

# Biodiversity

## Why was Biodiversity a Material Topic in 2015?

Global Context: Protecting and enhancing biodiversity, which is the abundance and variety of living organisms and ecosystems in nature, is integral to global sustainability. Many of the world's ecosystems are being altered, and loss of biodiversity is a concern. As recently outlined in the OECD Environment in 2015 Report, there is increasing evidence that ecosystems will be challenged over the long term to continue providing essential services such as food provision, soil formation and climate regulation due to ongoing environmental degradation.<sup>15</sup>

### Industry Context

Mining activities have the potential to impact biodiversity and to alter ecosystems in a significant and highly visible way. Direct impacts can result from any mining activity that involves land disturbance or discharges to waterbodies or the air. Indirect impacts can result from social or environmental changes that are induced by mining operations, particularly when mining opens up an area for other economic activities and increased habitation. In cases where mines are developed in landscapes where other pressures on biodiversity are present, the potential for cumulative impacts must also be considered.

Regulatory requirements are changing in response to widening recognition of these impacts on biodiversity, including requirements to tailor mine reclamation to meet requirements of wildlife and plants of greatest conservation concern, and requirements to implement biodiversity offsets to mitigate impacts that cannot be fully addressed through avoidance, minimization and rehabilitation.

Responsible mining companies also can create significant opportunities to achieve positive impacts on biodiversity, and on people's ability to benefit from and enjoy nature. This can include the protection and restoration of ecosystems and sharing expertise to improve biodiversity management.

### Teck Context

All our operations are adjacent to or within areas of high biodiversity value, including tropical and arctic areas, boreal forests and deserts. Communities near our operations depend on the land, plants and animals around them for their quality of life, livelihoods and leisure activities. Indigenous Peoples rely on the land to maintain traditional ways of life. Our COIs expect us to contribute to the conservation of biodiversity and to work collaboratively with them to develop integrated approaches to land use. Effectively managing biodiversity is integral to meeting regulatory and permit requirements and maintaining community support for our activities.

We recognize that our activities have the potential to impact biodiversity and to alter ecosystems in a significant way in the regions where we operate, which can affect both individual species and the provision of critical ecosystem services that communities of all species rely on. It is therefore important for us to operate in a manner that minimizes and mitigates our impacts on biodiversity. Our goal is to have a net positive impact on biodiversity.



### What is in this Topic?

Includes discussions of management approach and performance related to anticipating and minimizing impacts on high biodiversity value species and ecosystems, as well as our approach and performance regarding remediation.

### Performance Highlights

# 100%

of operations developed biodiversity management plans focused on our long-term vision of having a net positive impact.

Continued our investment in biodiversity research projects and partnerships, including caribou projects near our Quintette project and native plant collection and archiving projects with the Royal British Columbia Museum.

### Learn More

United Nations Environmental Programme: [Biodiversity Report](#)

Convention on Biological Diversity: [Global Biodiversity Outlook](#)

November 2014 ICMM Biodiversity [Performance Review](#)



# How Does Teck Manage Biodiversity?

## Our Targets and Commitments

We are working to achieve a net positive impact on biodiversity in areas affected by our activities, to implement biodiversity management plans for each of our operations and to develop net positive impact targets for exploration, construction and closure stages.

## Perspective on Biodiversity

"As part of our work to protect lands in the East Kootenay region of British Columbia, we identified six key parcels. In 2013, Teck purchased two parcels for the purpose of conservation, Alexander Creek and Flathead Townsite, which were at the top of that list. This conservation initiative by Teck is an important legacy for the entire region. Their commitment to having a net positive impact on biodiversity shows that it is possible to have both a world-class environment and world-class resource development. We continue to engage with Teck, the Ktunaxa people, the Nature Conservancy of Canada and the Nature Trust of British Columbia to share and enhance knowledge of these lands to help effectively manage them long-term."

Harvey Locke, Yellowhead to Yukon Conservation Initiative and John Bergenske, Wildsight

We work to minimize our footprint, mitigate our impacts, reclaim our lands for the use of future generations, and continually research and monitor our environments. Our work in biodiversity is integrated into company-wide strategies and standards and informed by engagement with communities. We focus on respecting protected and high biodiversity areas, achieving a net positive impact, developing biodiversity management plans and reclamation.

