. Whole-property management plans provide many advantages to the conservation and economic use of high country land, and are also applicable to other farming systems (e.g., hill country sheep and beef). These plans formalise existing best-practice, and can be used for resource consent applications and as a key component for meeting the requirements of future industry environmental accreditation schemes. Whole-property management plans also provide a means to show how a high country property can be managed to protect a range of values without having to divide the property between public conservation land and freehold land.

Whole-property management plans outline the visions and goals for the property, the likely constraints to management, the management tools that will be used (including QEII National Trust covenants), and the key role of monitoring in assessing the success of management in sustaining the range of values that are present on the property – so the plans need to provide as much detail on farm management practices (e.g., pasture development) as they do on biodiversity management (e.g., wetland restoration).

To produce a whole-property management plan, good information is required on the values present on the property. Much of our work over the last six months has been on collating biodiversity and farm management data for the two study properties. A template for the preparation of whole-property management plans will be produced during 2006. The aim of this is to outline an approach that can be readily implemented by high country farmers.

Fence-line mapping

A core unit of farm management is the paddock or block, which on a high country property can be in excess of 1000 ha. Good information on fence-line position enables the accurate calculation of block areas. We have been using ground- and helicopter-based surveys using a



Global Positioning System (GPS) to accurately map fence-lines. GPS works by calculating the observer's location relative to the position of 4-8 satellites and under optimal conditions can be accurate to within 30 cm. Of course using a helicopter reduces this, but even when the helicopter hovers over the fence post, measurement errors are still usually less than 3 m. Once GPS mapping of fence-lines on our two study properties has been completed we will produce a report summarising the approximate costs of undertaking a GPS fence-line survey for a typical high country property.

Our GPS data has then been entered it into a Geographical Information System (GIS) called MapInfo. MapInfo enables us to graphically display a wide range of spatial data including fence-lines, plant communities, soil types, animal and plant pest densities, and stocking rates. Using the GIS we can then easily calculate block area, as well as a wide range of other variables (e.g., the area of different vegetation or soil types within each block). GIS, which has much greater flexibility than traditional farm mapping packages, has huge potential for high country farmers as a means to display management inputs (e.g., AOSTD) and to provide contractors with precise data on where to work (e.g., the coordinates for an aerial weed spraying operation can be taken from the GIS and entered directly into the aircrafts GPS system to ensure that the correct area is treated). We have developed GIS models for our two study properties and are continuing to add to these as further data comes available.

Habitat use by sheep in summer grazing blocks

We have now fixed four collars with inbuilt GPS recorders onto merino weathers at Otematata Station. These collars record the sheep's position at 20-minute intervals and will be left on the sheep while they are in their summer grazing block, being retrieved during the autumn muster. The information from the collars, combined with vegetation mapping of the summer grazing block, will enable us to better understand the way in which sheep use large blocks with a range of vegetation types present. Once the initial Otematata study has been completed, the collars will be shifted to sheep on other high country blocks.

Further information

Further information on the project can be found on our web site: www.highcountryaccord.co.nz/biodiversity/
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