

Canada's Marine Species at Risk: Science and Law at the Helm, but a Sea of Uncertainties

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This article examines, through a three part format, Canada's legislative "lifeboat" for saving species from extinction, the Species at Risk Act (SARA), and how it has fared in its first two years of implementation with a focus on efforts to protect marine fish species. Part I explores how SARA has notionally placed science and law at the helm in the quest to protect endangered and threatened species. COSEWIC, a committee with scientific expertise, has been established to assess the status of wildlife species. SARA provides nine major legal levers for protecting listed species, including general prohibitions against harming species or damaging their residences. Part II highlights the sea of uncertainties being faced in implementation practice. Uncertainties include: contested listing criteria; politically dependent listing decisions; hazy general prohibitions; leeway for incidental harm permitting; recovery strategy and action plan foginess; critical habitat issues; unsettled relationships with other federal laws; and methodological tensions in how risks should be managed. Part III seeks to chart a course for future legislative and institutional reforms. Besides amendments to SARA, the paper advocates the urgent need to move from "deathbed treatment" to proactive encouragement of biodiversity health through such initiatives as fully implementing Canada's Oceans Act, establishing a network of marine protected areas, and modernizing Canada's antiquated Fisheries Act.

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Introduction

Scientific studies in relation to Canada's marine environment are not painting a pretty picture. In parts of the ocean, over 90 percent of the large predators, including tuna, swordfish, and cod, have disappeared with clear linkages to overfishing.¹ The Committee on the Status of Endangered Wildlife in Canada (COSEWIC), the expert body established to assess and classify species at risk, has already listed numerous marine fishes and marine mammals as endangered, threatened, or of special concern.² It is difficult for Canadians to fathom that some cod stocks, once thought to be inexhaustible, may now be endangered (Newfoundland & Labrador population) or threatened (Laurentian North population) with extinction.³ Inner Bay of Fundy Atlantic salmon populations are listed as endangered,⁴ and while about 40,000 adults were estimated in the 1970s, the number has declined to the few hundred range.⁵

Saving endangered and threatened marine species in the difficult "real world" of increasing human pressures and resource demands is likely to become one of the major battlegrounds of the century. A litany of ocean uses carries threats to wildlife species at risk. Threats include ships colliding with endangered whale species;⁶ whale watching vessels altering behaviors of marine mammals;⁷ offshore hydrocarbon seismic testing and drilling;⁸ naval deployment of sonar, which has been linked to beachings of some marine mammals;⁹ land-based pollution;¹⁰ coastal aquaculture operations;¹¹ vessel-source pollution, including invasive species introduced from ballast water;¹² and heavy fishing pressures.¹³

The management of risk to marine wildlife species brings to the scholarly forefront deep societal differences in values and interests and varying views on how precautionary decisions should be.¹⁴ Those with eco-centric perspectives are likely to view species at risk as meriting protection at all costs and to favor strong versions of precaution, for example, placing the legal burden of proof on development proponents to demonstrate no significant environmental harm (or some other standard such as no serious or irreversible damage) before being allowed to proceed.¹⁵ Those with "deep" ecological views are also likely to perceive ecological integrity as a necessary precondition to societal and economic sustainability.¹⁶ Persons with utilitarian worldviews are likely to support weaker versions of the precautionary approach where only cost-effective measures are necessary and where some adverse impacts on species at risk may be justified in light of social-economic benefits such as job creation.¹⁷ Those with "shallower" ecological views may also conceptualize sustainable development differently as a process of giving relatively equal weight to social, economic, and environmental factors.¹⁸

This article examines, through a three-part format, Canada's legislative "lifeboat" for saving species from extinction, the Species at Risk Act (SARA),¹⁹ and how it has fared in its first two years of implementation²⁰ in navigating value and interest conflicts with a particular focus on efforts to protect marine fish species. Part I summarizes how science and law have been placed at the helm through the formal recognition of COSEWIC, tasked with scientific assessments and classifications of species, and through nine legal levers for promoting protective measures.

Part II explores the numerous uncertainties found in SARA and emerging in implementation practice. They include: contested listing criteria; politically dependent listing decisions; hazy general prohibitions; leeway for incidental harm permitting; recovery strategy and action plan foginess; critical habitat issues; unsettled relationships with other federal laws; and methodological tensions in how risks should be managed.

