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EMPLOYED IN HER ELEMENT

UN EMPLOI DANS SON ÉLÉMENT

Alyssa Skaalid working in the field. **Photo by:** Brenden Voysey

By/Par Jackie Fritz

ALYSSA SKAALID:
living her dream career in British Columbia's forests

ALYSSA SKAALID :
une carrière de rêve dans la forêt britanno-colombienne

Alyssa Skaalid is living her dream. As a recent graduate of the Forestry Technology program at Selkirk College in the West Kootenay area of British Columbia, Skaalid spends most of her days in one of her favourite elements – outside in the open air.

Alyssa Skaalid vit un rêve éveillé. Diplômée récente du programme de technologie forestière du Selkirk College, dans la région de West Kootenay, en Colombie-Britannique, elle passe le plus clair de ses journées dans un de ses milieux favoris : le plein air.

"I love the outdoors and all it has to offer," enthuses Skaalid. "Working as a Forest Technologist allows me to do all the things I love outdoors such as hiking, ATVing, snowshoeing and snowmobiling. The majority of my work days are outside in the field, with my dog by my side. I also wanted to be a part of the forest management practices in B.C. to help encourage and practice sustainable and economic forestry."

Forestry technologists are one part of a large group of forestry professionals who work to manage, conserve and harvest one of Canada's most valuable natural resources. Forestry technologists play an important part in forestry management by taking samples and measurements, assisting with reforestation, assessing areas in need of assistance as well as locations of new growth and

« J'adore le plein air et tout ce qu'il peut offrir », affirme-t-elle avec enthousiasme. « Le métier de technologue en foresterie me permet de pratiquer toutes mes activités de plein air préférées : la randonnée pédestre, le VTT, la raquette et la motoneige. La majeure partie de mes journées de travail se passe sur le terrain, en compagnie de mon chien. Je voulais aussi participer aux pratiques de gestion forestière en Colombie-Britannique, afin de contribuer à la promotion et à la pratique d'une foresterie durable et économique. »

Les technologues en foresterie font partie du vaste groupe de professionnels de la foresterie qui assurent la gestion, la conservation et la récolte d'une des ressources naturelles les plus précieuses du Canada. Les technologues en

monitor forests to make sure companies are complying with forestry operation regulations, among other duties.

Skaalid explains, "It is very hands on, active work. It is rewarding to be able to physically get out into a forest stand and see what and why things need to be done. You become very familiar with an area you work in, which therefore makes it rewarding to see you have made the best management calls."

To prepare herself for the Forestry Technology course, Skaalid focused a lot of her high school education on the sciences; however there wasn't an opportunity for her to learn specifically about forestry.

"I took a lot of sciences and math courses which helped give me a good foundation in order to learn applied biology, ecology and statistics in college, Skaalid says. "I'd like to see natural resource courses available or an opportunity for an introduction into the natural resource science in high schools in order for students to experience aspects of the field and therefore be able to make educational decisions accordingly."

"I went to university and studied two years of general sciences before I found what I liked and disliked and then decided what I wanted to do as a career. I didn't know I wanted to study forestry in high school and was therefore encouraged to study general sciences and perhaps get my bachelor of science. This university education helped me tremendously through my college forest technology program even though it was not necessary," she explains.

foresterie jouent un rôle important dans la gestion forestière : entre autres fonctions, ils prélèvent des échantillons, prennent des mesures, aident au reboisement, évaluent les secteurs ayant besoin d'assistance et les sites de nouvelles pousses, et veillent au respect de la réglementation relative à l'exploitation forestière.

Comme l'explique Alyssa Skaalid : « C'est un travail très concret et actif. C'est gratifiant de pouvoir visiter physiquement un peuplement forestier pour déterminer et justifier ce qu'il y a à faire. Comme je finis par connaître le secteur où je travaille comme le fond de ma poche, c'est une source de satisfaction de voir que j'ai pris les meilleures décisions en matière de gestion. »

Sa préparation au programme de technologie forestière a consisté à faire ses études secondaires en concentration sciences; toutefois, aucun cours spécifique en foresterie n'était offert à ce niveau.

« J'ai suivi un tas de cours de sciences et de mathématiques. Cela m'a donné de bonnes bases pour étudier la biologie appliquée, l'écologie et la statistique au collégial. J'aimerais que l'école secondaire offre des cours en ressources naturelles ou une introduction aux sciences des ressources naturelles, pour donner aux élèves de l'expérience sur les aspects de ce domaine et, donc, la possibilité de choisir un programme d'études en connaissance de cause. »

« À l'université, j'ai fait deux années d'études générales en sciences avant de savoir ce qui me plaisait ou pas, puis j'ai fait mon choix de carrière. À l'école secondaire, je ne savais pas que je voulais étudier la foresterie. On m'a donc encouragée à faire des études générales en sciences, pour obtenir éventuellement un baccalauréat en sciences. Ces études universitaires m'ont énormément aidée dans mon programme en technologie forestière, même si elles n'étaient pas nécessaires », explique-t-elle.

Ayant découvert sa vocation, Alyssa Skaalid s'est inscrite au programme de technologie forestière du Selkirk College, à Castlegar (C.-B.). Ce programme de deux ans donne aux étudiants des bases solides et des connaissances pratiques sur divers aspects tels que la santé et l'écologie des forêts, les techniques de récolte, l'identification et la gestion des habitats fauniques, l'arpentage, la cartographie numérique, la gestion des feux de forêt et une foule d'autres compétences et connaissances nécessaires à l'exercice de leur future profession.

« Ces cours appliqués sont très pertinents pour les tâches qu'on a à accomplir au travail », explique Mme Skaalid. « Comme ils sont aussi très pratiques et concrets, il n'y a pas de meilleure préparation au métier qu'on exercera par la suite. »

Les technologues en foresterie peuvent s'attendre à un salaire annuel initial de 30 000 $ à 40 000 $, qui s'accroît avec l'expérience et la scolarité jusqu'à plus de 70 000 $ par an.

Having discovered her calling, Skaalid enrolled in the Forestry Technology diploma program at Selkirk College in Castlegar, B.C. The two-year program provides students with a solid and practical foundation in such aspects as forest health and ecology, harvesting techniques, wildlife habitat identification and management, surveying, digital mapping, wildfire management and a host of other skills and knowledge required for their future career.

"They were applied courses which makes them very relevant to what you would be doing for work," says Skaalid. "They were also very practical and hands on which best prepares you for work after you graduate."

Entry level forestry technicians can expect to earn between $30,000-$40,000 per year which increases with experience and education to upwards of $70,000 per year.

You will find forestry technicians employed by government agencies, consulting firms, land service companies, logging companies, conservation authorities, and other natural resource companies.

Forestry technicians must be prepared to sometimes work in remote locations with very few physical comforts and in all weather conditions. They may be required to fly in small planes and helicopters, and there is always the potential for dangerous interactions with wildlife.

Skaalid adds, "nature is nice and all but sometimes the mosquitoes, blackflies, and the very prickly plant called Devil's Club get to you. "

Skaalid is currently a Trainee Forest Technologist. "I am enrolled in the B.C. Timber Sales Forest Technologist Entry Level Program (FTELP) which is a 2 year program in Mackenzie, B.C. for newly graduated forest technologists. It aims to give on-the-job training in an operational environment. This allows us to gain valuable experience in all aspects of forestry. It also supports us getting our professional designation as a Registered Forest Technologist (RFT) or a Registered Professional Forester (RPF) through the Association of B.C. Forest Professionals (ABCFP). Some aspects of forestry is reconnaissance (scoping out potential harvest areas), development (layout of block boundary roads), and addressing management constraints such as streams, wildlife, ecological concern and archaeological impact. It also includes timber cruising (assessing the value of the stand) and silviculture (site prep prescriptions/planning, what trees to plant, assessing the stocking/survival of the planted trees)," she shares.

The many varied activities involved in the job will appeal to people who like to stay busy with different projects.

Skaalid says, "There are both office and field work needed which breaks up the type of work required and therefore keeps things interesting. There are heavy planning days in the office as well as very physically demanding days in the field. No two projects are the same because every forest stand is different and requires unique planning and management."

On trouve des techniciens en foresterie dans l'effectif des organismes gouvernementaux, des sociétés d'experts-conseils, des sociétés de services fonciers, des sociétés forestières, des organismes de conservation de la nature et d'autres entreprises du secteur des ressources naturelles.

Les techniciens en foresterie doivent être prêts à travailler parfois en milieu éloigné, à s'accommoder d'un confort physique très sommaire et à affronter toutes sortes de conditions météorologiques. Ils doivent parfois se déplacer en petit avion ou en hélicoptère, et le risque d'interactions dangereuses avec la faune est toujours présent.

D'ajouter Alyssa Skaalid : « La nature, c'est bien beau, mais parfois, on subit les attaques des moustiques, des mouches noires et d'une plante très épineuse, le bois piquant. »

Mme Skaalid est actuellement technologue en foresterie en formation : « Je suis inscrite au Forest Technologist Entry Level Program (FTELP) de BC Timber Sales, un programme de deux ans à l'intention des nouveaux diplômés en technologie forestière qui se donne à Mackenzie, en Colombie-Britannique. Le FTELP a pour but de donner une formation pratique dans un cadre opérationnel. Cela nous permet d'acquérir une expérience précieuse dans tous les aspects de la foresterie. Le programme nous aide aussi à obtenir le titre professionnel de technologue en foresterie autorisé (Registered Forest Technologist – RFT) ou de forestier professionnel autorisé (Registered Professional Forester – RPF) par l'entremise de l'Association of BC Forest Professionals (ABCFP). Les principaux aspects de la foresterie sont la reconnaissance (la recherche de zones de récolte potentielles), le développement (le tracé de chemins aux limites d'un bloc) et la prise en compte des contraintes de gestion telles que les ruisseaux, la faune, les préoccupations écologiques et l'impact archéologique. Notre domaine comprend aussi l'inventaire forestier (l'évaluation de la valeur d'un peuplement) et la sylviculture (les normes et la planification en matière de préparation du site, le choix des essences à planter, l'évaluation des stocks et de la survie des arbres plantés). »

Ce métier aux activités nombreuses et variées plaira aux personnes qui aiment les journées bien remplies, consacrées à différents projets.

De conclure Alyssa Skaalid : « Il y a du travail à faire au bureau et sur le terrain. Ainsi, le type de tâches varie, ce qui maintient l'intérêt. Il y a des journées de planification intensive au bureau, de même que des journées de terrain très exigeantes sur le plan physique. Il n'y a pas deux projets pareils, car chaque peuplement est différent des autres et exige une planification et une gestion particulières. »

A Natural Choice

Un choix naturel

By/Par Jackie Fritz

Opportunity abounds for career mobility in the natural resources sector

Le secteur des ressources naturelles : une variété propice à la diversité professionnelle

Canada has 9.984 million square kilometres of land mass, making it the second largest country in the world. Our country is lucky enough to be able to count on our vast natural resources both as a source of income from trade and as a provider of much needed energy and materials here at home.

Natural resource exports accounted for 47% of Canada's total merchandise exports in 2017, valued at approximately $236 billion, and the industry directly and indirectly provided employment for about 1.82 million citizens.

Becca Chettleborough, TFT, FTELP is a Forest Technologist in British Columbia. She says, "The natural resource field has many opportunities within it. I wasn't fully confident in choosing a single job I wanted to do for the rest of my life, as I have many interests. The great thing about natural resource jobs is that the experience you gain in one field can be used towards another field. For example, if you've worked in forestry for five years and decided you wanted to do a different natural resource job (such as reclamation), your experience in forestry will help meet job position criteria for the new job you want."

Avec une masse continentale de 9 984 millions de kilomètres carrés, le Canada est deuxième au monde en superficie. Sur ce vaste territoire abondent les ressources naturelles, qui sont à la fois source de revenus commerciaux, ainsi que d'énergie et de matériaux dont nous avons grandement besoin.

En 2017, les ressources naturelles ont représenté 47 % du total des biens exportés, estimé à 236 milliards $ approximativement. Le secteur fait travailler environ 1,82 million de Canadiens.

