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the waters of the bow river basin

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bioDIVERSITY in Action

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In 2020, the Southern Alberta Chapter of the Canadian Parks and Wilderness Society (CPAWS) – an organization perhaps best known for its influential conservation work such as the Defend Alberta Parks campaign – launched bioDIVERSITY. Designed to break down barriers to environmental action, the new program was born out of the belief that social justice and conservation goals belong side by side.

By working with and promoting diverse voices from Black, Indigenous and People of Colour (BIPOC) communities, as well as New Canadian groups, the organization wanted to tackle – and begin dismantling – the long-standing culture of colonialist environmentalism in Alberta. “Over the years, we’d witnessed time and again how cultural identity, racial inequality and lack of representation can impact students’ access to and experience of outdoor education



Elder Pablo Russell facilitating an Indigenous-led Nature Walk. Photo: Barry Crean.

and nature,” says Jaclyn Angotti, the Education Director at CPAWS Southern Alberta. “And, quite simply, we wanted to change that.”

Through bioDIVERSITY, CPAWS Southern Alberta has committed to:

1. Reduce barriers for individuals and communities that feel unwelcome or excluded from the outdoors;
2. Amplify diverse voices and stories in conservation;

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3. Amplify Indigenous-led conservation efforts to protect Treaty lands for future generations;
4. Acknowledge and educate on the history of Indigenous erasure in conservation and the outdoors;
5. Support the great work being done in conservation by BIPOC-led community organizations; and
6. Work towards an inclusive, welcoming and safe CPAWS Southern Alberta.

“Our team believes that we have to take action to make the outdoors, environmental education, and conservation accessible, inclusive, safe and joyous. Otherwise, we risk becoming complicit in perpetuating the structures that make them the opposite,” says Angotti. She knows, of course, that this is no mean feat. “There is so much work to be done,” Angotti admits. “But there are also so many inspiring steps being taken in the community.”

As the program has taken shape, exciting initiatives have been introduced to the public, including an Indigenous-led Nature Walk series in Mohkinstsis (Calgary) and Sik-Ooh-Kotoki (Lethbridge). The walks, which have been hosted at places like Nose Hill and Fish Creek Park, have offered attendees the opportunity to experience Indigenous stories, games, and even traditional foods. According to the organization’s Indigenous Event Consultant and Guide, Pookaakiwun (Sierra Shade),



Elder Api’soomaahka guiding an Indigenous-led Nature Walk. Photo: Barry Crean.

“Participants have left with a much greater understanding of the Niitsítapi (Blackfoot) people, their ways of Knowing and Being on the land, and a new perspective of their own responsibility to the land.”

Angotti agrees, adding that “the demand for Indigenous-led, land-based learning has blown us away, and we feel honoured to facilitate these walks.”

Meanwhile, efforts to improve the inclusivity of CPAWS Southern Alberta’s classroom experiences are underway, too. The organization worked closely with Elder Api’soomaahka (Running Coyote) to bring the Blackfoot language into existing education programs, like Grizzly Bears Forever and Community Science, and the feedback from students and teachers alike was so

overwhelmingly positive that Michif and Cree translations are being incorporated, too.

“We’re really pleased with the response to this program,” says Katie Morrison, the Executive Director of CPAWS Southern Alberta. “The environmental community has been very intrigued by what we’re doing, and we get lots of questions from partners asking how they can get involved and what action and learning opportunities we’ve found useful in our journey. There is a lot of interest in ecojustice work.” What’s more, Morrison continues, that interest extends to the broader community, “We know that Albertans want to participate in ecojustice and are looking for ways to do so.”

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Importantly, the approach that the organization is taking through the bioDIVERSITY program is increasingly supported by research, with studies finding that:

1. Working on social justice and conservation goals together leads to stronger, more effective conservation outcomes;
2. If we do not approach sustainable land use through a lens of decolonization and social justice, we do so at both human and ecological costs;
3. BIPOC communities may face numerous barriers to accessing nature, including physical distance to green spaces, expensive activities, unsafe or inappropriate gear, lack of resources on recreating safely, and social barriers such as lack of representation. These barriers make it difficult to connect with nature, which is essential for driving environmental action; and
4. Indigenous Peoples have been denied access to their lands through colonization, which has impacted their ability to carry out their ancestral responsibilities as land stewards, creating yet another barrier for taking eco-action.

“It comes full circle,” says Angotti, “If we want to protect Alberta’s landscape, we need inclusive conservation efforts.”