Part III seeks to chart a course for future legislative and institutional reforms. Besides suggesting strengthening SARA through amendment, the article advocates the

urgent need to move from “deathbed” treatment to proactive encouragement of biodiversity health through such initiatives as fully implementing Canada’s Oceans Act²¹ establishing a network of marine protected areas and modernizing Canada’s antiquated Fisheries Act.²² Discussion of the need to further develop scientific understandings and management arrangements for transboundary marine species at risk is beyond the scope of this article.²³

Part I: Science and Law at the Helm

Science at the Helm

Communication of science to decision-makers is often assisted through science advisory bodies comprising members who act independently of government, have the capacity to respond rapidly to policy “crises” when situations demand it, and are well informed of the policies to which they are contributing scientific advice. One of the best examples of such an advisory body is the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), the national advisory body responsible for assessing the risk of extinction of native Canadian fauna and flora. COSEWIC was created in 1977 in response to a recommendation made the previous year at a conference of federal, provincial, and territorial Wildlife Directors; it made its first species status designation in April 1978 and has met at least annually ever since. Until the passage of SARA, COSEWIC designations bore no legal consequences. Despite this, COSEWIC-listed species were usually accorded special consideration by the provinces and territories where they occurred and in environmental impact assessments of projects that may have directly or incidentally harmed designated species.

The Species at Risk Act formally established COSEWIC in section 14 and set out its functions in section 15. Those functions include, among others, assessing the status of each wildlife species considered by COSEWIC to be at risk and classifying the species as extinct, extirpated, endangered, threatened, or of special concern; indicating lack of sufficient information to classify a species; or indicating the species as not currently at risk. COSEWIC is required to carry out its functions on the “basis of the best available information on the biological status of a species, including scientific knowledge, community knowledge and aboriginal traditional knowledge.”²⁴

Section 16 of SARA provides only a skeletal keel for COSEWIC composition. The Minister of the Environment is granted appointment powers in consultation with the Canadian Endangered Species Council and possibly expert bodies, such as the Royal Society of Canada. COSEWIC members must have “expertise drawn from a discipline such as conservation biology, population dynamics, taxonomy, systematics or genetics or from community knowledge or aboriginal traditional knowledge of the conservation of wildlife species.”²⁵ The Act, perhaps surprisingly, does not establish a minimum or maximum number of appointees. The Minister of the Environment is given the discretion to issue regulations or guidelines respecting appointment of members.²⁶

SARA is also quite generic regarding the establishment of subcommittees. Section 18 requires the establishment of specialist subcommittees to assist in the preparation and review of status reports on species at risk. While not listing specific species subcommittees, SARA does call for the formation of a subcommittee specializing in aboriginal knowledge.

Between 1978 and 2003 (the year in which SARA was proclaimed), the number of Species Specialist Subcommittees had increased to eight: Birds, Terrestrial Mammals, Marine Mammals, Freshwater Fishes, Marine Fishes, Amphibians and Reptiles, Plants

and Lichens, and Molluscs and Lepidoptera. A ninth subcommittee was established in 2004, with lepidopteran species now being assessed by the new Arthropod Species Specialist Subcommittee.

SARA does not set out details regarding COSEWIC and its subcommittee meetings nor the preferred approach to reaching assessment decisions. Section 19 allows COSEWIC to make rules respecting its meetings and the meetings of any of its subcommittees.

In practice, species status assignments are conducted once or twice annually. A minimum of two-thirds of the electronically cast votes must be achieved before a specific status can be assigned. There are 30 votes on COSEWIC: one for each of four federal organizations (Department of Fisheries & Oceans [DFO], Canadian Wildlife Service, Parks Canada, and Canadian Museum of Nature on behalf of the Federal Biodiversity Information Partnership), one for each of the nine Species Specialist Subcommittees, one for each of the ten provinces and three territories, one for each of three nongovernment members, and one for the Aboriginal Traditional Knowledge Subcommittee.²⁷ Although governments are represented at COSEWIC, members do not represent their governments when species are being assessed; all members are expected to act independently and to base their assessments on the best available scientific, community, and aboriginal knowledge.²⁸

As of May 2005, COSEWIC had assigned status to 500 species in Canada (excluding those deemed Not At Risk and Data Deficient) in the following categories: Extinct ($n = 13$ species); Extirpated, i.e., no longer found in the wild in Canada ($n = 22$); Endangered ($n = 184$); Threatened ($n = 129$); and Special Concern ($n = 152$).²⁹

At face value, COSEWIC would appear to represent the type of independent advisory body at the helm that many would consider an ideal means of infusing government decisions with sound, independent scientific advice. It is a body that includes individuals from academia, several levels of government, nongovernmental organizations (NGOs), and the aboriginal community. Members of COSEWIC act and vote in accordance with their expertise in the science, conservation, and management of endangered species, not in accordance with the institutions with whom they are employed. By virtue of their membership on COSEWIC, government departments are inextricably linked to the species assessment process, rendering them less able to discount COSEWIC's assessments outright. The species assessment process is open and transparent; status reports are typically subjected to at least one year of review, with input from all individuals and groups who have information bearing on the status of species at risk. The results of COSEWIC's assessments are communicated publicly at the same time that they are communicated to government, thus fulfilling a key requirement of having scientific advice communicated directly to society, unaffected by the various communication filters often used to smooth the rough edges of scientific advice, or to eliminate them completely. As a consequence, the public is fully knowledgeable of the status of endangered species in Canada from a scientific perspective.