Becca Chettleborough, TFT, FTELP, est technicienne en sylviculture en Colombie-Britannique. « Les ressources naturelles offrent tout un champ de possibilités, dit-elle. Je doutais un peu de trouver un emploi que je voudrais garder toute la vie, parce que mes champs d'intérêt sont très divers. Ce qui est formidable avec les ressources naturelles, c'est justement que l'expérience acquise dans un domaine peut servir dans un autre. Si vous travaillez en foresterie pendant cinq ans et décidez de vous réorienter (en restauration écologique, par exemple), l'expérience acquise vous permet de répondre aux critères de ce nouvel emploi. »

> "The great thing about natural resource jobs is that the experience you gain in one field can be used towards another field."
>
> – Becca Chettleborough

> « Ce qui est formidable avec les ressources naturelles, c'est justement que l'expérience acquise dans un domaine peut servir dans un autre. »
>
> – Becca Chettleborough

Becca Chettleborough working in the forests of BC.
Photo by: Catherine Singh

There are three main industries within the natural resources sector; energy sources and distribution, forestry and logging and minerals and mining.

There are many sources of energy available in Canada such as oil, natural gas, fossil and alternative fuels, uranium for nuclear energy and renewable energies including solar, wind, hydropower, geothermal and biomass.

Canada is the world's fifth largest producer of oil and natural gas and has the world's third-largest proven oil reserves. There are many different jobs in the sector from a derrick hand on an oil rig to a surveying and engineering careers. The industry also employs a wide range of support staff like drivers, office workers and mechanics.

Alternative fuels include propane, bio-diesel, batteries and fuel cells, vegetable oils, etc. Fossil fuels are rapidly being depleted so focus is turning to these alternative fuel sources. As industry changes to make the adjustment to alternative fuels, the demand for trained employees continues to increase. To address this demand, colleges across the country are including more and more educational opportunities in this area.

Le secteur des ressources naturelles est principalement associé à trois grandes industries : sources et distribution d'énergie, foresterie et exploitation forestière, mines.

Le Canada est riche en sources d'énergie : pétrole, gaz naturel, combustibles fossiles et carburants de remplacement, uranium (nucléaire) et énergies renouvelables, y compris soleil, vent, eau, géothermie et biomasse.

Notre pays se classe au cinquième rang des producteurs de pétrole et de gaz naturel et au troisième rang des réserves de pétrole mesurées. Le secteur offre de nombreux types d'emplois, depuis l'accrocheur sur les plateformes de forage jusqu'à l'arpenteur-géomètre et à l'ingénieur. À cela s'ajoute tout un éventail d'emplois de soutien comme conducteur, employé de bureau ou mécanicien.

Compte tenu de l'épuisement rapide des réserves de combustibles fossiles, le monde se tourne vers les carburants de remplacement, soit le propane, le biodiésel, les piles électrochimiques et les piles à combustible, les huiles

As the second largest producer of uranium in the world, the industry in Canada directly employs over 3000 people. Uranium is used to produce electrical energy through a nuclear reaction. Mining and milling uranium is a $1.2 billion a year industry.

Jobs in the uranium field include exploration and sampling, mine site planning, construction and operation, scientific research, environmental assessment and protection as well as corporate and support positions.

Chettleborough shares, "When I was fresh out of high school, I worked in an office every day. I decided at that time that I did not want a desk job to become my career. The natural resources field has many opportunities within it. I wanted a job where I could make some type of difference in regards to the environment. It has always been important to me to do what I can to protect the environment."

Renewable energy comes from natural processes that renew faster than they are used. Solar and wind energy, geothermal heating from deep within the earth, hydropower from dams and rivers, biogas and liquid biofuels are examples of this form of energy. Biogas includes methane derived from animal manure and other digested organic material, liquid biofuels often contain ethanol made from corn, and biodiesel fuel comes from liquid animal fat and vegetable oil. There's even green diesel made with algae and other plant matter. Continuing advancements in technology help to make the best use of these natural resources.

Jeff Manser, Professor, Renewable Energies Technician Program at Niagara College says, "I think over the last ten years or so we've seen the sector move from a very small sector that needed support, to a more sustainable sector from an economic standpoint. There seems to be lots of positive news that the costs for these systems are continuing to drop and the technology is becoming more competitive. As a sector, it has significant potential for growth, as the need for clean power solutions is strong. This should allow the renewable energy workforce to expand with it."

"Canada is the world's fifth largest producer of oil and natural gas and has the world's third-largest proven oil reserves."

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« Notre pays se classe au cinquième rang des producteurs de pétrole et de gaz naturel et au troisième rang des réserves de pétrole mesurées. »

végétales, etc. L'industrie se convertit peu à peu, ce qui alimente la demande croissante en main-d'œuvre qualifiée. Et pour répondre à cette demande, les collèges de tout le pays diversifient leurs programmes.

Le Canada est le deuxième producteur d'uranium au monde, une industrie de 1,2 milliard $ par année qui emploie directement plus de 3000 personnes, notamment pour l'extraction et le traitement en vue de la production d'énergie électrique par réaction nucléaire.

Les emplois possibles englobent la prospection et le carottage, l'aménagement des sites d'exploitation, la construction et l'exploitation, la recherche scientifique, l'évaluation environnementale et la protection de l'environnement en plus de postes administratifs et d'emplois de soutien.

Becca Chettleborough raconte : « Dès la fin du secondaire, j'ai travaillé dans un bureau, mais j'ai compris que je ne voulais pas y passer tous les jours de ma vie professionnelle. Le secteur des ressources naturelles offre tellement de possibilités! Je voulais contribuer à la protection de l'environnement. C'est un volet qui a toujours eu de l'importance pour moi. »

L'énergie renouvelable est issue de processus naturels qui consomment les ressources moins vite que celles-ci se renouvellent. L'énergie solaire et éolienne, le chauffage géothermique par la chaleur en réserve loin sous la surface du sol, l'énergie hydroélectrique produite par des barrages en rivière, le biogaz et les biocombustibles liquides en sont autant d'exemples. Le biogaz comprend le méthane dérivé des déjections animales et autres matières organiques digérées, les biocombustibles liquides contiennent souvent de l'éthanol fabriqué avec du maïs, et le biodiésel vient de gras animal et d'huile végétale. On fabrique même un diésel respectueux de l'environnement à partir d'algues et d'autres plantes. Les progrès technologiques continus permettent d'optimiser ces ressources naturelles.

"**The forest industry** in Canada employs over **200,000** people and generates **more than $1.4 billion** in revenue, making up **7.2%** of the country's total exports."

Renewable energies are currently responsible for 18.9% of Canada's total energy supply and we are a prime example to the rest of the world in the production and use of energy from renewable resources. Career opportunities in this sector continue to grow and expand as state-of-the-art technology is developed and new processes are developed to implement the use of sustainable materials.

Jeff Manser, professeur au programme de techniques en énergies renouvelables du Collège Niagara, commente : « Il y a dix ans ou à peu près, le secteur naissait à peine et nécessitait beaucoup de financement, mais il est maintenant très viable d'un point de vue économique. Les perspectives semblent plutôt bonnes : le coût des systèmes continue de baisser et la technologie devient elle aussi de plus en plus concurrentielle. Le secteur a un énorme potentiel de croissance en raison d'un grand besoin de solutions énergétiques propres. »

Les énergies renouvelables représentent actuellement 18,9 % de l'approvisionnement total en énergie au Canada. Nous sommes d'ailleurs un exemple pour le reste du monde par notre production et notre utilisation d'énergie de sources renouvelables. Sans compter que les possibilités de carrière sont en croissance grâce à la création de technologies de plus en plus perfectionnées et à la mise au point de nouveaux procédés qui facilitent l'emploi de matériaux respectueux de l'environnement.

« Nous voyons nos diplômés s'épanouir dans des carrières très variées. Certains travaillent en fabrication et en construction dans le solaire et l'éolien, d'autres sont spécialisés dans l'entretien des turbines et des pales », rapporte Kerly Acosta Hitchcock, P. Eng, directrice du programme de gestion des énergies durables à l'Institut de technologie de Colombie-Britannique (British Columbia Institute of Technology ou BCIT). Elle poursuit : « Nous en avons aussi en vérification des bilans énergétiques, dans la vente de systèmes photovoltaïques et même en prospection de clientèle. »

Quant à l'industrie forestière canadienne, elle emploie plus de 200 000 personnes, génère plus de 1,4 milliard $ de revenus

« **Quant à l'industrie forestière** canadienne, elle emploie plus de **200 000** personnes, génère **plus de 1,4 milliard $** de revenus et représente **7,2 %** du total des exportations du pays. »

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"The roles we have seen some of our graduates take has been diverse. We've seen students entering into manufacturing & construction on both the solar and wind side of renewables, as well as wind turbine maintenance technicians and blade repair technicians," states Kerly Acosta Hitchcock, P.Eng, Program Head of Sustainable Energy Management (SEMAC)

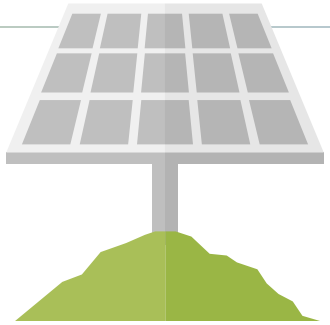
et représente 7,2 % du total des exportations du pays. Le secteur repose principalement sur le bois d'œuvre et autres produits de bois massif ainsi que sur les pâtes et papiers.

Quelles sont les possibilités d'emploi? Biologistes, chercheurs, bûcherons, ingénieurs, arboriculteurs, spécialistes en

at the British Columbia Institute of Technology (BCIT). "We also have graduates working in energy auditing, as well as photovoltaic (PV) sales and even business development."

The forest industry in Canada employs over 200,000 people and generates more than $1.4 billion in revenue, making up 7.2% of the country's total exports. The core of the Canadian forestry sector includes lumber and other solid wood products as well as pulp and paper.

Forestry jobs include biologists, researchers, loggers, engineers, arborists, land-use planners, surveyors, tree planters, millwrights, timber cruisers, and foresters and forest technologists.



"Renewable energies are currently responsible for **18.9%** of Canada's **total energy supply**."

Forest technologist Becca Chettleborough says, "Forestry involves planning for the future as well as dealing with present day problems. My college education prepared me for a job extremely well. They were up to date

aménagement du territoire, arpenteurs-géomètres, planteurs d'arbres, monteurs-ajusteurs, estimateurs de bois, experts forestiers et techniciens en foresterie.

« Travailler en foresterie, explique la technicienne Becca Chettleborough, c'est résoudre les problèmes actuels en fonction de l'avenir. La formation que j'ai suivie au Collège m'a très bien préparée au marché du travail parce qu'elle était tout à fait en phase avec les exigences de l'industrie envers des diplômés de récente date. La théorie et la pratique se sont révélées très utiles. »

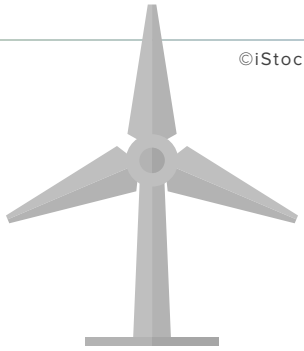
Enfin, le Canada figure parmi les cinq principaux producteurs de plus de 60 métaux et minéraux. L'industrie minière emploie des centaines de milliers de Canadiens et fournit aux marchés mondiaux des matières premières comme la potasse, l'aluminium, le nickel, le platine, l'or, les diamants, le titane,

on what the industry wanted from recent college graduates. The theoretical curriculum and the hands on training have proved to be very useful at work."

Canada is one of the top five global producers of more than 60 metals and minerals. Mining employs hundreds of thousands of Canadians who provide raw materials such as potash, aluminum, nickel, platinum, gold, diamonds, titanium, sulfur and more to worldwide markets. Exports of metals and minerals contributed over $97 billion to the economy in 2017, up 9.9% over the previous year.

Larry Fisher, General Manager of ProCon Mining and Tunneling in Saskatoon, Saskatchewan says, "Mining is important to Canada as it employs hundreds of thousands of people either directly or indirectly. Mining in Canada allows our industries access to raw materials at a lower cost and is done by ethically responsible mining companies. That does not happen in some

le soufre et plus encore. L'exportation des métaux et des minéraux a apporté plus de 97 milliards $ à l'économie en 2017, soit 9,9 % de plus que l'année précédente.



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« Les énergies renouvelables représentent actuellement **18,9 %** de l'approvisionnement **total en énergie au Canada.** »

Selon Larry Fisher, directeur général de ProCon Mining and Tunneling, une entreprise de Saskatoon, en Saskatchewan, « l'industrie minière tient une grande place dans l'économie canadienne parce qu'elle emploie des centaines de milliers de personnes directement ou indirectement. Elle fournit d'autres industries en matières premières à coût moindre, et en vertu d'une production éthique, ce qui n'est pas le cas dans d'autres régions du monde. L'exploitation doit être respectueuse de l'environnement parce que les générations qui nous suivent vont avoir besoin des mêmes ressources, mais en quantité supérieure à ce que nous utilisons aujourd'hui. »

parts of the world. Being sustainable is important because the future generations will need the same resources and more, that we are using today."

