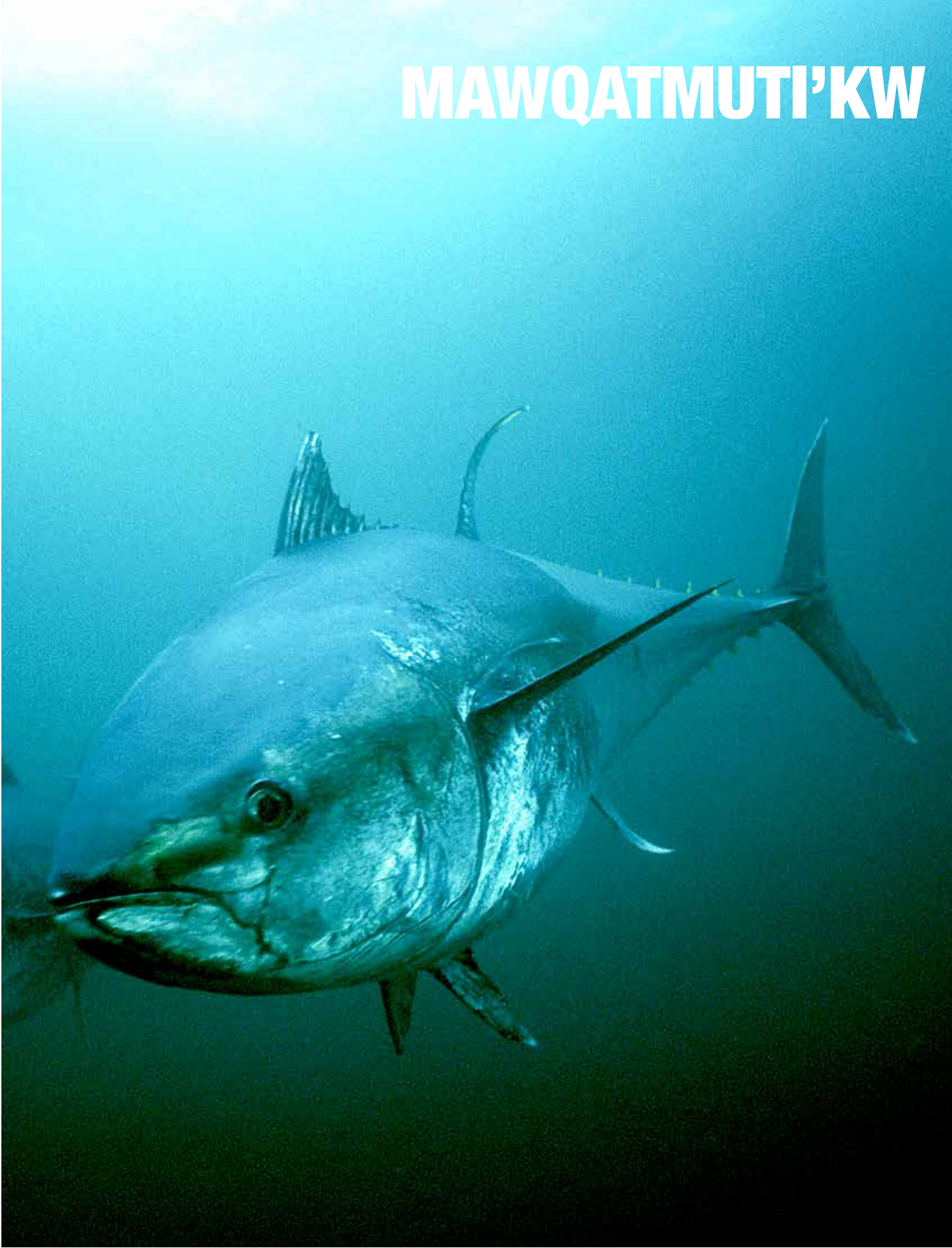
MAWQATMUTI'KW



OUR CONNECTION

The eagle never lost so much time,
as when he submitted to learn of the crow.

William Blake

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Watercolour: 'No Peace to Eat' by Leonard Paul. We must help one another to protect our forests- not just for us to enjoy but for the birds. - Leonard Paul

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mawqatmuti'kw

Summer—Fall 2018/9

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Mawqatmuti'kw is also produced to feature articles and information about MAARS work to promote knowledge about aquatic resources, ocean management, communal commercial fisheries, collaborative partnerships and governance.

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Front Cover Credit
Gilbert Van Ryckevorsel - this is a photograph Gilbert took for the WWF in support of Atlantic bluefin tuna getting on Appendix I of CITES CoP 15 – the highest level of protection under its appendix system, which would ban all international commercial trade. On the brink of extinction because of overfishing and illegal fishing to feed a rapidly expanding market in recent years for sushi and sashimi.

INDEX

NEWS FROM MAARS

GUEST WRITER

MI'KMAQ DANCERS
by JOEL DENNY

My name is Joel Denny (Pi'j). I'm from Eskasoni First Nation, Nova Scotia. I belong to a group of Mi'kmaq Dancers. We do contemporary theatre and traditional dance. We compose some of our music. We also do research and repatriate old songs and dances. Our mother and father, aunts and uncles who live close by passed down some songs and dances to us. We are very fortunate and privileged to have Elders, from our close family and community sing the songs and show us the dances. Different families have kept these songs and each had their own style. It is very important that we identify the families when we perform these songs because they have been loaned to us to share.

Noel R. & Sarah Denny

Our Parents, Sarah & Noel R. Denny had a tremendous impact on us as children. The songs and dances that they passed on were

from the Elders in our small community. The songs that were sung to us as children, they would instruct the dance and tell about the meaning behind each movement and nuance. Always, there was a story or lesson behind it. Our family consists of nine sisters and two brothers. We all dance. Today, I have ten sons and three daughters and 23 grandchildren; I'm proud that some are dancers.

Some dances and songs shared to us:

Lnukwa'n (To Dance)

Some dances are ancient, some comical, and some serious. It is told; the way we dance commemorates life itself and life's seven stages. That is why the dances are all teachings. The songs were restricted to individuals in the community because they have special roles. Sadly with European policies of assimilation, suppression, and centralization, our dances and culture went underground. But still some of the dances/ songs and the language remain intact and were kept by certain families who became the keepers of the songs and dances.

Plauwej (Partridge song)

There is a partridge song that we dance. A hunter in the wintertime is trying to grab a partridge that is behind a tree

From Eskasoni Cape Breton, Joel Denny is a Mi'kmaq Elder, a linguist, composer, musician, dancer, writer, lecturer and artist - all of which spring from and centre around his Mi'kmaq heritage and culture. Mr. Denny is a graduate of CBU, NSCC, and has certificates from Unamaki, CB Vocational, Abamoweg and has many years of experience in Aboriginal Tourism. Our Mi'kmaq language is the essence of who we are as people and a nation says Joel. He works tirelessly in the field of Natural History in Mi'kmaq Culture, to protect our Mi'kmaq heritage, to research and identify our cultural ancestry and preserve our identity as the Mi'kmaq First Nation in Ka na da. In 2002, Joel produced and recorded a video on the account of the experiences of the Mi'kmaq veterans that participated in the first and second World War which was distributed to all Mi'kmaq schools in Nova Scotia.

on a windy day. The hunter is unable to catch the partridge and the bird takes off and sings at you—the hunter will sing to the partridge to come back and be caught. So there are reasons for singing these songs and you have to find out where they came from. You can't just sing a song and say you know where the song came from. There are reasons for singing these songs and you need to find out where the songs came from to figure out the reason and it's that reason that makes the song and its meaning richer and relevant. It could just be a song to make fun of something or singing is just part of socializing.

Respect for nature and animal life and how you talk to animals is a central theme in Mi'kmaq songs. The songs came from sounds of nature and even the animal cries that you hear when you are part of the natural world.

Ajinek (War Dance)

The war dance isn't about killing people. It only says that you are standing your ground or defending your beliefs and identifies whom you are representing in this world. It could be your family or another country or settlement you belong to. If there is a dispute you stand up for what you believe and honour. You make it right by just standing up for it. So that's how it is.

Joel leading a dance class at PEI....

Intertribal Interaction

We also do a Partridge Dance, and a Pine Cone Dance. These are different versions of ones that the Penobscot, the Passamaquoddy, the Maliseet, the Huron, the Montagnais and the Mohawks do. They all have a similar type of singing as we do. There has been some sort of intertribal interaction with the songs in the way they mingled and borrowed.

I'ko

Most of the time there would be seven women (e'bit) that would dance the heartbeat (musknn) and we call that neskawet. Neskawet is the seven cries within. The first cry is the first breath you take in the world and the last cry is the last breath you take in this world.

Other Songs

If I were courting a young woman I would start out with the flute (pipuqwaqn). If she accepted my courting and the family allowed me to court her for a year, then she would take my song and make a lullaby to it. And if we married she would sing that lullaby to her children. So there are a lot of ways Mi'kmaq use songs to enrich and represent life and the world around us. We even sing to the animals when they die. There are whaling songs that you sing when the whale sacrifices its life for the village and the people.

There is a song we sing to

the ancestors to remember them in our ceremonies, in our pipe ceremonies, in our sweat lodge. There will be a select few who will have that song. Hunter's Song (this song is about three whale hunters in a canoe)

Three whale hunters have been out on the ocean for more than three days and a hunter says "nepitu nesimskaq". This is said in an old Mi'kmaq language, it means that I could see three days ahead of me but, I can see our food drifting towards us. The hunter says, "My friends paddle this canoe a little bit faster to our families." So this is an old song, but the words of the song, our young people don't use them anymore. This is about a canoe and being out in the ocean, and is 'out on the ocean' language. It is a song that came from the ocean. Everything had a song.

Jipijka'm

Jipijka'm is the serpent or snake and when it moves you can hear a rumble, may be a small earthquake or something but that is how they moved. It was one of the seven spirits of the underground world.

With the songs that I write I try to take the legends and teachings that were taught to me by my mother and present them in a musical and theartical way so that other people can see and understand.

The Mi'kmwesu (The Spirit Dance)

Spirit people, spirit people watch over us, Spirit people watch us in our gatherings, Spirit people, spirit people watch over our children and keep an eye on what we do. It is you that is going to take our spirits back into the spirit world. It is you that takes the spirit of the animals back into the spirit world. Spirit people give us guidance.

That's the song and the children made up the dance. We took the old and the new and we put it all together. My sister Kathy sings it and it all comes together in the theatre.

So I use stories about spiritual entities of the Mi'kmaq. My mother told me this as a child and her grandmother told her.

These Mi'kmwesu are spirit entities – they can change you into anything, an animal, a tree, a rock, or a very handsome person. But they are tricky; they will make you come to them. They will help you get more wood or more baskets but they are tricksters.

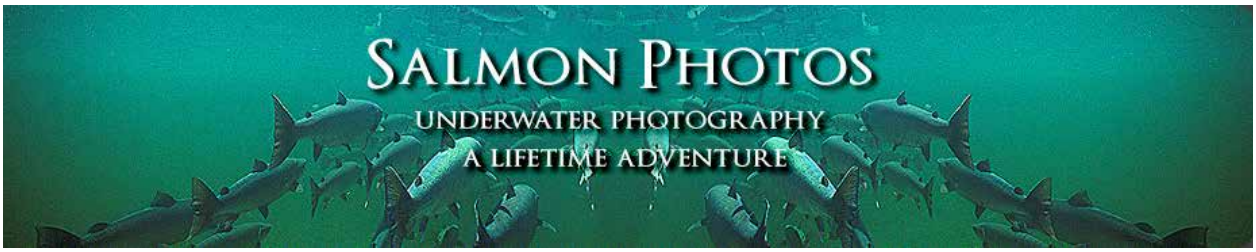
My mother would always say, "Don't go too far. If you see someone new don't let them help you. It could be Mi'kmwesu. He'll take you to the spirit world of the Mi'kmaq." So adults always made us children scared—I don't know if they wanted us to be wary of strangers or to stop us from going out too far into the woods.

Puklatamuj / Kukwesk

There are also stories of the Puklatamuj who are the little people. Kukwesk are giant beings, spiritual beings. Jipikemaqn is the serpent, the big snakes that are around here. Kulu is the big bird that watches over the burial sites and children.

These stories were meant to protect children and are something that you would always hear. There are songs that some would have borrowed from others when we had gatherings with different tribes. But it is critical now that we retain our own songs and dances in each region, each area, or province. Maybe because of todays mainstream powwows and intertribal gatherings there is a danger that the songs and dances will somehow merge or influence each other, and in the process, lose some of their meaning and impact.

For me it is vital we keep our songs so we will be able to teach our children and maybe say "this is the song your grandmothers or my mother, Sarah Denny sang. This is the song that my grandfather, Richard Denny would have sung. He got it from his grandfather Noel Denny or great grandfather Grand Chief John Denny. Now if we continue to do this, then we will have done our job well and our culture justice.

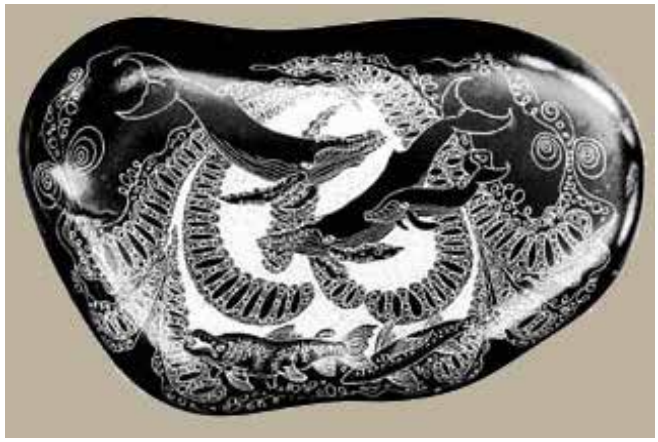


The rocks on which these mysterious creatures are hand-engraved come from the rugged, wave-battered beaches of North Atlantic and the gravel banks of rushing rivers; hidden deep within the Canadian wilderness.

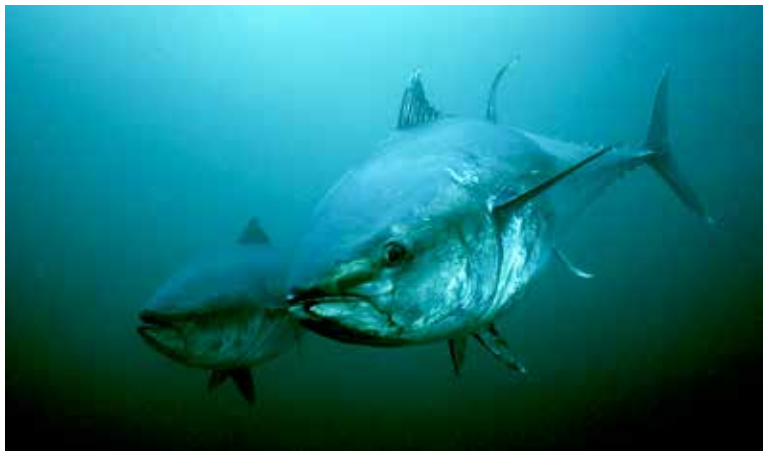
Top: Bay of Fundy Whales and Atlantic Salmon

Middle: Atlantic Salmon Rendered on Coloured Granite Beach Rock

Bottom: Swordfish and Tuna of St.Margaret's Bay

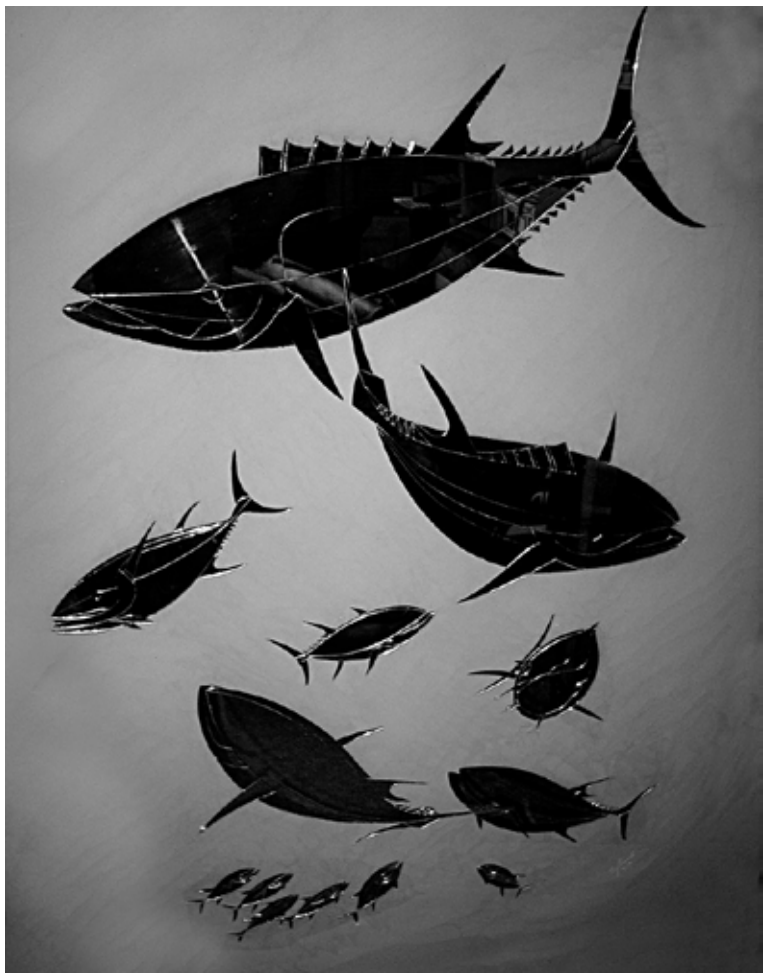


Hand-picked by Gilbert for their individual beauty in shape, form, and colour, these rocks are a pure natural phenomenon, perfect for the art of engraving.



"The experience of photographing the Atlantic Bluefin Tuna inspired me to do mirror glass art as well as engraving on beach rock's exhibited in my private gallery"

Gilbert Van Ryckevorsel



WHEN A GRASS TOWERS OVER THE TREES

BY MANIPADMA JENA

This article is part of a series of stories and op-eds launched by IPS on the occasion of the World Day to Combat Desertification and Drought on June 17.

NEW DELHI, June 12 2018 (IPS) - As governments scramble for corrective options to the worsening land degradation set to cost the global economy a whopping 23 trillion dollars within the next 30 years, a humble grass species, the bamboo, is emerging as the unlikely hero.

"Bamboo is a grass. All 1,640 species have a very strong root system that binds soil, and fast growing plants making them best suited for restoring unproductive farmland, erosion control and maintaining slope stability," Hans Friederich, Director-General of the International Network for Bamboo and Rattan (INBAR), told IPS from their Beijing headquarters.

Bamboo is a strategic resource that many countries are increasingly using to restore degraded soil and reverse the dangers of desertification.

"Our members pledged to restore 5 million hectares of degraded land with bamboo plantation by 2020 for the Bonn Challenge in 2015. Political pledges have already exceeded the commitment and are today close to 6 million hectares," Friederich said. "Planting on the ground however is much less , because nurseries have to be set up and planting vast areas takes a few years," he added.

INBAR, an intergovernmental organization, brings together 43 member countries for the promotion of ecosystem benefits and values of bamboo and rattan. Before joining INBAR in 2014, Friederich was regional director for Europe at the International Union for Conservation of Nature (IUCN).

