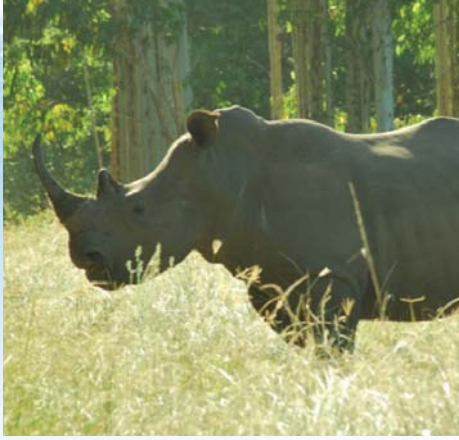
Discovering the Ecosystem Value of Ecological Networks in Developed Landscapes



Rhino in front of Mondi plantation

The business case

High-yielding commercial forestry plantations provide the sustainable raw material for Mondi's pulp mill in South Africa. The implementation of Forest Stewardship Council – FSC™ – certification and New Generation Plantation (NGP) principles have minimized the impact of these plantations on biodiversity and freshwater systems, but careful mitigation of these impacts is required. Ecological networks are proving to be an important mitigation factor. As part of a commitment to land and freshwater stewardship, Mondi is demonstrating responsible practices to its stakeholders because securing access to sustainable fiber is fundamental to its business.

The issue

Mondi is an international paper and packaging group with operations across 28 countries. The Group's key operations are located in central Europe, Russia and South Africa. Mondi is fully integrated across the paper and packaging process, from the growing of wood and the manufacture of pulp and paper (including recycled paper), to the conversion of packaging papers into corrugated packaging, industrial bags and coatings.

Mondi's ecological networks are composed of remnant natural land set aside for the mitigation of any negative effects of intensive land use. These networks consist of large-scale, interconnecting linkages (corridors or stepping-stone patches) and nodes (mini or true nature reserves) that together play an important role in conserving ecological connectivity across the landscape. The networks also create refugia in which organisms can survive. They help to reduce the isolation of populations or even individuals, thus allowing for gene flow, reducing founder effects (the loss of genetic variation that occurs when a new population is established by a very small number of individuals). Ecological networks also facilitate the recolonization of areas after localized species extinctions. This reduction of isolation and fragmentation helps to prevent ecological degradation in the long term, thereby mitigating further biodiversity loss in a production landscape.

Securing access to sustainable fiber is fundamental to Mondi's business and the responsible management of 307,000 hectares of FSC™ certified land in South Africa, of which 203,000 hectares are commercial forestry plantations, is a company priority. Much of the non-commercial land comprises remnants of natural ecosystems (e.g. wetlands, riparian habitats, grasslands and indigenous forests) that have been set aside. The importance of these remnants to sustaining biodiversity, and for commercial production within the production landscape, is paramount.

Many of the Aichi biodiversity targets can be addressed using ecological networks. For example, these networks can help to ensure ecological function and reduce the effects of habitat fragmentation and they can also provide opportunities to address the underlying causes of biodiversity loss by putting people working in the production landscape in contact with biodiversity. In the production landscape, particularly agricultural and forestry landscapes, ecological networks can contribute to the sustainability of both biodiversity and the crop being produced, at local and regional scales. They can also be used to protect specific natural resources or ecosystem services against pressures; for example, water loss, climate change and alien invasive species, and they can serve to protect individual threatened species.

Despite the substantial potential commercial and biodiversity value of ecological networks, remarkably few have actually been established and managed, with the notable exceptions of the Pan European Ecological Network (PEEN), the Greenways in China and the ecological networks within the commercial timber plantations of South Africa. Research is emerging that demonstrates the add-on conservation value that

ecological networks provide for neighboring protected areas, but further research into the ecological function and processes within the networks is required.

The response

Mondi has been engaged in supporting the science research into the effective design and management of ecological networks, which is making a significant contribution to land and freshwater stewardship. Mondi's cooperation with researchers at Stellenbosch University on the topic of biodiversity issues in ecological networks spans almost two decades of studies and field experiments on Mondi's land. More recently, three years of intensive research by a team of scientists based at the university has revealed ways in which these networks help to meet a range of the Aichi Targets.

The results

Contact between people and nature is essential to foster a sense of ownership and respect for biodiversity. South Africa is a country renowned for its large mammal biodiversity, yet many of the poorer and socially disadvantaged people never come into contact with living animals. Some of Mondi's plantations in the northern part of the KwaZulu Natal province are home to a range of large game, including rhino, buffalo, zebra and elephant. This creates opportunities for local forestry workers to observe these charismatic large mammals. Furthermore, in a country where ecotourism is targeted at the higher income groups, allowing the general public access to these ecological networks will enable more people to experience these animals. The networks also provide opportunities for traditional use of grasslands and wetlands, for purposes such as reed and grass harvesting (to make baskets and thatching) or cattle grazing, allowing the local communities to use land that would normally be closed off to them.

After four years of extensive research in to the value, functioning, design and management of Mondi's ecological networks and the adjacent protected or high conservation areas, the *Mondi Ecological Network Programme* team, based in the Department of Conservation Ecology and Entomology at Stellenbosch University, has developed a multi-taxon database with 29,000 records. This research has been on plants, large mammals, birds and the hyper-sensitive and resource-dependant arthropods. Their conclusions are that ecological networks are effective at conserving biodiversity and ecosystem function, provided they are well designed and managed, to provide good quality habitat. Measuring ecological networks against their ability to contribute to or meet Aichi Targets is a proving to be a very useful way of illustrating the real values of ecological networks in a production landscape.

Giraffes within an Ecological Network on the edge of a Mondi SQF plantation block. Photo credit: Samways /Pyke

FURTHER INFORMATION
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