Canadians working in the mining industry are the highest paid, surpassing the average earnings of workers in forestry, manufacturing, finance and construction.

Miners in Canada can earn over $110,000 a year, while those in supervisory positions may take home even more. Skilled equipment operators, engineers, construction workers, mine exploration experts, and operational and processing positions make up the majority of the employment openings in the sector.

Chettleborough advises, "Those who are considering a career in natural resources should job shadow someone if possible. There are lots of people that pursue the schooling for natural resource jobs, only to be surprised by the physical demands of the actual job. There are also a lot of jobs within the natural resource world; make sure you do your research to find the one that interests you the most. A career in natural resources is very rewarding. It is interesting and it keeps you grounded. "

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Les emplois du secteur minier sont les plus rémunérateurs. Les salaires y sont supérieurs à la moyenne de ceux des travailleurs en foresterie, en fabrication, en finances et en construction.

Ainsi, le salaire annuel des mineurs au Canada peut dépasser 110 000 $ par an, et celui des superviseurs peut même être supérieur. Les emplois sont en majeure partie des postes de conducteurs d'équipement, d'ingénieurs, de travailleurs de la construction et de spécialiste de la prospection minière, sans oublier la transformation et les activités opérationnelles.

Becca Chettleborough offre un conseil : « Si vous envisagez le secteur des ressources naturelles, demandez à observer un travailleur sur place au préalable ou trouvez un programme de jumelage dans la mesure du possible. En effet, beaucoup d'étudiants sont surpris par les exigences physiques du travail. Du reste, le secteur offre une grande diversité d'emplois. Informez-vous pour trouver celui qui répond le mieux à vos champs d'intérêt. Les carrières de ce secteur sont intéressantes et peuvent être très gratifiantes. Elles sont aussi très bonnes pour l'équilibre. »

Career Snapshots

Profils de carrière

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Minding Mother Earth Through the Environmental Sciences

Soigner la Terre Mère par les sciences de l'environnement

By/Par Sharon Frank

Environmental science is a broad term that integrates atmospheric sciences, ecology, environmental chemistry and geosciences in order to learn about the environment and search for solutions to environmental issues.

Environmental scientists study such subjects as understanding processes of the earth, pollution control, natural resources management, alternative energy systems, and global climate change. Atmospheric sciences are focused on the atmosphere of the earth and how it relates to other systems. Careers in this field can include meteorology, research and development, climatology and air quality.

Climatologists use long-term data like temperature, rainfall and wind speed to study trends and predict potential issues that may cause problems. Meteorologists study short-term weather patterns to provide upcoming weather forecasts. Entry level meteorologists and climatologists can expect a salary in the range of $50,000 per year.

Climate change has affected every area of the globe, impacting the lives and environment of everyone on earth. Preserving and maintaining the world's ecosystems in crucial to life as we know it.

Ecology is defined as the interaction between organisms and the environment. Ecologists study how human activities affect other living things and the area in which they live. Ecologists are often found working for environmental groups and organizations, government institutions and in the education field. Zoos often employ wildlife ecologists to help maintain the animals' health and habitats. Ecologists can also find employment as consultants, research scientists, resource managers and park naturalists. A wildlife ecologist who is new to the industry can look to earn approximately $50,000 per year. Ecologists also provide valuable information about how the

Les sciences de l'environnement, un domaine générique qui englobe les sciences de l'atmosphère, l'écologie, la chimie de l'environnement et les sciences de la Terre, ont pour but d'enrichir nos connaissances sur l'environnement et de trouver des solutions aux problèmes environnementaux.

Les spécialistes de l'environnement se penchent sur des sujets d'étude tels que les processus terrestres, la lutte contre la pollution, la gestion des ressources naturelles, les nouveaux systèmes énergétiques et l'évolution du climat mondial. Les sciences de l'atmosphère sont axées sur l'atmosphère terrestre et ses relations avec les autres systèmes. On peut faire carrière dans ce domaine dans les secteurs de la météorologie, de la recherche-développement, de la climatologie et de la qualité de l'air.

Les climatologues se servent de données longitudinales sur la température, les précipitations et la vitesse du vent pour étudier les tendances et anticiper les questions susceptibles de devenir problématiques. Les météorologues étudient les régimes climatiques ponctuels pour produire des prévisions météorologiques. Les météorologues et climatologues peuvent s'attendre à un salaire initial de l'ordre de 50 000 $ par an.

Les changements climatiques touchent toutes les régions du globe; ils ont un impact sur la vie et l'environnement de tous les humains de la Terre. La préservation et le maintien des écosystèmes du monde sont essentiels à la vie telle que nous la connaissons.

L'écologie est l'étude des interactions entre les organismes et l'environnement. Les écologistes étudient les effets des activités humaines sur les autres êtres vivants et leur habitat. Bon nombre d'écologistes travaillent au sein de groupes et organismes de protection de l'environnement, dans des organismes gouvernementaux et dans le secteur de l'éducation. Plusieurs zoos embauchent des écologistes de la faune pour aider à maintenir la santé et l'habitat de leurs animaux. Les écologistes trouvent aussi des emplois comme consultants, chercheurs scientifiques, gestionnaires des ressources ou naturalistes de parc. Une ou un écologiste de la faune peut espérer gagner environ 50 000 $ par an à ses débuts dans l'industrie. Les écologistes sont également une précieuse source d'information sur les moyens d'utiliser les ressources de la Terre de manière à assurer un environnement sain aux générations futures.

earth's resources can be used in a way that ensures the environment remains healthy for generations to come.

Environmental chemistry involves the study of how different chemicals react in the environment. Environmental chemists strive to improve the health and safety of people and the areas in which they live and work, evaluating how chemicals enter the environment and what effects they have. Some examples of jobs in this sector include positions in water treatment and waste disposal, research and education, environmental analysis, and health and safety coordination. Water treatment plant operators typically earn around $30 per hour as an entry level wage.

David Fritz BSc, CIH, ROH is an Occupational Hygiene Consultant in the Human Resource Services Department at the City of Winnipeg. He explains, "Occupational hygienists keep workers, and the communities surrounding workplaces, healthy and safe. They also ensure compliance with laws and regulations in the work environment."

"Occupational hygienists assess health risks in a workplace; sample air to determine if there are harmful substances present; measure noise levels in factories; supervise the safe removal of asbestos from buildings; and provide practical advice on how workers can be protected from job-related health and safety risks. The job offers great variety and challenge – today I am dealing with concerns related to mould in city arenas, silica dust exposure concerns during concrete cutting, indoor air quality in an office during renovations, and reviewing reports on asbestos abatement projects and diesel exhaust exposure assessments," Fritz adds. The average annual salary for occupational hygienists in Canada is around $55,000 but with experience they can earn $90,000+.

The study of geosciences includes geology and soil sciences. This involves studying the composition and structure of the earth's crust, examining rocks, minerals and fossils to see how they affect the development of the earth, and finding gas and mineral deposits and underground sources of water. Geosciences graduates can be found working as anthropologists, engineers, archeologists and scientists in such industries as mining, energy production, and more. A petroleum geologist with a bachelor degree can earn from $80,000 to $180,000 as their experience grows. Someone with a master's degree may earn significantly more. Geology is important to everyday life. Geologists research climate change in the past to deliver essential predictions about the future and how all global citizens can live more sustainably.

Employment predictions for careers in the environmental sciences sector indicate further growth in the industry increasing demand for qualified employees. Many of the new jobs will be related to managing environmental concerns over climate change and the depletion of resources, as well as developing new ways to utilize and sustain the natural resources that are so important to the lives and economy of all Canadians.

La chimie de l'environnement est l'étude des réactions chimiques dans l'environnement. Les chimistes de l'environnement s'efforcent d'améliorer la santé et la sécurité des gens et la salubrité de leurs milieux de vie et de travail, en évaluant les modes d'entrée des substances chimiques et leurs effets sur l'environnement. Ce secteur ouvre la porte à des emplois en traitement des eaux, en élimination des déchets, en recherche, en éducation, en analyse environnementale et en coordination de la santé et de la sécurité. Le salaire initial des opérateurs d'usine de traitement de l'eau se situe généralement autour de 30 $ l'heure.

David Fritz, B. Sc., hygiéniste industriel agréé et hygiéniste du travail agréé, est consultant en hygiène du travail au Service des ressources humaines de la Ville de Winnipeg. Il explique la nature de sa profession : « Les hygiénistes du travail assurent la santé et la sécurité des travailleurs et des collectivités voisines des lieux de travail. Ils assurent aussi la conformité aux lois et aux règlements en milieu de travail. »

« Les hygiénistes du travail évaluent les risques pour la santé dans un lieu de travail; ils mesurent la composition de l'air afin de détecter les substances nocives qui pourraient s'y trouver; ils mesurent le niveau de bruit dans les usines; ils supervisent l'élimination sécuritaire de l'amiante dans les édifices; enfin, ils donnent des conseils pratiques sur les moyens de protéger les travailleurs contre les risques pour la santé et la sécurité liés à leurs fonctions. »

« Ce travail offre une grande diversité et beaucoup de défis. Par exemple, aujourd'hui, je m'occupe de moisissures dans les arénas municipaux, de l'exposition à la poussière de silice associée à la coupe du béton et de la qualité de l'air d'un bureau pendant des rénovations. Je vais aussi prendre connaissance d'un rapport sur des projets d'élimination des poussières d'amiante et analyser une évaluation de l'exposition à l'échappement de moteurs diesel », d'ajouter M. Fritz. Au Canada, le salaire annuel moyen des hygiénistes du travail est de l'ordre de 55 000 $, mais les hygiénistes chevronnés peuvent gagner 90 000 $ et plus par an.

Le domaine des sciences de la Terre comprend la géologie et la pédologie. Il consiste à étudier la composition et la structure de la croûte terrestre, à examiner les roches, les minéraux et les fossiles pour comprendre leurs effets sur le développement de la Terre, et à trouver des gisements gaziers et minéraux et des sources d'eau souterraine. Les diplômés en sciences de la Terre travaillent comme anthropologues, ingénieurs, archéologues et scientifiques dans l'exploitation minière, la production d'énergie et plusieurs autres secteurs industriels. Une ou un géologue pétrolier détenant un baccalauréat peut gagner de 80 000 $ à 180 000 $ par an à mesure que son expérience s'enrichit. Un diplôme de maîtrise lui permet de gagner encore davantage. La géologie est importante pour notre quotidien. Les géologues étudient les changements climatiques du passé pour produire des prévisions essentielles sur les conditions futures et les modes de vie durables pour tous les citoyens du monde.

Les prévisions d'emploi relatives aux carrières dans le secteur des sciences de l'environnement pointent vers une croissance soutenue de l'industrie et une demande accrue d'employés qualifiés. Les nouveaux emplois seront principalement axés sur la gestion des préoccupations environnementales associées aux changements climatiques et à l'appauvrissement des ressources, de même que sur le développement de nouvelles façons d'utiliser et de conserver les ressources naturelles, qui ont une importance indéniable pour la vie et l'économie de toute la population canadienne.

Much More Than Hewers of Wood

From the woodlot to the lab, career options are growing in Forestry

Bien plus que du bûchage

De la terre à bois au labo, les choix de carrière en foresterie se multiplient

By/Par Jackie Fritz

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Wes Van Camp, TFT is a Trainee Forest Technologist in the Forest Technology Entry Level Program for BC Timber Sales. He explains what drew him to a career in forestry, "Forestry initially grabbed me as a way to not be stuck behind a desk 24/7. Within the field of forestry I saw professionals who were active, hiking in the bush all day while still performing high level mental problem solving and management. I wanted the opportunity to be both physically and mentally active."

The forestry trade includes logging, timber trade, and the production of forest products, timber/lumber, primary forest and wood products like furniture and secondary products like wood pulp for the pulp and paper industry.

"There are a wide variety of jobs available. Mill workers, loggers, heavy machinery operators, tree planters, silviculture surveyors, timber cruisers, log truck drivers, brushing contractors, registered forest technologists, and registered professional foresters make up the core of the forestry sector but there are many other jobs that involve forestry in different ways as well", explains Van Camp.