The Bonn Challenge is the global effort to restore 150 million hectares – an area three times the size of Spain – of deforested and degraded land by 2020, and 350 million hectares by 2030.

Instead of cutting forests to make charcoal for household energy, these Chinese women use bamboo which will grow back. Photo Courtesy of INBAR

When soil health collapses, food insecurity, forced migration and conflict resurrect themselves

According to the United Nations Convention to Combat Desertification's (UNCCD) latest review released in May, to take urgent action now and halt these alarming trends would cost 4.6 trillion dollars, which is less than a quarter of the predicted 23-trillion-dollar loss by 2050.

Globally, 169 countries are affected by land degradation or drought, or both. Already average losses equal 9 percent of gross domestic product (GDP) but for some of the worst affected countries, such as the Central African Republic, total losses are estimated at a staggering 40 percent of GDP. Asia and Africa bear the highest per year costs, estimated at 84 billion and 65 billion dollars, respectively.

"Healthy land is the primary asset that supports livelihoods around the globe – from food to jobs and decent incomes. Today, we face a crisis of unseen proportions: 1.5 billion people – mainly in the world's most impoverished countries – are trapped on degrading agricultural land," said Juan Carlos Mendoza, who leads the UNCCD Global Mechanism, which helps countries to stabilize land and ecosystem health.

Western Allahabad rural farmland under 150 brick kilns in the 1960s. Photo Courtesy of INBAR

Indian farmlands ravaged by 150 brick kilns are nurtured back by bamboo plantations

In the 1960s, construction was newly taking off in India. Brick kiln owners came calling at the 100 villages of Kotwa and Rahimabad in western Allahabad, a developing centre in central India's Uttar Pradesh state. Rice, sugarcane, and bright yellow fields of mustard flowers extended to the horizon on this fertile land. Attracted by incomes doubling, the farmers leased their farmlands to the brick makers. Within a decade, over 150 brick kilns were gouging out the topsoil from around 5,000 hectares to depths from 3 to 10 feet.

When the land was exhausted, the brick makers eventually left. Thousands of farm-dependent families sat around, their livelihoods lost, while others migrated away because nothing would grow on this ravaged land anymore. With the topsoil cover gone, severe dust storms, depleted water tables and loss of all vegetation became the norm.

Starting bamboo plantations on 100 hectares at first in 1996, today local NGO Utthan with the affected community and INBAR have rehabilitated 4,000 hectares in 96 villages. Here bamboo is grown together with moringa, guava and other fruits trees, banana, staple crops, vegetables, medicinal plants and peacocks, oxen and sheep. Annually bamboo stands add 7 inches of leaf humus to the soil and have also helped raise the water table by over 15 metres in 20 years.

Selling bamboo adds 10 percent to the farmers' income now. But the best benefit has accrued to women – 80 percent of cooking is done with biogas, not charcoal or wood. Much of the waste bamboo goes into biomass gasifiers that run 10 am to 1 pm powering 120 biogas generators at the NGO's centres to keep refrigerators running, keeping vaccines and critical medicines safe during the regular power shortages.

A family of bamboo artisans sells household items in Satkhira district of Bangladesh. Bamboo provides a sustainable livelihood for

The same farmland today revived by integrated bamboo plantations. Photo Courtesy of INBAR

the poorest communities in Asia and Africa.

Multi-functional bamboo's global market is 60 million dollars and community is reaping benefits

Today, bamboo and rattan are already among the world's most valuable non-timber forest products, with an estimated market value of 60 million dollars. Rural smallholder communities are already benefiting by innovating beyond their traditional usages.

"The more they benefit from this growing market of bamboo and rattan, the more they can become an integral part of conservation efforts," according to Friederich, an explorer and bamboo enthusiast.

He narrates to IPS how rural Chinese women have carved out economic opportunities, are being innovative and entrepreneurial with bamboo to reap rich incomes. After the devastating 1998 Yangtze floods and 1997 severe drought in the Yellow River basin, the Chinese government began a massive restoration programme, foresting degraded farmland with bamboo which today involves 32 million farming households in 25 provinces.

Like millions of others, a woman in Guizhou province in central China made furniture out of the abounding bamboo available. As she expanded the business, the larger pieces of bamboo waste went into the furnace generating electricity and heating but the bamboo powder heaps grew mountainous. She experimented growing mushrooms on them – high value delicacies restaurants vie to buy from her today.

The bamboo leaves are fodder for her 20,000 free-running plump chickens. A 2017 study shows fiber in the bamboo leaves enlarges the chickens' digestive tract, enabling them to consume more and increase in body weight by as much as 70 percent more than chicken fed on standard organic diets. The dye in bamboo leaves the chicken eggs a slightly bluish tinge akin to the pricey duck egg. Consumers pay more for her blue chicken eggs. She's not

Hans Friederich at a Chinese bamboo plantation. Photo Courtesy of INBAR

complaining.

Her yearly earnings have grown to 30,000 million Renminbi or 5 million dollars.

In Ghana again, a young woman manufacturing sturdy bamboo bicycles, employing and training local village girls who have few opportunities, is already exporting her innovation to Netherlands, Germany and the US.

Realizing bamboo's disaster reconstruction value, "Peru, Ecuador, Colombia and other earthquake-prone regions have changed building regulations to allow bamboo as a structural element. They have seen, after disasters bamboo structures may crack or damage but have not collapsed as often as concrete structures have," Friederich said.

Nepal is building 6,000 classrooms still in need of repairs post -2015 earthquake, with round earthen walls, and bamboo roofs which allow the building to flex a little bit even

when the ground trembles.

Besides housing, furniture, household items, bamboo can be used for a number of other durable products, including flooring, house beams, even water carrying pipes.

An efficient carbon sink

But in a warming world, bamboo as a very effective carbon sink, is not as widely known. Because of their fast growth rates and if regularly harvested allowing it to re-grow and sequestrate all over again, giant woody bamboos (grown in China) can hold 100 – 400 tonnes of carbon per hectare. But bamboo's carbon saving potential increases to 200 – 400 tonnes of carbon per hectare if it replaces more emissions-intensive materials like cement, plastic or fossil fuels, according to Friederich.

Partnering with International Fund for Agricultural Development from its start, INBAR now has recently entered a strategic intra-Africa project with the UN organization, focusing on knowledge sharing between Ghana, Cameroon, Madagascar and Ethiopia, regions in dire need of re-greening.

The Global Bamboo and Rattan Congress (BARC 2018), starting 25 June in Beijing will see this project kick-started, with side plenary discussions on bamboo and rattan's innovative, low-carbon applications, and how bamboo has and can further support climate-smart strategies in farming and job creation.

Story Credit: by Manipadama Jena, Jun 12 2018, Inter Press Service News Agency. ipsnews.net

CENTRAL AMERICANS DEMAND TO BE CONSULTED ABOUT MINING PROJECTS

by **EDGARDO AYALA**

GUATEMALA CITY, 2018 (IPS) - Rosa Dávila is busy cooking ears of corn, to be eaten by the men and women who have set up a checkpoint on the side of the road to block the passage of supplies sent to a mining company that operates in the area.

The San Rafael mining company, a subsidiary of the Canadian company Tahoe Resources, is located on the outskirts of San Rafael Las Flores, a town 96 km southeast of Guatemala City, in the department of Santa Rosa.

The roadblock has been mounted by the inhabitants of Casillas, a neighbouring rural municipality, located a few kilometres down the road, and which cannot be avoided on the way to the mine. Other transit points have also been blocked by the "resistance", as the anti-mining protesters refer to themselves.

"The first thing we want, for God's sake, is for them to go back to their country," said Dávila, a 48-year-old homemaker and mother of seven, as she stoked the fire.

The residents of this and other neighbouring municipalities are firmly opposed to the company's mining operations, due to the social and environmental damage they say has been caused since they began in 2007.

Conflicts like this have broken out in other areas of Guatemala and in other Central American countries, not only with mining companies but also with hydroelectric power companies.

"It's not fair, and the worst thing is that they never asked us if we wanted these companies to come here," Dávila told IPS while moving about in the kitchen set up in an improvised camp, which IPS visited on April 29.

The lack of prior consultations with the communities where such projects are installed is a recurrent problem in the countries of Central

Residents of the municipality of San Rafael Las Flores maintain a permanent sit-down in front of the Constitutional Court, in the centre of Guatemala's capital, to demand that the country's highest court rule on the demand for a suspension of the San Rafael mining company's permit to operate a mine in that municipality. Credit: Edgardo Ayala / IPS

America, whose governments fail to comply with international regulations that call for prior consultation over whether or not the population approves of these investments.

In late April, environmental organisations held in the Guatemalan capital the Second Regional Meeting of the Central American Alliance against Mining, which concluded with the requirement that the governments of the region comply with international and regional obligations to guarantee the right to free, prior and informed consultation.

"We call upon Central American governments to reflect on the viability of what they call development, when we know that the extractive industry is a model of destruction and death for our countries," explained Julio González, of the Guatemalan environmental organisation MadreSelva, at the end of the meeting, on April 27.

That organisation and the other participants in the meeting have joined forces in the regional Alliance against mining, in order to constitute a block with more power in the face of the activities of the extractive industries in Central America.

In the municipality of Casillas, in the department of Santa Rosa, in Guatemala, local inhabitants erected a roadblock on the road that leads to the San Rafael Las Flores mine, blocking the passage of trucks carrying supplies to the site. In the picture, Rosa Dávila (centre) peels ears of corn in the activists' improvised camp.

One of the rules under which the organisation operates is ILO Convention 169 on Indigenous

In the municipality of Casillas, in the department of Santa Rosa, in Guatemala, local inhabitants erected a roadblock on the road that leads to the San Rafael Las Flores mine, blocking the passage of trucks carrying supplies to the site. In the picture, Rosa Dávila (centre) peels ears of corn in the activists' improvised camp. Credit: Edgardo Ayala / IPS

and Tribal Peoples, in force since September 1991, which has been ratified by 22 countries, including all countries in Central America except El Salvador and Panama.

Article 6 of the Convention establishes that governments shall "consult the peoples concerned, through appropriate procedures (…) whenever consideration is being given to legislative or administrative measures which may affect them directly," such as when a national or municipal state institution grants a concession to international consortiums.

But that is basically a dead letter in the Central American countries that have ratified it, said activists consulted by IPS during the meeting.

The governments have not promoted consultations, because they believe that important development projects would be halted, so it is the affected communities that have carried out their own consultations, they added.

In Guatemala, where 63 percent of the population is indigenous, around 90 such consultations have been held, by show of hands.

"Before the hydroelectric companies were to arrive, we began to carry out consultations, and we asked whether these businesses have the right to take our rivers, and the vast majority said no," 69-year-old Mayan Indian Cirilo Acabal Osorio told IPS.

So far they have managed to stop attempts by companies to install projects in the eight communities putting up resistance in that region, which are predominantly Mayan, said the native of Zona Reina, municipality of Uspatán, in the department of Quiche in northwestern Guatemala.

In Honduras more than 40 open town meetings have been

held in which the population of different localities has rejected similar projects, said Pedro Landa, of the Reflection, Research and Communication Team (ERIC), attached to the Jesuits.

"But the State continues to ignore the will of the people," he said.

Environmentalist activists said local governments in the area consider the consultation processes to be non-binding, and as a result do not take them into account.

Before the Salvadoran legislature approved, in March 2017, a historic law prohibiting metal mining in all its forms, civil society organisations carried out popular consultations in at least four municipalities, under the Municipal Code.

For now there is no need for further consultations, as the law banned mining company investments. But the spectre of mining is still present after the right-wing parties, its natural allies, obtained an overwhelming majority in the Legislative Assembly in the March 4 elections, warned Rodolfo Calles, of the Association for the Development of El Salvador (CRIPDES).

Convention 169 refers only to indigenous peoples, although the experts said in the meeting that national laws that serve the same purpose can be applied: people affected by any industrial activity must be informed and consulted beforehand.

"In the case of countries that do not have indigenous communities, they will use other mechanisms that they undoubtedly have, such as referendums," Sonia Gutiérrez, an expert with the Association of Mayan Lawyers and Notaries of Guatemala, told IPS.

The extractive industry has no economic weight in the region, despite its impacts on the environment and on production in the communities where it operates, Nicaraguan activist Olman Onel told IPS. He pointed out that in his country, for example, it only contributes one percent of GDP and 0.66 percent of employment.

On the other hand, the participants in the forum denounced the police and judicial persecution suffered by environmentalists in the whole region, as a mechanism to silence opposition to such projects.

Landa, of ERIC, said that in Honduras, where more than 800 extractive projects and 143 hydroelectric projects have been approved in recent years, at least 127 environmentalists have been killed, including Berta Cáceres.

She was riddled by bullets on Mar. 3, 2016, for her fierce opposition to the construction of the Agua Zarca hydroelectric dam, located between the departments of Santa Bárbara and Intibucá, in the northwest of the country.

Meanwhile, in San Rafael Las Flores, local inhabitants have organised to defend their land and their livelihood, agriculture, although the damage caused by the extractive activity is already evident, they said.

Rudy Pivaral, a 62-year-old farmer, told IPS that the impacts on the flora and fauna are already being felt, and there is a decrease and drying up of water sources, which makes it impossible to continue producing two or three harvests a year, in addition to the health problems associated with water pollution.

Around 96 families in the village of La Cuchilla, on a hill next to the site, had to be evicted because of damage to the walls of the houses, due to the vibrations produced by the drilling in the ground.

Story Credit: by Edgardo Ayala, 2018, Inter Press Service News Agency. ipsnews.net

TOXIC AIR

THE 'TAKE-MAKE-DISPOSE' ECONOMIC MODEL KILLS

by **BAHER KAMAL**

ROME, Oct 26 2017 (IPS) - The prevailing "Take-Make-Dispose" linear economic model consisting of voracious depletion of natural resources in both production and consumption patterns has proved to be one of the world's main killers due to the huge pollution it causes for air, land and soil, marine and freshwater.

Just to have an idea, the UN World Health Organization (WHO) estimates that nearly a quarter of all deaths worldwide, amounting to 12.6 million people in 2012, are due to pollution, with at least 8.2 million attributable to non-communicable environmental causes, and more than three quarters occurring in just three regions.

As in most other pollution-related impacts, low- and middle-income countries –those who are among the least industrialised nations on Earth– bear the brunt of pollution-related illnesses, with a disproportionate impact on children.

The latest global and regional environmental assessments give an indication of the magnitude of current threats: air pollution; land and soil pollution; freshwater pollution, and marine and coastal pollution. All this in addition to crosscutting causes such as chemicals and waste, reports the UN Environment Programme (UNEP).

As if the death of millions of humans every year due to human-made pollution were not enough, it also impacts the global economy. The UN estimates that outdoor air pollution costs about

Oil fields ablaze in Mosul, Iraq. Credit: UNEP

3 trillion dollars, while the cost of indoor pollution reaches 2 trillion dollars a year.

Climate change is also modifying weather patterns, affecting the levels and occurrence of pollutants and airborne allergens, such as ozone and pollen, and in some cases exposing people to higher concentrations over longer periods than in previous decades, according to UNEP's report Towards a Pollution-Free Planet.

The report provides some key examples: air quality is a problem in nearly all regions; water pollution is a major cause of death of children under five years of age; nutrient over-enrichment of land and water is causing shifts in ecosystems and loss of biodiversity; plastics in the ocean is on the rise and there is still no acceptable "storage or disposal option" for processing of older-generation nuclear fuel. See: World Campaign to Clean Torrents of Plastic Dumped in the Oceans

Here are some key details regarding the major threats caused by the prevailing linear economic model as summarised by UNEP's "Towards a Pollution Free Planet" report.

AIR

Air pollution is the world's single greatest environmental risk to health. Some 6.5 million people across the world die

#CleanSeas. Credit: UNEP

prematurely every year from exposure to out-door and indoor air, and nine out of ten people breathe outdoor air polluted beyond acceptable World Health Organization guidelines levels.

WHO also reports that air pollution disproportionately affects the most vulnerable, including those with mental disabilities and young children.

On this, the UN Children's Fund (UNICEF) estimates that approximately 2 billion children live in areas where outdoor air pollution exceeds the guidelines, and 300 million in areas where outdoor air pollution is at least six times higher.

In addition to the impact on human health, other air pollutants cause climate change and affect ecosystems, such as short-lived climate pollutants including black carbon and ground-level ozone, warns WHO.

The UN Environment Assembly, the world's highest-level decision-making body on the environment, will gather in Nairobi, Kenya, from 4-6 December 2017 under the overarching theme of pollution. Credit: UNEP

The main sources of outdoor air pollution are fossil fuel emissions from coal burning for power and heat, transport, industrial furnaces, brick kilns, agriculture, domestic solid fuel heating, and the unregulated burning of waste materials such as plastics and batteries in open pits and incinerators, according to UNEP's report.

Other important sources include the burning of peat-lands, both of which generate haze, sand and dust storms, as well as desertification, which often results from land degradation, including deforestation and wetland drainage.

The report says indoor air pollution accounts for 4.3 million deaths, 18 per cent of ischaemic heart disease and 33 per cent of all lower respiratory infections. It in particular affects women, children, the sick and elderly, and those in low-income groups, as they are often exposed to high levels of pollutants from cooking and heating.

LAND AND SOIL

"Towards a Pollution-Free Planet" also informs that land and soil pollution is largely the product of poor agricultural practices, inefficient irrigation, improper solid waste management – including unsafe storage of obsolete stockpiles of hazardous chemicals and nuclear waste – and a range of industrial, military and extractive activities.

"Leachates from mismanaged landfills and uncontrolled dumping of waste from households, industrial plants and mine tailings can contain heavy metals such as mercury and arsenic as well as organic compounds and pharmaceuticals, including antibiotics and microorganisms."

UNEP explains that pollutants easily degrade land, soils and the underlying aquifers and are hard to remove, thus humans and wildlife living near former industrial sites and some reclaimed lands are at potential risk of continued exposure to pollution if sites are not decontaminated properly.

The primary pollutants of concern in land and soil include heavy metals such as lead, mercury, arsenic, cadmium and chromium, persistent organic pollutants and other pesticides, and

pharmaceuticals, such as antibiotics used for livestock management, the report adds.

Globally, estimates indicate that at least 1 million people are unintentionally poisoned every year by excessive exposure and inappropriate use of pesticides, with health effects on all, according to UNEP.

The main driver for the use of synthetic chemical pesticides is the reduction of the negative impacts of pests, such as insects, diseases and weeds, on crop yields, estimated in the 1990s to account for 40 per cent of the world's losses.

WOMEN

The number of women working as pesticide applicators varies, but in some countries, women make up 85 per cent or more of the pesticide applicators on commercial farms and plantations, often working while pregnant or breastfeeding, says the report. Women are also uniquely exposed to pesticides even when they do not directly apply them.

Just a couple of examples: in Pakistan, where cotton is picked by women, a survey found that 100 per cent of the women picking cotton 3-15 days after pesticides had been sprayed suffered acute pesticide poisoning symptoms. And in Chile, in 1997, of the 120 reported pesticide poisonings, 110 were women, nearly all employed in the lower industry.

Pesticide exposure can cause lifelong harm and increase the risk of preterm births, birth defects, childhood mortality, reduced sperm function and a range of adult diseases, warns the report.