## Integration with Strategies and Standards

Biodiversity is considered throughout all stages of our business; we put this into practice through comprehensive environmental management systems and tools such as our HSEC Management Standards, which call for specific action with respect to biodiversity, land and water.

In line with our sustainability strategy and biodiversity goals, our approach is to carefully assess how our activities can impact biodiversity prior to disturbance, to develop a biodiversity baseline, and to implement site-specific plans that minimize our impacts, from exploration through to closure. The actions we use to achieve these goals include progressive reclamation, the use of native vegetation species (with seed from local sources where feasible), and using the most recent research and techniques.

## Engagement with Communities

Through engagement with our COIs, we integrate interests and partner with NGOs and government to inform our approach to biodiversity conservation. Biodiversity and land use/access is particularly important to Indigenous Peoples near our operations. For example, at Red Dog Operations, access to land/water and time to hunt during traditional hunting season are priorities that we support through our subsistence committee with NANA.

## Respecting Protected and High Biodiversity Value Areas

Protected areas include those protected by national or regional law or designated by international organizations, including United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites and International Union for Conservation of Nature (IUCN) category Ia, Ib, II, III or IV protected areas.<sup>16</sup> High

biodiversity value areas have features that provide essential ecosystem services relied on by humans and animals, an abundance of rare, vulnerable or endemic species, and/or large areas of relatively intact natural habitat.

Using a combination of databases to identify global conservation priorities, we have identified protected areas, areas of high biodiversity value, and species at risk that occur within 25 kilometres of our operations and major development projects. We determined that these characteristics exist within or adjacent to all of our operations; this information is an important input into the development of biodiversity management plans for each operation. Each of our operations have occurrences of species at risk within and adjacent to the operation. Some examples include the olive-sided flycatcher (a local bird) at all of our Canadian operations, whitebark pine at many of our southeastern B.C. steelmaking coal operations, and the guanaco (related to the llama) at some of our Chilean sites.

As a member of the ICMM, we are committed to not explore or develop in UNESCO World Heritage Sites. Currently, none of our operations or projects are located within areas protected by UNESCO or IUCN; however, the road between Red Dog Operations and its port facility passes through the Cape Krusenstern National Monument, an IUCN category III protected area.

## Achieving a Net Positive Impact

As a responsible resource company, we create significant opportunities to achieve positive impacts on biodiversity, and on peoples' ability to benefit from and enjoy nature. Our vision for biodiversity management is to achieve a net positive impact (NPI) on biodiversity in areas affected by our activities.

At our sites, we implement the mitigation hierarchy, a key framework that we use to achieve our vision of NPI on biodiversity. To track and demonstrate our net positive impacts, we develop a “ledger” to account for negative and positive impacts on biodiversity. We reduce our impacts on biodiversity through avoidance, minimization and rehabilitation. We then aim to achieve a net positive impact through the use of offsets. This approach is guided by the following principles:

