The paucity of ethics in Canadian environmental affairs.

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Abstract:

Canadian natural resources are recognized as deteriorating or being lost, without adequate replacements. Although environmental regulations for conservation are in place, these frequently fail in practice. Socio-economic factors generally influence political decisions, overriding scientific evidence and democratic processes, at the expense of the natural environment, leading to losses in biodiversity and collapse of ecosystems. Recent examples of such failures at the federal, provincial and municipal levels are given. Major changes in priorities are needed at political levels.

Keywords: Canadian natural resources depletion; conservation regulation failures; democracy failure.

Introduction.

"Sustainability" has increasingly become an important issue in light of the continued erosion of natural ecosystems, and with realization of the essential services these ecosystems provide for human health and survival. The attrition and deterioration of the Canadian environment has long been recognized (e.g. New Scientist 1992), but emphasis remains on economic growth at the expense of the natural environment, an unsustainable situation. Historically civilizations have collapsed as their ecological base

deteriorated, and such collapse could become global if present trends continue (e.g. Wright 2005).

Theoretical and empirical studies have shown that democracy and corruption influence environmental policies (Pellegrini and Gerlagh 2006). A true democracy should have greater effect at the political level than do corporations. Nevertheless, despite Canada being a "developed" democratic country, we have found that democracy has an insignificant impact on environmental conservation, and market economies have greater influence on environmental policies, allowed through weak or corrupt government officials. We provide examples of perversion of science and ineffectual democracy in environmental policy, leading to deterioration of natural resources, a situation which appears to be a general problem at all levels in Canada, and requires a revision of priorities in implementations at the political level.

In Canada, Environmental Impact Studies (EIS) are mandated where harmful alteration or destruction of habitat or the environment is possible by an activity. Boyd (2003) in a review of the Canadian Environmental Assessment Agency (CEAA) 'examines the theory of Environmental Assessment (EA), the federal and provincial EA laws, and the court cases that have interpreted and shaped the laws'. He notes that 'despite paying lip service to the concept of sustainable development, CEAA appears to be implemented in a manner that favours development over sustainability. According to the CEAA, approximately twenty-five thousand projects were reviewed between 1995 and 2000. More than 99.9% of proposed projects were approved.' Public consultation is mandatory for comprehensive studies, although it is limited to receiving notice about a project and being given an opportunity to provide written comments. For review panels the public has an opportunity to take part in public hearings by presenting evidence and questioning the proponent's experts. 'Like the CEAA,

provincial laws may mention sustainable development but development dominates. Few projects are ever turned down as a result of provincial EA processes.' A tremendous gulf exists between the theory of EA and the reality of on the ground practices in Canada. A report prepared for the federal government concluded that the main weakness of EA in Canada is at the implementation stage. Canada is faring poorly in comparison to the rest of the industrialized world in terms of protecting the environment, and Canada's record, on the majority of environmental indicators is getting worse (Boyd 2003). Major changes in governmental attitudes are required to improve Canada=s environmental standing, and to conserve biodiversity and ecological health.

We give examples from national, provincial and municipal situations, from across the country, where corporate and political pressures decide outcomes for decisions on environmental methods in industrial developments, even when strong public pressures and scientific knowledge should decide otherwise. They are projects that we were involved in, but they further illustrate a general problem with governmental lack of environmental responsibility in Canada.

Our examples are: two lakes in central Newfoundland, in the Exploits River basin, (1) Star Lake, converted to a hydroelectric generating reservoir, and (2) Trout Pond, a lake converted to a waste dump for mine tailings; (3) a marine example from British Columbia, with aquaculture, in which industry lobbyists and federal government scientists deny evidence of high densities of sea lice generated from aquacultured salmon having negative effects on wild salmon; (4) a terrestrial example, Eagleridge Bluffs, North Vancouver, British Columbia, where wetland and old growth forest were destroyed to widen a road for the 2010 winter Olympics; and (5) a municipal situation, a super store development in a historical park in St. John's, Newfoundland. In all these cases, scientific and public concerns were

subjugated in favour of socio-economic pressures.