Otherwise, the rise of antimicrobial resistance as a result of overuse and improper use of antimicrobials, including antibiotics used in food production, is now a globally significant issue. A major concern is that this may cause rapid changes to the microbial composition of soil, freshwater and biota, and drive the development of multi-strain microbial resistance worldwide, according to the UN Food and Agriculture Organization (FAO).

FRESHWATER

As if all this were not sufficient, "Towards a Pollution-Free Planet" says that freshwater bodies are heavily affected by pollution, particularly by a range of nutrients, agro-chemicals and pathogens from untreated wastewater, and heavy metals from mining and industrial effluents

Moreover, polluted water is also more likely to host disease vectors, such as cholera-causing Vibrio and parasitic worm-transmitted Bilharzia.

Another scary fact in the report is that over 80 per cent of the world's wastewater is released into the environment without treatment. Globally, 58 per cent of diarrhoeal disease –a major driver of child mortality– is due to a lack of access to clean water and sanitation.

These are just some of the major consequences of the current so-called linear economic model, which perhaps should be rather known as the relentless destruction of both nature… and humans.

Story Credit: by Baher Kamal, October 26 2017, Inter Press Service News Agency. ipsnews.net

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MOST SUSTAINABLE COOPERATIVES IN THE WORLD

A MILLENNIA-OLD HAIRSTYLE: YAUNG PAE SOO

by BRITTNEY TUN for Myanmore

Climate Adaptation UNDP - In Adaptation Fund, Asia & climate change, Contributed to Causes & Community - March 12th, 2018 **This story first appeared on Myanmore in February 2018*. Set Set Yo village, about an hour from Bagan, is the last place to witness the fading tradition of Myanmar's yaung pae soo hairstyle. Dating back to the Pagan Empire, the unique topknot once adorned the heads of kings and "bawgas" (the rich) during celebrations and parades, but is now only kept by Set Set Yo's children.

My troupe and I loaded 36 bags of trinkets, sweets, and school supplies, then set out from Bagan to the village Monastery. A local couple was already there offering a donation, and the Sayadaw had the youngsters seated behind them. "Don't force the kids for a picture," he cautioned. "Some people come and pressure them to."

Producing crops such as pigeon pea, groundnut and sesame, the village is a recipient of the UNDP-supported Adaptation Fund-financed project, 'Addressing Climate Change Risks on Water Resource and Food Security in the Dry Zone of Myanmar'. The four-year plan, which started in February 2015, is in partnership with the Ministry of Natural Resources and Environmental Conservation.

Karma Rapten, a technical specialist for the UNDP, is involved with the project in Set Set Yo. "Myanmar's Dry Zone is one of the few areas in this region where food security for survival is still a real issue," he said. In the last 10 years, the village has suffered the effects of climate change. Shorter monsoon seasons with erratic rainfall patterns, high intensity rainfall with flash floods, and extreme temperatures producing drought spells have affected the village's economy.

In Set Set Yo, there are 125 dry land farmers, but approximately 30 percent of total households in the village are landless. These households earn their income as seasonal agricultural workers. "UNDP provides drought-tolerant species of livestock [pig, goat, and chicken] to landless households. So far, 18 households in Set Set Yo village have received support through the project," said Karma.

Additionally, farmers and government staff are receiving training on better animal husbandry practices and pest and disease control. "The

Children with the yaung pae soo hairstyle.

Livestock Breeding and Veterinary Department has supported the farmers in providing free vaccination and technical support for the management of livestock," added Karma. Farming, he says, is the primary source of livelihood for the farmers and "tourism is in no way a significant feature of Set Set Yo village."

After measuring us up for about 30 minutes, the kids retreated to the back of the monastery and poked around at a homemade paper boat floating in a giant mud puddle. The older boys leaned against a tree, crossing their lanky arms and eying us warily. The younger kids gathered for a game of hpan khoun, a type of jumping game.

I was watching the game at a distance beside a group of girls who were coddling my three-year-old. I envied their long, glossy eyelashes. From the corner of my eye, I saw a youngster helping another child of four or five to re-tie his topknot. They do it themselves—the older children washing, trimming, and shaving the hairlines of the younger children with razors. As each child grows, they adapt their yaung pae soo to reflect their age and gender, eventually shaving it off upon taking customary monastic vows, then growing a full head of hair.

Khaing Tha Zin Myo, a girl of about nine, laced her fingers in mine, tugged me, and said, "Come." "Thaw dare," I cheered. "Ni ma Inglake zagar tut dare!" She beamed and cast her pretty eyes downward. Everyone followed in a grand procession, stopping occasionally to pick flowers for our hair. We circled the village when, like lightning, they broke for a dry creek bed behind a line of trees and brush.

My daughter learned how to play leapfrog and hopped her way to the finish line drawn in the sandy bottom. The little ones huddled around us closely, the sweet, natural fragrance of their locks wafting through the breeze.

We went again to the monastery where they opened their presents. I marveled as they skipped the chocolates and candies and went straight for little whistles we threw in. The sound was deafening, and my husband belly-laughed for the first time in ages. A few stopped to help my daughter blow hers.

Soon, they will grow their hair out and become farmers, but today they are free to roam and play leapfrog. I'll never forget the sound of dozens of children blowing little plastic whistles in the Myanmar countryside. It was, perhaps, the purest moment of my life.

Story Credit: by Brittney Tun for Myanmore, UNDP, March 2018 - https://undp-adaptation.exposure.co/the-ancient-hairstyle-of-set-set-yo

THREATENED

THE TUXÁ INDIGENOUS PARADISE SUBMERGED UNDER WATER

by FABIANA FRAYSSINET

RODELAS, Brazil, Sep 30 2017 (IPS) - The Tuxá indigenous people had lived for centuries in the north of the Brazilian state of Bahia, on the banks of the São Francisco River. But in 1988 their territory was flooded by the Itaparica hydropower plant, and since then they have become landless. Their roots are now buried under the waters of the reservoir.

Dorinha Tuxá, one of the leaders of this native community, which currently has between 1,500 and 2,000 inhabitants, sings on the shore of what they still call "river", although now it is an 828-sq-km reservoir, in the northeastern state of Pernambuco, along the border with the state of Bahia, to the south.

While singing the song dedicated to their "sacred" river and smoking her "maraku", a pipe with tobacco and ritual herbs, she looks dreamily at the waters where the "Widow's Island" was submerged, one of several that sprinkled the lower course of the São Francisco River, and on which the members of her community used to live.

"What nostalgia for that blessed land where we were born and which did not let us lack for anything. The river where we used to fish. I have such nostalgia for that time, from my childhood to my marriage. We were indeed a suffering and stoic but optimistic people. We grew rice, onions, we harvested mangoes. All that is gone." ***-- Manoel Jurum Afé***

"This song is to ask our community for unity, because in this struggle we are asking for the strength of our ancestors to help us recover our territory. A landless indigenous person is a naked indigenous person. We are asking our ancestors to bless us in this battle and protect our warriors," she told IPS.

The hydroelectric plant, with a capacity of 1,480 megawatts,

Tuxá families take a break while building their new village in Surubabel, as part of what they consider the recovery of their ancestral lands, on the bank of what was previously the river where they lived, the São Francisco River, but which now is a reservoir on the border between the Brazilian states of Pernambuco and Bahía. Credit: Fabiana Frayssinet / IPS

is one of eight installed by the São Francisco Hydroelectric Company (CHESF), whose operations are centered on that river which runs across much of the Brazilian Northeast region: 2,914 km from its source in the center of the country to the point where it flows into the Atlantic Ocean in the northeast.

After the flood, the Tuxá people were relocated to three municipalities. Some were settled in Nova Rodelas, a hamlet in the rural municipality of Rodelas, in the state of Bahia, where Dorinha Tuxá lives.

After a 19-year legal battle, the 442 relocated Tuxá families finally received compensation from the CHESF. But they are still waiting for the 4,000 hectares that were agreed upon when they were displaced, and which must be handed over to them by state agencies.

The new village is very different from the community where they used to live on their island.

Only the soccer field, where children play, retains the shape of traditional indigenous Tuxá constructions.

But the elders strive to transmit their collective memory to the young, such as Luiza de Oliveira, who was baptized with the indigenous name of Aluna Flexia Tuxá.

She is studying law to continue her people's struggle for land and rights. Her mother, like many other Tuxá women,

Dorinha Tuxá, a leader of the native Tuxá people, sings to her sacred river and smokes her "marakú", a pipe with tobacco and ritual herbs, to ask her ancestors to help them get the lands which were promised to them when they were evicted from their island to make way for a dam in northeastern Brazil. Credit: Gonzalo Gaudenzi / IPS

also played an important role as chief, or community leader.

"It was as if they lived in a paradise. They had no need to beg the government like they have to do now. They used to plant everything, beans, cassava. They lived together in complete harmony. They talk about it with nostalgia. It was a paradise that came to an end when it was flooded," she said.

After three decades of living with other local people, the Tuxás stopped wearing their native clothes, although for special occasions and rituals they put on their "cocares" (traditional feather headdresses).

They welcomed IPS with a "toré" – a collective dance open to outsiders. Another religious ceremony, "the particular", is reserved for members of the community. That is how they honour the "enchanted", their spirits or reincarnated ancestors.

But they are also Catholics and very devoted to Saint John the Baptist, patron saint of Rodelas, which was named after Captain Francisco Rodelas, considered the first chief who fought alongside the Portuguese against the Dutch occupation of northeast Brazil in the 17th century.

Armando Apaká Caramuru Tuxá is a "pajé" – guardian of the Tuxá traditions.

"The waters covered the land where our ancestors lived. Many times I saw my grandfather sitting at the foot of a jua (Ziziphus joazeiro, a tree typical of the eco-region of the semi-arid Northeast), there on the island talking to them up there (in the sky)," he said.

"We lost all that. That place which was sacred to us was submerged under water," he said,

sadly.

The Tuxá people, who for centuries were fishermen, hunters, gatherers and farmers, practically gave up their subsistence crops in their new location.

Some bought small parcels of land and grow cash crops, such as coconuts.

"We need to improve our quality of life. Before we used to live on what we produced from agriculture and fishing. Today that is not possible, so we want to return to agriculture, and to do that we need our land," Chief Uilton Tuxá told IPS.

In 2014, a decree declared some 4,392 hectares of land an "area of social interest" in order to expropriate it and transfer it to the Tuxá people.

In June of this year, they won a lawsuit in a federal court, which ruled that the National Indigenous Foundation (Funai) had three months to create a working group to begin the demarcation process. It also set a new compensation to be paid to the Tuxá people.

But distrustful of the state bureaucracy and the courts, the Tuxá people decided to occupy Surubabel, the area near their village, on the banks of the reservoir, which was expropriated in order for it to be demarcated in their favor, but this never happened.

They began to build a new village there, in what they call "the recovery" of their lands.

"The occupation of this land by us, the Tuxá people, represents the rekindling of the flame of our identity as an indigenous people native to this riverbank. We were already here, since the beginning of the colonization process, even in the 16th century when the first catechists arrived," argued Uilton Tuxá.

"We want to build this small village for the government to fulfill its obligations and the order to delimit our territory," he said.

During the week they have other activities. They are public employees or work on their plots of land. But on Saturdays they load their tools in their vehicles and build their houses in the traditional way.

"Nowadays a lot of land in this sacred territory of the Tuxás is being invaded by non-indigenous people and also by indigenous people from other ethnic groups," chief Xirlene Liliana Xurichana Tuxá told IPS.

"We were the first indigenous people from the Northeast to be recognized and we are the last to have the right to our land. This is just the beginning. If the justice system does not grant us our right to continue the dialogue, we will adopt forceful measures, we will mobilise. We are tired of being the good guys," she warned, speaking as a community leader.

Meanwhile, the small portion of their ancestral land that was not submerged, and the land they occupy now, are threatened by new megaprojects.

These lands were left in the middle of two canals, on the north axis of the diversion of the São Francisco River, a project that is still under construction, which is to supply 12 million people with water.

"The Tuxá people have suffered impacts, above and beyond the dam. There is also the diversion of the river and the possibility that they might build a nuclear plant will also affect us," said Uilton Tuxá, smoking his marakú during a break.

They say the marakú attracts protective forces. And this time they hope these forces will help them to get the land promised to them when their ancestral land was taken away, and that they will not lose it again to new megaprojects.

Story Credit: by Fabiana Frayssinet - September 2017, Inter Press Service News Agency. ipsnews.net

TOCANTINS, A RIVER OF MANY DAMS IN CENTRAL BRAZIL

by MARIO OSAVA

PALMAS and PORTO NACIONAL, Brazil, Jan 12 2018 (IPS) - Tocantins, the newest of Brazil's 26 states, which was created in 1988 to seek its own paths to development in central Brazil, fell into the common plight of expanding borders, based on soy and hydroelectricity.

The area owes its name to a river that crosses the state from south to north, but which has been converted into a sequence of dams to generate electricity, almost entirely for other states. With no industries and with a population of just 1.5 million, consumption in this state is very limited.

"The lake is beautiful, but it left us without the tourism potential of the river and the electricity is more expensive for us than elsewhere," complained journalist and writer Edivaldo Rodrigues, editor-in-chief of the newspaper O Paralelo 13, which he founded in 1987 in Porto Nacional.

The Lajeado hydroelectric power plant, with a capacity of 902.5 megawatts and which is officially named after former member of parliament Luis Eduardo Magalhães, who died in 1998, submerged beaches, crops and houses with its 630 square km reservoir, along a 170-km stretch of the Tocantins river.

"We had beaches in the dry season, islands of white sand that attracted many tourists", and it was all lost when the water level rose, Rodrigues lamented, at his home in the city's historical district, a few metres from the shore of the lake.

The journalist, who is the author of 12 books, chronicles, memoirs and novels, is a privileged witness to the transformations in Tocantins, especially in Porto Nacional, the cultural cradle of the state, with a population of about 53,000 people.

His historical novels show the violence of old

Access stairway to the Tocantins River in the central Brazilian state of Tocantins, which no longer has flowing water since it was dammed to generate electricity, mostly to be used in other parts of the country, and which contributes very little to local development. Credit: Mario Osava / IPS

landowners, the "colonels" appointed by the National Guard, a paramilitary militia that was disbanded in 1922, who dominated the region of Tocantins, as well as the advance in education brought by Dominican priests who came from France in 1886 to spread Catholicism from their base in Porto Nacional.

"They brought knowledge from Europe, they created schools, turning Porto Nacional into a cultural centre, and today a university town, with three universities and students from all over the country," said the journalist who studied Communication and History in Goiania, capital of the neighboring state of Goiás.

The river, which was part and parcel of the city, more than doubled in width when it became a lake, but now it is farther away from the population. Now there are ravines between the coastal avenue and where the water starts, accessed only through two stairways.

Some old families from the city were resettled away from the shore of the lake and indemnified, but most of the displaced were peasant farmers who lived on the other side, on the left bank, where the reservoir was extended the most across the plain.

Anesia Marques Fernandes, 59, is one of those victims.

"We lost the river, the beaches, the tourists, the

nearby fish and the fertile lands which we sowed in the dry season," recalled the peasant farmer, who was resettled along with her mother 21 km from the river in 2000, before the reservoir was filled the following year.

"My mother is the one who suffered the most and still suffers today, at 80 years of age," after having raised her five children on her own in the flooded rural community, Carreira, because her husband died when she was pregnant with their fifth child, Fernandes said.

In the Flor de la Sierra Resettlement community, home to 49 displaced families, the four hectares of land that were given to them are not even a tenth of what they had before, she said. "But the houses are better," she acknowledged.

The most important thing, however, was community life, the solidarity among "neighbours who helped each other, shared the meat of a butchered cow. We were one big family that was broken up," she lamented. In the resettlement community there are only three families from her old village.

That is the same complaint voiced by Maria do Socorro Araujo, a 56-year-old retired teacher, displaced from Canela, a submerged beach community, 10 km from Palmas, the capital of the state of Tocantins.

Edivaldo Rodrigues, editor-in-chief of the newspaper O Paralelo 13, from Porto Nacional, a cultural and university centre in central Brazil with a population of 53,000 located on the right bank of the Tocantins River. Credit: Mario Osava / IPS

"The community was fragmented, it dispersed, it forgot its culture, its unity and its way of live," said Araujo, who was resettled in 2001 on block 508 in the north of Palmas, with her husband and three children.

"We lost our land, tranquillity and freedom, there were no fences there; here we live behind high walls," complained her neighbour Bernardete Batista de Araujo, referring to the house where she was resettled in the capital.

She is pleased, however, to have a roof over her head, a solid three-bedroom house, better than her rustic dwelling in Canela, which had been rebuilt after the river flooded and destroyed it in 1980.

In her small yard, she now tries to compensate for the loss of the many fruit trees in the village flooded by the reservoir, planting papaya, mango and pineapple.

"The bad thing here is the dust in the dry season and the mud when it rains because of the unpaved roads," a long-standing complaint by the inhabitants of La Cuadra, who are demanding that the road be paved.

Palmas, with a current population of 290,000, is an artificial city, planned according to the model of Brasilia, with wide avenues and squares to accommodate large numbers

Bernardete Batista de Araujo stands in front of the house where she was relocated in Palmas, together with others displaced by the Lajeado hydroelectric dam in central Brazil. The high walls and a street muddy because of the rain make her miss Vila Canela, her old village on an island that no longer exists on the Tocantins River. Credit: Mario Osava / IPS

of cars and blocks arranged by numbers and cardinal points.

Founded in 1989, it took years of construction before becoming in practice the administrative capital of Tocantins.

Antonio Alves de Oliveira, 63, is proud to have been "the third taxi driver" in Palmas, when the city, in its second year, "had nothing but dust and huge numbers of mosquitoes."

"Fried fly" was the nickname given to an improvised restaurant, he recalled.

Where Palmas is located, the Tocantins River now has an 8.4-km bridge which crosses the reservoir – almost eight times the width before the construction of the Lajeado dam, 50 km downstream (to the north).

The environmental impact study carried out by Investco, the company that built the Lajeado hydropower plant between 1999 and 2001 and has a concession for 35 years, registered only 1,526 families, of which 997 are rural, directly affected by the dam and reservoir.

But Judite da Rocha, local coordinator of the Movement of People Affected by Dams (MAB), believes that the real number is close to 8,000 families.

Many groups were not recognised as affected, such as the Xerente indigenous people, boatmen, fishermen, potters, dredgers who extracted sand from the river and seasonal workers, such as "barraqueros" who set up stands to sell beach products in the tourist season, she argued.

But the "worst and most complex situation" is that of the Estreito hydroelectric plant, inaugurated in 2012 in the north of the state of Tocantins, with an installed capacity of 1,087 megawatts.

There are "almost 1,000 families displaced and without compensation", scattered in seven camps, so that the total number of people affected could reach 12,000, according to Rocha.

MAB estimates that there are 25,000 families in total who suffer the consequences of the hydroelectric power plants built in the state of Tocantins, four of which are on the Tocantins River. Added to three other large plants built in other states, the Tocantins River has a generation capacity of 12,785 megawatts.