Law at the Helm

Canada's Species at Risk Act sets a legal course for achieving three overall purposes, as set out in section 6:

- To prevent wildlife species from being extirpated³⁰ or becoming extinct;
- To provide for the recovery of wildlife species extirpated, endangered,³¹ or threatened³² as a result of human activities; and

- To manage species of special concern³³ to prevent them from becoming endangered or threatened.

To guide overall steerage of SARA implementation, the Species at Risk Act establishes the Canadian Endangered Species Conservation Council.³⁴ The Council, consisting of the Minister of the Environment, the Minister of Fisheries and Oceans, the Minister responsible for the Parks Canada Agency, and provincial/territorial ministers responsible for wildlife conservation, is given two main roles. It is to provide general direction to COSEWIC and in relation to preparation of recovery strategies and action plan preparation/implementation. The Council is also to coordinate activities of the various governments represented.³⁵

The SARA tiller has nine main legal grips for promoting protective measures. Two of the most powerful legal handles are general prohibitions. Section 32 prohibits various actions in relation to individuals of listed extirpated, endangered, or threatened wildlife species. No person is allowed to kill, harm, harass, capture or take an individual³⁶ or to possess, collect, buy, sell or trade an individual or any part/derivative thereof.³⁷ Section 33 prohibits damaging or destroying the residence of one or more individuals of listed endangered or threatened species.³⁸

Two legal handles are directed at helping endangered, threatened, and extirpated species recover. Section 37 requires the competent minister³⁹ to prepare a recovery strategy for listed species.⁴⁰ Recovery strategies, if feasible,⁴¹ are required to include various elements. They include, among others: identification of threats to species survival and habitat; identification of critical habitat to the extent possible; a schedule of studies to identify critical habitat where information is inadequate; and a statement of population and distribution objectives.⁴² The strategy must also include a statement of when one or more related action plans will be completed.⁴³

Section 47 requires the preparation of action plans based upon recovery strategies. Action plans must include various elements, including identification of the species' critical habitat to the extent possible; a statement of proposed measures for protecting species' critical habitat; identification of any portions of the species' critical habitat that have not been protected; a statement of measures to implement the recovery strategy; recovery monitoring methods; and an evaluation of the socio-economic costs and benefits of the action plan.⁴⁴

A fifth control grip is a specific prohibition against destruction of critical habitats. Pursuant to section 58, no person is allowed to destroy critical habitats of listed endangered, threatened, or extirpated species.⁴⁵

A sixth legal handle is aimed at conserving species of special concern. Section 65 requires the competent minister to prepare a management plan for such species. Proposed management plans must be included in the public registry within five years for originally listed species⁴⁶ and within three years for newly listed species.⁴⁷

A seventh control point is through agreements or permits authorizing persons to engage in activities, such as fishing, that affect listed wildlife species or their critical habitats or residences. Such agreements or permits may be granted by the competent minister in three situations: for scientific research relating to conservation of the species; where an activity benefits the species or enhances its chance of survival; and where effects are incidental to carrying out an activity.⁴⁸ Agreements or permits must contain terms and conditions considered necessary to protect the species and minimizing authorized activity impacts.⁴⁹

An eighth control point is the imposition of environmental assessment review re-

quirements on projects that are likely to affect listed wildlife species or their critical habitats. Section 79 requires persons proposing projects that trigger review under the Canadian Environmental Assessment Act⁵⁰ to identify adverse effects on listed wildlife species and critical habitats. If the project is carried out, project proponents must ensure measures are taken to avoid or lessen effects and must undertake monitoring.

Emergency orders are a ninth main lever for protecting listed wildlife species. If a competent minister believes a species faces imminent threat to its survival or recovery, the minister must recommend to the Governor-in-Council (Cabinet) that an emergency order be issued. If the Governor-in-Council does issue an emergency order, the order may require actions to protect the species and its habitat and may prohibit activities adversely affecting a species and its habitat.⁵¹

Part II: Sea of Uncertainties

Contested Listing Criteria

The assessments of species status undertaken by COSEWIC are based in part on five criteria developed by the World Conservation Union (IUCN)⁵² which specify various thresholds of abundance, rate of decline, habitat, size and quality, and number of populations that, if exceeded, can trigger the listing of species into one of several at-risk categories. These criteria were initially developed when the IUCN was assessing the extinction risks faced by terrestrial and aquatic freshwater species, prior to their initial listing of commercially exploited marine fishes in 1996.