Employment within the industry is also offered in the areas of mill operation (i.e. crane operators, lumber graders and machinery operators), sciences and engineering (such as biologists, electrical, chemical, civil and mechanical engineers), administration and skilled trades (including carpenters, welders and electricians to name a few).

Van Camp adds, "Forest professionals – jobs requiring registration and membership to a professional association and are involved with the higher-level planning – are the most in demand currently. As more of the forested land base is being shared with other resources and user groups, as well as the oncoming changes that climate change is bringing, it is imperative that we have enough qualified people to manage these increasingly complex scenarios."

In 2016, Canadian exports of this valuable commodity were $29.5 billion, with exports of lumber, sawmill and millwork products and pulp and paper accounting for most of the sales.

"Forestry is a huge driver in small town economies all over Canada, but especially in BC. The jobs created by the mills and their associated harvesting and forest management

Wes Van Camp est un technologue forestier en formation (Trainee Forest Technologist, TFT) inscrit au Forest Technology Entry Level Program de BC Timber Sales. Il explique ce qui l'a poussé à faire carrière en foresterie : « Ce qui m'a attiré au départ, c'est que la foresterie est un bon moyen de ne pas passer tout son temps derrière un bureau. Dans le domaine forestier, j'ai vu des professionnels actifs, qui arpentaient la forêt à longueur de journée tout en exécutant des tâches de résolution de problème et de gestion d'un haut niveau intellectuel. J'ai voulu saisir cette occasion de combiner l'activité physique et intellectuelle. »

Le secteur forestier englobe l'exploitation forestière, le commerce du bois, ainsi que la production de produits de la forêt : le bois d'œuvre et de sciage, les produits primaires tels que le mobilier, et les produits secondaires comme la pâte de bois destinée à l'industrie des pâtes et papiers.

« Il y a une grande diversité d'emplois offerts. Les ouvriers de scierie, les bûcherons, les opérateurs de machinerie lourde, les planteurs d'arbres, les arpenteurs forestiers, les estimateurs de bois, les conducteurs de grumier, les entrepreneurs en débroussaillage, les technologues en foresterie autorisés et les forestiers professionnels autorisés constituent le noyau du secteur, mais il y a aussi beaucoup d'autres emplois qui ont trait à divers aspects de la foresterie », explique Wes Van Camp.

L'industrie offre aussi des emplois dans d'autres secteurs, dont l'exploitation des scieries (opérateurs de grue, classeurs de bois débité, opérateurs de machinerie d'exploitation forestière, etc.), les sciences et le génie (biologistes, ingénieurs en génie électrique, chimiste, civil ou mécanique, etc.), l'administration et les métiers spécialisés (charpentiers, mécaniciens, soudeurs, électriciens, etc.).

D'ajouter M. Van Camp : « Les professionnels de la forêt, qui doivent être enregistrés et adhérer à une association professionnelle, et qui s'occupent de la planification de haut niveau, sont les personnes les plus recherchées actuellement. De plus en plus, le territoire forestier est partagé avec d'autres ressources et groupes d'utilisateurs, et compte tenu des changements associés à l'évolution du climat, il est impératif de disposer d'un effectif qualifié suffisant pour gérer ces scénarios de plus en plus complexes. »

En 2016, les exportations canadiennes de cette précieuse denrée ont atteint 29,5 milliards de dollars. Le bois de sciage, les produits de sciage et de menuiserie préfabriquée ainsi que les pâtes et papiers constituent la majeure partie des exportations.

companies, as well as the forest professionals backing those operations can be the backbone of entire towns," states Van Camp. "The number of jobs and the variety of skill levels needed to perform these jobs – from high school graduation to university degree – make the forestry sector an important keystone in all social classes."

Strict forest laws in Canada protect woodlands and maintain and promote sustainable forest management practices.

Van Camp says, "Industry and government alike are introducing and enforcing best practice management which promotes sustainable and economic forestry. The public has voiced how important sustainable forestry is and there is significant effort being made to become more and more sustainable. Forest professionals have both by mandate of their association, and by their own moral and ethical conscience a duty to protect the lands and manage them responsibly. These people are leading the charge towards greater sustainability through their actions and decision making. Additionally, legislation is being updated to ensure that the forestry industry is held accountable to be environmentally and economically sustainable."

The industry employed 205,660 Canadians in 2016 and provided a total income of about $16 billion, and Van Camp believes the future looks bright.

"The demand for forest professionals will continue to grow; especially as the baby boom generation continues to retire, creating lots of opportunities for employment", he says. "Some areas in forestry will see a decrease in job potential. As mills become more high tech and self-sufficient there will be less need for human involvement, meaning less jobs. Overall I believe that the forestry industry will continue to be a large player in providing jobs in Canada."

The industry appeals to potential employees for many different reasons.

"Forestry is a great way to get away from the stereotypical 9-5 desk job. It is a dynamic career that involves constantly adapting to new situations. Forestry allows you to be both physically and mentally challenged. The job also allows you to create and retain a connection with nature and uphold sustainable and environmentally responsible ideals," says Van Camp. "With so many aspects to forestry it is possible to dip your toes in without fully committing to see if you want to make a career in forestry. Try a summer of bush work (tree planting, surveying, etc.) and if you like it continue on with further education. Forestry occurs all around Canada but a large portion of forestry happens in small towns. Be prepared to spend some time in small towns or camp work. That being said there are opportunities everywhere."

« La foresterie est un puissant moteur économique dans de petites villes de tout le Canada, en particulier en Colombie-Britannique. Les emplois créés par les scieries et les entreprises connexes de récolte et de gestion forestière, de même que les professionnels forestiers qui soutiennent ces activités, sont souvent l'épine dorsale de toute une ville, relève M. Van Camp. Le nombre d'emplois et la diversité des niveaux de compétence – du diplôme d'études secondaires aux grades universitaires – nécessaires à leur dotation donnent au secteur forestier un rôle essentiel pour toutes les classes sociales. »

Au Canada, des lois strictes assurent la protection du territoire forestier ainsi que le maintien et la promotion de pratiques durables de gestion forestière.

Wes Van Camp l'affirme : « L'industrie et le gouvernement implantent et appliquent un mode de gestion fondé sur les meilleures pratiques, qui promeut une foresterie durable et économique. Le public a fait valoir toute l'importance d'une foresterie durable, et des efforts notables sont déployés pour optimiser la durabilité du secteur. Le mandat de leur association et leur propre conscience morale et éthique obligent les professionnels forestiers à protéger le territoire et à en assurer une gestion responsable. Par leurs actions et leurs décisions, ces gens sont à l'avant-garde du mouvement pour une durabilité accrue. De plus, des modifications législatives visent à responsabiliser l'industrie forestière à l'égard de sa viabilité environnementale et économique. »

L'industrie employait 205 660 Canadiens en 2016, pour une masse salariale d'environ 16 milliards de dollars. M. Van Camp estime que l'avenir est prometteur.

« La demande de professionnels forestiers va continuer d'augmenter, surtout à mesure que les baby-boomers prendront leur retraite, ce qui ouvrira de larges perspectives d'emploi, dit-il. En revanche, le potentiel d'emploi va diminuer dans certains secteurs de la foresterie. Plus les scieries adoptent la haute technologie et s'autonomisent, moins elles ont besoin de main-d'œuvre, ce qui se traduit par une baisse de l'emploi. Au total, je crois que l'industrie forestière demeurera un acteur important sur le plan de l'emploi au Canada. »

À plus d'un titre, l'industrie a tout pour plaire à ses employés éventuels.

« Faire carrière en foresterie est un excellent moyen d'échapper au stéréotype du travail de bureau de neuf à cinq. C'est un secteur dynamique qui exige une adaptation constante aux situations nouvelles. La foresterie nous appelle à relever des défis d'ordre physique et intellectuel. Elle nous permet aussi de créer et d'entretenir des liens avec la nature, et d'affirmer des idéaux durables et écologiquement responsables, assure M. Van Camp. Beaucoup d'aspects de la foresterie nous donnent la possibilité de faire un bout d'essai sans nous engager pleinement, juste pour voir si une carrière en foresterie nous intéresserait. Les étudiants peuvent trouver un emploi d'été sur le terrain (en plantation d'arbres, en arpentage, etc.) et, si cela leur plaît, poursuivre leurs études dans cette direction. La foresterie est omniprésente au Canada, mais une grande partie de cette industrie est ancrée dans de petites villes. Il faut être prêt à passer un certain temps dans ces petites villes ou dans les camps forestiers. Cela dit, il y a des possibilités d'emploi partout. »

Clean Energy Technologies – Integral to the Evolution of Natural Resource Extraction

Des technologies pour une énergie propre – Une évolution... toute naturelle

By/Par Sharon Frank

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Climate change, depletion of natural resources and a growing concern for the safety of our planet for future generations have contributed to the demand for cleaner, more sustainable energy technologies.

Les changements climatiques, l'épuisement des ressources naturelles et l'inquiétude croissante pour les futures générations sont autant de motifs favorables aux technologies énergétiques propres et durables.

Processing products and providing services that focus on renewable resources and sustainable energy while reducing waste make up this exciting and necessary branch of the natural resources sector.

Jeff Manser, Professor, Renewable Energies Technician Program at Niagara College says, "There is definitely an environmental benefit as it relates to climate change. When you see all of the concerns related to our climate and the apparent link between fossil fuel use and climate change, it becomes pretty clear that the clean energy sector has to be an integral part of any solution. It should be a sector that is poised for significant growth over the next few decades as we try to find solutions to address this challenge.

Renewable energy is produced primarily by solar, wind, hydro, geothermal and biomass energy. Solar power is generated by harnessing the energy from the rays of the sun, wind turbines convert kinetic energy from wind into an electrical power source, hydroelectricity comes from power plants that use falling water to generate energy, geothermal power comes from the heat of the earth's core and biomass energy is made from renewable organic material such as wood, solid waste, agricultural crops and landfill gases.

Cette branche stimulante et indispensable du secteur des ressources naturelles englobe la transformation des produits, la prestation de services fondés sur des ressources renouvelables et une énergie durable, et la réduction du gaspillage. Pour Jeff Manser, professeur au programme de techniques en énergies renouvelables du Collège Niagara, « l'environnement y gagne forcément, puisqu'il s'agit de lutter contre les changements climatiques. Pensez aux inquiétudes grandissantes que suscite le climat et au lien apparent entre les changements climatiques et l'exploitation des combustibles fossiles. Voilà pourquoi le secteur des énergies propres doit faire partie intégrante de la solution, et voilà pourquoi il connaîtra sans doute une croissance considérable pendant quelques décennies, le temps que nous trouvions les réponses ».

L'énergie renouvelable est fournie essentiellement par le soleil, le vent, l'eau, la Terre (géothermie) et la biomasse. L'énergie solaire est générée par les rayons du soleil. Pour tirer parti du vent, il faut des éoliennes qui convertissent son énergie cinétique en énergie électrique. L'hydroélectricité est produite par des centrales qui transforment la puissance d'une nappe d'eau déversante en énergie, et la géothermie

When you see all of the concerns related to our climate and the apparent link between fossil fuel use and climate change, it becomes pretty clear that the clean energy sector has to be an integral part of any solution.

Colleges, with their strong ties to industry, have first-hand knowledge of current and future business needs which allow them to train their students in the latest cutting-edge clean energy technologies.

Kerly Acosta Hitchcock, P.Eng, Program Head of Sustainable Energy Management (SEMAC) at the British Columbia Institute of Technology (BCIT) explains," BCIT is preparing its students by integrating sustainability into the curriculum. Sustainability is also being integrated into course delivery. Our energy management programs integrate sustainability, and so do the weekend in-person courses in renewable technologies, residential efficiency, and the online energy modeling course."

Manser notes that Niagara College is taking a similar approach, while looking at the future of the industry. "We are trying to prepare our students with a skill set that allows them to adapt to a changing environment. Instead of focusing in on one aspect of renewable energy, we want students to understand and develop fundamental

Voilà pourquoi le secteur des énergies propres doit faire partie intégrante de la solution, et voilà pourquoi il connaîtra sans doute une croissance considérable pendant quelques décennies, le temps que nous trouvions les réponses ».

désigne la chaleur des profondeurs de la Terre. La bioénergie, ou énergie de la biomasse, enfin, vient de matières organiques renouvelables comme le bois, les déchets solides, les cultures et les gaz qui émanent des décharges.