Story Credit: by Mario Osava - January 2018, Inter Press Service News Agency. ipsnews.net

ENDANGERED

LEATHERBACK TURTLE, WASHED UP IN BRAS d'OR LAKES

by PEGGY MACDONALD

CBC News, Feb 14 2018 - A creature that co-existed with the dinosaurs has washed up dead near shore in Islandview, Cape Breton, in Nova Scotia. This is the 1st recorded sighting of a leatherback turtle in the Bras d'Or Lake.

Ron MacLean spotted the rare, endangered leatherback turtle along the Bras d'Or Lake. The 360-kilogram carcass has been taken to the Atlantic Veterinary College in Charlottetown, P.E.I. for analysis.

"They'll check and see what they think happened, and we'll wait and see. Turtles are supposed to be in the Caribbean about now, see, laying eggs, not ... they don't ski."

The Department of Fisheries and Oceans told MacLean that although there have been some anecdotal reports of sightings, this is the first recorded sighting of a leatherback turtle in the Bras d'Or.

"On Thursday, I was out walking on the shore in front of my place and it looked like there was a small overturned boat on the shore, in the ice. And I went to look and it was a leatherback turtle," he told CBC's Information Morning Cape Breton.

"When I touched it it was floating a bit, so it wasn't moving, so I knew it was dead, but it was in good condition. It didn't look like it was there that long, but that would be because, with the ice and the cold and such."

MacLean tried without success to reach DFO for a few days, finally sending an email on Sunday to the Canadian Sea Turtle Network.

That stirred some interest.

"I got a call from pretty well everybody on Monday morning," said MacLean.

When DFO officials saw MacLean's pictures of

The turtle carcass had to be freed from thick ice before it could be hauled ashore in Cape Breton. (Sue MacLean/ Facebook)

the turtle, "they wanted it," he said.

By Tuesday, the turtle was being removed from the ice with the help of some sturdy wooden ramps and heavy machinery.

"We got it under the turtle and we pulled it out onto the ice," MacLean said, "and then we dragged it over where we could get it up close to the shore and I pulled it onto a pallet, and with the tractor, I put some forks on it and we lifted it up and brought it up."

MacLean said the carcass measures about two metres from tip to tail and the shell, from side to side, is about a metre wide.

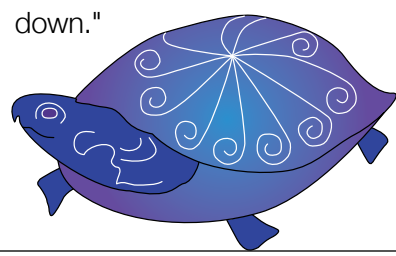
The leatherback turtle is listed as an endangered species in Canada.

One of the world's largest reptiles, leatherback turtles can reach more than two metres in length and weigh more than 900 kilograms. They're known to swim up to 12,000 kilometres a year and dive to depths of up to 1.2 kilometres, according to DFO.

The turtles usually only ever come ashore to nest on warm tropical and subtropical beaches so it's a bit of a mystery as to why the turtle ended up so far north in winter and so close to land in Cape Breton's inland sea.

"The ice has been in quite a while and it wasn't here before, so I don't know if it washed up or it had gotten that far," said MacLean.

"But you could tell on the shell — it was cracked in the centre — so the weight of the ice was on it when the water level come down."



A makeshift ramp was used to bring the carcass out of the water. (Sue MacLean/Facebook)

The 360-kilogram carcass is now on its way to the Department of Fisheries and Oceans lab in Charlottetown for analysis. (Sue MacLean/Facebook)

Story Credit: by Peggy MacDonald, February 2018, CBC News - CBC.ca/news

Declaration of the Global Plastics Associations for Solutions on Marine Litter

Plastic materials deliver significant societal benefits, including energy and resource savings, consumer protection and innovations that improve health care, reduce food spoilage and improve quality of life. For society to receive the benefits that plastics can provide, it is essential to properly recover them so that litter does not threaten our natural environment, including marine ecosystems.

Investigations by marine scientists are highlighting the extent to which littered plastic and other materials are ending up as debris in our oceans and the consequences for the marine environment. The organisations below are firmly committed to the principle that plastics do not belong in the world's oceans and should not be littered — plastics should be responsibly used, reused, recycled and finally recovered for their energy value.

Plastic is present as debris in the marine environment as a result of poor or insufficient waste management, lack of sufficient recycling / recovery and bad practices such as land and marine litter. These are large and complex issues with societal and economic challenges, and are more than any single entity, industry, or government can solve. Building on work in individual regions, the undersigned organisations are coming together to work with governments, NGOs, researchers and other stakeholders to prevent marine litter.

WE WILL:

1. Contribute to solutions by working in public-private partnerships aimed at preventing marine debris
2. Work with the scientific community and researchers to better understand and evaluate the scope, origins and impact of and solutions to marine litter
3. Promote comprehensive science-based policies and enforcement of existing laws to prevent marine litter
4. Help spread knowledge regarding eco-efficient waste management systems and practices, particularly in communities and countries that border our oceans and watersheds
5. Enhance opportunities to recover plastic products for recycling and energy recovery
6. Steward the transport and distribution of plastic resin pellets and products from supplier to customer to prevent product loss and encourage our customers to do the same

Success in these efforts will require sustained, good faith cooperation among a wide range of stakeholders. We will do our part and invite other organisations to join us.

For more information on specific regional efforts to prevent marine litter see:
https://www.marinelittersolutions.com/projects/

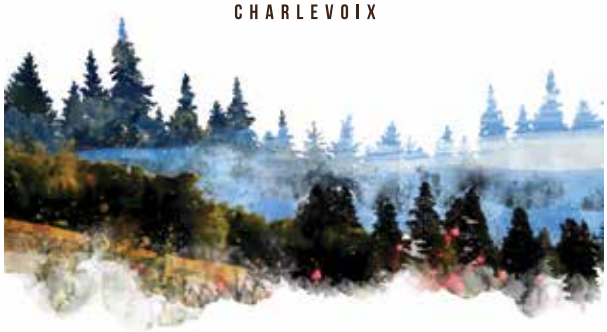
CHARLEVOIX BLUEPRINT FOR HEALTHY OCEANS & RESILIENT COASTAL COMMUNITIES

Global Affairs Canada - Summits Management Office, JUN 2018 - The health of our oceans and seas is critical to the economic, social and environmental well-being of the planet. Oceans and seas play a fundamental role in the global climate system and in supporting communities, jobs and livelihoods, food security, human health, biodiversity, economic prosperity and way of life.

Oceans and seas; however, are facing many challenges. Illegal, Unreported and Unregulated (IUU) fishing and overexploitation of fish stocks threaten entire species and food security. Marine pollution, including plastic litter, is compounding the threats facing already degraded marine ecosystems. As set out in The Charlevoix G7 Summit Communique, ocean warming, acidification and sea-level rise, together with extreme weather events, are affecting communities globally. Arctic and low-lying coastal communities, particularly Small Island Developing States (SIDS), are among the most vulnerable.

We, the Leaders of the G7, underscore the importance of engaging and supporting all levels of government to develop and implement effective and innovative solutions. We will promote collaborative partnerships and work with all relevant partners, in particular local, Indigenous, remote coastal and small island communities, as well as with the private sector, international organizations and civil society to identify and assess policy gaps, needs and best practices. This path forward will support the leadership and empowerment of women and youth as agents of positive change.

Recognizing the direct impact of global temperature rise on oceans, with this Blueprint we are pursuing global efforts towards a sustainable and climate-resilient future, in particular reducing emissions while stimulating innovation and economic growth, enhancing adaptive capacity, strengthening resilience and reducing vulnerability to the impacts of climate change while ensuring a just transition to the broad participation of women and girls, both at home and in our commitment to



CHARLEVOIX BLUEPRINT FOR **HEALTHY OCEANS, SEAS AND RESILIENT COASTAL COMMUNITIES**

Charlevoix Blueprint for Healthy Oceans, Seas and Resilient Coastal Communities (PDF, 904 KB) https://g7.gc.ca/wp-content/uploads/2018/06/HealthyOceansSeasResilientCoastalCommunities.pdf

support developing countries.(1)

Recognizing the need for action in line with previous G7 commitments and the 2030 Agenda, which sets a global framework for sustainable development, we, the Leaders of the G7, commit to:

Resilient Coasts and Coastal Communities

Support better adaptation planning, emergency preparedness and recovery: We will work in partnership across multiple sectors to identify and assess policy gaps, vulnerabilities, risks and needs, and share lessons learned and expertise. We encourage the development of coastal management strategies to help plan and build back better, including through standards, best practices and provisions to rebuild natural and physical infrastructure, as appropriate. Our efforts will support resilient and quality infrastructure in coasts and coastal communities, particularly in SIDS. This will include advancing the development and deployment of clean and resilient energy systems, including from renewable sources. Where appropriate, we will advocate for and support nature-based solutions, such as the protection and rehabilitation of wetlands, mangrove forests, seagrass beds and coral reefs. To protect coastal communities, we will work to increase the capacity of these communities, particularly in SIDS, to generate and communicate effective early warnings of extreme weather and other geo-hazard related risks. To this end, we support early warning systems, including through efforts such as the Climate Risk and Early Warning Systems initiative, which aims to build the capacity of Least Developed Countries and SIDS. We will develop gender-sensitive planning strategies that integrate economic growth, adaptation, sustainable development, conservation and sustainable use of biodiversity and disaster risk reduction. In ensuring more inclusive, comprehensive approaches, we will support women's equal participation in decision-making for disaster risk reduction and recovery. Looking ahead to a brighter economic future, we will promote income-generating activities in coastal communities, such as sustainable tourism.

Support innovative financing for coastal resilience: Mobilize greater support for increasing financial resources available to build coastal resilience, particularly in developing countries, and exploring new and innovative financing with national and international public and private sector partners. To explore these innovative financing approaches and tools, we will build on existing platforms for governments, industry, philanthropists and institutional investors. We will explore broadening disaster risk insurance coverage, including through global and regional facilities, such as the InsuResilience Global Partnership, to extend high quality insurance coverage to vulnerable developing countries and beneficiaries in need and to encourage new types of insurance products for emerging risks. We welcome research, monitoring and gender analysis to increase both the range of insurance products and women's access to financial resources for disaster risk management and recovery.

Launch a joint G7 initiative to deploy Earth observation technologies and related applications to scale up capacities for the integrated management of coastal zones: We intend to leverage innovation

in the field of Earth observation technologies and related applications and make them broadly available in the poorest and most vulnerable regions of the world in order to support disaster risk prevention, contingency planning, spatial planning, infrastructure and building design, early warning systems and risk transfer mechanisms. We ask the forthcoming G7 Ministerial meetings in Halifax to work to present new actions in this area.

Ocean Knowledge: Science and Data

Increase the availability and sharing of science and data: Recognizing the value of ocean science, observation and seabed mapping, we will expand global observation and tracking efforts. Through enhanced global monitoring of oceans, and coordinating access to ocean science information, we will significantly improve the availability of data. We encourage the collection, analysis, dissemination and use of gender-sensitive data to bridge gaps in understanding the way women and girls are impacted by risks and catastrophic events, and how they can be engaged in developing and implementing solutions.

Sustainable Oceans and Fisheries

Address IUU fishing and other drivers of overexploitation of fish stocks: We will work globally to build stronger public-private partnerships with key countries and technology providers to deploy innovative platforms and technology to identify vessels that engage in, and those that support, IUU fishing. A key effort will be the implementation of unique vessel identification scheme of the International Maritime Organization for all eligible vessels fishing on the high seas. Further, we will strengthen existing regional fisheries networks and launch new networks in needed areas in partnership with INTERPOL and Regional Fisheries Management Organizations (RFMOs), in accordance with their respective competencies, to share information and best practices, and develop new tools to eliminate IUU fishing. Our partnerships will leverage the agency, leadership and participation of women in developing strategies for marine conservation through inclusive planning and implementation, capacity building and improved access to information for women. We will also work to address the myriad of other challenges facing sustainable fishing, including by: promoting global adoption and implementation of the Food and Agriculture Organization (FAO) Agreement on Port State Measures to Prevent, Deter, and Eliminate IUU Fishing, including through supporting capacity building on effective implementation of the Agreement; promoting coordinated action to address forced labour and other forms of work that violate or abuse human rights in the fishing sector that can also be related to IUU fishing; prohibiting harmful fish subsidies that contribute to overfishing and IUU fishing and collectively addressing this through effective disciplines in the World Trade Organization (WTO); supporting the FAO Voluntary Guidelines for Catch Documentation Schemes; and promoting innovation for fishing gear design and recovery to prevent its loss or abandonment.

We will also support the implementation of the Global Record of Fishing Vessels, Refrigerated Transport Vessels, and Supply Vessels by providing our Phase 1 vessel data as soon as possible.

Support strategies to effectively protect and manage vulnerable areas of our oceans and resources: We will advance efforts beyond the current 2020 Aichi targets including, the establishment of marine protected areas (MPAs) where appropriate and practicable and contribute towards these objectives, the sustainable management of fisheries and the adoption of marine spatial planning processes. We will further advocate for the creation and implementation of effective and science-based MPAs and area-based conservation measures, in close alignment with relevant international frameworks, including in the high seas. We acknowledge efforts to develop an effective and universal international legally-binding instrument under the UN Convention on the Law of the Sea (UNCLOS) on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction in line with resolution UNGA 72/249.

Ocean Plastic Waste and Marine Litter

We recognise the urgency of the threat of ocean plastic waste and marine litter to ecosystems and the lost value of plastics in the waste

stream. We commit to building on previous G7 commitments and taking a lifecycle approach to plastics stewardship on land and at sea, moving towards a more resource efficient and sustainable management of plastics. Further, we will promote the harmonization of monitoring methodologies for marine litter and collaboration on research on its impacts, in cooperation, for example with the United Nations Environment Programme (UNEP) to facilitate this work.

We ask Ministers to further elaborate on this work at their meeting in Halifax.

Annex: Ocean Plastics Charter

Plastics are one of the most revolutionary inventions of the past century and play an important role in our economy and daily lives. However, the current approach to producing, using, managing and disposing of plastics poses a significant threat to the environment, to livelihoods and potentially to human health. It also represents a significant loss of value, resources and energy.We, the Leaders of Canada, France, Germany, Italy, the United Kingdom, and the European Union, commit to move toward a more resource-efficient and sustainable approach to the management of plastics. We resolve to take a lifecycle approach to plastics stewardship on land and at sea, which aims to avoid unnecessary use of plastics and prevent waste, and to ensure that plastics are designed for recovery, reuse, recycling and end-of-life management to prevent waste through various policy measures. We endeavor to increase the efficient use of resources while strengthening waste diversion systems and infrastructure to collect and process plastic materials and recapture the value of plastics in the economy, thereby reducing greenhouse gas emissions and preventing waste and litter from being released into the environment. We seek to stimulate innovation for sustainable solutions, technologies and alternatives across the lifecycle to enable consumers and businesses to change their behaviour. We will work to mobilize and support collaborative government, industry, academia, citizen and youth-led initiatives. We also recognize the need for action in line with previous G7 commitments and the 2030 Agenda, which sets a global framework for sustainable development.

OceanPlasticsCharter.pdf https://g7.gc.ca/wp-content/uploads/2018/06/OceanPlasticsCharter.pdf

We commit to take action toward a resource-efficient lifecycle management approach to plastics in the economy by:

Sustainable design, production and after-use markets

Working with industry towards 100% reusable, recyclable, or, where viable alternatives do not exist, recoverable, plastics by 2030.

Taking into account the full environmental impacts of alternatives, significantly reducing the unnecessary use of single-use plastics.

Using green public procurement to reduce waste and support secondary plastics markets and alternatives to plastic.

Working with industry towards increasing recycled content by at least 50% in plastic products where applicable by 2030.

Supporting secondary markets for plastics including using policy measures and developing international incentives, standards or requirements for product stewardship, design and recycled content.

Working with industry towards reducing the use of plastic microbeads in rinse-off cosmetic and

personal care consumer products, to the extent possible by 2020, and addressing other sources of microplastics.

Collection, management and other systems and infrastructure

Working with industry and other levels of government, to recycle and reuse at least 55% of plastic packaging by 2030 and recover 100% of all plastics by 2040.

Increasing domestic capacity to manage plastics as a resource, prevent their leakage into the marine environment from all sources, and enable their collection, reuse, recycling, recovery and/or environmentally-sound disposal.

Encouraging the application of a whole supply chain approach to plastic production toward greater responsibility and prevent unnecessary loss, including in pre-production plastic pellets.

Accelerating international action and catalyzing investments to address marine litter in global hot spots and vulnerable areas through public-private funding and capacity development for waste and wastewater management infrastructure, innovative solutions and coastal clean-up.

Working with relevant partners, in particular local governments, to advance efforts to reduce marine litter and plastics waste, notably but not exclusively in small island and remote communities, including through raising awareness.

Sustainable lifestyles and education

Strengthening measures, such as market-based instruments, to prevent plastics from entering the oceans, and strengthening standards for labelling to enable consumers to make sustainable decisions on plastics, including packaging.

Supporting industry leadership initiatives and fostering knowledge exchange through existing alliances and other mechanisms.

Promoting the leadership role of women and youth as promoters of sustainable consumption and production practices.

Support platforms for information sharing to foster-awareness and education efforts on preventing and reducing plastic waste generation, plastics pollution and eliminating marine litter.

Research, innovation and new technologies

Assessing current plastics consumption and undertaking prospective analysis on the level of plastic consumption by major sector use, while identifying and encouraging the elimination of unnecessary uses.

Calling on G7 Ministers of Environment at their forthcoming meeting to advance new initiatives, such as a G7 Plastics Innovation Challenge, to promote research and development of new and more sustainable technologies, design or production methods by the private sector and innovators to address plastics waste in the oceans with a focus on all stages of the production and supply chain.

Promoting the research, development and use of technologies to remove plastics and microplastics from waste water and sewage sludge.

Guiding the development and appropriate use of new innovative plastic materials and alternatives to ensure they are not harmful to the environment.

Harmonizing G7 science-based monitoring methodologies.

Collaborating on research on the sources and fate of plastics and their impact on human and marine health.

Coastal and shoreline action

Encouraging campaigns on marine litter in G7 countries with youth and relevant partners to raise public awareness, collect data and remove debris from coasts and shorelines globally.