Questions have been raised as to whether these criteria ought to be applied to marine fishes, primarily because of the perception that marine fishes have lower extinction probabilities than other taxa, owing to their high levels of abundance, broad distributions, high levels of offspring production, and perceived resilience to anthropogenic disturbances. However, rather than applying the criteria *sensu stricto*, COSEWIC uses the IUCN criteria as guidelines during the assessment process, taking into account other factors, such as the life history attributes of the species in question, which might affect probabilities of extinction and recovery. Of the five IUCN criteria, it is the one pertaining to rate of population decline under which all marine fishes have been listed.

The population-decline criterion in question specifies thresholds that, if attained or exceeded over the longer of three generations or ten years, may cause a taxon to be assigned to a particular category of extinction risk. The extinction risk faced by taxa for which “the causes of the reduction [in population size] are clearly reversible AND understood AND ceased [upper case letters in original]”⁵³ is assessed using the following decline-rate thresholds: 90% (Critically Endangered, IUCN); 70% (Endangered, IUCN and COSEWIC); and 50% (Vulnerable, IUCN; Threatened, COSEWIC). It is against these three-generation decline-rate thresholds that one can expect many Canadian marine fishes to be assessed. This seems reasonable when the causes of decline and threats to recovery include neither habitat destruction nor invasive species introductions. It has been argued, based on empirical analyses, that the decline-rate thresholds used by the IUCN and COSEWIC to assign status are appropriate insofar as recovery probability is a reliable measure of extinction risk.⁵⁴

Since the IUCN’s listing of Atlantic cod in 1996, debate has ensued as to whether the criteria used to assess extinction risks for terrestrial animals, plants, and freshwater fishes should also be used to assess extinction risk in marine fishes. This debate has included both intuitive arguments in favor of treating marine fishes differently⁵⁵ and

empirical analyses that suggest that extinction probabilities of marine fishes are unlikely to differ from other taxa.⁵⁶ From a quantitative perspective, the intuitive arguments against treating marine fishes as one would treat other taxa ultimately hinge on the degree to which rates of decline used to assign species to at-risk categories adequately reflect the likelihood that a particular population or species will decline to zero. This is a legitimate question, but it is one that should be asked of all taxa, not just marine fishes.

Reductions in abundance are an inevitable consequence of harvesting and can constitute a primary objective of fisheries management. Depending on the species and on the single-species model of productivity that is used, the predicted maximum sustainable yield (MSY) of a population may not be achieved until that population has been reduced by at least 50% its size in an unfished state.⁵⁷ This "fishing down" element of population decline has been used as a basis for arguing that substantive declines by marine fishes should not be cause for concern from a conservation or extinction perspective.⁵⁸ However, this perspective incorporates the implicit assumption that the observed declines of commercially exploited marine fishes can be attributed primarily to the fulfilment of management objectives specific to each stock. This strikes the authors as an unlikely explanation for the numerous declines that have been documented for North Atlantic and North Pacific marine fishes.⁵⁹ Few if any of these declines can be attributed to management plans designed to reduce abundance to stated reduction targets in accordance with decision rules for controlling and eventually stopping the rate of decline. Furthermore, few if any of these declines describe the reduction in abundance of a population from an unfished state.

Regarding new fisheries, for which one would expect an initial "fishing-down" period of decline, it is incumbent upon the responsible management agency that its management plan for that fishery include: 1) decision rules for controlling the rate of decline in population size; 2) a biomass reduction target; and 3) a mechanism for monitoring population size relative to the target. In general, rules such as these have not been implemented to guide the exploitation of commercially harvested marine fishes in Canadian waters.

Debate concerning the applicability of the IUCN criteria to marine fish has the potential to infuse nonscience influences into the listing process of marine fishes under SARA. Governments and stakeholders who are not in favor of having marine fish listed, particularly commercially valuable species, might contest the applicability of the IUCN criteria, arguing that COSEWIC's species assessment process is flawed, resulting in undue extensions of the listing process. The likelihood of this tactic being employed during the listing decision process might, however, be significantly tempered by consensus opinions reached at a recent international workshop which addressed the means by which COSEWIC incorporates the IUCN's criteria in its assessments of marine fish.⁶⁰