Grâce à de solides liens avec l'industrie, les collèges connaissent les besoins actuels et futurs, et peuvent donc enseigner à leurs étudiants les technologies de pointe en matière d'énergie propre.

Kerly Acosta Hitchcock, P. Eng, directrice du programme de gestion des énergies durables à l'Institut de technologie de Colombie-Britannique (British Columbia Institute of Technology ou BCIT), explique : « Le BCIT prépare ses étudiants en intégrant la viabilité des ressources dans ses programmes et ses cours. Nos programmes d'études en gestion de l'énergie font une large place à ce sujet, tout comme nos formations de fins de semaine, en personne, sur les technologies renouvelables, l'efficacité énergétique des résidences, et notre cours en ligne sur la modélisation de la consommation énergétique. »

Jeff Manser explique la démarche du Collège Niagara, similaire, mais résolument axée sur l'avenir de l'industrie. « Nous nous efforçons de préparer nos étudiants en les aidant à acquérir un ensemble de compétences qui leur permettront de suivre l'évolution de l'environnement. Au lieu de nous en tenir à un aspect de l'énergie renouvelable, nous voulons que nos étudiants comprennent et acquièrent des compétences fondamentales, applicables à divers domaines. Il leur faut notamment avoir de solides capacités analytiques de base. Les choses évoluent constamment, au fil des progrès des technologies et de l'évolution des exigences, et nous tenons à ce que nos étudiants puissent s'adapter et continuer d'apprendre après le collège. »

De fait, étant donné l'attention que suscitent les énergies renouvelables dans le monde, le domaine va continuer d'évoluer et de se diversifier.

Kerly Hitchcock rappelle que « les technologies de l'énergie propre sont partie intégrante du devenir des industries de l'énergie et de l'extraction des ressources. Puisque l'extraction tient une très grande place dans l'économie canadienne, les technologies connexes peuvent aussi contribuer considérablement à notre économie. »

Membre de Mission Innovation au côté d'autres pays, le Canada s'est engagé à rendre les énergies propres plus accessibles et plus abordables à l'échelle mondiale.

skills that they can apply in different areas. A strong analytical background is a must. Things are constantly changing as technology and requirements change. We want to prepare students to be able to adapt and continue to learn once they leave the College."

With a greater worldwide emphasis on renewable energies, the field will continue to develop and change over time.

Hitchcock says, "Clean energy technologies are part of an evolution of the energy and resource extraction industries. Because resource extraction is such a large part of Canada's economy, clean energy technologies have the potential to be a large contributor to the Canadian economy."

As a member of Mission Innovation, Canada is joining an increasing international commitment to make clean energy accessible and affordable globally.

Canada has committed to double government investments in clean energy research, development and demonstration over five years, including more than $2.3 billion in the country's 2017 Budget to meet those obligations and promote private sector involvement in developing clean energy technology. Anser adds, "As it is a potential growth sector, I think it's important to develop the sector for the benefit of the economy, and the local environment. Having development here in Canada will result in direct benefit to Canadian industries and the greater population. It also then becomes technologies and best practices that can be shared with others. Industry, as well as colleges and universities here in Canada are all able to contribute to this development process."

Pour s'acquitter de ces obligations et stimuler la participation du secteur privé à la création de technologies adaptées, le gouvernement fédéral a promis entre autres de doubler d'ici cinq ans ses investissements en recherche, développement et démonstration en matière d'énergies propres, ce qui comprend plus de 2,3 milliards $ figurant au budget de 2017. M. Anser précise : « Étant donné le fort potentiel de croissance, il me paraît important d'exploiter le secteur au profit de l'économie et de l'environnement. Si nous faisons du développement ici même, au Canada, les résultats profiteront directement à l'industrie canadienne et à la population en général. Sans compter que les technologies mises au point et les pratiques éprouvées peuvent ensuite être transférées. Notre industrie, nos collèges et nos universités peuvent tous contribuer à ce processus de création. »

L'intérêt croissant envers la durabilité des ressources, les changements climatiques, la déforestation et d'autres enjeux liés à l'environnement à l'échelle planétaire ne peut qu'augmenter les débouchés professionnels en gestion de l'énergie, car les industries vont être plus nombreuses à chercher des moyens de réduire leur empreinte carbone.

« Les gestionnaires de l'énergie vont avoir l'embarras du choix sur le marché du travail, peu importe la réglementation adoptée pour protéger l'environnement. Les ressources naturelles ne sont pas illimitées et le coût de l'énergie va continuer

With an ever-increasing focus on sustainability, climate change, deforestation and other global environmental issues, employment in the field of energy management is expected to rise as more industries look for ways to minimize their carbon footprints.

"Employment opportunities for energy managers will continue to grow, regardless of regulations in place to protect the environment. There is a limit to natural resources; the cost of energy will continue to rise as population increases. Hence, companies that use energy to function will look for ways to become more energy efficient."

There are plenty of employment opportunities available in the renewable energy sector for people with the proper skill sets.

"You'll want to have an interest in problem solving, a willingness to travel and a commitment to lifelong learning as both needs and technologies change rapidly," Manser advises. "I would point out that there are a lot of different roles available in the industry. Potential students will want to have strong math and analytical backgrounds. It offers the opportunity to apply a technical skill set in a growing field, and can help to create an improved environment. If the thought of a career that is both challenging and rewarding is interesting to you, then it is something worth considering."

Graduates of energy management programs are in demand in such sectors as mining, energy generation and storage, industrial bioproducts manufacturing, conservation, natural resources, agriculture and many more. In fact, most industries and businesses are making environmental sustainability an increasingly important part of their corporate culture, meaning employment opportunities are expanding rapidly.

Students considering entering the field can look forward to a long career in an area where they will truly make a significant, positive impact to both the environment and the economy of Canada.

Hitchcock shares, "Clean energy technologies minimize environmental impacts such as green house gases and rising temperatures and provide adaptation solutions for climate change as well as offer meaningful employment."

d'augmenter parallèlement à l'augmentation de la population. Les entreprises qui ne peuvent fonctionner sans énergie vont être à la recherche de procédés écoénergétiques. »

Dans le secteur des énergies renouvelables, entre autres, les postes ne manquent pas pour les gens dotés des compétences pertinentes.

« Vous devez aimer résoudre des problèmes, voyager et apprendre, puisque les besoins et les technologies évoluent rapidement, prévient Jeff Manser. C'est un secteur où l'emploi est très varié. Les étudiants qui ont de solides de bases en mathématiques et une bonne capacité d'analyse – ce sont des impératifs – vont pouvoir appliquer leurs compétences techniques dans un secteur en croissance et contribuer à l'amélioration de l'environnement. Si l'idée d'une carrière stimulante et gratifiante vous intéresse, c'est un domaine à envisager. »

Les diplômés des programmes d'études en gestion de l'énergie sont très recherchés dans des secteurs comme les mines, la production et le stockage d'énergie, la fabrication de bioproduits industriels, la conservation, les ressources naturelles, l'agriculture et beaucoup d'autres. En fait, la plupart des industries et des entreprises font de la protection de l'environnement un volet de plus en plus important de leur culture, ce qui fait augmenter rapidement les occasions d'emploi.

Les étudiants qui pensent choisir un programme du genre pourront faire une longue carrière dans un domaine où leur apport à l'environnement et à l'économie du Canada sera particulièrement significatif.

Le dernier mot à Kerry Hitchcock : « Les technologies liées à l'énergie propre réduisent l'incidence de phénomènes nuisibles comme les gaz à effet de serre et la hausse des températures, et fournissent des moyens d'adaptation aux changements climatiques tout en ouvrant des débouchés professionnels très intéressants. »

Build a high-demand construction career in the resource sector

Les carrières en construction dans le secteur des ressources naturelles : des emplois à forte demande

By/Par BuildForce Canada

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Canada is rich in natural resources and offers significant potential for developing more renewable resources, such as wind and solar power. But we can't leverage the value of these resources unless construction professionals build something first.

Le Canada est riche en ressources naturelles et possède un important potentiel de développement des ressources renouvelables, comme l'énergie éolienne et solaire. Mais nous ne pouvons pas tirer profit de ces ressources si les professionnels de la construction ne construisent pas quelque chose d'abord.

Mines require the construction of tunnels or excavations deep into the earth to extract iron, copper, aluminum, magnesium, and even gold and diamonds, and building the facilities that will help process them. Oil and gas extraction requires the construction of specialized wells, refineries and pipelines — and construction maintenance workers are required to keep these facilities in top shape. Wind farms require the specialized talents of construction workers who can build and install massive wind turbine towers and provide the electrical infrastructure, including power lines and transmission towers, that bring electricity to market. Installing vast solar arrays also involves the skills of construction workers who can erect photovoltaic panels and electrical equipment that can convert the sun's energy into usable power.

Keeping Canada's natural and renewable resource industries moving requires a team of talented individuals who follow their unique interests to contribute. Some of the careers of construction

Pour extraire le fer, le cuivre, l'aluminium, le magnésium et même l'or et les diamants des mines, il faut construire des tunnels et creuser profondément dans la terre. Il faut aussi construire les installations pour traiter ces ressources. Pour extraire le pétrole et le gaz, il faut construire des puits spéciaux, des raffineries et des pipelines, et les travailleurs de la construction et de l'entretien doivent maintenir ces installations en bon état. Dans les parcs éoliens, les talents spécialisés des travailleurs de la construction sont requis pour construire et installer d'immenses tours d'éoliennes et l'infrastructure électrique, notamment les lignes électriques et les pylônes de transmission, qui achemine l'électricité vers les marchés. Pour mettre en place un vaste réseau solaire, on fait aussi appel aux compétences des travailleurs de la construction qui peuvent installer les panneaux photovoltaïques et le matériel électrique qui transformeront l'énergie solaire en électricité utilisable.

workers employed in these fields are: blasters and drillers; boiler and pipe insulators; boilermakers; bricklayers; carpenters; concrete finishers; construction craft labourers; crane operators; electricians; estimators; gasfitters; heating, ventilation, air conditioning and refrigeration mechanics; heavy equipment mechanics; heavy equipment operators; ironworkers; lineworkers, millwrights; sheet metal workers; steamfitters and pipefitters; surveyors; and welders.

There's also plenty of room for advancement to positions that include construction supervisors and project managers. The ranks of construction executives are often filled by workers who started their careers in the trades.

Based on your interests and how you want to work, you can choose a career that involves outdoor work, indoor work, or both. In the trades, you'll be assisted by an increasing array of high-tech tools that will help you measure, build, and install, or operate some of the largest pieces of heavy equipment in existence via computer screen.

There's plenty of demand for workers in companies and projects across Canada. BuildForce Canada's construction and maintenance labour market projections anticipate that in the decade from 2019 to 2028, the construction industry will require 44,100 more workers than it does today — a 4% increase.

But the real demand story is found in the unfolding retirement bubble that will see older workers leaving the construction industry in record numbers. Over the same 10-year period, 261,100 workers are expected to retire. That represents about one in four current

Pour assurer la pérennité des secteurs des ressources naturelles et renouvelables du Canada, il faut une équipe de personnes talentueuses qui se consacrent à leur passion afin de contribuer. Parmi les emplois des travailleurs de la construction dans ces domaines, mentionnons les dynamiteurs et les foreurs, les calorifugeurs de chaudières et de tuyaux, les chaudronniers, les briqueteurs-maçons, les charpentiers-menuisiers, les finisseurs de béton, les manœuvres qualifiés en construction, les grutiers, les électriciens, les évaluateurs, les monteurs d'installations au gaz, les mécaniciens en chauffage, en ventilation, en climatisation et en réfrigération, les mécaniciens d'équipement lourd, les conducteurs d'équipement lourd, les monteurs de charpentes métalliques, les monteurs de ligne, les mécaniciens de chantier, les tôliers, les monteurs d'appareils de chauffage et les tuyauteurs, les arpenteurs et les soudeurs.

Il existe également de nombreuses possibilités d'avancement à des postes comme les surveillants de la construction et les directeurs de projet. Les postes de cadres supérieurs en construction sont souvent occupés par des travailleurs qui ont commencé leur carrière dans les métiers.

Selon vos champs d'intérêt et la façon dont vous souhaitez travailler, vous pouvez choisir une carrière où vous serez appelé à travailler à l'extérieur, à l'intérieur ou les deux. Dans le domaine des métiers, vous vous appuierez sur un nombre grandissant d'outils à la fine pointe de la technologie qui vous aideront à mesurer, à construire et à installer ou à conduire par ordinateur certains des plus gros équipements lourds qui existent.