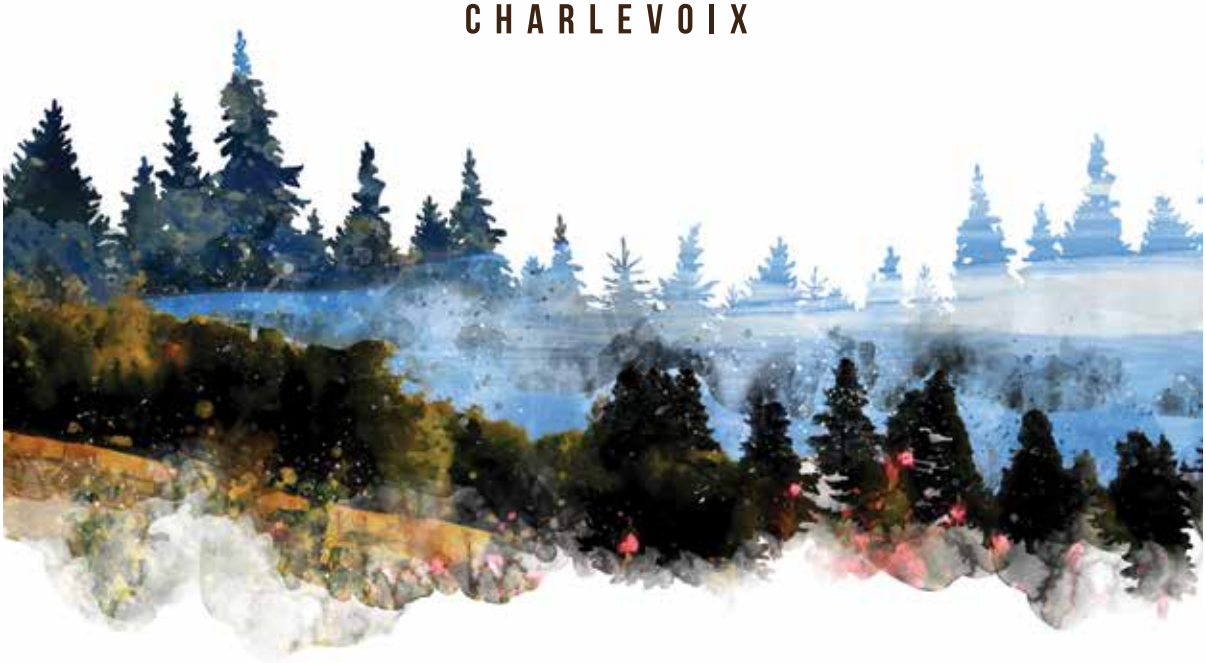
Accelerating implementation of the 2015 G7 Leaders' Action Plan to Combat Marine Litter through the Regional Seas Programs, initiatives led by RFMOs, where appropriate, and targeted investments for clean-up activities that prove to be environmentally sound in global hotspots and priority areas, in particular on Abandoned, Lost or Otherwise Discarded Fishing Gears (ALDFG) and wastes generated and collected by fishery activities.

Footnotes

Footnote 1

The United States strongly supports heathy oceans, seas and resilient coastal communities. The United States has announced its intention to withdraw from the Paris Agreement, and reserves on the climate related language in the Blueprint.

G7 2018
CHARLEVOIX



OCEAN PLASTICS CHARTER

OCEAN PLASTICS CHARTER

Plastics are one of the most revolutionary inventions of the past century and play an important role in our economy and daily lives. However, the current approach to producing, using, managing and disposing of plastics poses a significant threat to the environment, to livelihoods and potentially to human health. It also represents a significant loss of value, resources and energy.

We, the Leaders of Canada, France, Germany, Italy, the United Kingdom, and the European Union, commit to move toward a more resource-efficient and sustainable approach to the management of plastics. We resolve to take a lifecycle approach to plastics stewardship on land and at sea, which aims to avoid unnecessary use of plastics and prevent waste, and to ensure that plastics are designed for recovery, reuse, recycling and end-of-life management to prevent waste through various policy measures. We endeavor to increase the efficient use of resources while strengthening waste diversion systems and infrastructure to collect and process plastic materials and recapture the value of plastics in the economy, thereby reducing greenhouse gas emissions and preventing waste and litter from being released into the environment. We seek to stimulate innovation for sustainable solutions, technologies and alternatives across the lifecycle to enable consumers and businesses to change their behaviour. We will work to mobilize and support collaborative government, industry, academia, citizen and youth-led initiatives. We also recognize the need for action in line with previous G7 commitments and the 2030 Agenda, which sets a global framework for sustainable development.

WE COMMIT TO TAKE ACTION TOWARD A RESOURCE-EFFICIENT LIFECYCLE MANAGEMENT APPROACH TO PLASTICS IN THE ECONOMY BY:

1. **Sustainable design, production and after-use markets**
    a. Working with industry towards 100% reusable, recyclable, or, where viable alternatives do not exist, recoverable, plastics by 2030.
    b. Taking into account the full environmental impacts of alternatives, significantly reducing the unnecessary use of single-use plastics.
    c. Using green public procurement to reduce waste and support secondary plastics markets and alternatives to plastic.
    d. Working with industry towards increasing recycled content by at least 50% in plastic products where applicable by 2030.
    e. Supporting secondary markets for plastics including using policy measures and developing international incentives, standards or requirements for product stewardship, design and recycled content.
    f. Working with industry towards reducing the use of plastic microbeads in rinse-off cosmetic and personal care consumer products, to the extent possible by 2020, and addressing other sources of microplastics.

2. Collection, management and other systems and infrastructure

a. Working with industry and other levels of government, to recycle and reuse at least 55% of plastic packaging by 2030 and recover 100% of all plastics by 2040.

b. Increasing domestic capacity to manage plastics as a resource, prevent their leakage into the marine environment from all sources, and enable their collection, reuse, recycling, recovery and/or environmentally-sound disposal.

c. Encouraging the application of a whole supply chain approach to plastic production toward greater responsibility and prevent unnecessary loss, including in pre-production plastic pellets.

d. Accelerating international action and catalyzing investments to address marine litter in global hot spots and vulnerable areas through public-private funding and capacity development for waste and wastewater management infrastructure, innovative solutions and coastal clean-up.

e. Working with relevant partners, in particular local governments, to advance efforts to reduce marine litter and plastics waste, notably but not exclusively in small island and remote communities, including through raising awareness.

3. Sustainable lifestyles and education

a. Strengthening measures, such as market-based instruments, to prevent plastics from entering the oceans, and strengthening standards for labelling to enable consumers to make sustainable decisions on plastics, including packaging.

b. Supporting industry leadership initiatives and fostering knowledge exchange through existing alliances and other mechanisms.

c. Promoting the leadership role of women and youth as promoters of sustainable consumption and production practices.

d. Support platforms for information sharing to foste awareness and education efforts on preventing and reducing plastic waste generation, plastics pollution and eliminating marine litter.

4. Research, innovation and new technologies

a. Assessing current plastics consumption and undertaking prospective analysis on the level of plastic consumption by major sector use, while identifying and encouraging the elimination of unnecessary uses.

b. Calling on G7 Ministers of Environment at their forthcoming meeting to advance new initiatives, such as a G7 Plastics Innovation Challenge, to promote research and development of new and more sustainable technologies, design or production methods by the private sector and innovators to address plastics waste in the oceans with a focus on all stages of the production and supply chain.

c. Promoting the research, development and use of technologies to remove plastics and microplastics from waste water and sewage sludge.

d. Guiding the development and appropriate use of new innovative plastic materials and alternatives to ensure they are not harmful to the environment.

e. Harmonizing G7 science-based monitoring methodologies.

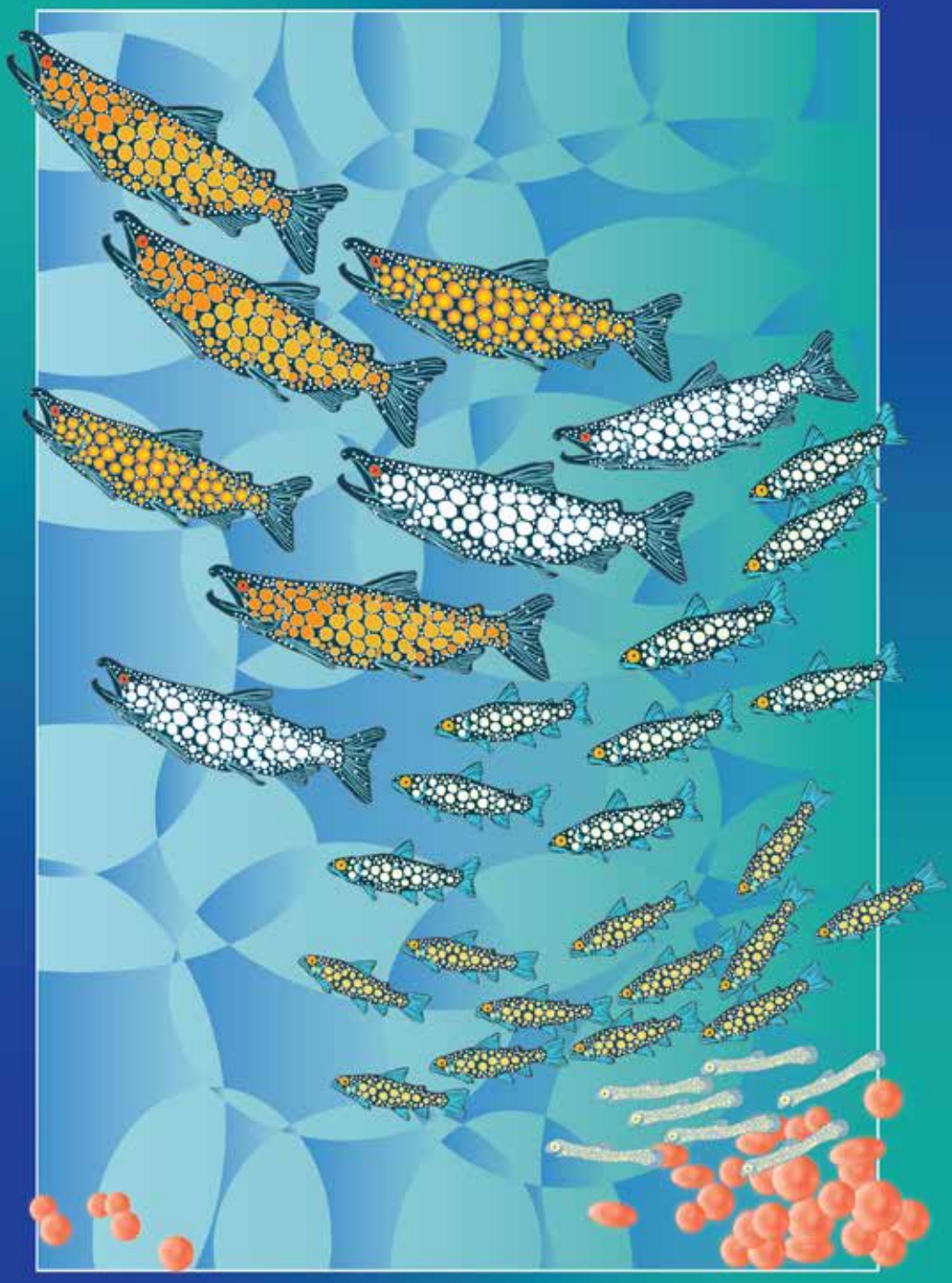
f. Collaborating on research on the sources and fate of plastics and their impact on human and marine health.

5. Coastal and shoreline action

a. Encouraging campaigns on marine litter in G7 countries with youth and relevant partners to raise public awareness, collect data and remove debris from coasts and shorelines globally.

b. Accelerating implementation of the 2015 G7 Leaders' Action Plan to Combat Marine Litter through the Regional Seas Programs, initiatives led by RFMOs, where appropriate, and targeted investments for clean-up activities that prove to be environmentally sound in global hotspots and priority areas, in particular on Abandoned, Lost or Otherwise Discarded Fishing Gears (ALDFG) and wastes generated and collected by fishery activities.

NEWS FROM MAARS



MARITIME ABORIGINAL AQUATIC RESOURCES SECRETARIAT

Illustration by Anna Nibby-Woods

SCIENCE OF OIL SPILLS (SOS)

by JESSICA SEWARD

The National Oceanic and Atmospheric Administration (NOAA) held a Science of Oil Spills (SOS) class in Seattle at the NOAA Headquarters on June 11-15, 2018. This class aims to help spill responders and other stakeholders increase their understanding of oil spill science when analyzing spills and making risk-based decisions. This class is designed for new and mid-level spill responders and covers a range of topics including:

- Fate and behavior of oil spilled in the environment;
- An introduction to oil chemistry and toxicity;
- A review of basic spill response options for open water and shorelines;
- Spill case studies;
- Principles of ecological risk assessment;
- An introduction to damage assessment techniques; and
- Determining cleanup endpoints.

All of the presentations were very informative and useful for building MAPC's oil spill response capacity, specifically the review of NOAA's Environmental Sensitivity Index (ESI) as well as endpoint assessments.

Jill Petersen, NOAA, provided detailed

Challenges of ATK Collection & the Aboriginal Community's Perspectives on Spill Response in Nova Scotia.

information about NOAA's Environmental Sensitivity Index (ESI), which is the most widely used approach to sensitive environment mapping in the United States. This approach systematically compiles information in standard formats for coastal shoreline sensitivity, biological resources, and human-use resources. ESI maps are useful for identifying sensitive resources before a spill occurs so that protection priorities can be established and cleanup strategies designed in advance. This framework is very similar to Canada's new Area Response Planning methodology. However, the ESI

CHALLENGES & PERSPECTIVES

Environmental Conditions

- *240-320 billion tons of water flows in and out of the Bay of Fundy.*
- *That's equivalent to the combined total 24 hr flow of all the rivers of the world!*
- *Tidal resonance*
- *Ice cakes; turbid; and turbulent waters*
- *"weather conditions preventing response can be a hard sell to the public..."*

does not provide a weighting scheme to the information gathered; rather it is made available to responders who are then responsible for making these decisions when consulting with local stakeholders during the event of a spill.

John Tarpley, NOAA, provided an overview of oil spill cleanup endpoint assessments, environmental trade-offs and the question of "how clean is clean?" This subject is heavily debated among marine stakeholders as endpoints are determined based on general cleanup objectives, which are to: 1) minimize exposure hazards for human health; 2) speed recovery of impacted areas if possible; and 3) reduce the threat of additional or prolonged natural resource impacts. These objectives lead to developing cleanup strategies that do not cause more harm to the environment than good.

The definition of "endpoint" is a highly debated subject due to the fact that although the highest cleanup endpoint is removal to the point of no observed oil, this is often not

possible, particularly if there is a background rate of oil deposition (e.g., natural seeps, shipping traffic). According to NOAA's Shoreline Assessment Manual, in these cases a more appropriate endpoint would be cleanup of visible oil, but not exceeding the background amount – keeping in mind that "visible" oil applies not only to oil on the surface, but also subsurface oil that must be exposed in trenches dug into the sediments. When shoreline cleanup to achieve these endpoints is likely to cause added harm to the environment, additional endpoints may be considered which are also laid out in the manual.

A second contentious issue is the idea behind "trade-offs", which also helps to determine spill- and site-specific endpoints. Shoreline access is often difficult, dangerous, and limited to low tides and calm wave conditions. High wave energy usually breaks up sheens, limiting the distance sheens can spread and thus the areal extent of threat to sensitive resources. Timing is often a critical component in allowing natural removal to proceed, particularly for the presence of migratory waterfowl, seabird nesting, and breeding activities of marine mammals. However, informing local citizens and other marine stakeholders that weather conditions are what are preventing environmental response can be a hard sell. This is where the idea of a stakeholder developed weighting scheme has value when prioritizing response efforts.

Several oil spill exercises occurred over the course of the class including an oil spill projection exercise. The methodology for oil spill project and other information from the class is located in the attached files.

Jessica was asked by the NOAA SOS Class coordinator to present on the perspectives of the Aboriginal community regarding oil spills. Though the subject is broad, Jessica focused her presentation around the challenges associated with collecting ATK for the MAPC Oil Spill Project. The presentation concentrated on the lack of trust between the

CHALLENGES & PERSPECTIVES
Bio-piracy

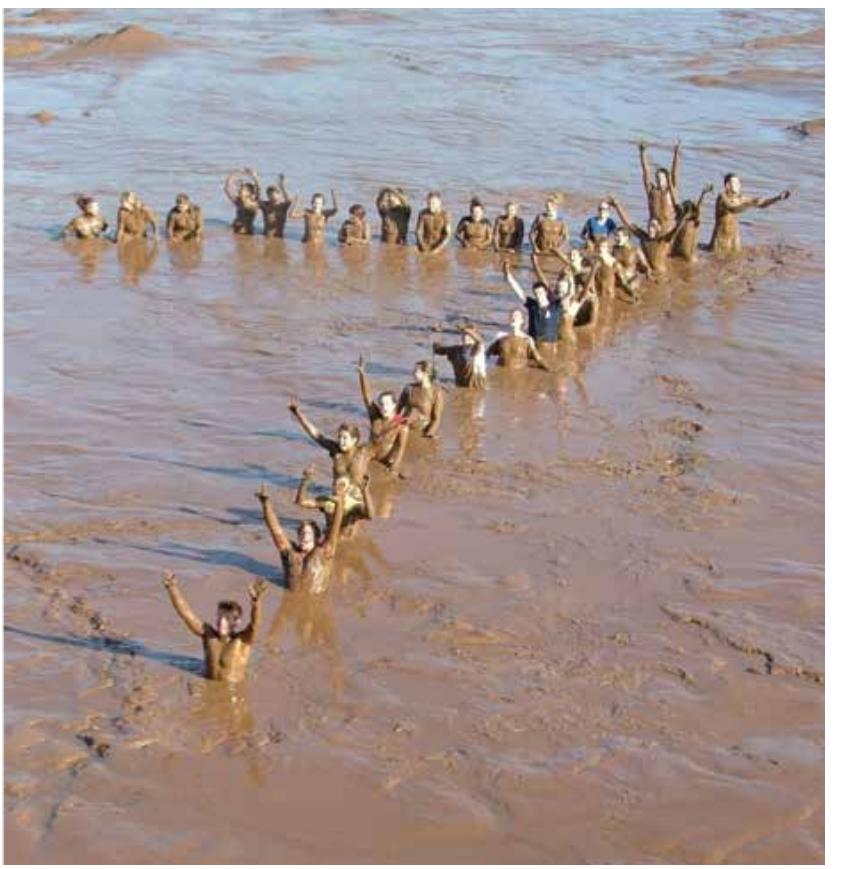
- *Linked to colonialism, with countries having many of their resources forcibly removed.*
- *Pepper, sugar, coffee, rubber, neem tree, tamarind, turmeric, aspirin, and quinine...*
- *Ownership of a constantly evolving and changing organism is illogical, especially to an individual vs a community of users.*
- *CBD and the Nagoya Protocol*
- *What are you going to do with the information if we share it? How can we trust you?*

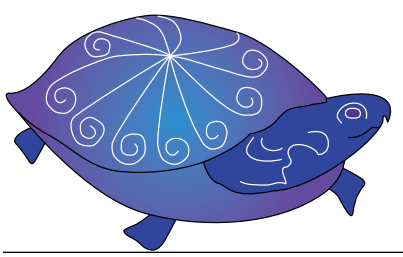
WHY COLLECT ABORIGINAL TRADITIONAL KNOWLEDGE:

Environmental Conditions

- *"If we don't know where the resources are there, we cant protect them"*
- *The Community knows details of the environment that other marine stakeholders may not (eg. SCAT)*
- *Seasonality*

government and Aboriginal community as being one of the largest challenges, while also reviewing the reasons for that lack of trust (Indian Act, ABS, and Aboriginal Rights). Unfortunately the aboriginal component of the agenda was allotted significantly less time compared to the other class sections which prevented a more detailed overview of the Aboriginal community's perspectives of oil spills.