Politically Dependent Listing Decisions

While those species assigned endangered or threatened status by COSEWIC prior to the enactment of SARA in December 2002 are now on the SARA legal list, those assessed by COSEWIC after the passage of SARA are subjected to a lengthy, and potentially indeterminate, period before the political decision is made as to whether they will be legally listed or not. SARA identifies specific time-lines for the listing process. Upon receipt of the previous year's assessments by COSEWIC (which the Minister of the Environment will normally receive annually in July), the Minister has 90 days to indicate how he/she will respond to those assessments.⁶¹ Upon receipt of COSEWIC's assessments from the Minister, the Governor-in-Council (GIC) has 9 months to decide

whether (a) to accept the assessment and add the species to the SARA legal list; (b) to not add the species to the list; or (c) to refer the matter back to COSEWIC for further information or consideration.⁶²

These 90-day and 9-month time lines are clearly specified in the Act. What is not specified in the Act is the time period during which the Minister of the Environment must submit the COSEWIC assessments to the GIC. Herein lies some highly regrettable flexibility in SARA. It is this flexibility that has allowed the Minister of the Environment, on request by the Minister of DFO, to permit postponements for the submission of several aquatic (mainly marine) species assessments to the GIC. The Fisheries Department has described such postponements as necessary "extended consultation processes" that are required because of the predicted complexities in implementing SARA for aquatic organisms that may be directly or incidentally harmed by the fishing industry.⁶³ However, the potential for such postponements to delay indeterminately the listing process is real. For example, after the 90-day time period described above had expired for the first assessments submitted by COSEWIC under SARA, the DFO announced that the assessments of 12 species would be subjected to extended consultations, but that these assessments would be sent to the GIC nine months later (i.e., January 2005). However, as of May 2005, these assessments had still not yet been submitted to the GIC, almost sixteen months after the Environment Minister had received COSEWIC's assessments of these species.

The prohibitions of SARA that prevent the killing, harming, harassing, capturing, or taking of an individual of a listed species underscore one of the key political impediments to adding a marine fish species to the legal list. There is widespread concern that the legal listing of a commercially exploited fish, or of a commercially unimportant fish that is often caught incidentally during fishing operations, will lead to complete closures of a wide variety of commercial fisheries. The fishing industry has argued, in effect, that decisions regarding the harvest of numerically depleted species should rest solely with the Minister of Fisheries and Oceans. Under the Fisheries Act, the Minister exercises a degree of discretionary power unlike that of any other Minister of the Crown. It is this discretionary power that allows the Minister, for example, to re-open fisheries for collapsed stocks despite the risks to conservation and fisheries sustainability of doing so.

Hazy General Prohibitions

SARA leaves hazy exactly what actions may be caught by the section 32 general prohibition against killing, harming, harassing, capturing or taking an individual of a listed extirpated, endangered, or threatened species. The Act does not provide definitions for the prohibited acts, and the meanings of harm, harass, and take are particularly open to interpretation.

One key question is whether section 32-prohibited actions must be intentional, reckless, or negligent. Later sections of SARA covering offences and punishment help clarify that even inadvertent actions affecting listed species may be subject to prosecution. Section 97, setting out penalties for contravening section 32, clarifies that the prohibition is a strict liability offence and does not require the showing of a "guilty mind." Section 100 provides a defense of due diligence to prosecution for an offence, which means that once the Crown establishes the "wrongful act," it will be up to the defendant to show all reasonable care was taken.⁶⁴ Section 102 provides that a court, in weighing what sentence to impose may consider whether the offender acted intentionally, recklessly, or inadvertently.

Another issue is whether the section 32 prohibition only applies to direct actions

and contacts or also to indirect impacts on individuals of listed species. For example, could the Department of Defence be held responsible for indirect harm to an endangered/threatened marine species caused by chemical warfare agents left abandoned at sea? Another example of an indirect impact might be a major oil spill that harms larvae or eggs of listed aquatic species.⁶⁵

Whether provincial permits or licenses issued for marine uses, such as aquaculture operations, might be challenged as violating the harm/take prohibition is a further question. Various cases under the U.S. Endangered Species Act of 1973⁶⁶ have found that state grants of permission to a person involving a violation of the Act's taking/harming provision are the proximate cause of the taking.⁶⁷ For example, in *Straham v. Cox*,⁶⁸ the First Circuit Court of Appeals upheld injunctive relief⁶⁹ granted to an environmentalist against Massachusetts officials issuing licenses and permits authorizing gillnet and lobster pot fishing having negative impacts on the endangered northern right whale. The injunction required Commonwealth officials to consider the means by which gillnets and lobster pots could be modified to avoid takings and to establish an endangered whale working group to provide input.⁷⁰

A further hazy issue area is deciphering the section 33 general prohibition against damaging or destroying the residence of one or more individuals of listed endangered, threatened, or extirpated species. Besides the issue of exactly how damage is to be construed,⁷¹ there is the difficult question of determining what residences are for the wide range of species. The Species at Risk Act itself provides quite an open-textured definition:

[R]esidence means a dwelling-place such as a den, nest or other similar area or place, that is occupied or habitually occupied by one or more individuals during all or part of their life cycles, including breeding, rearing, staging, wintering, feeding or hibernating.⁷²

Environment Canada has issued a Federal Discussion Paper on the residence concept,⁷³ which although not meant to be a final or even draft statement of government policy, does assist in highlighting the three main definitional conundrums. First is the physical location element of a dwelling-place. While SARA provides two quite clear examples of dwelling-places, den and nest, the Act leaves considerable room for locational expansion with the wording "or other similar area or place." The Federal Discussion Paper identifies a number of ways in which a species' use of a particular place might be similar to a nest or den, including exhibition of a strong fidelity to a particular location⁷⁴ and modification of habitat by a species for occupation purposes.⁷⁵

A second definitional element raising difficulty is the temporal occupation requirement. The wording "occupied or habitually occupied" allows a residence to be protected even if the individual listed species has temporarily left.⁷⁶ Various temporal patterns are possible, for example, occupancy for periods of time within a year; occupancy for a period of time once a year and never used again; occupancy for part of a year and used every year; or perhaps a broader cycle of every five years, etc.⁷⁷

A third element of a residence description involves a crucial functional purpose. SARA emphasizes specific life-cycle functions that are meant to be protected under the residence rubric, namely, "breeding, rearing, staging, wintering, feeding or hibernating."⁷⁸ The "specific site" focus of residence has to be distinguished from the broader population-based concept of critical habitat intended to protect habitat critical to the recovery and health of species at a population level.⁷⁹ The functional element opens up the possibility for a species to have more than one type of residence, for example, a hibernation shelter and a breeding site.⁸⁰

Bringing the legal concept of residence down to real-life terms is not explicitly required by SARA. The Act does not require competent ministers or others to describe residences for any species nor to specifically locate individual residences.⁸¹ SARA implementing departments are still in the early stages of trying to describe to stakeholders precisely what residences for particular species are. The Federal Discussion Paper notes that for protection of residences to be truly effective, some level of descriptive effort is required.⁸² *Technical Guidelines on Species at Risk Residence Description*, appended to the Discussion Paper, provide just a few concrete examples of residence descriptions. They are for the piping plover (*Charadrius melodus melodus*), the black ratsnake (*Elaphe obsoleta obsoleta*), and the swift fox (*Vulpes velox*). The Guidelines note that many more descriptions are in preparation but do not provide details on which species are being given priority.⁸³

Leeway for Incidental Harm Permitting

While SARA seems to set a firm course for protecting listed wildlife species from takings and damaging residences, section 73 allows considerable drift in practice through ministerial discretion to issue incidental harm agreements or permits.

Section 73(3) puts in place only three rather flexible “leeboards” to check the discretion. The incidental harm permit may only be entered into if the competent minister is of the opinion that:

- (a) all reasonable alternatives to the activity that would reduce the impact on the species have been considered and the best solution adopted;
- (b) all feasible measures will be taken to minimize the impact of the activity on the species or its critical habitat or the residences of its individuals; and
- (c) the activity will not jeopardize the survival or recovery of the species.

SARA provides a rather minimal check on the ministerial discretion to issue incidental harm permits. Section 73(3.1) requires the competent minister to include in the public registry an explanation of why an agreement or permit was granted in light of the three limiting criteria.

A particularly problematic and potentially controversial phrase in this section of SARA is “will not jeopardize the survival or recovery of the species.” Since SARA does not define “jeopardy,” various policy questions are left open. They include the magnitude of additional risk of extinction that is acceptable and the degree of impact on the likelihood of recovery that should be allowed.⁸⁴ Whether a cumulative assessment of risks is required is a further issue.⁸⁵

Ambiguities created by the absence of a definition of “jeopardy” could be remedied by the adoption of quantitative assessments that incorporate existing, international criteria. For example, by applying the IUCN’s quantitative analysis criterion (Criterion E), an activity could be judged to jeopardize the survival of an endangered species if the probability of extinction was 20% or more over the longer of 20 years or 5 generations; for a threatened species, survival would be judged to be jeopardized when the probability of extinction was 10% or higher over the next century. It will be difficult, however, to apply a similar quantitative assessment of the degree to which an activity might jeopardize recovery. Herein lies one of the weaknesses in implementing SARA. One cannot reliably determine whether an activity will jeopardize recovery in the absence of recovery targets. However, recovery targets are not identified until the recovery strategy phase, a process that takes place after the incidental harm permits have been issued.