(1) Star Lake was a large (15.7 km^2) lake in west central Newfoundland. Two species only of fish were present, a race of brook trout (*Salvelinus fontinalis*) that matured late, was relatively long lived (6+), and grew to a large size (≥ 486 mm in fork length), and a very small arctic char (*Salvelinus alpinus*) (< 157 mm in fork length), which was a major prey item for the brook trout. In 1997 the lake was transformed into a fluctuating (8 m over winter) reservoir for hydroelectric (15 MW) generation. The impoundment was projected to cover 25 km^2, but by mistake an extra 2.2 km^2 was flooded. Spawning and rearing areas, at the lake outlet for the large trout, and littoral areas for the arctic char, were lost. The fish habitat compensation agreement (January 1998) to mitigate for this habitat loss committed the Star Lake Hydro Partnership (Abitibi-Consolidated Inc. and CHI Hydroelectric Company Inc.) to use artificial propagation and rearing of Star Lake fish, with the hatchery designed for stocking up to 100,000 fingerlings annually, and "for long-term maintenance of the genetic variability in the wild fish populations of Star Lake". Hatcheries have failed elsewhere to conserve unique genetic stocks (Vρllestad and Hesthagan 2001), and frequently result in reduction or loss of wild stocks (Myers et al. 2004). Therefore such management measures are unsuitable for maintaining genetic integrity. In Newfoundland and Labrador it is likely that numerous but so far unquantified evolutionary significant units or stocks remain (Adams and Hutchings 2003; van Zyll De Jong et al. 2004), and Star Lake represented a unique fish community, with possibly the largest brook trout on the island.

The Environmental Impact Statement (EIS) predicted that effects on fish would be minor, mitigable, and in fact positive. The international scientific literature illustrating the consequences of water level regulation - the oligotrophication process, the loss of littoral invertebrates, and the indirect loss of

benthic and large salmonid fish - is monumental (e.g. Stockner et al. 2000), but these principles were not acknowledged or treated as highly likely consequences. Based on the projected increase in flooded area and in a "trophic upsurge" from increased dissolved nutrients, a theoretical net gain of productive habitats was emphasised. However it was ignored that after some original "trophic upsurge", numerous studies have shown that productivity of reservoirs declines after several years to below original productivity of the lake. In addition the littoral areas of a lake are the most productive for plant, algal, littoral plankton and benthic invertebrates, and have the highest biodiversity of the lake, and these food items are impoverished and some eliminated by fluctuating water regimes (e.g. Smith et al. 1987). It is known that with new reservoirs over acidic rocks, as in Precambrian formations, methyl mercury, a neurotoxin, is generated, to be accumulated up the food chain and can reach levels in piscivorous fish to make them unhealthy as food, lasting for more than twenty years (Anderson et al. 1995; Bodaly et al. 1997); nevertheless it was stated that "mercury content in sport fish will remain unchanged". In fact since 2000 both the brook trout and the arctic char have acquired high levels of mercury, restricting them for consumption (annual advisories by Health Canada). The actual levels of mercury are not publicly available. New roads increased access and angling pressure, so that a decreased season and reduced bag limits are now imposed. Sticklebacks (*Gasterosteus aculeatus*) appeared and have become abundant, probably introduced in nets used for an annual monitoring programme. An annual monitoring programme, "to determine the suitability and success of the brook trout breeding programme, the long term survival of the fingerlings, and the assessment of the status of brook and arctic char in Star Lake" is carried out by the proponent, the Star Lake Hydro Partnership, on behalf of DFO.

Recent assessments submitted to DFO by the Partnership have shown collapse of the

arctic char population, and that few large brook trout remain (Jacques Whitford 2006a).The report documents that: angling effort had declined in the previous two years (2004 and 2005) and success rates had fallen off considerably over the same period. The Catch per Unit Effort (fish/h) from standardised deeply set gill net sets for brook trout declined from 2.50 to 0.00, and for Arctic char this CPUE in the same period declined from 3.50 to 0.00. Insufficient broodstocks were collected in 2004 and 2005, in spite of greatly increased levels of effort in time spent and gear deployed in both years. In 2005 only 14,560 trout eggs were collected (collection target 100,000 eggs). The mean length at age of the trout increased from 1999, but subsequently there has been a decrease in mean lengths. For the three year and four year old trout in 2003 mean (fork) lengths were 217 mm for the 3+ and 285 mm for the 4+ fish. There was a decrease after this time, and in 2005 the fork lengths were 172 mm for 3+ and 219 mm for 4+ trout. In addition, annual mean Fulton's condition factor of both species (weight related to length) has declined significantly, indicating that oligotrophication has now followed any trophic upsurge. The condition factor for brook trout declined from 1.09 in 1999 to 0.88 in 2005. That for arctic char declined from 1.09 in 1999 to 0.68 in 2004. Thus the lack of adequate forage is now quite clear. Over half the broodstock now collected are from the artificial rearing programme.