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WATER

- SAMQWAN - WATER

by JADE ROBINSON

Growing up my mother would always tell me I should have been born a fish. As I reflect on the small amount of time I've spent here on Turtle Island, I start to believe that sentiment myself. My life, similar to that of the oceans currents has been spent navigating along the complex route of its currents as it pushes and pulls me through some of the most beautiful and devastating experiences it possesses. When I was a child, water was like a homing device always calling to me. Everywhere I travelled and explored I always found my way to it, like a childhood friend providing me with hours of entertainment and companionship. Whether it be the brooks and streams throughout my home community of Sipekne'katik; or the shores of the Bras d'Or Lake's behind my aunt's home; or the many warm summer swimming holes of Maine – water was always there. As a result, the word water coincided entirely with FUN, for that is all one really cares about as a child.

Now as an adult when I think of this simple five-letter word "water" I can think of a million different similes for it's characterization, with the one most prominent being "Life". For such a simplistic chemical compound, three molecules to be precise, its casual existence posses all the components of sustenance that we as human beings and all living things alike need to survive.

I like to think of it as Mother Nature's life blood flowing throughout her body and replenishing all the different organs that coexist within her. In order to truly understand its capabilities, we first need to extract it from the equation completely and analyze what is left without it.

Imagine waking up to a world with out water. What would that entail for even the most simplistic daily routines? No morning shower or clean teeth, no nice clothing to wear, no coffee and toast or jam or juice. That's just the start of your day! Now think about its driving economic factors; from the fishing and agricultural industries, to just about every other manufacturing company you can think of – all would be lost without water.

Yet, as we look out to our surroundings, both locally and globally, the disregard for water is blatantly thrown in our faces in every direction we turn. From the ice caps of the north, whose melting waters are destroying vast amounts of habitat and ecosystems and contributing to sea level rise that will have negative impacts on our coastal communities around the world. To the pipelines carrying natural gases, crude oils, and petroleum over thousands of kilometres of natural land and sea resources throughout our countries and continents with design faults which are inevitably bound to surface; leading to devastating impacts on the ecosystems they travel over. I just cannot bring myself to understand how it is rationalized that the prospect of indefinitely altering our most important natural resource without any way of remediation is overlooked in the name of profit.

So, I propose that in order to change the dire direction that we as a global community are destined for we must reimagine the five-letter word we so absently take for granted and give it the power that its adversary "m-o-n-e-y" possesses. The goal of sustainable waters does not lie within a high standing seat of great political and monetary power, it is found in each and every one of us, because 7.6 billion voices are more powerful than any governmental/ cooperate body could ever be. The change we require starts from within each of us, in the ways that we view and respect water, the ways in which we consume and use water, and the teachings about water that we pass on to our children to carry out on our behalf once we are no longer here to teach them.

TOWARDS ZERO OCEANS PLASTICS: POLY TALK 2018

by JESSICA SEWARD

Under the banner of "Together we must save our oceans from litter", the 5th PolyTalk Symposium was held in St-Julian's, Malta and brought together more than 190 high-level representatives from the world of politics, industry, media, NGOs, science and academia. Jessica attended the two-day event, on 26 and 27 April, 2018 where participants continued establishing and building new partnerships with stakeholders to improve circularity, waste management and other solutions to prevent marine litter around the world.

PolyTalk 2018 aimed at identifying the path towards a clean marine environment with a special focus on the Mediterranean Sea. The event also served as a platform to strengthen industry efforts and actions to tackle marine litter while boosting the role of research and innovations to identify knowledge gaps. Common points such as strategies and actions to change citizens' behaviours and the importance of implementing proper waste management infrastructures were shared amongst a broad range of stakeholders.

Every year, Europeans generate 25 million tonnes of plastic waste, but less than 30% is collected for recycling. During the symposium key aspects such as how waste management infrastructures and regulations could contribute to the reduction of waste were raised. Stefanie Werner, the Scientific Officer for the German Environment Agency's Marine Protection Unit, presented the five elements of the EU Marine Strategy Framework Directive, which aims to achieve Good Environmental Status (GES) of the

During the Creating Awareness and Behavioural Change Panel Discussion several speakers spoke to effecting broad scale behaviour change through education and engaging imagery. Though those are essential to creating awareness, Jessica questioned whether or not knowledge is enough to effect broad scale behavioural change and spoke to the lack of connection with our environment being at the forefront of the plastic problem. Jessica shared the Mi'Kmaq value of Netukulimk and asked the panelists what they were doing to re-establish that connection.

EU's marine waters by 2020 as well as the criteria and methodological standards to help Member States implement the Marine Directive https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017D0848&from=EN).

Since the beginning of plastic production era 8300Mt of plastic have been produced globally, of which only 7% has been recycled, the rest has been discarded. According to the Organisation for Economic Co-operation and Development (OECD), even if recycling increases globally by 45% by 2050, it would not sufficiently offset the increased amount of waste incinerated or discarded. To address this deficiency the plastics industry must work toward a circular economy and support innovative product design. Ms. Werner spoke to this, tasking the plastic sector to keep chemicals of concern away from plastics, develop holistic solutions together with the entire plastic value chain, and to invest in smart product design. Karmenu Vella, European Commissioner for Environment, Maritime Affairs and Fisheries presented key European policy actions such as the Circular Economy Package and the Plastics Strategy.

The first-ever Europe-wide Strategy on Plastics adopted on January 16, 2018, sets clear goals to curb plastic waste, increase resource efficiency, and to create value and job growth in Europe. It also highlights challenges to be addressed as well as areas where appropriate actions from industry and policy makers can achieve tangible and long-term results. The strategy on plastics offers both the European Commission and industry an opportunity to look towards the future to improve Europe's Competitiveness and Resource Efficiency.

Plastics Europe's Views on a Strategy on Plastics: https://www.plasticseurope.org/application/files/4515/1700/9733/20170907_final_views_on_a_strategy_on_plastics_updated_sept.pdf

"Plastics 2030" Voluntary Commitment:

https://www.plasticseurope.org/application/files/5115/1966/5994/PlasticsEurope_-_Voluntary_Commitment_FINAL.PDF

However, the European Bioplastics (EUBP), the association of the bioplastics industry in Europe, claims that the European Commission's Strategy falls short as it focuses almost solely on mechanical recycling and lacks the steps needed to move away from the plastics industry's dependence on fossil feedstock. Furthermore, EUBP criticizes the Commission's acknowledgement of the contributions of biodegradable plastics to a circular economy and yet the steps to incorporate them into the system are absent.

The Association does condone the Commission's recognition of biodegradable and compostable plastics belonging in separate collection systems for organic waste in order to improve clean waste streams and recycling quality. Furthermore, the Strategy does make an important and clear distinction between biodegradable plastics and so-called 'oxo-degradable' plastics that falsely claim to biodegrade. EUBP encourages the circular economy and bio-economy to come together and support innovative bio-based plastics solutions to reduce greenhouse emissions and to help reach the UN Sustainable Development Goals and the Paris Agreement.

To further address marine litter the European Commission is revising their Directive on Port Reception Facilities which was originally proposed in 2000 to align with and complement MARPOL by regulating the legal, practical and financial responsibilities at the shore-sea interface. However, since its adoption, MARPOL has been strengthened through subsequent amendments, while the scope and definitions of the current Directive are no longer in line with the international framework. As a consequence, Member States have relied increasingly on the MARPOL framework, making implementing and enforcing the Directive difficult. In addition, Member States apply different interpretations of the Directive's main concepts, creating confusion among ships, ports and operators. The Directive is now being revised to incorporate these changes. The new proposed

Jessica speaking to Edward Sultana, co-founder of the pressure group "No to Plastic Malta" which was established in 2017 to create more awareness on the enviornmental hazzards of plastic through engagement and outreach. No to Plastic Malta and Malta Clean Up work together to conduct shoreline and underwater cleanups along the coasts of Malta and have used footage from these cleanups to produce a short documentary titled "A Plastic Ocean".

Directive on port reception facilities will now go to the European Parliament and Council for adoption.

The Commission also plans to launch the work on the revision of the 1994 Packaging and Packaging Waste Directive and prepare guidelines on separate collection and sorting of waste to be issued in 2019.

Leading plastics producers in Europe and around the world, including World Plastics Council and the Global Plastic Alliance, are working together to find solutions to protect the environment. Jim Steward, Chairman of the World Plastic Council and Vice-President of Lyondell Basell highlighted that to date 74 plastic associations in 40 countries have signed the plastics industry's global declaration through which 355 projects have been planned, initiated or completed since its launch. Many of these projects were highlighted during the two day conference,

German and UK based plastic manufacturer representatives speaking to Jessica about their carbon engineering technologies which are being used to extract CO2 from the atmosphere. The pure carbon dioxide gas has many applications including use by the agriculture sector, fabric and furniture manufacturers, as well as the vehicle industry.

including Operation Clean Sweep, Plastic Soup Foundation, and CLAIM H2020 Project, as well as other local undertakings such as "No to Plastic Malta."

During the closing ceremony Daniele Ferrari, President of Plastics Europe and CEO of Versalis (Eni) shared that Plastic Europe's objective is to not only raise awareness, but to share concrete strategies and build new partnerships for preventing marine litter around the world. Mr. Ferrari emphasized the importance of the international plastics industry but urged plastic producers, converters and managers worldwide to work together toward the responsible management of plastics.

So how does Canada compare to Europe when it comes to plastic waste management? Not well. In 2008 the OECD Council adopted a recommendation that encourages its members to improve resource productivity by promoting environmentally effective and economically efficient uses of natural resources and materials as well as to strengthen capacity for analysing material flows. "Vision 2050 - The New Agenda for Business Report" by the World Business Council for Sustainable Development also calls for closed-loop recycling and circular economy.

However, Canada is a long way from achieving the 2050 Vision objectives and the OECD commitments.

According to the 2014 State of Waste Management in Canada Report (https://www.ccme.ca/files/Resources/waste/wst_mgmt/State_Waste_Mgmt_in_Canada%20April%202015%20revised.pdf), Canada ranks low in waste management (less than 11 per cent of all plastics are recycled in Canada), resource efficiency, CO2 emissions, and the pace of eco-innovation. In this sense, looking at what better performing OECD countries (Europe) are doing can help inform Canadian policy development.

The State of Waste Management in Canada Report provides many recommendations on how to improve waste policy frameworks, waste prevention and reduction upstream, energy recovery, waste diversion and disposal, as well as monitoring and reporting, but in order for these recommendations to effect change we must move away from voluntary, industry-led initiatives that prove to be ineffective and toward legally binding global policies. With Canada at the forefront of the G7 meetings this year, global action is within reach.

In the comprehensive December 2017 United Nations Environment Programme (UNEP) report "Combating marine plastic litter and microplastics: An assessment of the effectiveness of relevant international, regional and subregional governance strategies and approaches," the expert advisory body concluded that continuing with the current status quo legal structure for plastics was not an option. The report recommended a "new global architecture" for plastics and called for an international legally binding treaty.

INTRO TO MERCURY

by JAMIE KNILL

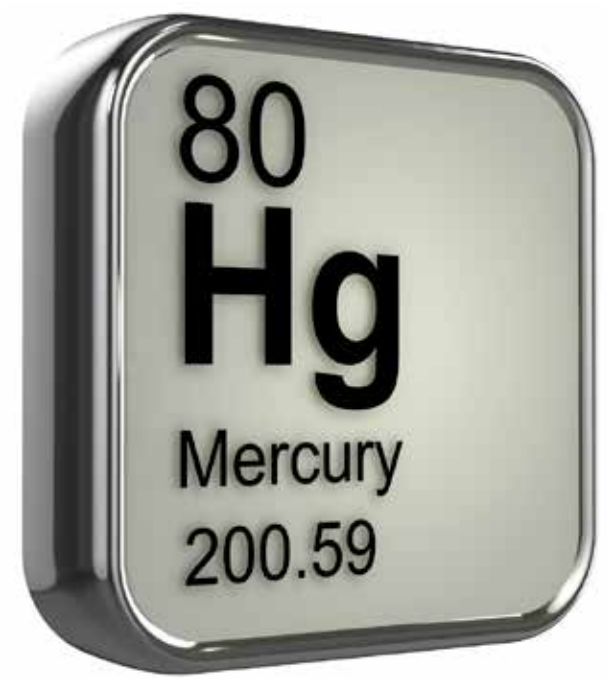
Mercury, or quicksilver, is a chemical element with the symbol Hg. It is the only metallic element that is a liquid at room temperature. Most commonly, Mercury is found in a naturally occurring mineral called cinnabar and then refined into its elemental state. You may be most familiar with mercury silver liquid found in old glass thermometers; however, it was also used in thermostats, barometers, and skin-lightening products, in addition to industrial processes such as gold purification and fur treatments to make hats (mercury poisoning led to "mad hatter's disease"). Today, mercury is not used much in developed countries with a few exceptions. For example, some dentists still use mercury for dental fillings, and fluorescent lighting uses mercury vapours. Both of these uses are currently being phased down in Canada as the dangers of mercury are now more recognized, and alternative materials have become cheaper and more readily available. However, in under-developed countries, mercury is still used in many of the example products listed above and solutions of nearly pure mercury are used in some areas to extract gold from mined ore.

In addition to its intentional use to create products, mercury is also released as a gas by-product during burning of materials

such as coal or waste. Although coal use is declining in Canada, air currents bring gaseous mercury from the United States and distant countries such as China and India, resulting in mercury deposition in the Northern Territories and Eastern Provinces. Indeed, Nova Scotia's prized Kejimukujik National Park is a mercury hot-spot due to air currents and acidic lake water which is common in many Nova Scotia lakes.

The mercury problem

While a light "dusting" of mercury spread throughout our landscape may seem insignificant, in reality, it is a large amount of mercury being deposited over time, and mercury (being an element) does not break down. This means it accumulates in the soil and water, and slowly makes its way up the food chain into humans with especially high concentrations in people who fish and hunt for consumption. Most of the mercury we consume stays within the body. Ingesting small amounts over a long period of time can cause toxic effects on the nervous, digestive and immune systems and impact organs like the lungs, kidneys, skin and eyes. Some studies suggest that mercury can also be linked to diabetes. Mercury is most dangerous to children in the womb and can cause developmental problems and lower IQ, even in very small quantities. In large quantities or repeated dosages, people can develop what is termed Minamata disease – a condition that causes many neurological problems and birth defects, named after the bay in Minamata, Japan where a chemical factory released



mercury into the water for 36 years.

Japan may seem far away; however, Minamata disease was documented in many residents of Grassy Narrows and Wabaseemoong in Canada where a chlor-alkali plant and pulp mill discharged mercury effluent into the Wabigoon River system, the main source of food and drinking water for the community. Although these discharges happened in the 1960s, Japanese experts came to Canada to study Minamata disease and have recently found that even the younger generation of residents in Grassy Narrows and Wabaseemoong suffer the effects of mercury poisoning. In addition to environmental injustices like the proximity of Aboriginal communities to industrial facilities, Aboriginal populations are exposed to more mercury than the average person, particularly in northern communities, because of a diet that more frequently includes wild-caught fish.

For the majority of people in developed nations, mercury enters the body through consumption of fish and shellfish. Health Canada recommends that the general population not eat more than 150 g (approximately 1 cup or 1 can) of fish per week and women of childbearing age should not eat more than 150 g of fish per month. There are no restrictions on canned tuna and light tuna; however, women should only consume 300 g and children should only consume 75-150 g of albacore (white) tuna per week (depending on the child's age). These guidelines were made using assumptions from store-bought fish and do not account for increased mercury levels in harvested fish. There are currently no consumption guidelines for Nova Scotia based on fresh-caught fish from inland lakes and rivers. This is problematic given the higher than average levels of mercury in Nova Scotia waters and soils and lower than average levels of selenium, which acts as a counter to the toxic effects of mercury.

That is not to say, you should not eat fish. Fish is a healthy food and a staple for many families who supplement their groceries by catching fish or harvest fish for traditional/ceremonial purposes. Fish provide many beneficial nutrients including selenium and omega-3 fatty acids which help to improve cardiovascular function. Studies suggest that consuming fish that are smaller in size (i.e. younger) and lower on the food chain (e.g. herring, anchovies, sardines) can minimize the risk of mercury exposure without reducing the benefits of nutrient intake.

A global problem needs a global solution

The Minamata Convention on Mercury was ratified on August 16, 2017 and currently has 88 parties and 128 signatories from around the world. The goal of the treaty is to protect human health and the environment from human-caused mercury pollution. It calls for the elimination of gold mining using mercury; phase-out of chlor-alkali and acetaldehyde

production, mercury containing batteries, switches and relays, fluorescent lamps (CFLs and LFLs), cosmetics, pesticides, biocides and topical antiseptics, and non-electronic measuring devices; and phase-down of dental amalgams (silver fillings). Parties must also ensure that the best available technologies and practices are used to reduce mercury production in coal-fired power plants and industrial burners, smelting and roasting processes used in the production of non-ferrous metals (e.g. lead, zinc, copper and gold), waste incineration facilities, and cement clinker production facilities.

The first meeting or conference of the parties (COP) occurred in September 2017. Here, the parties discussed how to best implement and monitor the effectiveness of the convention. Given the variation in financial and technical resources available to developed and underdeveloped countries around the world, this is no easy task. Committees were struck to determine the best course of action to proceed on the topics of mercury waste thresholds, contaminated sites, reporting and effectiveness monitoring.

As a representative from the Congress of Aboriginal Peoples and the Maritime Aboriginal Peoples Council, I attended the COP to give a voice to the off-reserve Aboriginal communities across Canada and to bring attention to the impacts of mercury toxicity on these communities. This is an important issue for all Aboriginal Peoples in Canada and around the world because of the increased exposure to mercury due to environmental racism as well as the cultural importance of consumption of wild game – especially fish.

The convention recognizes the disproportionate effects of mercury on Indigenous communities globally; however, there is no formal way to allow the participation of Indigenous communities in any matters covered by the convention. I worked with the Canadian delegation to allow for the formal inclusion and participation of Indigenous communities in the convention where possible. As a result, regional representatives from Indigenous communities around the world have the opportunity to participate as observers to the expert panel on effectiveness monitoring. This means that Indigenous Peoples can speak directly with the scientific experts tasked with measuring how well the Convention is working to reduce mercury pollution and share their own expertise and traditional knowledge with the panel members to ensure that the right indicators of mercury pollution are used and measurements are carried out appropriately. This is a small step in the process of involving Indigenous peoples into the convention; however, it is important as it sets a precedent for the other expert groups and committees that will be set up over the next few years to implement the convention as well as for future conventions.

CHEMICALS MANAGEMENT OUR RELATIONSHIPS

by JOSHUA MCNEELY

Canada imports, produces, mixes, uses, or sells somewhere around 20,000-30,000 manufactured chemicals. 400-500 new manufactured chemicals enter Canada every year. The USA uses more than 100,000 manufactured chemicals. What is our exposure to those thousands of chemicals? How do we keep ourselves and our family safe while still enjoying the benefits of manufactured chemicals?

We rely on the Government of Canada to carefully assess the effects of chemicals and to ban or manage chemicals that are toxic, but the answer cannot be found by just banning or limiting chemicals at the entrance to the life-cycle. We all bear responsibility to keep ourselves and our families safe, as well as our environment and our neighbours. In particular we must remain vigilant that the chemicals used to meet our needs and wants do not harm the health and environments of those who live near or work at the places where those products are made, transported, stored, or disposed, including those half-way around the globe.

I have prepared a bit of a primer. There are many more materials available, but I wanted to raise a few as a starting point for discussing our relationship with chemicals and how we might better our lives and our environment in this 21st century.

What is chemical safety?