There are also questions of science related to assessing the consequences of activities to the survival or recovery of listed species.⁸⁶ To evaluate the degree to which a particular activity might negatively influence the survival of a listed species, one requires data on species abundance, bycatch levels, and estimates of the mortality imposed by these incidental takes. Abundance data, however, are available for a comparatively small number of species, e.g., for only about 26 of the 750 species of marine fish on Canada's Atlantic coast,⁸⁷ and most of these are commercially valuable species. Even amongst those species for which abundance data are available, reliable data on bycatch are not, especially when bycatch data are required for different types of gear. Thus, for most fish species, one of the key types of data upon which incidental harm permits could be issued with scientifically sound justification is unavailable.

One can envisage a situation in which scientific uncertainty might permit the Minister of Fisheries and Oceans to exercise his/her considerable discretionary powers in favor of a "no jeopardy" determination. The Science Branch of the DFO might conclude, for example, that there is insufficient information to permit a scientifically legitimate assessment of the degree to which an incidental or directed take would affect the survival or recovery of a listed species. There is, in theory, no reason why the Minister might not weigh such scientific uncertainty against industry arguments that such a take would not unduly harm the species in question. The Minister might then argue that, in his/her opinion, a take would be permissible, if he/she was convinced that the activity would not jeopardize the survival or recovery of the species.⁸⁸

A "runaway ship" looms as a possibility in light of the various discretionary constraints not imposed. The incidental harm permitting process under SARA does not provide for public comment or review, unlike the United States' approach under the Endangered Species Act.⁸⁹ SARA does not leave the crucial determination that an activity will not jeopardize the survival/recovery of the species to an independent scientific assessment but grants maximum freeboard to "the opinion" of the competent minister.⁹⁰ No appeal procedure is provided for those who may be dissatisfied with an incidental harm decision. The Act does not impose a strong precautionary approach by explicitly requiring the activity proponent to bear the burden of showing that the activity will not jeopardize the survival or recovery of the species.⁹¹

In 2004, there were four listed marine species raising special concerns because of the chances of incidental bycatch or gear entanglements by commercial fishers. Those species included the northern and spotted wolffish, the leatherback turtle, and the inner Bay of Fundy Atlantic salmon.⁹²

From the record of initial issuance of section 73 incidental harm permits, it would appear that the considerable ministerial discretion has largely been exercised in favor of commercial interests and pressures. In 2004, the Minister of Fisheries and Oceans issued approximately 9,600 permits for incidental taking by commercial fishers of threatened northern and spotted wolffish.⁹³

The Minister rejected, as a reasonable alternative, demersal fishery closures in Atlantic waters as the livelihood of about 9,600 fishers would be adversely affected.⁹⁴ The Minister also found feasible mitigation measures were available including a requirement, first imposed in 2003, for all northern and spotted wolffish to be released in a manner that causes the least harm.⁹⁵

The Minister also issued 72 permits allowing the take of leatherback turtles by fishers in the pelagic longline fishery for swordfish and tuna in Atlantic Canadian waters.⁹⁶ He found the complete closure of the longline fishery, catching 90% of the Canadian swordfish quota, would be an unreasonable alternative because of socio-economic consequences.

Various feasible impact minimization measures were also used for justification, including the permit requirement for fishers to release leatherback turtles caught or entangled in fishing gear in the least harmful manner and to report encounters with turtles.⁹⁷

The exception where the Minister of Fisheries and Oceans refused to issue incidental harm permits was for the inner Bay of Fundy Atlantic salmon, but only because they are on the extreme brink of extinction. Based on an April 2004 DFO Allowable Harm Assessment for Inner Bay of Fundy Atlantic Salmon,⁹⁸ which reported a decline from a peak of 40,000 mature fish in the 1970s to less than 200 wild adult salmon in 2003,⁹⁹ the Minister concluded that any level of human-induced harm could jeopardize the survival or recovery of inner Bay of Fundy salmon.¹⁰⁰

While SARA itself provides no legislated requirement for consultation regarding incidental harm decisions, DFO has in practice subjected draft allowable harm assessment reports to a Regional Advisory Process (RAP) which appears variable in participation and format. The Canadian Science Advisory Secretariat (CSAS), which reviews and approves allowable harm status reports, mentions RAP meetings as part of the peer review process but provides no generally available guidelines or procedures.¹⁰¹ The levels of NGO and industry participation have varied considerably in the three regional advisory processes held for inner Bay of Fundy salmon, the leatherback turtle, and spotted and northern wolffish.¹⁰² For example, participants at the Bay of Fundy salmon regional advisory process were largely drawn from federal and provincial departments with no industry representatives and only one NGO, the Nova Scotia Salmon Association.¹⁰³ The RAP process for the leatherback turtle, meanwhile, included various industry associations,¹⁰⁴ academic participants,¹⁰⁵ and NGOs.¹⁰⁶