La demande pour les travailleurs est forte dans les entreprises et les projets au Canada. Selon les prévisions relatives au marché du travail du secteur de la construction et de l'entretien de ConstruForce Canada, durant la décennie de 2019 à 2028, le secteur de la construction aura besoin de 44 100 travailleurs de plus qu'aujourd'hui, une augmentation de 4 %.

Mais le facteur qui influence vraiment la demande est la vague de départs à la retraite qui fera en sorte qu'un nombre record de travailleurs plus âgés quitteront le secteur de la construction. Durant la même période de dix ans, 261 100 travailleurs devraient partir à la retraite, soit environ le quart des travailleurs de la construction actuels. Le secteur est à la recherche de jeunes femmes et hommes, d'Autochtones et de nouveaux Canadiens qui souhaitent mener une carrière en construction à long terme.

On peut trouver des emplois dans le secteur des ressources naturelles pratiquement partout, de la côte est à la côte ouest, en passant par le nord du Canada. Vous pouvez travailler dans des régions éloignées ou plus près des principales agglomérations. Vous pouvez travailler selon un horaire stable et prévisible ou choisir un emploi en entretien dans le secteur de l'énergie qui offre du travail intense et concentré, puis une période de repos.

construction workers. The industry is looking for young women and men, Indigenous people, and new Canadians who will be willing to invest their careers in construction over the long term.

Resource jobs are found pretty much everywhere, from Canada's north to the east and west coasts. Work in remote sites or closer to major population centres. Work steady, predictable hours, or choose a job like energy-industry maintenance that offers lots of concentrated and intense work and then some down time.

Wages are very competitive and often include attractive benefits packages, including medical and dental coverage. Each year, Canadian Business highlights Canada's best jobs. For 2019, six of the top 25 jobs involved construction careers that are in high demand for natural or renewable resource projects:

#4: **Power systems electrician** — median salary $86,000.
#5: **Mining and quarrying supervisor** — median salary $83,200.
#6: **Pipefitting supervisor** — median salary $81,000.
#10: **Construction manager** — median salary $83,000.
#15: **Power line & cable worker** — median salary $80,000.
#23: **Oil and gas drilling supervisor** — median salary $85,000.

There are many ways to enter the construction field, but people generally choose one of three.

You can apply for an entry-level position in the construction industry, learn the ropes and work your way up.

You can complete programs in colleges, technical institutes, and universities for programs that range from construction-related technician and technology diplomas to degree programs such as electrical engineering technology, building construction technician, and powerline technician. You could also aim for construction-related business management programs.

You can also enter the field through an apprenticeship program and spend about 80% of your time on the job and 20% in school. Because you're working, you'll get paid straight out of the gate. If you pass all the requirements, you'll become a certified tradesperson.

Natural and renewable resources will continue to represent a huge slice of Canada's economy. With the right training and education, you can be an important part of that sector in high-demand jobs that pay well and allow you to choose how and where you want to work. What's not to like?

Les salaires sont très concurrentiels et comprennent souvent des avantages sociaux intéressants, comme l'assurance maladie et dentaire. Chaque année, Canadian Business présente les meilleurs emplois au Canada. En 2019, six des 25 meilleurs emplois étaient des carrières en construction très recherchées dans le secteur des ressources naturelles ou renouvelables :

No 4 : **Électricien de réseaux électriques** – salaire médian de 86 000 $
No 5 : **Superviseur de mines et carrières** – salaire médian de 83 200 $
No 6 : **Superviseur en tuyauterie** – salaire médian de 81 000 $
No 10 : **Directeur de la construction** – salaire médian de 83 000 $
No 15 : **Monteur de lignes électriques et de câbles** – salaire médian de 80 000 $
No 23 : **Superviseur du forage pétrolier et gazier** – salaire médian de 85 000 $

Il existe de nombreuses façons d'entrer dans le secteur de la construction, mais les gens choisissent généralement l'une des trois méthodes suivantes.

Vous pouvez postuler pour un poste de débutant dans le secteur de la construction, apprendre les ficelles du métier et gravir les échelons.

Vous pouvez étudier dans un collège, un institut technologique ou une université en vue d'obtenir un diplôme de technicien dans un domaine lié à la construction, un diplôme en technologie ou en technologie du génie électrique, ou encore un diplôme de technicien en construction de bâtiments ou de technicien de lignes électriques. Vous pouvez aussi suivre un programme de gestion lié au secteur de la construction.

Enfin, vous pouvez entrer dans le domaine par l'entremise d'un programme d'apprentissage dans le cadre duquel vous passerez 80 % de votre temps au travail et 20 % en classe. Et comme vous travaillerez, vous serez payé dès le départ. Si vous satisfaites à toutes les exigences, vous devenez une personne de métier certifiée.

Les ressources naturelles et renouvelables continueront de représenter une grande part de l'économie canadienne. Avec la bonne formation et les bonnes études, vous pouvez jouer un rôle important dans ce secteur où les emplois très recherchés et bien payés vous permettent de choisir où et comment vous souhaitez travailler. Que demander de mieux?

Visit careersinconstruction.ca to learn more.

BuildForce Canada is a national industry-led organization committed to working with the construction industry to provide information and resources to assist with its management of workforce requirements.

Visitez le site carrieresenconstruction.ca pour en savoir plus.

ConstruForce Canada est un organisme national dirigé par le secteur, qui travaille en collaboration avec le secteur de la construction afin de fournir l'information et les ressources nécessaires à la gestion des besoins en main-d'œuvre.

CANADORE college.ca

Our students graduate with the job-ready skills needed to be on the leading edge of these emerging fields.

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Program Profiles

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Canadore College

School of Environmental Studies and Biotechnology

Canadore College is home to 11 schools of study, including the well-renowned School of Environmental Studies and Biotechnology. The world is in a constant state of change with increasing global populations, pollution, disasters and biological factors. There is a growing need for skilled professionals to work in vital areas that affect our daily lives including environmental and resource management, alternative energy and sustainable development, disease control, customized medicine and food science.

Canadore learners are job ready thanks to laboratory skills development, intensive field experience, provincial ministry certifications, work placements and other hands-on learning opportunities both domestically and internationally. Study options include a range of one to three year credentials in biotechnology technician/technologist, environmental technician – protection and compliance, environmental technology, environmental management, and functional genomics and clinical consultation.

In 2019, Canadore environmental students travelled to Paraiso Provedencia, Costa Rica and volunteered with Green Communities, an organization that engages in sustainable organic farming practices. The opportunity included experiential learning with an organic coffee bean plantation. Plantations in the rainforests of Costa Rica are susceptible to a variety of environmental challenges such as, soil erosion, nutrient depletion and pesticide run-off. The students learned about mitigation and remedial techniques, sustainable agriculture and tourism and participated in local awareness activities to promote a switch from conventional to more ecological supportive options.

Canadore students also have access to the College's innovative genomics laboratory, which was unveiled in August 2019. The lab boasts some of the most leading-edge technology in Canada, including two DNA sequencers that provide opportunity for research in areas such as environmental monitoring, pharmacology, addictions, surgical implants and disease prevention.

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Cambrian College

Mining, Environment and Applied Research

Not that long ago, Sudbury, Ontario's landscape resembled the moon. Formed by a meteorite impact more than a billion of years ago, the community comes by its rocky terrain honestly. The absence of trees and plants, however, was the result of early mining activity. As Sudbury established itself as one of the world's leading nickel producers, the countryside continued to take a hit. By the 1970s, activists and community leaders, working in concert with the provincial government, academia and industry, sought to correct Sudbury's moonscape appearance with a landscape reclamation campaign. Over the last four decades, nearly 10 million trees have been planted and thousands of hectares of land have been rehabilitated. The transformation, which has been internationally recognized, has been nothing short of magnificent.

At Cambrian College, in Sudbury, Ontario, our students and graduates continue this tradition of working in the mining industry, but do so with a commitment towards environmental stewardship.

Students from our Mining Engineering Technology program, which is a nationally-accredited program and the only one of its kind in Ontario, learn the skills and receive the hands-on experience needed to become part of an underground or open-pit mine engineering team anywhere in the world. The practical skills developed in third year, such as mine ventilation planning will help them contribute to a larger industrial trend in which mining companies are going green by reducing power consumption. Students get to study the environmental transformation and mining evolution in Sudbury up close through field trips and hands-on demonstrations at active mine sites.

While students from Cambrian's suite of Environmental programs, such as the Environmental Technician and Environmental Monitoring & Impact Assessment programs, may not always end up in the mining industry, they are developing skill in the areas of environmental monitoring and biodiversity conservation that mining companies are looking for in the 21st century. Students in these programs learn about environmental impact assessment methods, remediation technologies, and environmental laws and regulations that can be applied across sectors, but particularly mining.

Outside of these programs, which can set students up for a career in the mining sector, Cambrian College students can also prepare for the workforce by gaining a work-integrated learning opportunity on research projects with an industry partner. Facilitated by the College's Applied Research Department, these specialized projects give students a hands-on experience working with faculty and community partners to solve a real industry challenge. In the realm of mining innovation, Cambrian's Chemical Engineering and Process Control technology students have had the opportunity to work with a company, BacTech, that uses bacterial cultures to break down mine waste (tailings). By the end of the project, the students had contributed to optimizing a unique mining process that has the potential to significantly decrease the environmental impact of mining tailings.

Cambrian students in these programs aren't just gaining a credential, they are becoming part of a rich tradition of environmental stewardship in mining and ensuring that Sudbury's green legacy is in good hands.

Connect with us: **cambriancollege.ca**

Centennial College

Energy Systems programs meet a rising demand for new skills

A growing skilled-labour shortage and rapidly advancing energy technology are creating enormous demand for technologists and technicians whose knowledge spans the mechanical, electrical, electronic and automation engineering fields.

Centennial College's ***Energy Systems Engineering Technology program*** focuses on society's changing views of energy and the environment, which are transforming the utility and construction sectors. This ***three-year advanced diploma program*** teaches students how to integrate sustainable energy technologies in a manner consistent with our urban environments. In one example, graduates can work with architectural firms to integrate energy technologies into their sustainable "green" building designs. The ***two-year Energy Systems Engineering Technician program*** similarly examines innovative energy sources such as solar, wind, hydro, fuel cells, gas turbines and biomass to produce electricity, heat and air conditioning for homes and businesses. Graduates benefit from a unique blend of technical, managerial and entrepreneurial skills that are highly sought after. ***Both programs*** equip learners with knowledge of renewable, distributed energy systems, building automation systems and energy efficiency in general. Graduates have the capability to design heating, ventilating, air conditioning and refrigeration systems, and operate power plants of various sizes.

The three-year technology program offers a co-op option that allows students to gain hands-on experience as an employee in the field over three consecutive work terms. The experience puts classroom lessons into practice and allows participants to gain valuable contacts for their career. ***Qualified Energy Systems Engineering Technology graduates*** may be eligible to continue in an articulated degree program with selected universities. Conversely, the Fast-track option allows qualified students to enter the Technology program in year two. *Both Centennial programs have met the national accreditation requirements established by the Canadian Council of Technicians and Technologists and, as such, have received national accreditation status by the Canadian Technology Accreditation Board.*

Connect with us: **centennialcollge.ca/setas**

College of the North Atlantic

School of Natural Resources

Agriculture Technician (Co-op) (NEW)

Graduates will assist in overcoming challenges identified in the sector, including agriculture production levels; agriculture business development; human resources and labour; research, innovation and diversification; market access and development; and, processing and value-added agrifoods products. Students are exposed to the study of plants and animals, including the biological effects of soil, climate and chemical management activities, and also a business component, which covers areas of agricultural sales and marketing, land use in Canada, and the business of agriculture, among others.

Geological Technician (NEW)

Students develop skills, such as field data collection; field sample collection and preparation; rock, soil and sediment analysis; geo-chemical data interpretation; geophysical data collection and interpretation; and, field navigation. Students also learn to operate equipment relevant to performing the above-listed skills.

Fish and Wildlife Technician

This program provides a balance of field and classroom experiences that include a computer-based data collection and analysis component, and is designed to reflect the trend towards integrating a wide range of natural resources technology within government departments and other agencies. The requirement for the forest industry to consider wildlife in its management practices and the increased monitoring/management of freshwater and marine resources highlights the need for this program.

Forest Resources Technician

This program strives for innovative training that reaches beyond the classroom with a strong emphasis on “real life” experiences. Students will be able to identify forest ecosystem issues, challenges and alternate solutions, as well as evaluate and present sustainable techniques related to protection, management and use.