Chemical safety often conjures an image of someone cleaning with a spray bottle while wearing a mask and gloves; but we come into contact with chemicals in one form or another every minute of every day, even while we sleep (think about off-gassing foaming agents or flame-retardants in your mattress).

Many chemicals we come into contact with are natural. In fact, our bodies synthesize or consume a vast array of chemicals for our survival. However, many other chemicals we encounter are manufactured, distilled, synthesized, formulated, mixed, or made into products that are not natural. Some of these manufactured chemicals mimic the effects of natural chemicals or the properties of manufactured chemicals are more selective or more powerful than the natural chemical. Other chemicals, such as plastic polymers, are novel. But to put a twist on an old adage: "one organism's cure is another organism's poison".

The problem is that for the most part, we (as the public) don't know who or to what degree we are poisoning our environment and each other or is the risk worth the benefits we receive from manufactured chemicals?

We know that those living in Sarnia, Ontario's "Chemical Valley" are much more exposed to manufactured chemicals than the average Canadian because 40% of Canada's petrochemical industry is located in those few square kilometers. However, did you know that a new study from the University of Ottawa found that the Inuit are still being newly exposed and are accumulating many Persistent Organic Pollutants (POPs) which were released thousands of kilometers away and were banned or phased out decades ago?

Because of a couple of decades of work by Health Canada and Environment and Climate Change Canada to assess chemicals, and mountains of work by health and environmental non-government organizations and academics, we know that at some level, Canadians are exposed to a multitude of toxic chemicals. We are also exposed to a vast array of mixtures and accumulations which may become toxic in our bodies at levels much lower that what we would traditionally deem to be a "toxic chemical" for listing under the Canadian Environmental Protection Act; i.e, in many cases, the whole of chemical toxicity is greater than the sum of individual chemicals. Add to that, the growing knowledge about the various forms of vulnerability of different segments of the Canadian population and at different stages in our lives and we are getting a clearer picture that chemical exposures and chemical effects on health and the environment are unique to each individual or each unique environment. I would go as far as to say that the types and amounts of chemicals in your body could identify you like a fingerprint, though one that changes daily.

What is the safe level of chemical exposure? Is there a safe level? Unfortunately, we simply do not know. A great deal remains unknown about bioaccumulation, eco-toxicity, the effects of manufactured chemicals on our natural hormone chemicals and our endocrine system, and how other factors such as diet, social life, and mental health play into how a chemical may affect us. More and more health care providers are documenting cases of people who have never had a problem with manufactured chemicals who are now suddenly developing acute and dramatic sensitivities to them, sometimes even at very low doses, which is requiring many public spaces to ask patrons to refrain from using scents. Other people are developing "multiple chemical

sensitivities" which are causing a wide variety of health effects, often restricting or even completely isolating those people from our increasingly man-made chemical world and society, which snowballs into a multitude of other social and economic induced health effects.

A primer for discussion

There are some good resources on-line to at least learn about what may be in your environment and what is currently being done. Several websites are provided in the box as an initial primer. I want to engage you about what Canada's vision and goals should be for chemicals management. Foremost, we are well into the 21st century now and we must lay in the past our 20th century thinking and actions.

We are in the midst of the Information Revolution as well as the Chemical Revolution. In particular these two revolutions have led to an unprecedented level of individual independence to choose our individual lifestyle, our individual health, and even choose which community(s) and with whom we will associate ourselves. Though the Information Revolution is seen as the great equalizer, the benefits of the Chemical Revolution have not fallen equally to all of humanity and very little if any benefit falls to our brothers and sisters and our Mother Earth.

The chemical problem(s) of the 21st century

First off, I want to applaud the effort by the Government of Canada to propose to ban the importation and production of all forms of asbestos and asbestos containing products. The Government of Canada anticipates that they will have the regulation finalized by this fall. Though we have mostly phased out the use of asbestos, this one regulatory move alone will still save five (5) people from lung cancer every year in Canada, almost all of whom are "blue collar workers". This type of regulatory approach was needed to finally kick Canada's asbestos habit. The Government of Canada has developed a number of regulations and management documents for chemicals management over the past several years, including BPA, mercury, lead, and several other manufactured chemicals or products that have very clear detrimental health effects and where we no longer use those products or have found substitutes for them long ago.

But what is our strategy for plastic?

Plastic is both a chemical polymer itself and an absorber and releaser of many other chemicals. It is found in solid forms, such as construction materials, everyday consumer products, packaging, automobiles, medical devices, machine parts, and a vast array of "composite" materials. Plastic can also come in liquids, such as latex paint, glues, coatings, and resins. It now makes up most of our clothing as polyesters, rayon, nylon, and spandex. It coats our non-stick cookware and utensils. It is used as abrasives and masking agents in cosmetics. Even many things labeled rubber or bamboo may actually be plastic.

The greatest advantages of plastics, that they are nearly infinitely useful and much cheaper than traditional alternatives, have not only led to their proliferation, but also has spurred the mentality that the resource is never ending. It is cheaper and easier to throw it away and get a new one than to reuse or recycle. Plastic is so engrained in our everyday life, we think why would I ever want to reduce my use. But western consumerism society is finally starting to realize that there is a dark side to plastic.

Citing concerns about the buildup of plastic litter in our oceans, Prime Minister Justin Trudeau announced that five of the G7 countries adopted a marine plastic reduction charter on June 9 at the G7 Summit held in Charlevoix, Quebec.

"Five of us also agreed to a

plastics charter, which speaks to our common resolve to eradicate plastic pollution. This is an important step to achieving a life cycle economy in which all plastics would be recycled and repurposed."

Prime Minister Trudeau, June 9, 2018

A big driver of this ambitious goal was the announcement on May 28 by the European Union to "ban" the Top 10 single-use plastic items found on beaches: food containers, beverage cups/lids, cotton swabs, straws/stirrers/cutlery/plates, ballons/ballon sticks, food wrappers/packets, bottles/lids, cigarette filters, sanitary wipes/towels, and bags. The "ban", which includes fishing gear, is actually a three prong approach of:

1. The items for which there are available sustainable alternatives, the objective is to promote less harmful alternatives.
2. Items for which the alternatives do not exist. For these items, the objective is to limit damages by better informing the consumers and making the producers financially responsible of the consequences on the environment.
3. Items which are already well captured where the objective is to make sure that they land in the existing (or forthcoming) separate collection and recycling circuit.

In Canada a big part of the push came from the Chemistry Industry Association of Canada who made an announcement for World Environment Day, June 5th, that they are seeking to make 100% of plastic packaging produced in Canada recyclable or recoverable by 2030 and that by 2040 all plastic packaging will be either recycled, re-used, or recovered.

While I applaud these 21st century visions, the problem is that we are still saddled with 20th century actions.

A series of CBC articles published over the past few months called Reduce, Reuse and Rethink found that the majority of Canadians are either not recycling or are recycling wrong and while we think everything going into the blue bin or bag is recycled, much of it is actually land-filled, incinerated, or exported to jurisdictions which have more lax environmental laws. Surprising to me (a habitual recycler of everything, even if I have to tear it apart to get that at that one bit of plastic) was that I am one of the worst offenders to the recycling system.

First of all, we have to understand that recycling in Canada is not a 100% publicly funded service – it's a business. That business, which operates at the municipality level, needs buyers for our trash. Most buyers will not take shipments of mixed plastics, plastics contaminated with foods or oils, or plastics of unknown composition. Many will only take certain "numbered plastics". That means that unless plastics are separated, clean, and unwanted things removed, it goes to the dump or is burned.

If your municipality accepts everything in one bag or bin then they are spending a lot of money to sort "your recyclables" into the recyclables that they can actually sell. If sorting is done by the consumer, the municipality saves a lot of money, but in most cases sorting is not done well because we don't understand our municipality's or province's particular recycling business model (i.e., their recycling program) and in many cases people just don't recycle if they think (maybe rightly) that "it's all likely going to the dump anyway".

In other words, even if the Chemistry Industry Association of Canada meets their 2030 goal to make all plastic recyclable or recoverable, their

2040 goal that all plastics are recycled or recovered cannot be met by them alone. The Association's announcement acknowledges the monumental task ahead:

"Achieving these goals will require significant investment across the value chain in new and upgraded infrastructure and improved packaging design. Success will also require widespread public participation in recycling and recovery programs along with changes to littering behaviour."

What is our inspiration that we will see significant investments for infrastructure and widespread recycling? I'm certainly not inspired by our largest East Coast municipality of Halifax which operates one of the least effective recycling programs in Canada and who this past winter silently slipped out 300 tons of thin-film plastic (e.g., shopping bags) to an "undisclosed out-of-province location" after China refused to take any more of their trash. And blame for this evolving environmental disaster doesn't just fall to the municipality. Where do you think all those millions of single-use plastic bags came from? No - it isn't China.

Haligonians still dearly hold onto their black trash bags despite hard evidence showing that when Haligonians are required to use clear bags for their garbage, suddenly they are more accountable to what goes in the trash and what goes into the recycle bag – to the order of thousands of tons of recyclables each year. Don't be too quick to blame municipality waste managers for sorting out your trash problem.

And I'm certainly not throwing rocks in my proverbial glass house. I thought that because I was throwing everything into the blue box, and I live in a municipality that takes almost everything, that I was recycling. I thought I was part of a 21st century solution, but now I realize that I am still just exporting my pollution, and its associated chemical risks, for someone else to deal with, whether that is my municipality's recycling facility, to another country, to a vulnerable population, or to future generations? Out of Sight – Out of Mind.

This is totally unacceptable.

While plastic is the poster problem for our generation to deal with, it is but a symptom of a boarder problem to manage manufactured chemicals from "cradle to grave" or in a "circular economy" with minimal impacts to health or the environment. Plastics are at least tangible things to the average consumer and the image of a sea bird lying dead on the beach with a belly full of plastic is something that we can come to grips with. Phthalates, antimicrobials, petroleum distillates, volatile organic compounds, persistent organic pollutants, and other groups of chemicals are harder to visualize. We have yet to begin talking about the impacts of a new group of materials that will likely revolutionize our world to the same degree what plastic has done – that is nano-materials.

The movement in Canada to ban plastic microbeads in cosmetics wasn't just to protect the environment; I believe it was a collective reaction by Canadians appalled that we would use a product to make ourselves more beautiful, but which makes our environment more ugly. I think for the first time, many Canadians realized that not only have we become dependent on manufactured chemicals, but we are incredibly ignorant to a vast array of environmental and health issues, yet no less culpable because in the end we are buying those products. Some would say that we have become morally and ethically sick. The "Ban the Bag" movement among Canadians is further proof that we've had enough of plastic and enough of our throw-away economy and enough of valuing the dollar above all else – we

recognize that we are sick and we are searching for a cure.

I'm not advocating for a complete ban of plastics; we certainly can't ban all manufactured chemicals. We do however need to learn more about this hidden world of chemicals – it is our environment that we have constructed for ourselves. We cannot just don a mask and a pair of gloves and make-believe that we are safe. We are a part of our surrounding environment and it a part of us no matter how far we think we are removed from pollution sources.

"Our bodies are probably riddled with POPs [Persistent Organic Pollutants] and all kinds of other pollutants in the water column. We were meant to eat seal meat and Arctic char and whales from the ocean and waterfowl from the air. That's who we are."

Inuvialuit elder Roy Goose

If we purport to be independent Information Age people freely choosing our trajectory in life we all bear the responsibility to be informed about chemicals and chemical management. Some are heralding 2018 as the end of the "Golden Age of Recycling". I hope that is true – I hope it means that finally we are entering a 21st century age of first reducing, reusing, and repurposing, and then as a last resort efficient recycling, so that we can eliminate our dependence on harmful manufactured chemicals. I hope that we recognize this moment as more than just a bag issue or a plastic issue, but one of searching to find a balance in our chemical relationships with one another and with our Mother Earth.

- National Pollutant Release Inventory: www.canada.ca/en/services/environment/pollution-waste-management/national-pollutant-release-inventory.html
- Canada's Air: www.airquality-qualitedelair.ccme.ca
- Nova Scotia Ambient Air Quality Stations: www.novascotia.ca/nse/airdata
- New Brunswick Air Quality Stations: http://www.elgegl.gnb.ca/AirNB/en/SamplingLocation/Index
- PEI Air Quality: www.princeedwardisland.ca/en/information/communities-land-and-environment/air-quality-monitoring
- Cosmetics Ingredients Hotlist (check your products!): www.canada.ca/en/health-canada/services/consumer-product-safety/cosmetics/cosmetic-ingredient-hotlist-prohibited-restricted-ingredients/hotlist.html
- Chemicals at a Glance: www.canada.ca/en/health-canada/services/chemical-substances/fact-sheets/chemicals-glance.html
- Responsible Care (by the Chemistry Industry Association of Canada): www.canadianchemistry.ca/responsible_care
- Canadian Centre for Occupational Health & Safety: www.ccohs.ca/topics/hazards/chemical/chemicals
- Canada Health and the Environment: www.canada.ca/en/health-canada/topics/health-environment.html
- Women's Voices for the Earth: www.womensvoices.org
- CBC series Reduce, Reuse, Rethink: www.curio.ca/en/collection/reduce-reuse-and-rethink-2589
- List of Provincial Recycling Program websites (provided by Canadian Tire): www.canadiantire.ca/en/provincial-recycling-information.html

THE IMPORTANCE OF VERNAL POOLS AND HABITAT DESTRUCTION

by CHELSEY WHALEN

Habitats are the foundation of the Earths natural resources, as they provide homes to all wildlife and all living organisms. Habitat varies greatly depending on biotic and abiotic features that are present, including weather and sunlight. Vernal pools are a unique habitat which caters to individuals with life cycles that incorporate both aquatic and terrestrial components. Amphibians and reptiles require these pools to complete their life cycle and are offered a predator free environment. Woodland vernal pools are geographically isolated, seasonally flooded bodies that are formed by indentations within the undulating forest floor. These pools are generally small by the area to which they encompass, however they serve as homes for many endangered or threatened species, such as the Wood Frog, and the Blue-Spotted Salamander.

Hydroperiod and canopy cover are the most crucial factors that influence successful amphibian breeding within the vernal pools. Amphibians are very sensitive to hydroperiods as they require an aquatic habitat to complete the first four stages in their life cycle. However, dry periods are also crucial to prevent the colonization of predators into the pools. The canopy cover that is directly over the vernal pool protects the organism from direct ultraviolet radiation from the sun as well as the heat. Canopy and flora within the pool also is important because it provides organisms a food source as well as a medium for adults laying eggs.

Amphibians are the most threatened group of organism, and the average population of some species has decreased by 80% within the last four decades.

Factors Affecting the Productivity of Vernal Pools:

Natural resources like vernal pools are very sensitive to stressors, any threats to these habitats can be very detrimental to the ecosystem. Many species rely on these pools for breeding, and larval development. Landscape connectivity and health is vital for species persistence and movement of breeding amphibians to ensure their genes are passed for a successful population. Climate change and human disturbance is becoming a large problem with the success of these pools as there is less annual rainfall, more urbanization in wooded areas, and an increasing need for agricultural and pesticides.

Global Warming, or the increase of the Earth's average surface temperature has influenced the productivity of vernal pools. The irregular and fluctuating hydroperiod is causing the pools to dry up sooner or not fill up as efficiently as in past decades. Endangered species are facing a further decline in productivity due to excessive warm temperatures, which is causing the pools to dry incredibly faster. Eggs are not submerged in the water long enough for larva to metamorph into terrestrial forms.

Agriculture is one of the major nonpoint source pollution that has a detrimental effects on the diverse habitat and biodiversity. Agriculture runoff carries harmful chemicals including pesticides, fertilizers and animal waste into the water systems. These toxins and chemicals greatly impair the development of amphibians and impair successful hatchlings by causing limb malformations.

The continuously growing human population is causing urbanization which is impeding on the wooded areas where these pools lay. Urban development alone threatens approximately 950 amphibian species with extinction. Road development is also an issue with urbanization because it limits individuals from breeding, and can also limit gene flow which further reduces the population.

Species Reliant on Vernal Pools:

The Blue-spotted Salamander (Ambystoma

laterale), is a mole salamander that is found within Central United States, and in the Atlantic provinces of Canada. In the late winter or early spring, the Blue-spotted Salamander migrates from its overwintering site to terrestrial ground and travels to vernal pools. Generally, the male arrives at the breeding grounds followed shortly after by the female. Females lay eggs at the bottom of the pool, attaching them carefully to plants, or logs that are present within the pool. Hatching time is approximately 20-60 days depending on many factors, such as the water temperature, hydro period and food availability. Larvae requires approximately 11-18 weeks to fully develop and mesomorph into adults where they become terrestrial and move to land.

The wood Frog (Rana sylvatica) is a forest dwelling species that is found all over North America. They are considered to be explosive breeders, breeding in woodland vernal pools in the early spring to the middle of May. The adults migrate from their terrestrial overwintering sites and travel to the isolated wetlands to breed. Egg masses are aid just below the waters surface, and are attached to plant material. Embryos hatch in approximately 4-28 days later depending on the water temperature, while complete metamorphosis takes 6-15 weeks after hatching. Constant

annual drought will decrease the Wood Frog population, and could lead to extinction.

Conservation:

With the rapid decline in amphibian species due to many factors such as habitat destruction, global warming, and urbanization, conservation methods must be enforced.

Successful restoration requires clear and obvious goals that are based on the understanding of wetland habitats, and a clear image of pools prior to anthropogenic disturbances. The need to restore wildlife habitat in degraded areas to help prevent further losses in biodiversity is a main focus in this time period. However, it is poorly understood how to alter the hydroperiod. Another problem that conservationist face is, the wide variability in vernal pool physical and hydrologic characteristics, and which are most important to conserve. Hydroperiod and canopy cover are the two most important aspects of a successful vernal pool, but there is no commonly used classification system for setting standards. The variability in the pools and lack of federal protection from the clean water act make it extremely difficult for conservation actions to begin. If a vernal pool classification system was invented, it would make it easier to try and conserve these essential isolated water systems.

How can you Help:

Conservations methods are being to developed to try and preserve the essential wetlands that so many threatened species require. However, there's so much variation between vernal pools that creating a classification system is very difficult. Until there is a clear definition, individuals can help these important seasonally flooded pools by being aware of their presence, and eliminating the use of fertilizers or pesticides. Also, landowners should avoid performing any silvicultural practices that could interfere with the vernal pools canopy cover or flora.

INTERNATIONAL DAY FOR THE FIGHT AGAINST IUU FISHING NOW ON UN AGENDA

Fisherman carries the day's catch in Timor-Leste, where small-scale coastal fisheries dominate the fisheries sector and are restricted to a relatively narrow area along the coastline. The most productive fishing grounds are often fished illegally by foreign commercial fishing fleets. UN Photo/Martine Perret.

Rome, Italy 15/01/2018 – The General Fisheries Commission for the Mediterranean (GFCM) is excited to announce that 2018 is the first year the world will observe an official day promoting awareness of the need to combat illegal, unreported and unregulated (IUU) fishing. This new international day will be celebrated on 5 June, following a recent decision by the United Nations General Assembly (UNGA).