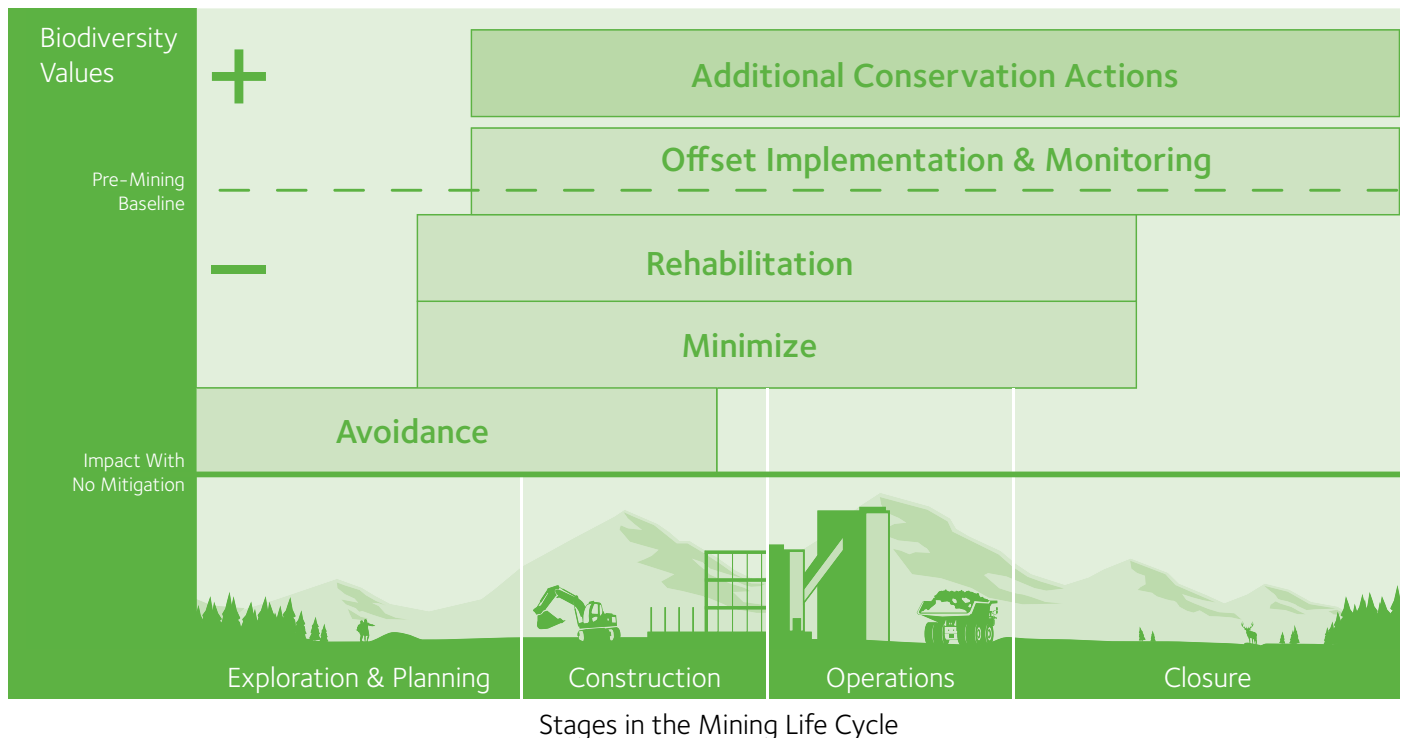
- **Avoid impacts where possible** — Whenever possible, we avoid biodiversity impacts. In some cases, biodiversity features are so valued and/or vulnerable that they may require significant changes in our plans in order to protect critical areas.
- **Minimize impacts that are unavoidable** — At all times, we minimize impacts that are unavoidable, adopting best practices in mine operations in order to reduce the severity of our impacts.
- **Rehabilitate affected areas** — On a progressive basis, we rehabilitate areas

in order to re-create biodiversity values. Rehabilitating the land means returning it to a stable ecological state that does not contribute substantially to environmental deterioration. Reclamation practices can replace much or most of the diversity of the natural habitats that existed prior to mining.

- **Offset any residual impacts** — Even with the best reclamation practices, there are limits to what can be achieved, and it may not be possible to replace all of the important biodiversity features that our mines impact. For these features, we design and implement biodiversity offsets to move towards a net positive impact on biodiversity.

Implementing our biodiversity mitigation hierarchy also requires the consideration of cumulative effects to ecosystems caused by other parties’ past, present and reasonably foreseeable future activities. We plan and implement protective or restorative actions based on our potential contributions to cumulative effects, and we adjust our actions based on the results of ongoing monitoring and scientific studies.

Figure 24: **Implementing our Biodiversity Mitigation Hierarchy to Achieve a Net Positive Impact**



# How Does Teck Manage Biodiversity?

## Snapshot

### Quebrada Blanca Implements New Monitoring Technologies to Help Protect Local Ecosystems

Our Quebrada Blanca Operations in Chile recently implemented two systems to enhance our ability to monitor and protect biodiversity at our operations, using new environmental monitoring camera technology.

The first piece of technology uses hyperspectral sensors to produce detailed aerial photographs that capture more colours than visible to the human eye. These intense colours are indicative of the level of chlorophyll found in the plants, allowing for highly accurate species identification.

The second piece of technology uses movement-activated sensors to capture photographs of wildlife, both day and night, revealing the presence and behaviours of diverse species such as pumas, foxes, birds and amphibians. Combined, these new monitoring tools provide our team with valuable information to build a complete picture of the local environment, enabling us to focus our efforts and better conserve these ecosystems.