GIS Applications Specialist (Post Diploma)

Graduates are considered to be the "experts" who provides technical expertise to produce and analyze spatial information in the effective application of Geographic Information Systems (GIS), remote sensing, Global Positioning Systems (GPS), internet mapping solutions and data visualization technologies. This program has an intensive three-semester curriculum that uses current high-end technology tools to collect, store, manipulate, analyze, interpret and communicate geographic information within a variety of disciplines.

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Connect with us: **cna.nl.ca**

Fanshawe College

Honours Bachelor of Environmental Design and Planning

With 12 programs to choose from, Fanshawe degrees give you the best of both worlds: theoretical knowledge combined with hands-on, experiential learning. That's why our graduates are uniquely skilled and in high demand.

Students learn through a perfect mix of industry experts and Ph.D. faculty committed to teaching excellence and research. "The novel approach to learning and the dedicated faculty at Fanshawe were vital to my success upon graduating," says Alex Waffle, Honours Bachelor of Environmental Planning graduate and Landscape Architect and Manager of Design (pictured above).

Fanshawe's Honours Bachelor of Environmental Design and Planning combines the theory and techniques of landscape architecture, urban design and physical planning with the technical skills required for geographic information systems, computer-aided design, visualization and presentation. Students graduate with a strong knowledge in both streams, and all Fanshawe degrees feature pathways to a master's degree or teachers' college.

During four years of study, students get the hands-on experience needed to hit the ground running in the workplace. Digital technologies and design and communications methods are implemented throughout the program, in alignment with workplace standards. Students apply their knowledge in three co-operative work placements and in the final semester they create and execute a Capstone Integrated Project. The project explores their areas of strength and contributes greatly to the students' portfolios.

Graduate career-ready and join a growing network of alumni who work in the private sector as planning and GIS consultants, landscape architects and developers, or in the public sector with municipalities, conservation authorities and provincial ministries.

"Design and planning theory are coupled with applied and collaborative learning and advanced technical skills in visualization and geographic information systems," says Andrew Wilson, Program Coordinator, "which prepares students and graduates to respond comprehensively and creatively to employers' and clients' requirements to immediate effect."

Connect with us: **fanshawec.ca/degrees**

Fleming College

Environmental and Natural Resource Sciences

If you are looking for flexibility and options when it comes to your career in Environmental and Natural Resource Sciences, Fleming College's Common First Semester provides the opportunity to discover which specific career area will best suit your interests and skills.

"Fleming's core Environmental and Natural Resource Sciences diploma programs share a common first semester, offering students the opportunity to meet with faculty, program coordinators and upper-semester students who can share their experiences to help you decide on a career path that's right for you," said Brett Goodwin, Dean, Principal, School of Environmental and Natural Resource Sciences.

During your time in Common First Semester, you will be exposed to the many career options available in the different program areas, while you acquire a base of knowledge and fundamental skills that are transferable. "I entered Common First Semester knowing I wanted to work in Environmental Sciences in order to make a positive impact on our environment, however I didn't know how or exactly what I wanted to do," said Hilary Uez, current Fleming College Ecosystem Management Technician student. "Common First Semester allowed me the opportunity to explore my options by exposing us to a variety of sectors and introducing us to new ideas and concepts."

Programs within Fleming's School of Environmental and Natural Resource Sciences include:

- *New*: Conversation Biology Technician
- Earth Resources Technician Co-Op
- Ecosystem Management Technician/Technology
- Environmental Technician/Technology
- Fish and Wildlife Technician/Technology
- Forestry Technician
- Resource Drilling Technician

"The range in subject matter combined with helpful insight from my professors allowed me to make an informed decision to stay in the Ecosystem Management Technician program," continued Uez. "After completing my first of three years at Fleming College, I am confident I have chosen a field that will allow me professional growth and will continue to fascinate me for the foreseeable future."

Connect with us: **flemingcollege.ca/senrs**

Lakeland College

Unique learning opportunities produce oil and gas leaders

Fueled by industry and innovation, Lakeland College is a leader in education for power engineering and the oil and gas sector.

Hands-on learning begins at the $17-million Energy Centre. Heavy oil and power engineering (HOPE) students take the lead in the Cenovus Lab to produce functional energy – up to 215 kilowatts – to heat and power the Lloydminster campus. This modern facility is home to state-of-the-art equipment. In fact, Lakeland is the only post-secondary institution in Western Canada that has a once-through steam generator.

Students also gain extensive experience in steam-assisted gravity drainage (SAGD), refining, upgrading, gas plant operating, power generation and more. Their range of knowledge and experience gives them the confidence to challenge the provincial Alberta Boiler Safety Association (ABSA) 4th and 3rd Class power engineering exams. In 2019, second-year HOPE students achieved an 86% pass rate on the 3rd Class ABSA exam.

As the only college in Alberta that offers controlled practicum placements for these programs – a six-week placement for heavy oil operations technician and first-year HOPE students, as well as a three-month one for second-year HOPE students – Lakeland students graduate industry-ready.

They are equipped with the knowledge and skills to excel as power engineers and beyond the petroleum industry. Their career opportunities are broad, including oil and gas plants, power generation plants, sour gas processing plants, food processing plants, institutional facilities, pulp mills, hospitals, educational facilities and more.

Lakeland also offers energy-related professional development programming onsite and online. The college's 2nd Class power engineering program is the only one in Alberta to provide a full-time face-to-face format in its entirety. Lakeland also has a petroleum management diploma program to help industry professionals maximize their work experience to grow management and leadership skills.

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Connect with us: **lakelandcollege.ca/energy**.

ENGINEER A BRIGHT FUTURE

Take charge of your future at Lakeland College

We offer cutting-edge facilities at our Lloydminster campus, specialized programs and experienced instructors.

Industry helped design our programs and our labs so you know you'll develop needed skills not only for the petroleum industry, but anywhere there's a need for power engineers.

Our programs:

- *Heavy oil operations technician (4th Class power engineering)*
- *Heavy oil power engineering (4th and 3rd Class power engineering)*
- *2nd Class power engineering*
- *Petroleum management*

Ask us about online options.

Our Energy Centre features:

- *Once-through steam generator*
- *Four high-pressure boilers*
- *Two-storey distillation tower*
- *Water treatment equipment*
- *Cooling tower*

As you take the lead operating equipment in our Energy Centre, you'll generate heat and electricity for our Lloydminster campus (Alta./Sask.).

lakelandcollege.ca | 1.800.661.6490

Lakeland COLLEGE

Lethbridge College

Environmental Science programs

Be ready – to take your passion for the outdoorsto the next level at Lethbridge College

Students who are ready for a rewarding career working in environmental sciences should look to Lethbridge College's applied degree programs. Whether studying Conservation Enforcement or Ecosystem Management, students benefit from experienced instructors, as well as thoughtfully designed and well-respected curriculum and training.

The college's Bachelor of Applied Science in Conservation Enforcement degree equips students to respond to the diverse challenge of protecting Canada's valuable land, wildlife and fisheries resources. This degree was the first of its kind to be offered in Canada and includes a unique, eight-month directed field study at the end of the program.

"The curriculum gave me the technical background in wildlife management, fisheries management and all the resource-type management courses to understand the resources that I was enforcing the law with," says Miles Grove, who earned his Conservation Enforcement degree in 1990. "The college set me up perfectly to get a job as a wildlife officer. I have a great career, and it all started with me going to Lethbridge College," adds Groves, who now works as the Director of Operations for Fish and Wildlife Enforcement in Edmonton.

The Bachelor of Applied Science in Ecosystem Management degree is unique in western Canada and prepares students for a rewarding career in fish and wildlife management or restoration and remediation. Designed with input from environmental industry partners, this program integrates applied field and lab skills with theoretical studies, and it culminates with an applied research project.

"I chose Lethbridge College because of its location, smaller class sizes and the hands-on component of the program," says Luiz Madeira, a student in the Ecosystem Management degree program. "The best parts of the program are the outdoor experiences and the opportunity to learn from instructors with industry experience who care about students' well-being and academic performance."

Connect with us: **lethbridgecollege.ca/em**

Northern Lakes College

Creating Crisp, Clean, and Free Solar Power at NLC

Northern Lakes College Electrical instructor Martin Engler brings his passion for alternative energy into his classroom, inspiring students to look beyond the conventional. As a classroom project, Electrical students Kurtis Lunty and David Douillard built a portable, four-panel solar array capable of converting abundant Alberta sunlight into 1064 watts of electrical power. This power charges the batteries on a 2200-volt amp, battery-based solar system, which would be ideal for providing the electrical supply for a small cabin.

Engler included the class project to provide students the experience of working with electrical materials commonly used in northern Alberta's industrial settings. "It involves a lot of precision cutting, and provides practice using the tools required for such materials." Engler explains that the portable solar array feeds a two-sided panel, which includes both battery-based and grid-tie systems. Battery-based systems are standalone solar systems suitable for off-grid dwellings. The grid-tie option, including both string inverter and micro inverter systems, is suitable for residential use.

Pre-Employment Electrical student Kurtis Lunty is from Forestburg, Alberta. He found his way to NLC because it is one of the few Alberta colleges offering the Pre-Employment Electrical program. David Douillard of Slave Lake is a First Period Electrical student and employed by an Edmonton-based electrical company. They both appreciate the small class sizes, which provide a lot of one-to-one time with instructors.

Northern Lakes College (NLC), located in northern Alberta, provides quality programs through distributed learning to over 6,000 students annually. NLC offers certificate and diploma programs in Business, Health Sciences and Allied Health, Human Services, Technology, Trades, University Studies, and Academic Upgrading. The College collaborates with partners to offer degree completion opportunities, including a Bachelor of Education and a Bachelor of Social Work. NLC provides professional accreditation and certificate programs through its Continuing Education and Corporate Training Department.

Connect with us: **northernlakescollege.ca**

Sault College

School of Natural Environment

Sault College has a rich and storied history in Natural Environment Education. Forestry has been a flagship program at the College since the 1968 Charter. Over the years, jobs in the Natural Environment have broadened beyond the typical 'Forest Industry' model and programming has evolved to match the trend. Diploma options at Sault College now include:

- Forestry Technician - Conservation
- Fish and Wildlife Conservation
- Natural Environment Technician/Technology
- Adventure Recreation and Parks
- Natural Resources / Environmental Law (Ontario Graduate Certificate)

At the root of these programs are the experiential learning opportunities that take place in the field. The Sault College campus boasts its own 50-hectare field lab where outdoor lessons enrich student education. Beyond this urban green space, the rugged beauty of the Sault Ste. Marie/Algoma region, with Lake Superior and diverse forest habitats, make for an unparalleled classroom environment.

Field Camps are the Sault College fall ritual and rite of passage for all student Technicians. Nothing bonds a group of students with the environment than camping and doing field work together. Fifty plus years of field camps have proven that new skills and lifetime bonds make for a solid foundation for the school year.

Another key program feature is the opportunity to complete a co-op work placement. Many student testimonials point to this experience as a critical piece of their education. Whether fighting forest fires, monitoring wildlife, or working within the provincial park system, placements help students build their network and carve a niche. An added bonus might include working in a new part of Canada, as Sault College students are in demand across the country.

Our School of Natural Environment offers an enriching education for students interested in a related field of employment. If working outdoors to protect, enhance and improve nature is a career goal, there is no better destination to begin the journey. Join the School of Natural Environment and make your impact.

Connect with us: **saultcollege.ca/nature**

Sheridan College

Chemical Sciences, Technology, Technician and Environmental Control Programs

An integrated suite of 2-year, 3-year and 1-year post-graduate programs: Chemical Laboratory Technician (2 year), Environmental Technician (2 year), Chemical Engineering Technology (3 year with optional co-op), Chemical Engineering Technology – Environmental (3 year with optional co-op).

These programs are suited for students who enjoy chemical sciences and moving seamlessly between the classroom and the laboratory. All chemical and environmental programs have the same admission requirements, and admissions are managed as a whole. This means that applicants can easily move between the programs before they start or during their studies. Hands-on experience is acquired with our industry-standard laboratory-based courses. Graduates enjoy a wide range of careers in laboratories, chemical manufacturing or environmental industries.