The degradation of a formerly pristine area, and elimination of the valuable trophy trout fishery, are seen as a sad losses to local communities (Byrne 2002).

The example of Star Lake is a classical example of the changes to be expected by conversion of a lake into a fluctuating reservoir. At the stage of the Environmental Impact Study,

several scientists, including one who had done research in the lake, and many local people expressed concern about the negative changes that would probably occur. However, Federal and Provincial authorities accepted an inadequate study, despite considerable criticism from scientists and public groups (Gibson et al. 1999), who predicted the present outcome. A large amount of data was collected for the EIS, but not presented or collected in a scientific manner to answer the important scientific questions. An EIS is conducted and financed by the proponent, which appears fair, but may not be the best solution, since frequently the science is poor, and biased in favour of the project proceeding, often claiming falsely, as in this example at Star Lake, that in fact the resource would be improved (Campbell and Parnrong 2000).

Environmental law and policy were bent and interpreted to agree with a conclusion reached before any studies were undertaken. A political decision was made at an early stage to proceed with the project, scientific advice was ignored, and the later Acompensation@ plan in reality was a public relations strategy. The Environmental Impact Assessment for Star Lake was regarded as a bureaucratic formality.

(2) A similar example is the case of **Trout Pond** in central Newfoundland (Coumans 2006; Paquet et al. 2006). Aur Resources are developing a copper-zinc mine near Buchans (Duck Pond project). They requested use of Trout Pond, (37 ha), and a smaller adjacent lake (2 ha) as the ATailings Management Area@. Aur enlisted the help of the Mining Association of Canada in steering the Duck Pond project through new federal legislation for depositing tailings in a natural pond. The lakes and their outlet streams contain brook trout and Atlantic salmon (*Salmo salar)*,

three spine sticklebacks and possibly eels (*Anguilla rostrata*), which species will be killed by the toxic mine wastes. Since there would be 'harmful alteration, disruption or destruction of fish habitat', to comply with the Fisheries Act Section 35 (2), losses of habitat caused by the project would have to be compensated by gains elsewhere. As in the case of Star Lake, the industry was given permission to proceed, with the compensation strategy to be devised later. The 'compensation' plans were based on weakly designed impact studies that presented very crude and preliminary estimates of fish biomass and productive capacity of the habitat in question. The >compensation= agreed to consists of removal of old logging debris downstream in a slow water section of Harpoon Brook (Harpoon Brook Steady), a tributary of the Exploits River, a major salmon river, and placement of some gravel areas for spawning (Jacques Whitford 2006b). Loss of 291,032 m^2 of lacustrine habitat would be compensated with 2800 m^2 of riverine habitat. The biomass in the lost lakes was estimated to be 124 kg. The 124 kg of target production (the terms 'production', 'standing stock' and 'biomass' were used interchangeably) would be met with 1,078 stream units (a 'unit' being 100 m^2) in Harpoon Brook Steady, using an average fluvial salmonid production (they mean biomass) on the island of 115 g/unit. Harpoon Brook Steady had been dammed to hold pulp wood in the days when pulp wood was driven downriver in the annual high spring river discharge, resulting in numerous drowned logs. A fishway for anadromous Atlantic salmon around the dam had been present, but the dam was later removed, so no obstruction to fish migration is present.