Angotti, Morrison and the entire staff at CPAWS Southern Alberta are proud of the work that has

been done so far, but prouder still of the relationships they’ve forged along the way.

“We’ve been fortunate enough to collaborate with the Kainai Ecosystem Protection Association, Multicultural Trail Network, Urban Society for Aboriginal Youth, Niitsítapi Water Protectors, the Calgary Immigrant Women’s Association, Calgary Catholic Immigration Society, Adaptable Outdoors, and so many other incredible organizations,” says Morrison, “and we know we can deepen our impact as we continue to strengthen these partnerships.”

In other words, this is just the beginning – and the organization is excited about what the future holds. In September of 2022, they launched their latest bioDIVERSITY project, ChangeMakers – an online community forum to celebrate and empower local and regional eco-action. In 2023, staff hope to bring the website ‘into the real world’ with activities, events and resources for encouraging inclusive environmental change.

“That’s the tip of the iceberg for the year ahead,” laughs Angotti. “There’s no shortage of work to be done when it comes to ecojustice. My hope is that our staff continue to learn and grow, gaining the skills needed to make our programs and community accessible to everyone who wants to join. For instance, we’ve only scratched the surface on how to support participants with differing abilities and neurodiversities. We also dream of being able to offer support to folks in their first languages.

Unfortunately, there are many reasons why folks might not feel safe or accepted in the outdoors – fortunately, however, there are as many wonderful people and groups that have knowledge in reconciliation, anti-racism, justice, accessibility and inclusion. By teaming up, and bringing CPAWS’ expertise in conservation and environmental education, we believe we can collectively redefine what it means to be an environmentalist.”

CPAWS Southern Alberta would like to express its gratitude to Alberta Ecotrust for providing the seed money to kickstart the bioDIVERSITY project. Thank you also to the Chawkers Foundation, Alberta Conservation Association, and Field Law for helping us to continue this important work.

Please visit [CPAWS Southern Alberta, bioDIVERSITY](#), for more information and resources.



Elder Pablo Russell. Photo: Barry Crean.

“The points of intersection between water, energy, and food systems ... give rise to inevitable trade-offs and synergies.”

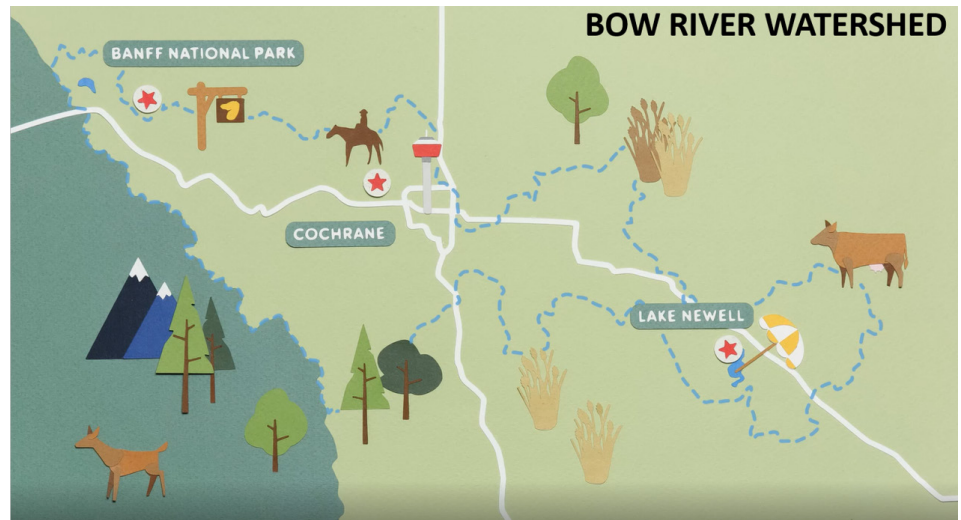
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Water, Energy and Food: What Is the ‘WEF Nexus’ and Why Is It Important?

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Our world today is composed of diverse connections between the human and biophysical systems upon which society depends. Three systems are particularly interconnected: water treatment and use, agricultural production, and energy generation. The connections between them create a ‘nexus,’ or points of intersection, where different parts of one or multiple systems link together and where a change in one will have an impact on the other(s).