## Biodiversity Management Plans

In 2015, we accomplished our goal to develop biodiversity management plans (BMPs) at all of our current operations that set out how NPI would be achieved at all our operations. biodiversity management plans include:

- A list of ecosystems and biodiversity elements at the site
- A summary of the risks and impacts that the site and its activities pose to these elements
- A plan, developed using the biodiversity mitigation hierarchy, that demonstrates how the site will manage its impacts to achieve net positive impact for each element
- A list of activities and resources required to implement the plan

In addition to meeting the commitments in our sustainability strategy, our biodiversity management plans also serve to meet aspects of our internal Health, Safety, Environment and Community (HSEC) Management Standards and the Mining Association of Canada's Towards Sustainable Mining Biodiversity Conservation Management Protocol.

To create the BMPs, operations and advanced projects collect biodiversity information, conduct a preliminary identification of risks and existing mitigation actions, conduct gap analyses and create workplans. We identify risks based on a risk register that weights risk based on biodiversity, social/community, regulatory compliance and reputational factors. Some of the most significant risks identified across our company during biodiversity management planning include species at risk or of special concern, viability of subsistence activities, and our contribution to cumulative impacts on ecosystems such as old-growth forests.

Our biodiversity management plans are designed to mitigate these risks. We address the protection of species at risk and those species that may be more common, especially those that are highly valued due to other factors, such as subsistence use by Indigenous Peoples. For example, our steelmaking coal operations are located in the habitat of grizzly bears, a species of special concern, and we work to understand, conserve

and restore their habitat. Habitat mitigation includes ongoing reclamation activities conducted at each site as well as multi-partner conservation initiatives. To learn more about how we are working to conserve habitat, such as purchasing 7,150 hectares of land near our operations, [see this case study](#).

## Reclamation

Responsibly closing our sites and managing our legacy properties plays an important role in protecting biodiversity on the lands where mining once took place. Through exemplary reclamation practices, we can replace much or most of the structural and compositional diversity of the natural habitats that existed before we developed our mines. As such, our reclamation activities are making a contribution towards achieving a net positive impact on biodiversity.

While we are still operating at a site, we progressively reclaim portions of the mine site that are no longer required for mining purposes. We implement best practices in reclamation and have created an internal community of practice to share knowledge across our operations. We apply the principle of "equivalent land capability" to reclaim land to the equivalent capability that will support species that live in the area, according to reclamation and land use objectives. We have also implemented research programs to help ensure that we adopt best practices. Our reclamation activities focus on conserving biodiversity and include the development of diverse wildlife habitats, annual wildlife surveys, documentation of wildlife using trail cameras, aerial seeding in mined-out pits, and the development of tracking databases to monitor rare and unusual wildlife sightings.

To plan for these future reclamation obligations, we ensure that we allocate sufficient resources for reclamation in our mine budgets. For more information about our approach to mine closure, please see page 49.



## Case Study

### Supporting Mutual Benefit: Red Dog Operations and the Noatak Seed Collection Pilot Study

Unemployment in the Northwest Arctic Borough where our Red Dog Operations is located is higher than the state-wide average in Alaska, and employment opportunities are expected to decrease across the state in 2016 due to the challenging economic climate.

To help address these challenges and provide economic contributions to communities, Teck and the local Indigenous Iñupiat people have been piloting a unique seed collection program that could provide people a local opportunity to supplement their income and share traditional knowledge while also playing a role in reclamation at the mine.

When we work to reclaim an area after mining has concluded, we seek to create a self-sustaining ecosystem, including revegetating areas using native plants where possible to support traditional land uses and local wildlife. At Red Dog Operations, we have historically purchased plant seeds for environmental reclamation activities from commercial seed providers. However, with no provider of seeds local to the mine's region, we have had to buy seeds harvested further south. Because these seeds are in a different climatic zone, they don't grow as well as seeds indigenous to the Arctic, so we have been working to find a local source of indigenous seed varieties to support reclamation. Additionally, many of the indigenous plant species are not available commercially.

The Noatak Seed Collection Pilot Study was initiated in 2014 — led by the Alaska Plant Materials Center in partnership with Red Dog, NANA Regional Corporation and local residents — to look for a way to address this challenge. Local residents who join the

seed project harvest local plant seeds, which are then stored by Red Dog for use in future reclamation work.