The GFCM has long advocated for the need of increased awareness on IUU fishing, considering the magnitude of the problem. It is indeed recognized that IUU fishing activities seriously undermine fisheries management around the world, including in the GFCM area of application comprising the Mediterranean and the Black Sea. Globally, IUU fishing is believed to represent up to 20 percent of total catches. Curbing IUU fishing is therefore a priority for the GFCM, which has included it among the five targets of the Mid-term strategy (2017–2020) towards the sustainability of Mediterranean and Black Sea fisheries.

The GFCM brought a critical contribution to the FAO-led process through which the proposal for an IUU Day was put forth for adoption by UNGA. The date is a significant one as it was on 5 June 2016 that the Port State Measures Agreement officially entered into force as the first international treaty designed to end IUU fishing worldwide.

"We are extremely pleased to now have such an important arena to raise awareness about IUU fishing and its devastating consequences," said Abdellah Srour, GFCM Executive Secretary. "We are confident that observing this international day will help strengthen efforts and collaborations in support of our mandate, which is to ensure the conservation and sustainable use of marine living resources," he added.

The GFCM stands ready to celebrate the International Day for the fight against IUU fishing on 5 June.

MARINE PROTECTED AREAS

by JOSHUA MCNEELY

A presentation to the National Advisory Panel, Moncton, NB May 4, 2018 - "*Dear Honourable members of the National Advisory Panel on Marine Protected Area Standards: Thank you for inviting the Maritime Aboriginal Peoples Council (MAPC) to this session.*"

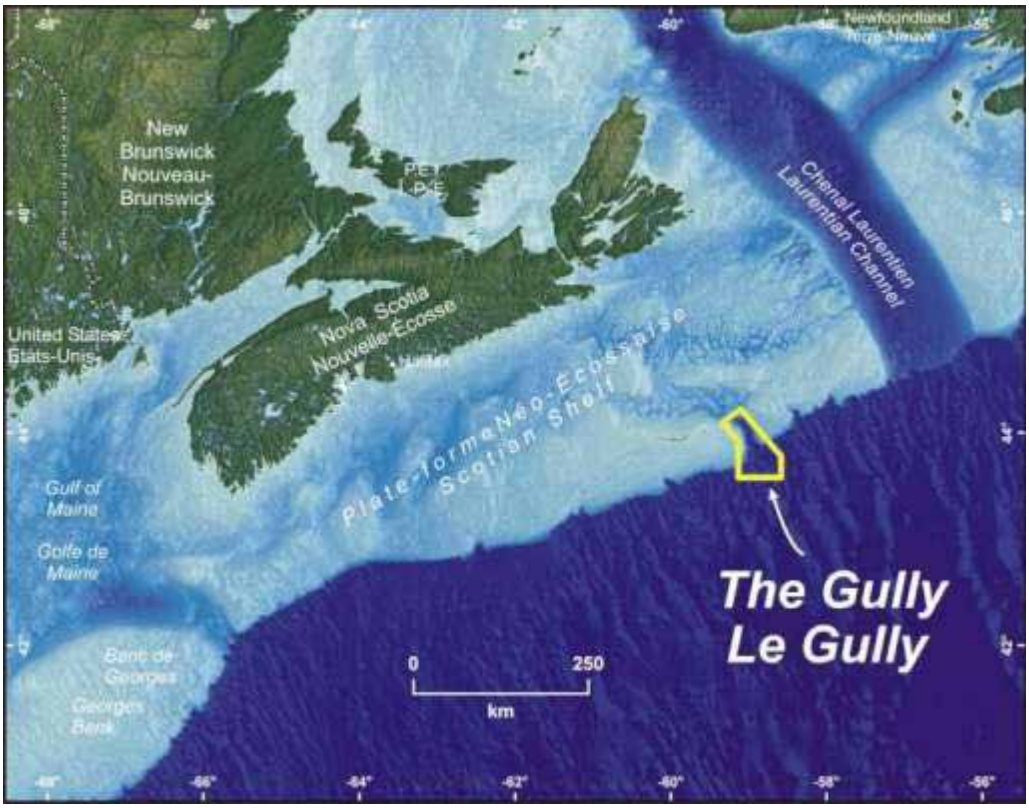
The Maritime Aboriginal Peoples Council (MAPC) is the intergovernmental leaders' forum of the Native Council of Nova Scotia, the New Brunswick Aboriginal Peoples Council, and the Native Council of Prince Edward Island. These three Councils are the democratically elected voice of the communities of status and "non-status" Mi'kmaq/Maliseet/ Passamaquoddy/ Aboriginal/ Indigenous Peoples [or 91.24 Indians] not residing on Indian Act created reserves. In total, the three MAPC partner Native Councils represent over 35,000 (over 70%) of Aboriginal Peoples living in the Maritimes.

Before I delve into the topic at hand and a description of the physiology of human teeth and tooth development... (Am I in the right session?)

Seriously though, I promise that I will be talking about Marine Protected Areas… but, my MPAs have teeth.

But before I begin I must to ask a question to the Panel:

Who are you referring to in your backgrounder and



The Gully is a large underwater canyon in the Atlantic Ocean near the edge of the eastern continental shelf of North America. It is located east of Nova Scotia near Sable Island.

your questions when you are speaking of "Indigenous Peoples"? Do you mean all the Indigenous Peoples of Canada or are you only referring to some who have Status before the Indian Act or live on an Indian Act Reserve?

I ask that you think about that as I continue with my presentation. Unfortunately, I do not have the time to delve into that topic other than to alert the Panel members that Canada is using its own definition of Indigenous Peoples, which is contrary to what is well understood internationally. Canada's definition is that: The Government of Canada recognizes First Nations, the Métis Nation, and Inuit as the Indigenous Peoples of Canada. Our experience warns us that the Government of Canada is again trying to exclude the non-Status, off-reserve Indians/Aboriginal Peoples, by playing with language, despite Supreme Court of Canada jurisprudence in Daniels v. Canada of April 14, 2016.

There is much more in our written brief, but as I said I do not have the time in my oral presentation.

And now may I entertain you with my limited knowledge of dentistry?

When we were children we had teeth. We also have teeth as adults. But, are a child's molars equivalent to an adult's molars? As we grow into adulthood our baby molars fail to keep up with our development and they fall out. They are really just superficial bits of bone on the surface of our gums. They are replaced by molars which have four strong roots that anchor the molar into our gums. These last our life-time, they are enduring.

I believe there are four strong roots which are

necessary for Canada to ground MPAs to be lasting and meaningful now and for future generations.

United Nations Declaration on the Rights of Indigenous Peoples, 2017 – UNDRIPs is the result of a 27 year process resulting in it now being universally accepted. In 5 days, it will be two years since Canada announced to the world that after 8 additional years of vetting UNDRIPs within Canada, that Canada accepts the Declaration without any qualifications. 35 years is a long time and Canada must now heed the 46 Articles of UNDRIP's guidance as: "the minimum standards for the survival, dignity, and well-being of the indigenous peoples of the world" (Article 44)

I invite you to go through UNDRIPs and you will see where each of the 46 articles would apply to a MPA designation. Article 3 talks of the right of Indigenous Peoples to self-determination; Article 5 – maintaining and strengthening their institutions and participation in the State; Article 19 – States shall consult and cooperate in good faith and seek free, prior, and informed consent; as well as that Indigenous Peoples have rights to their traditionally owned or used lands, waters, and resources in Articles 25 and 26 and others.

For the Aboriginal Peoples of Canada, UNDRIPs is the lens through which to view all Canadian legislation, policies, strategies, and guidance. We would ask, how does this MPA enable, or at least not hinder, Aboriginal Peoples to develop our own institutions, to retain access to our traditional ancestral homelands and waters, and receive legal protections from the Canada which are respective of our continuing development needs, customs, and our own responsibilities to our future generations. We have yet to see those questions asked in the MPA designation process.

The Second Root:

The United Nations Convention on the Law of the Sea, 1982 – which acknowledges that the sea is the common heritage of humankind and that humanity's needs and interests are so diverse and competing that the only way forward to achieve the "peaceful use of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment" was to explicitly recognize that "the problems of ocean space are closely interrelated and need to be considered as a whole".

320 Articles, over 90,000 words, are guided by that recognition. UNCLOS was a 14 year process of more than 150 countries. It too is well vetted.

It is true that the text of UNCLOS doesn't say much, if anything explicitly, about MPAs, but it does discuss at length, the conservation of marine species, the prevention of pollution, marine scientific research, protection and preservation of the marine environment, right of access and free passage, economic use, and cooperation among parties. Is that not what MPAs should strive for?

The Third Root:

The Convention on Biological Diversity, 1992 – which also is held up as a package deal in 42 Articles resulting from 20 years of discussion about humans and our environment and in particular about reversing the dramatic loss of all biodiversity, which is life. The CBD does require the establishment of protected areas and guidance in Article 8 (a) and (b). It is vital to note that Article 8 In-Situ Conservation continues on with 11 more parts covering a broad range of topics, including Article 8(j) which talks about respecting,

preserving, and maintaining the knowledge, innovations, and practices of Indigenous and local communities.

There is a reason why that is couched within Article 8 In-Situ Conservation.

The CBD is responsive to the needs and wants of the diversity of interests, particularly Indigenous Peoples, local communities, developing and least developed countries, women, poverty eradication, food and health needs, and international cooperation.

A protected area is one part of the whole and needs to be established and managed recognizing that it is a part of a response to the CBD and what it stands for – finding a way to "Live in Harmony with Nature".

The fourth and final root in our molar necessary to ground MPAs is our own legislation.

Canada's Oceans Act, 1996 – is a result of many years of struggle in Canada with its 3 oceans and its federal and provincial powers, to respond to UNCLOS, the CBD, and now UNDRIPs. I know that the National Advisory Panel knows that Canada's Oceans Act and the MPA sections did not materialize out of thin air. I know you know the meaning and vital importance of the preamble to the Oceans Act:

- the oceans are our common heritage;
- Canada wishes to affirm its international leadership;
- we must understand the ocean, and employ a precautionary approach, ecosystem; approach, and an integrated management approach
- Canada's oceans can meet the needs of all Canadians;
- Canadians will work together to develop and implement our Oceans Strategy; and
- Canada has responsibilities, as well as rights and jurisdiction, in the Economic Exclusive Zone.

As my mentor and friend always reminds me, "Joshua, with the right comes the responsibility and with that comes the burden"

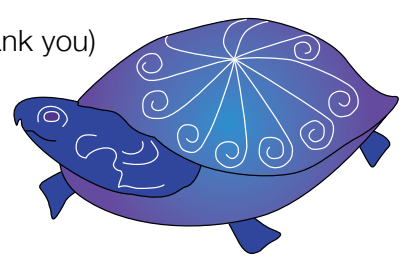
Canada's Oceans Act and MPAs are a burden for all Canadians to bear. That burden can be taxing if Canadians are ignorant of what has led us to require MPAs.

We must seek MPAs with teeth which not only address a biological or ecological need, but which also draw Canadians to the history, intentions, and vision of those 4 strong roots: UNCLOS, CBD, Oceans Act, UNDRIPs. A tooth without roots will fall out. To me the burden of MPAs doesn't have to be that hard to bear, unless we bear it alone. I see too many people, good people, get caught up in their interest, whether it be science, or conservation, or fishing, or rights.

We need MPAs to look beyond pitting one against the other or trying to come to some "begrudged agreement where everyone is equally unhappy". We need MPAs which seek to foster cooperation, understanding, respect, learning, and equitably sharing in the bounty of the Creator, as well as conservation and sustainable use.

We respectfully submit to you that in your recommendations that the Minister must consider how that MPA, or MPA Network, or MPA Target meets the intentions and vision of UNCLOS, the CBD, UNDRIPs, and Canada's Oceans Act.

Welalioq (Thank you)



TWO-EYED SEEING SUMMER CAMP from a reader

Two-eyed Seeing Summer Camp to be Launched this July in Pictou Landing and Sipekne'katik in Partnership with Mount Saint Vincent University

Mount faculty, Dr. Shannan Grant, Dr. Tamara Franz-Odendaal and Dr. Danielle Cox have obtained a grant from the Natural Sciences and Engineering Research Council of Canada's PromoScience Program to support efforts to develop innovative science education opportunities for Indigenous youth in mainland Nova Scotia.

Since obtaining this grant, they have focused on relationship and partnership development in the spirit of co-learning and Etuaptmumk (two-eyed seeing). During fall 2017, a Mount Saint Vincent University-based open house was offered for Indigenous youth from across mainland Nova Scotia. The event included a mentorship component that connected youth with Indigenous scientists and professionals working in science-based roles, for example, one mentor was a dietitian, another an environmental scientist and another an engineer.

Also in the fall of 2017, Dr. Grant and her colleagues hired a team of Mount students to work with two communities – Sipekne'katik and Pictou Landing – to co-develop Science Camp curriculum to be delivered to youth this summer and next (2018 and 2019). The development team includes Ashley Copage (member of Sipekne'katik First Nation), Chelsey Purdy (member of Acadia First Nation), Florence Blackett (member of Millbrook First Nation) and Iain Caldwell (non-Indigenous Cape Bretoner/Unama'ki). Ashley, Chelsey, and Florence are members of the Department of Applied Human Nutrition at the Mount, and Iain is a member of the Mount's Faculty of Education.

The camp curriculum has been deeply influenced by Mi'kmaq Elder Albert Marshall's guiding principle of Two-Eyed Seeing (Etuaptmumk). Dr. Grant and the student development team attended the Indigenizing the Academy Conference in Unama'ki (Cape Breton) May 3 and 4, 2018 to share their work to date, obtain feedback, and engage with Elders, including Albert Marshall himself. They are scheduled to meet with community partners May 7 to finalize the camp curriculum and commence planning for the 2018 camp, scheduled to occur July 3-6.

Photo credit: Antonia Harvey - Top photo: left to right: Chelsey Purdy, Ashley Copage, Florence Blackett, Iain Caldwell

A COMPELLING REASON

MOTHER - PACHAMAMA

We must help one another to protect our forests- not just for us to enjoy but for the birds.

... Leonard Paul

Watercolour: 'Raven Study' by Leonard Paul.

IKANAWTIKET

environmental respect l'environnement

The objective of IKANAWTIKET Environmental Incorporated is: to promote the preservation of the natural environment by educating and informing the public about environmental issues, biodiversity in the Maritime Provinces, Aboriginal culture, Aboriginal worldview, and traditional knowledge in relation to the environment.

IKANAWTIKET advances education by undertaking research which is made available to the public, providing training and instruction, offering courses, seminars, convening conferences, meetings and developing educational tools related to understanding and respecting the environment.

The charitable work of IKANAWTIKET Environmental Incorporated benefits the community by preserving and protecting the environment through the preservation, protection, and restoration of habitats, and increasing the public's understanding about the environment and its importance to all life.

"Is controlling nature worth destroying our environment and our biodiversity, killing our young, and poisoning our food, water, and air?"

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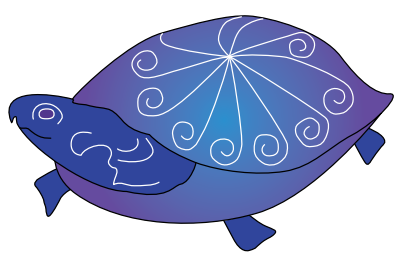

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The School of the Environment is the hub for environmental education, research and outreach at Saint Mary's University, bringing together students and professors from all of the university's programs that are explicitly environmental in focus.

Our students learn to apply knowledge from many academic disciplines to solve complex problems related to sustainability of the global environment in the face of human development.

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The School of the Environment encourages interdisciplinary and community collaboration among researchers, government agencies, local groups, and national organizations committed to environmental education, research, and sustainability.

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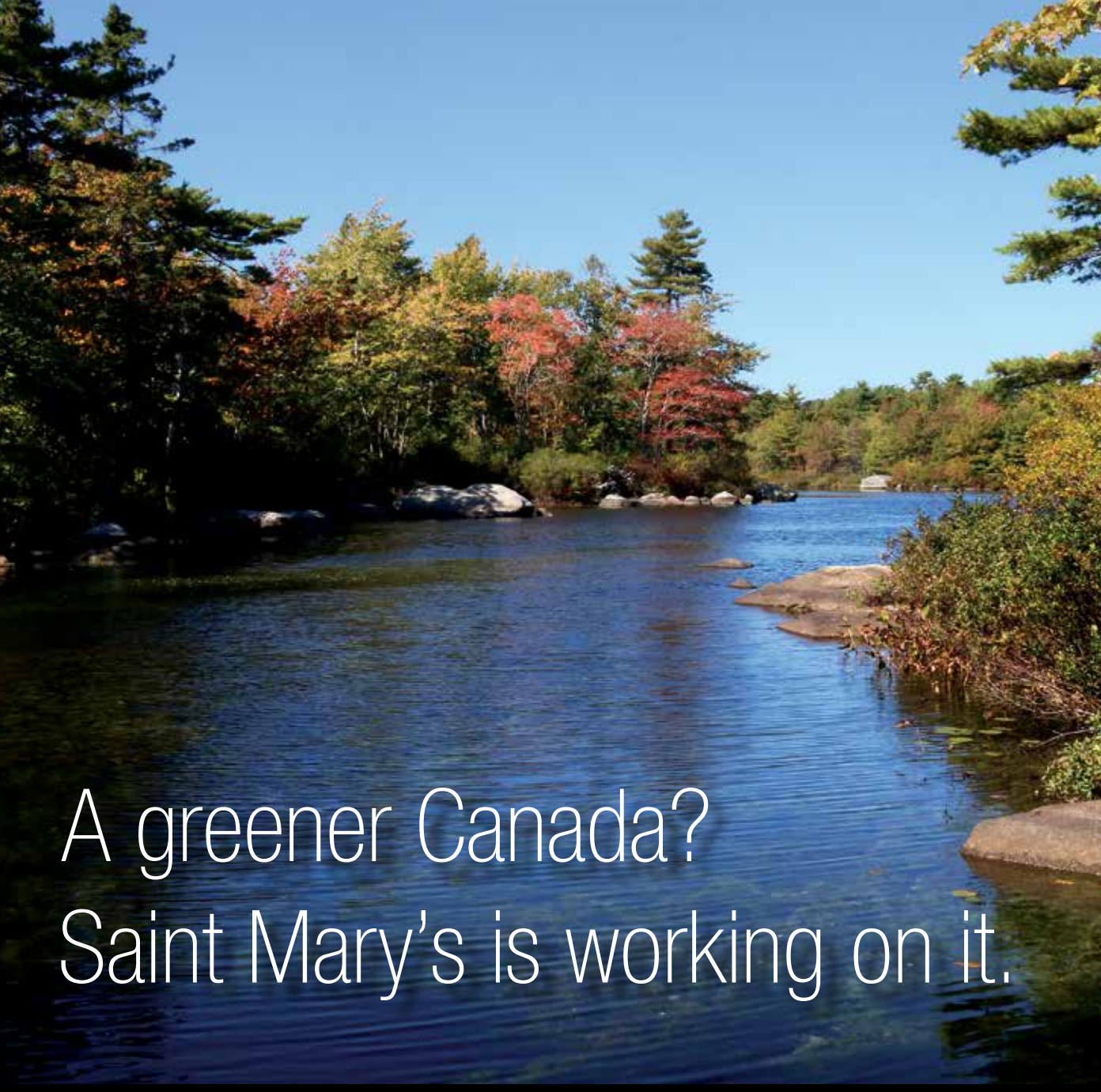

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