The term ‘Water-Energy-Food (WEF) Nexus’ has become shorthand for referring to the ways that these three systems are interconnected: water is needed to satisfy the demands of our growing population, not only to maintain but to improve environmental health, and is critical to the production of both food and energy. The points of intersection between water, energy, and food systems, and related management decisions and policies, give rise to inevitable trade-offs and synergies. A trade-off occurs when a decision is made to accept a less desirable result in order to achieve a desired outcome in another area. For example, a modelling study in Saskatchewan found that increasing irrigation by 400 per cent for agricultural purposes can boost food production by 1.6 per



The Bow River Watershed is home to numerous and varied water users.
Graphic: Alberta WaterPortal Society.

cent but, in turn, can also reduce hydropower production by 2.7 per cent (Wu et al., 2021). In contrast, synergies occur when interactions or cooperation between actors produce a combined effect that is greater than the effects of their separate actions. For example, in Taiwan studies have demonstrated that small run-of-river hydropower used in conjunction with optimized water allocation can improve water supply reliability, hydropower generation, and food production (Zhou et al., 2019).

Stressors, such as climate change, population growth, and economic development, currently (or are predicted to) amplify pressures on the systems within the WEF Nexus. For example, population growth will increase demand for water, energy, and food, as more people require these basic necessities. To meet this increased demand, more food

and energy must be produced, which is likely to increase water use for irrigation and power generation. The trade-offs and synergies that exist within the WEF Nexus, amplified by anthropogenic stressors, make it essential to think about these systems as intertwined rather than separate. Adopting the WEF Nexus perspective facilitates this thinking by integrating human (e.g., economy, energy, land use) and biophysical systems (e.g., hydrology, biology, ecology) into one framework, helping to reveal how trade-offs can be reduced, where synergies can be promoted, and how sustainable development might be achieved. The work of the [Alberta WaterPortal Society](#) (the WaterPortal) and [WaterSMART Solutions Ltd.](#) (WaterSMART) brings

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this framework to life through engaging educational tools and innovative collaborative planning, where integrative, system-wide thinking is advanced.

The Alberta Water Nexus Project

The WaterPortal, a non-profit organization committed to education about water, conducted a multi-year project on the WEF Nexus. The WaterPortal's [Alberta Water Nexus Project](#) was born from the desire to understand the interactions between different water uses in the Bow River Basin. In this basin, there are a number of [converging factors](#), such as water resource distribution and significant agricultural industry, that are compounded by the fact that the available surface water in the basin is now fully allocated. These factors make the Bow River Basin vulnerable to changes in water availability, with consequential impacts throughout the WEF Nexus.

To explore these interactions and consequences, the Water Nexus Project developed several educational tools. For example, the water simulator tool facilitates the exploration of water demand in the Bow River Basin. The simulator works by allowing users to make water allocation decisions for agriculture, energy, municipalities, and the environment. While making these tough choices, users receive calculated results of their simulations, allowing them to see the impacts of population growth on water availability and the results of water allocation on the environment.

The project also developed educational online [animated videos](#) and in-depth case studies on [agricultural](#), [energy](#), and [municipal](#) water use, all of which reveal important sectoral interdependencies. More recently, a [series of webpages](#) was created focusing on climate change, water availability, and what climate change could mean for watersheds throughout Alberta.

The WaterPortal also has an interactive online game, "[Follow the Drop](#)," in which users choose their own adventure as a snowflake or raindrop. Embodying their selected form of precipitation, users explore the many and diverse ways in which water from the Bow River is shared and how water quality changes as it flows downstream.

Through these educational tools and materials, and by fostering an online learning community, the WaterPortal continues to support a community of understanding regarding the WEF Nexus and the need for an integrative approach to water management.

WaterSMART and the WEF Nexus

WaterSMART is an advisory services company that is committed to supporting responsible management of water for a sustainable economy. The Bow River Basin can be seen as a microcosm of the WEF Nexus, and multiple water management projects run by WaterSMART have demonstrated key practices for planning within the interconnected WEF Nexus systems in the



Play "Follow the Drop" and travel downstream from the mountains to learn how water quality is influenced by human activities and processes.

Graphic: Alberta WaterPortal Society.

basin. These practices include a commitment to collaborative processes, establishing agreed-upon data, ensuring representation from key decision makers and user entities, and building trust-based relationships.

Over the course of many projects, including years of building expertise in interdisciplinary work related to the WEF Nexus, WaterSMART has found that many opportunities can arise from WEF Nexus thinking, as summarized in the following sections.