The Noatak Seed Collection Pilot Study has the potential to help create flexible employment opportunities for some residents in the Northwest Arctic region while also benefiting Teck's reclamation efforts through increased use of native seeds, which have long-term climatic adaptations that will enable disturbed land to be restored as closely as possible to its original state, and protect against invasive species.

Work undertaken to date through the pilot study included community workshops and seed harvesting in August of 2015. The results of the activities undertaken through the pilot study are now being assessed, with the goal of determining the long-term feasibility of the program.

**"The Noatak Seed Collection Pilot Study is a unique way to bring together the traditional knowledge and subsistence activity of the Iñupiat people with the reclamation work taking place here at Red Dog."**

Wayne Hall, Manager, Community and Public Relations, Red Dog Operations



## Sustainability Strategy Spotlight

### Progress Against Our 2015 Goals

- Developed comprehensive biodiversity management plans for all operations. Examples of work in 2015 include: continuing to consult with the regional subsistence committee and incorporating advice on timing of our activities such as road hauling and shipping, in order to minimize our impacts on wildlife such as caribou and marine mammals at our Red Dog Operations.
- Developed plans to offset impacts at our operations, which includes work such as: continuing our development of the Lower Columbia Ecosystem Management Program around Trail Operations and advancing our evaluation of biodiversity offset opportunities at Carmen de Andacollo Operations.

For a full list of 2020 and 2030 goals, see page 18.

## What was Our Performance in Biodiversity in 2015?

### Update From Our Subject Matter Experts

“While we have made good progress on achieving our biodiversity goals, there is more work to be done. We will focus on ensuring that our operations’ plans for managing biodiversity are fully implemented, including integration with mine planning and overall closure planning and developing additional performance metrics that will enable our employees and COIs to judge whether we are truly doing things that make net positive contributions to biodiversity”

Steve Hilts,  
Director, Environmental Legacies

### Outlook for Biodiversity

In 2016, our biodiversity priority is the continued implementation of biodiversity management plans at all operations. For example, at several of our operations, including Highland Valley Copper, we will work to redefine our post-mining land use objectives so that our ongoing reclamation actions are better directed towards the habitat needs of plants and wildlife that existed on the site before mining began. We will develop net positive impact objectives for exploration, construction and closure stages.

We are working to improve our reporting on the biodiversity risks and opportunities at each of our operations and our approach to managing the issues. For an overview of the area reclaimed and disturbed to date, see Table 15 on page 55 in the Mine Closure section.

Table 27: **Key Activities and Accomplishments in Biodiversity in 2015**

Operation	Steps to Implement Biodiversity Mitigation Hierarchy (see page 119 for further detail)	Performance Highlight
Highland Valley Copper	Avoid impacts where possible	We conducted field surveys for the presence of nesting birds prior to clearing vegetation for new land disturbance. We also conducted tests to learn how to best incorporate culturally significant native plants in our reclamation programs.
Red Dog Operations	Minimize impacts that are unavoidable	We continued to consult with the regional subsistence committee and incorporate advice on timing of our activities such as road hauling and shipping, in order to minimize our impacts on wildlife such as caribou and marine mammals.
Coal Mountain, Elkview, Greenhills, Fording River, Line Creek Operations	Rehabilitate affected areas	At our Elk Valley, B.C. steelmaking coal operations, we committed to consider ways in which the reclaimed areas of the mine can be made to more closely achieve pre-mining characteristics. This may include steps that can be taken on young forests to provide some of the characteristics of older forests, such as additional placement of woody debris, organic soil amendments, and wildlife tree placement to support woodpeckers and other cavity-nesting species.
Carmen de Andacollo and Quebrada Blanca Operations	Offset any residual impacts	We began our evaluation of biodiversity offset opportunities for achieving our Net Positive Impact vision by working with external biodiversity experts to examine the potential applicability of regional offset opportunities that have been prioritized in the region.
Trail Operations	Offset any residual impacts	Continued our development of the Lower Columbia Ecosystem Management Program (LCEMP) around Trail. LCEMP is a program we developed to leverage restoration and conservation offset opportunities available to Teck by linking them with the biodiversity conservation objectives of regional regulatory agencies and non-governmental organizations. In 2015, while advancing development of the overall program framework, we also acted on several new opportunities to protect habitats on Teck-owned lands in the area. For example, we completed fencing installations to protect yellow-breasted chat bird habitat in the Pend Oreille valley.