Technology programs are ideal for students interested in a combination of chemistry, engineering and the environment. With optional co-op, students can experience up to three paid work term experiences. **The dual emphasis on core chemical engineering and chemistry is unique to Sheridan.** There are pathways to university degrees, and graduates can pursue a 4-year chemical engineering degree with an additional 5 terms of study. Career opportunities exist in chemical manufacturing, food, pharmaceuticals, laboratories, the environmental industry and more.

Technician programs are designed for students interested in chemistry, laboratory science and the environment, and allow students to specialize in manufacturing or environmental applications. Career opportunities exist in a wide range of laboratories that support industry, the environmental industry and environmental regulatory agencies. There are also opportunities to work outside the lab in the environmental industry.

Environmental Control, a **post-graduate certificate program**, is an excellent educational and career opportunity for students who have graduated from a chemical science-based postsecondary program.

Students can learn to apply their previous chemical sciences education to the environmental sector, and in the process open a wide range of career options. Co-op is an option.

Connect with us: **sheridancollege.ca**

Prepare for an exciting career working in laboratories, chemical manufacturing, the environmental industry and beyond!

Whether it's a two-year diploma, three-year advanced diploma or one-year postgraduate certificate, Sheridan's School of Applied Chemical and Environmental Sciences offers optional co-ops and work placements to combine theory with practical learning to get your career started in the right direction.

Each program also features several lab-based courses per term, giving you experience working with the latest technology and equipment.

- **Chemical Laboratory Technician**
- **Environmental Technician**
- **Chemical Engineering Technology**
- **Chemical Engineering Technology – Environmental**
- **Environmental Control**

Sheridan | Get Creative

College of New Caledonia

Natural Resources and Forest Technology

The College of New Caledonia' (CNC) two-year interdisciplinary Natural Resources and Forest Technology (NRFT) program is your gateway to exciting and fulfilling career opportunities in the natural resources sector across a range of industries.

NRFT might be for you if you want to challenge current forestry issues, spend your days outdoors, make a difference in how human activities impact natural resources, and expand technological applications in land use and land stewardship. Combining classroom and laboratory work with field exercises and team projects provides CNC's students with enhanced problem solving and critical thinking skills valued by employers.

CNC's faculty have real-life experience in the natural resources sector and are actively engaged with industry and in applied research in the CNC Research Forest. Covering 12,500 hectares, this dynamic land base supports regular harvesting and forestry activities with the expectation that the operations are economically and environmentally sustainable, while providing learning and work opportunities for students.

Including NRFT students in research projects strengthens experiential and collaborative learning — positioning graduates for greater success in their careers. Since 2009, more than 200 CNC students have directly benefitted from working in the Research Forest's 12 separate forested areas and eight distinct ecological subzones.

Student are encouraged to take their education abroad with one of two NRFT focused International Field Schools. The first takes students on an exploration of Costa Rica's rainforests, tropical wildlife, beaches and thriving ecotourism industry while the second is an immersive study of Ecuador's history, culture, and tropical ecosystems.

Combining the practical and technical aspects of the program with leadership skills, teamwork, creativity and innovation – NRFT graduates can be found in Forestry and Forest Management, BC Wildfire Services, Environmental management for mine operations, Land Management and Conservation, Policy and Planning, Road Building, Geographic Information Systems (GIS) and Mapping. NRFT graduates report an impressive 95% success rate finding employment in the sector.

Connect with us: **cnc.bc.ca**

Photo credit: Ellie Anderson

Ellie Anderson (far right) says, *"My Green Job has given me so much hands-on experience about how to keep kids engaged and motivated. It has also built up my knowledge about environmental issues and how to relate them to kids."*

"The conditions can be tough sometimes, but the impact of our work is huge. That's the real reward that Green Jobs can offer."

Photo credit: Ben Siebert

Photo credit: Karissa Brown

Karissa Brown, beaming while on a visit to a lumber mill.

Project Learning Tree

Job Placements, Mentorship, and Career Resources for Youth Interested in the Great Outdoors

Youth aged 15-30 with an interest in working outdoors will soon have access to mentorship services and career development resources thanks to new programming by Project Learning Tree Canada (PLT Canada) – an initiative of the Sustainable Forestry Initiative. The organization, which has already placed over 2,000 youth in Green Jobs since 2018, and which hopes to place another 2,500 across the country in the next few years, is expanding its service offerings to provide ongoing support to youth as they navigate and pursue green career pathways.

Job Placements

PLT Canada's Green Jobs program places youth into meaningful full-time positions for 8 to 16 weeks. These jobs include positions in ecosystem and wildlife management, Indigenous forest-based programs, recreation and interpretation, and more. These positions are more than just jobs – they provide practical work experiences that educate and inspire youth from across Canada to become forest and conservation leaders.

Mentorship and Career Resources

As a result of additional funding from the Government of Canada, PLT Canada is able to expand the work that it will offer to include career support services, including mentorship, career counselling, career development resources, increased networking opportunities, and employer education in diversity, equity and inclusion. These enhanced services will help youth overcome barriers often faced when entering the workforce. The development of these programs was undertaken as a direct response to youth who have been requesting guidance in their education and careers and help in building their professional networks.

Highly Recommended by Youth!

PLT Canada's success reveals itself in the infectious energy of its participants. Ellie Anderson, a student at Laurentian University in Sudbury, worked as an Education and Outreach Technician with Lower Trent Region Conservation this year. Another youth, Ben Siebert, worked as a Conservation Technician in Boundary Bay, south of Vancouver, identifying invasive species for Ducks Unlimited Canada. PLT Canada is also proud to celebrate Indigenous youth like Karissa Brown who worked as a Stewardship Youth Ranger with the Outland Youth Employment Program (OYEP) in 2018, and inspired other Indigenous youth as part of her job.

PLT Canada has achieved gender balance in its jobs placements and continues to provide a great deal of support to Indigenous youth. These placements are supported by strong employer networks at the Sustainable Forestry Initiative and Canadian Park Council and are funded in part by the government of Canada.

Connect with us: **mygreenjob.ca**

Confederation College

Promoting Green Careers for Graduates to Help Address Climate Change

Providing students with hands-on education, including how to apply their skills to green development, is one way Confederation College is contributing to a more sustainable future for our planet. Through the natural resources and civil engineering programs, graduates are prepared to enter the workforce and become an active part of the solution in addressing environmental issues.

Confederation College is uniquely situated in northwestern Ontario, with campuses close to many Indigenous communities. Opportunities for land-based learning are endless in the Canadian Shield, vast Boreal forest, rivers and lakes, parks, and urban settings that are found both on and nearby campus. This coupled with a teaching philosophy focused on experiential learning makes Confederation a natural choice for anyone hoping to positively impact our environment and communities. Experienced and passionate instructors, and strong connections to local industry, enable Confederation to offer a diverse range of learning opportunities for students.

The Environmental Technician program teaches learners how to responsibly develop our resource-based economy while protecting our forests, waterways and land, all in the interest of a sustainable future.

The Forestry Technician: Ecosystem Management program teaches students everything they need to know about forest management, conservation and protection, ultimately helping learners understand how to balance social, economic and ecological aspects of our natural resources, so our communities—and our peoples—will continue to thrive.

The Civil Engineering Technician program exposes learners to engineering principles that can apply to a range of green industries. These skills will help graduates to play a key role in ensuring the health, safety and economic well-being of our communities.

No matter which program interests you most, Confederation College can help you put your dreams to work and gain meaningful employment, supporting and advancing the vitality of our environment to secure our collective future.

Connect with us: **confederationcollege.ca**

Algonquin College

Applied and Environmental Science - Be on the cutting edge of technology and science

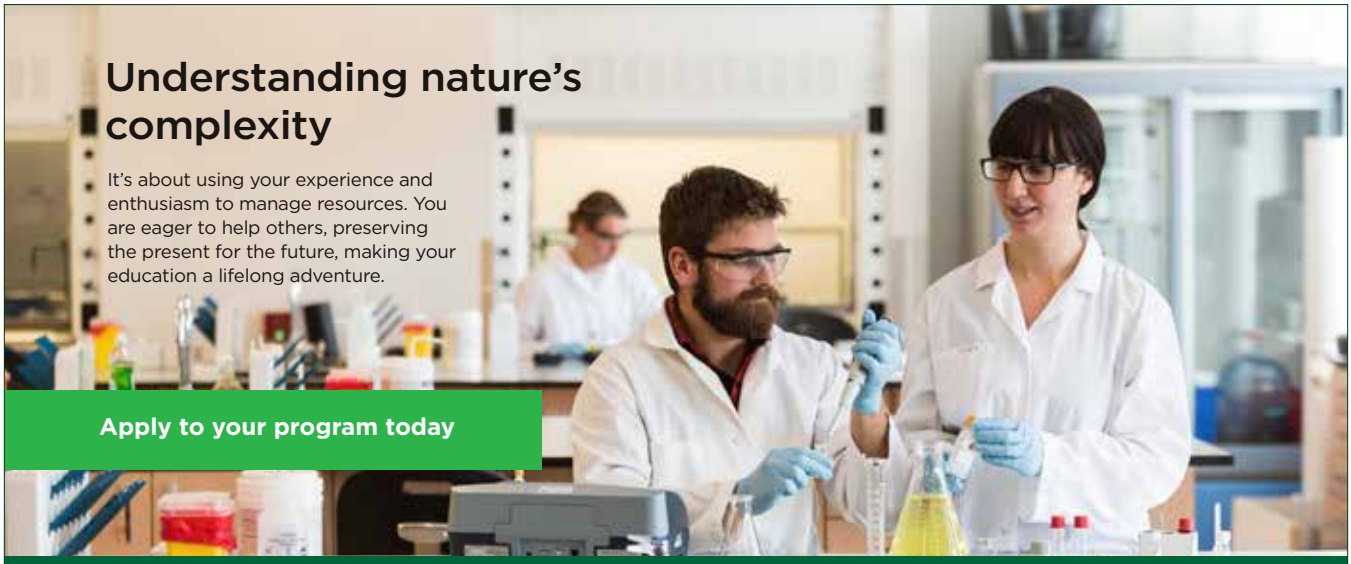
Do you have students who are seeking an active, outdoor, hands-on learning environment? What about students who are inquisitive and have an analytical nature? Perhaps your students are attracted to new technologies? The Applied and Environmental Science programs at Algonquin College is the pathway for your students. Our suite of nine programs range from eight-month certificates to two-year diplomas, to three-year advanced diplomas, and even graduate certificates. Learn it, then do it. You're needed.

- Biotechnology - Advanced (Co-op): 3-Year Advanced Diploma
- Environmental Management and Assessment (Co-op): 1-Year Graduate Certificate
- Environmental Technician (Co-op): 42-Week Diploma
- Forestry Technician: 45-Week Diploma
- General Arts and Science - One Year - Environmental Studies: 1-Year Certificate
- Regulatory Affairs - Sciences (Co-op): 1-Year Graduate Certificate
- Urban Forestry - Arboriculture: 1-Year Certificate
- Water and Wastewater Technician: 42-Week Diploma

So, which students are a perfect fit for our Applied and Environmental Science programs? As a student, you're scientifically curious, possess strong problem-solving skills, and, most importantly, care about the environment. Whether you study urban forestry, biotechnology, or applied nuclear science, you're eager to lead others in conservation and exploration, using your knowledge and enthusiasm to preserve the present for the future.

With our programs, it's about using your experience and enthusiasm to manage resources. You are eager to lead others in conservation and exploration, preserving the present for the future, making your education a lifelong adventure. Many of our students' favourite aspect about their time at Algonquin is the work-integrated learning opportunities that our programs provide – experiences like co-op, field placements, community service learning, and applied research projects. It's a hands-on approach that puts our students a step ahead for their chosen career. The Applied and Environmental Science programs at Algonquin College leads to numerous career pathways. #changinglives.

Connect with us: **algonquincollege.com/enviro**



Offering Programs in:

Applied Nuclear Science & Radiation Safety (Co-op)
Biotechnology - Advanced (Co-op)
Environmental Management and Assessment (Co-op)
Environmental Technician (Co-op)
Forestry Technician
General Arts and Science - Environmental Studies
Regulatory Affairs - Sciences (Co-op)
Water and Wastewater Technician
Urban Forestry – Arboriculture

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ALGONQUIN COLLEGE

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NO DESK JOBS HERE.
Auston Chhor conducted largemouth and smallmouth bass snorkel surveys last summer for a tagging project at Carleton University.
PLT Canada Green Jobs offer more experience and opportunity than you might imagine. **Got what it takes?**
MyGreenJob.ca
PROJECT LEARNING TREE CANADA
PLT is an initiative of SFI

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