The compensation plan is in fact scientifically unsound. It was "assumed that Harpoon

Brook Steady has nil fish production at present", despite no fish estimates being made or water chemistry assessed. No reasons were given for this unlikely assumption, and it makes future monitoring of the effects of the enhancement (removing logging debris and placing spawning substrate) invalid. Juvenile salmon can migrate many kilometers both upstream and downstream, and there is no evidence that spawning substrate is limiting and therefore should be installed. The annual planned monitoring by electrofishing would adjust the standing stock estimates upwards to include smolt (juveniles salmon migrating to sea) that had migrated, plus estimates of large fish that had escaped the electrofishing, which is fallacious since the smolt (plus their overwinter mortality) would have been estimated as large parr (juvenile freshwater stage of salmon) the previous year, and in fact it is possible to estimate large fish present by using appropriate methods.

Compensation plans should take into account the true value of the full range of uses and services provided by intact ecosystems, not just units of fish and fish habitat. The present enhancement could not compensate for loss of a unique ecosystem, and in reality is an excuse to allow the lake (plus a smaller adjacent one), to be destroyed (Glynn 2006; also an article on the web: http://www.dominionpaper.ca/environment/2006/12/05/where_have.html). The fish community would have evolved life history tactics to cope with their ecosystem, and the fish are likely to be genetically distinct from fish of neighbouring systems (Adams and Hutchings 2003). Lakes provide important services to the ecosystem, hydrologically, physically, chemically and biologically (Gibson 2002), which were not taken into consideration for compensation. The loss

of wildlife habitat was not taken into consideration. The proposed compensation for lost lake habitat by fluvial habitat in Harpoon Brook Steady is a sham because this habitat is presently fish habitat already , and in fact no new habitat is being created to compensate for that being destroyed. The present enhancement could be done under the goals of the policy of 'net gain' of productive capacity of fish habitats, and such work is done by DFO and local groups outside of any "compensation" (e.g. Scruton et al. 1998).

Tailings impoundments can be constructed, but are more expensive than using an existing lake. The destruction of the two lakes was not an 'unavoidable loss', alternatives exist but were not adequately explored. The legal obligation of the proponent and of local Environment Canada authorities to explore alternative mine waste disposal options was not taken seriously. Recently Trout Pond was re-scheduled in the metal mining effluent regulations to go into Schedule 2, which allows a pristine lake to be polluted, previously illegal under the Fisheries Act, and without scientific support, and contrary to much public opposition (Paquet et al. 2006). Trout Pond is the first pristine lake to be so re-scheduled. This is a major weakening of the Fisheries Act, as mining companies across the country can now apply for the same treatment. Two formerly pristine lakes have been turned into permanent toxic waste dumps, legalized by federal and provincial authorities, for the economic benefit of a mining company. Scientific information and biological wealth have been lost, and future angling, hunting and recreational opportunities destroyed.

(3) The effects of sea lice on salmonids. Sea lice have always affected wild salmon, but

intensive marine farming has increased the size of the problem. In Europe where there is aquaculture of salmonids in the marine environment (Ireland, Scotland, Iceland and Norway) governments have recognized that salmon farms can be hazardous to the environment. An ICES workshop in Europe concluded that in Europe where there are salmon farms there are more sea lice (Hansen and Windsor 2006). In Central British Columbia there are more sea lice, primarily *Lepeophtheirus* spp, on juvenile wild fish near farms, and the weight of evidence suggests a negative impact of salmon farms on pink salmon (*Oncorhynchus gorbuscha*) in the Broughton Archipelago (Gallaugher et al. 2004; Ommer et al. 2007; Routledge et al. 2007; Krko_ek et al. 2007). In Europe it has been accepted that location of salmon farms had negative effects on local stocks of wild Atlantic salmon and anadromous brown trout (*Salmo trutta*), so that plans are implemented to reduce the problem, e.g. fallowing of the area, re-location of cages, etc. In British Columbia the risks to pink and chum (*O. keta*) salmon are exacerbated by their small size at emergence into the marine environment. The short term mortality of juvenile pink and chum salmon is increased by 1 – 3 lice. Despite evidence that fish farms may negatively affect wild salmon, there are high densities of salmon farms in the Broughton Archipelago, where pink salmon stocks have declined. The Broughton Archipelago has higher sea lice levels than adjacent regions in Central British Columbia where there are no salmon farms (Morton et al. 2004). Both the Provincial and Federal governments refuse to accept that fish farms in British Columbia could negatively affect wild salmon stocks, arguing that sea lice and wild salmon can co-exist, and concur with statements such as, ‘however, while higher sea lice infestations tend to occur in areas

of BC with salmon farms, this correlation cannot be used to conclude that salmon farms are, in fact, the cause of more intense infestations' (Butterworth et al. 2006). The aquaculture business is now a powerful agri-business with formidable lobbying power, commanding a significant presence in government policy development (Ommer et al. 2007). Federal and provincial authorities ignore science and the precautionary principle in favour of 'the economy'. Wild salmon stocks, and the preferred life time careers and cultures of local people are sacrificed for the benefit of corporate gains.