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Regulatory system and economic drivers

The regulatory system can support or hinder collaborative planning and creative cross-sectoral opportunities. Economic tools and drivers are also influential, motivating investment decisions of companies, governments, and individuals that can impact trade-offs and synergies within the WEF Nexus. In the Bow River Basin, a regulatory approach (e.g., basin closure) combines with an economic tool (e.g., licence transfers) to enable access to limited water resources. This can serve to support creativity, efficiency and collaboration between new or expanding sectors that rely on water within the WEF Nexus.

Efficiency of resource use

There are always opportunities for improving efficiency in resource use, and identifying WEF Nexus connections is important when seeking such opportunities. In some cases, opportunities to improve efficiency can benefit more than one WEF Nexus sector. For example, using less hot water in a process not only reduces overall water use but also generates energy savings on heating. In other cases, however, improved efficiencies in one sector may increase demands in another sector. In agriculture, for example, while converting from flood irrigation to sprinkler systems dramatically reduces water use, the conversion also increases energy demand. Such cross-sectoral impacts must be

considered, particularly when identifying broad-based synergies for resource efficiency. The WEF Nexus framework facilitates this thinking, whether the focus is capturing waste heat, maximizing land use for alternative energy production, collaborating on water-use strategies, or developing major infrastructure.

Synergies and cross-sectoral sharing

When industries have similar or shared water and energy needs, collaboration and co-location (establishing multiple operations in the same space) can create significant, mutually-beneficial opportunities. Examples include co-generation (producing energy from a by-product such as excess heat) and adopting a circular waste stream (multiple processes utilizing each other’s waste products). Through industry collaboration, multiple operators can share information and infrastructure to reduce input and transportation costs. For example, numerous craft breweries that operate within the Bow River Basin give their spent grain (a by-product of brewing) to local farmers in the area, reducing waste and providing farmers with additional nutrients for livestock.

Conclusion

Water management is a complex process characterized by dynamic relationships between the needs of ecosystems, municipalities, energy production, agriculture, industrial processing, and many

more interconnected sectors. The WEF Nexus is about recognizing that complexity and incorporating it into decision-making processes – a challenging exercise that requires careful consideration of potential ramifications for multiple and diverse interests. How should decision makers balance the many competing water demands? How can societies use resources responsibly and plan for the future? How do we decide which trade-offs are acceptable? These questions highlight the importance of water management approaches that push integrative, systems-wide thinking to the forefront of how our collective resources are managed. WaterSMART and the WaterPortal are committed to this work and recognize that a greater understanding of the interconnections within the WEF Nexus enhances decision making, benefiting all inhabitants and elements of the watershed.



WaterSMART has fostered a WEF-Nexus approach by facilitating collaborative work with numerous, cross-sectoral parties. Photo: WaterSMART Solutions Ltd.

Non-profits and Partnerships

The Friends of Fish Creek

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Environmental non-profits are started for many reasons. The story of The Friends of Fish Creek is one that tells a tale of a community meeting its own needs through people's lived experiences in Fish Creek Provincial Park. Through its thirty years of existence, both the meaning and depth of the responsibility granted to the Friends have matured. Facing a potential change in the scope of activities in an organization is something that can come with growing pains, but the strength of long-term partnerships serves to complete work in ways not otherwise possible. Intentional partnerships with people and organizations create an active strength that is much more capable than any one person's effort, and is something that is necessary in a world of ever-expanding responsibilities.

In the summer of 2022, a volunteer of ours expressed an interest in organizing a pond leveler to further our aims of beaver coexistence. They came to us with the project proposal, and we were able to help get their project funded through a grant that we recommended they apply for. After successfully receiving



Pond leveler installation. Photo: The Friends of Fish Creek.

funding for their project, we sourced the budgeted materials and set up the event with help from volunteers in our beaver coexistence program. After months of preparation, we were able to install the pond leveler where we wanted it. Bypassing the pre-existing beaver dam in this way helped us control flooding on pathways upstream, improve park accessibility, and lower maintenance costs for Alberta Parks.

While the work in the beaver coexistence project is undeniably valuable, it would not have gone ahead without serious commitment from volunteers. Coordinators can run many more projects concurrently if certain administrative aspects of the project are handled by people outside of the organization's staff structure. Giving volunteers a

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serious stake in how a project develops has given this project the chance to flourish, taking flight with its own wings. Volunteers who feel a sense of ownership and belonging to something inevitably find ways to make it happen. Developing this sense of community takes time, but bringing a community together has impacts beyond volunteering that are well worth the effort.