(4) Eagleridge Bluffs. In British Columbia the 2010 Winter Olympic Games are to be held at Whistler. A short piece of highway on the Sea to Sky corridor to Whistler going through West Vancouver is presumed to be inadequate for the predicted extra traffic, and therefore is being widened. The area for this work is the Eagleridge Bluffs and Larsen Creek Wetlands, a rare and biodiverse ecosystem of great natural beauty (www.eagleridgebluffs.ca). The area is close to the city and provides enjoyment for naturalists and walkers, and study sites for scientists. The ecosystem was not logged, has an old growth Arbutus forest, and is the best example of temperate rain forest along this coast. Temperate rain forests are among the world's rarest forests, covering only 0.2% of the Earth's surface. The wetlands provide essential habitat for a number of species, including some which are endangered, and a nature park was planned. Professional scientists have pointed out that due to the local geology and climate, Eagleridge Bluffs was a unique remnant of old growth forest in the lower mainland, and extremely precious. It included a huge wetland, and was a very special area for plants, amphibians, reptiles, mammals,

eagles and many species of songbirds, and providing nesting habitat for migratory bird species. Besides the direct loss of habitat by a highway, three times that area for habitat is lost due to edge effects, and habitats are fragmented. Dispersal of species is reduced, and species diversity is reduced due to fragmentation of habitat, and species extinction could follow. The original EIS by federal and provincial government agencies recognized these features as "extremely rare, unique, highly susceptible to disturbance and regionally rare". In August, 2003, the Ministry of Transportation's consultants described the Eagleridge Bluffs and wetlands as unique – "the most biologically diverse area within the Sea to Sky Corridor", and recommended a tunnel through this area. In fact there was already a tunnel and railway underneath the bluffs, and the Bid Book for the 2010 Winter Olympic Games shows that the road would be built through the existing tunnel. However, an alternative plan of widening the road by destroying the bluffs and wetlands was accepted. The distance of the overland highway is 2.4 km, compared to 1.4 km of tunnel. The four lane divided tunnel would have been 1 km shorter, safer and cheaper, and would have been in accord with these Winter Olympics being promised as environmentally sustainable, now negated. Public and scientific opposition to the loss of the Bluffs by a highway rather than building a tunnel was very widespread, and included national TV coverage. Nevertheless, there was rationalization of the degradation of the Bluffs and wetlands, possibly because the overland road is conducive to a huge luxury private development and a golf course, now planned for the top of the bluffs, which will destroy a unique ecosystem with its attributes of outstanding recreation and natural beauty, and degrade ecosystem services on water quality. Again we see government

authorities succumbing to corporate interests, to the detriment of natural amenities and ecosystem services, contrary to the will of the people, and to government policy of conserving biodiversity.

(5) A superstore development in a historic recreational park, in St. John's, capital city of Newfoundland and Labrador. Although this situation is municipal, we give it as an example of where pressure from a national corporation was able to overcome strong public sentiments, and subjugate democracy. The major recreational park in central St. John's surrounds a 42 ha lake, Quidi Vidi Lake, where an annual regatta, the oldest sporting event in Canada, is held. The history of the park, and the loss of a heritage area to a supermarket, is detailed in Bambrick (2004). The land around the lake was purchased in 1908 'to safeguard it for the people and future generations of St. John's'. On June 25, 1936, St. John's City Council decided to rename the surroundings of Quidi Vidi Lake 'The King George V Memorial Park'. The lake is a natural lake, has a healthy population of trout, and is a popular site for bird watching, walkers, etc., and supports two rowing clubs. At the western end of the lake is an internationally standard soccer pitch, and adjacent to this are green spaces, used for basket ball, baseball games etc. A river, Rennies River, flows into the western end of the lake, and alongside the river is a popular linear park traversing the city. On the side of the river opposite the soccer pitch was a stadium and ice skating rink, Memorial Stadium, dedicated as a memorial to war veterans, and an outdoor parking lot, part of which was a roller skating, skateboard and cycling park. From 1950 – 1953 citizens of the city pulled together to raise funds to build Memorial Stadium at the head of the lake, and the

stadium was opened in 1954. However, after a larger ice rink was built downtown, at a non-public meeting of the City Council on July 14, 1999, Memorial Stadium was sold for $1.00 to the Civic Centre Corporation, a corporation with the Government of Newfoundland and Labrador. In January, 2001, the 'Discovery Group Inc.', who apparently were representing Loblaws, a national superstore business, although the connection is unclear, bought the property, and the same month assigned the rights of the property to Loblaws Properties Ltd, who bought it for $2 million. The deals were behind closed doors, and the general public was unaware of these deals until they were accomplished. In March of 2001 Loblaws applied to have the site rezoned from Parks and Recreational to Commercial so that they could build a supermarket. On March 5, 2001, the City Council rejected Loblaws' proposal to rezone by a unanimous vote. There was alarm and enormous public opposition to the proposal for rezoning, and the potential loss of Memorial Stadium and this recreational part of the park. A number of groups and neighbourhood committees formed, such as: St. John's Citizens Coalition; Save Our Stadium Committee; Say No to Loblaws Citizens' Committee; Say No to Commercialization Citizens' Committee; (Bambrick 2004). A vigorous campaign was led by the War Veterans' Committee. In June 2001 a 'Spirit of St. John's Parade' was held to oppose this supermarket, re-enacted on the anniversary of a 'Childrens' Parade' in June 1952 to raise funds for the original stadium. In March, 2002, 129 houses in the vicinity were visited, and 88% were against rezoning. Again, in February, 2004, 585 houses, were visited, with 688 respondents, and 83% were against rezoning. A large rally was held at the head of the lake. There were many letters to the local paper protesting against

rezoning, including one from James A. McGrath, former member of Parliament and former Lieutenant Governor of the Province, saying that 'City Council does not have the moral or legal rights to rezone the Stadium site' (McGrath 2004). The district MHA, Jack Harris, advised against the Loblaws proposal and suggested that the site remain in public hands. Many groups publicly opposed the rezoning proposal, including the Quidi Vidi Rennies River Development Foundation, The Royal St. John's Regatta Committee, and the Joint Veteran's Committee of the Royal Canadian Legion. A petition against rezoning was made with over 12,000 names, the largest ever in the Province. In April 2003 the City Council advertised for possible uses for the Memorial Stadium. There were several sporting bodies seeking new venues who showed interest, such as: the YM-YWCA; a sporting complex; and an indoor soccer stadium; all of whom are now looking elsewhere. There were many other suggestions, such as a public market, roller skating, hockey and ice skating, museum site, memorial gardens etc. A study was commissioned by the City to suggest alternatives, undertaken by Sandy Gibbons & Associates, presented publicly on February 11, 2004, (www.stjohns.ca/cityhall/pdfs/stadiumreuse.pdf), and this report showed that the Stadium could be financially viable as a recreational centre, and that aesthetically the proposed commercial centre, with widened roads for the increase in traffic etc. was not suitable for this site. A packed public meeting held at City Hall showed overwhelming opposition to rezoning. A second application to Council for rezoning in 2004 was turned down. In October 2004 another public hearing was held with a Commissioner (John Roil) appointed by the City, with a huge turnout, overwhelmingly opposing the rezoning, and a number of briefs presented.