Following the restoration season, the late fall gave us an opportunity to embark on a little experiment following a proposal from another one of our volunteers. Plastic debris had been accumulating in the city storm ponds in the park and a suggestion had been made to do something about it. Our volunteers went through the process of designing an event to remove plastic waste and bring people together to tackle the issue. On the day of the event, 20 volunteers gathered to clean the banks of a storm pond using shop vacs, rakes, and all kinds of equipment to see what would work best. Considering the experimental nature of the clean-up, it went surprisingly well, with 86 kg of contaminated grass and dirt debris being removed from around the pond.

The storm pond cleanup was different from the beaver coexistence installation in several ways. While we had some experience with pond levelers, we had none with removing microplastics. We were not aware of this being an issue until our volunteers brought it up at our proposal submission event. After

receiving their proposal and looking into the event's viability, we gave the go ahead and later that year, volunteers led the event and cleaned up around the pond, trying several methods and settling on something that worked. Again, this was something outside of our normal operations but within our capacity because of partnerships. Having a proposal event for bringing ideas to the table was crucial to identifying the project to begin with. By partnering with our volunteers, fresh concerns and ways of solving problems were imparted.

Partner organizations are not to be discounted, having hugely expanded our ability to take care of the park. The Alberta government has helped us by lending us storage space as well as equipment and supplies. Their mulch protects our plants, and their yard serves as storage. They graciously allow us to fix our equipment with their tools, they maintain our signage, and allow us to work in their buildings. The Venturers Society is also a key supporter, taking care of many aspects of our operations. Everything from nursery watering, dedication bench installation, and recycling is handled by their program participants. Both the Venturers Society and Alberta Parks address our needs in ways where we would otherwise have no remedy.

As the year ended, a deal with the Alberta government was struck: \$750,000 was granted over three years to enhance everything we do. From visitor information

and formal education programs to ecological conservation and enforcement support— everything was affected by this funding. This is on top of the funding we receive from other groups and individuals who generously provide year after year to support our operations. This money represents a belief in the potential of the community – a belief that came about due to work performed by volunteers who trust us as an organization to follow through with their concerns.

From individual community members to organizations and the community at large, partnerships in the park play a key role in our success. The volunteer relationship is one of the hallmarks of non-profit work, and a sense of belonging to a community is a necessity for taking actions to achieve goals. Putting these elements together creates a system that is inviting to potential volunteers and helps ensure effectiveness in achieving aims. Volunteer appreciation should be considered a core aspect of the volunteer/non-profit relationship. Sincere gratitude at the heart of our work can change not only the environment, but the hearts and minds of those who work to protect it. That gratitude makes partnerships possible, and improvement inevitable.

Learn more about
The Friends of Fish Creek:

<https://friendsoffishcreek.org/>

BRBC WEBSITE UPDATE

In December 2022, the BRBC rolled out its updated website, complete with a brand refresh!

We've received great feedback on these initiatives and invite all members to keep watching for new features and content.

Our latest addition is a **Maps and Data** page! Please [click this link](#) to take a look.

Other new features to check out:

- [Searchable BRBC Library](#)
Content will continue to be added!
- [Calendar of BRBC events](#)
Includes BRBC committee meetings – now it's even easier to check out our committees in action!
- [BRBC Blog](#)
- Easy access to [past issues of Preserving Our Lifeline](#)

Special thanks to our Program Coordinator, Brooke Kapeller, for shepherding all of the moving parts of this huge undertaking!

BRBC Quarterly Educational and Networking Forum

TransAlta Building
110, 12 Ave SW, Calgary

March 8th, 9:00 am – 3:00 pm
(8:30 am, sign in)

FORUM SPEAKERS

Aidan Yakymyshyn
SAIT Integrated Water Management Student
BRBC Summer Student 2022

Alesia Cameron
Adaptation Resilience Training Program Student
BRBC Climate Change Writer

Anne Naumann
Calgary River Valleys

Catherine Pierce
Battle River Watershed Alliance

Jaime Graves and Liisa Tipman
Calgary Metropolitan Region Board

Derek Leahy
Rural Routes to Climate Solutions

Sarah Schumacher
ALUS Canada

Katheryn Taylor
Prairie Conservation Forum

Jennifer Janzen and Pablo Pina
Alberta Tomorrow and SAIT

To register, please visit [this link](#).

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The opinions expressed in the articles in this newsletter are those of the author/s and do not necessarily reflect the views of the BRBC.



The next BRBC newsletter will be released in June

If you would like to submit an article, please contact Andrea Czarnecki at: aczarnecki@brbc.ab.ca