The Commissioner's report recommended against rezoning the property. Strangely, the Mayor became an official spokesperson and advocate for Loblaws, sending out letters in favour of rezoning. On February 23, 2005, Council voted 6 to 5 in favour of the rezoning, some of these councilors previously having publicly taken a stand against such rezoning. The value of the site was thereby considerably increased for the company, to about $7 million, providing Loblaws with a gift of $5 million, and a large commercial development now dominates the head of the lake. Twelve professional experts provided briefs alerting the short term, long term and cumulative negative effects on the environment if the immense supermarket went ahead, related to the widening of roads and bridges, increase in traffic, removal of trees and vegetation, and the increased runoff rates from larger roofs, roads and parking lots, collated in a document with supporting articles (Gibson 2005). (In fact Loblaws has ignored any treatment for the stormwater, which runs off into Rennies River and Quidi Vidi Lake, and deterioration of the water and ecosystem can be expected. The authorities neglected to have an Environmental Impact Assessment undertaken, or recommend remediation measures. In addition the parking area, in the flood plain, has been built up several feet, contrary to Provincial environmental regulations). The Appeal Board of the City of St. John's agreed to a hearing, and a number of citizens prepared documents (Gibson 2005) for that Board. However, at the meeting, with about 60 citizens present, the Board decided not to hear the appeal. There was considerable resentment about loss of this recreational and heritage area. For example, a Memorial University Professor Emeritus, in an article to the local paper (O'Flaherty 2006), writes, "Cabinet ministers (Provincial

Government) must have seen how powerful the feeling against the Loblaws proposal was, especially among citizens in the vicinity of Quidi Vidi Lake. The Cabinet has the means at hand to stall or stop any dubious proceeding of a dysfunctional or incompetent council. They chose to turn a blind eye. ……So now we have it – a superstore is being built in what was in effect a park in the heart of the city's east end. It will further clog traffic in an already heavily congested complex of streets, threaten and perhaps contaminate the lake – no environmental impact study has been done – restrict parking, obstruct recreational activity, and be a generally obnoxious, superfluous, and intrusive feature of the area."

Discussion.

The overall objective of the Policy for the Management of Fish Habitat (DFO 1986) is a net gain of the productive capacity of fish habitats for Canada=s fisheries resources, and conservation of fish habitat is implemented through the Fisheries Act. The policy is intended to: >increase the natural productive capacity of habitats for the nation=s fisheries resources to benefit present and future generations of Canadians.= Key to this policy is the principle of >no net loss= with regard to works and undertakings. Under this principle, DFO strives to, >balance unavoidable habitat losses with habitat replacement on a project-by-project basis so that further reductions to Canada=s fisheries resources due to habitat loss or damage may be prevented=. Harper and Quigley (2005) attempted to determine success of 124 authorizations under the Fisheries Act Section 35 (2) for compensation of impacted habitats. The compensation most often selected was the creation of in-kind habitat, which, in theory, should be the most effective

option in maintaining or increasing the productive capacity of the affected habitat type. However, they were unable to determine whether proponents were compliant with mitigation and compensatory requirements since file quality and record keeping was generally poor, so that determination of 'no net loss' could only be made in 14% of the cases. Our first two examples, where compensation was not 'in-kind' illustrate where the Policy can fail. The other (three) examples illustrate negative effects on the environment, but which were not taken seriously. Similarly, the David Suzuki Foundation (2007) gives a number of specific cases of habitat destruction, with lack of enforcement of regulations, to illustrate that the current DFO habitat protection and management system is not working.

All of the above cases, representing federal, provincial and municipal authorities, display trivialization of the environmental effects, in favour of political and socio-economic factors. Democracy is subjugated by pressures from corporate sources on these authorities, with compliance and misinformation from governmental authorities. Continuation of this attitude can only lead to further erosion of natural capital. Biodiversity and ecosystem functions enrich human lives, aesthetically, intellectually, recreationally and generally for human health. Furthermore, civilisation depends on ecosystem services, which are rapidly being eroded, leading perilously close to ecosystem collapses (Lovelock 2006). Angermeir (2007) believes that progress toward sustainability hinges on enhancing ecological and economic literacy among all resource consumers and policymakers. Nevertheless, the examples above illustrate that despite public literacy and demands, and despite strong regulations, corporate social irresponsibility and

economic growth are paramount. Pellegini and Gerlagh (2006) declare that increasing democratic standards has to be matched with low levels of corruption to induce stricter environmental policy and that democracy per se is insufficient. Higher standards of ethical behaviour of Canadian government officials are required, with radical changes needed in implementation of environmental assessments. For example, rather than the proponent preparing the EA, the regulatory authority should prepare scientifically based guidelines, the assessment should be done at "arm's length' by independent experts, including from academia, public participation should be honestly considered, and there should be active enforcement of regulations, without interference from industry lobbyists.

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