DFO, following an initial framework for considering incidental harm permits,¹⁰⁷ in February 2005 issued a *Revised Framework for Evaluations of Scope for Harm* under section 73 of the *Species at Risk Act*,¹⁰⁸ which could be interpreted as a furling of the sails away from strict protection of listed species. The Revised Framework proposes a "relative risk assessment" approach when an assessment of absolute risk is not possible due to insufficient data or limited knowledge for species' biology.¹⁰⁹ Under the relative risk assessment approach, three conditions are suggested for concluding that activities can be permitted under the section 73(3)(c) limitation of not jeopardizing the survival or recovery of the species:

- The current population is not so small that random factors threaten population viability nor so concentrated in space that it is vulnerable to elimination by a catastrophic event.
- The recent trajectory of the stock is stable or likely to be increasing, so that neither survival nor recovery is in jeopardy in the period when the permit is in place.
- The known sources of human-induced mortality are unlikely to increase during the permitting period. This means that there is high confidence that the causes of human-induced mortality are under management control, monitored, and that management measures can be enforced effectively.¹¹⁰

The second condition above seems to be especially slanted towards favoring section 73 permit issuances. Rather than requiring knowledge of long-term species survival or recovery chances, the language indicates a narrower short-term focus, namely, whether permitted activities would jeopardize survival or recovery *during the period of the permit*.¹¹¹

The Revised Framework confirms the departmental interpretation that reasonable alternatives to the activity to be considered under section 73(3)(a) include social and economic factors. The document states: "It is stressed that 'reasonable' has social and economic dimensions, as well as being biologically feasible. All three dimensions *must* be considered in selecting the 'best solution.'"¹¹²

The Revised Framework seems partly intent at bypassing the potential constraints of section 73 permits through timely development of recovery strategies. The document states that section 73 permits "are only in place for a period of 1-2 years or less"¹¹³ and that such permits are just a step, providing an inclusive consultation process and building stakeholder acceptance, towards development of a recovery plan.¹¹⁴ The document emphasizes that activities, such as directed fisheries or bycatch for listed species, if adopted within a recovery plan would exempt individuals from prosecution.¹¹⁵ The document is rather confusing in its use of the term "recovery plan," a term not used in the Species at Risk Act.¹¹⁶

Recovery Strategy and Action Plan Foginess

A recovery strategy for listed wildlife species is important for various reasons. The strategy is the mechanism whereby critical habitat is to be identified for protection and the vehicle is established for setting a timeline for completing one or more action plans setting out proposed management measures including those to protect critical habitat.¹¹⁷

Considerable legal mist surrounds the question of whether recovery measures for a listed species will in fact be included in a recovery strategy. Section 45 of SARA grants the competent minister considerable discretion to determine "whether the recovery of the listed wildlife species is technically and biologically feasible." The discretion is curbed by the mandate that the "determination must be based on the best available information, including information provided by COSEWIC."¹¹⁸ The terms "technically and biologically feasible" are not defined. Section 41(2) requires the competent minister to give reasons in a recovery strategy why a species' recovery is not feasible.

Some uncertainty also hovers over the precise contents of a recovery strategy. Regulations may be prescribed that set out additional matters to be addressed.¹¹⁹ The competent minister is given discretion to "adopt a multispecies or an ecosystem approach when preparing the recovery strategy."¹²⁰ Identification of species' critical habitat is required "to the extent possible."¹²¹

SARA leaves uncertain precisely who will be involved in recovery strategy formulation. According to a *Federal Policy Discussion Paper: Critical Habitat*,¹²² typically a team or group approach to recovery planning is envisaged.

SARA also leaves quite foggy the process, timing, contents, and implementation mechanism for action plans, potentially the most powerful means for instituting concrete protective measures. The Act provides minimal coordinates for the process to be followed in action plan preparation. Section 48(1) sets out a general obligation, qualified by the phrase "to the extent possible," for action plans to be prepared in cooperation with: various other ministers and governments including appropriate provincial and territorial ministers where the listed wildlife species are found; other federal ministers having authority over areas where the species are found; and every aboriginal organization that the minister considers will be directly affected by the action plan. Section 48(3) calls for consultation "to the extent possible" with persons considered by the competent minister to be directly affected by, or interested in, the action plan, for example, land-owners and lessees. Consultation is also to include the government of any other country

in which the species is found. For listed wildlife species found in an area where a land claims agreement authorizes a wildlife management board to perform management functions, the action plan must be prepared in accordance with the provisions of the agreement.¹²³

Substantial potential exists for action plans to be caught in the doldrums of political and bureaucratic forces because of the lack of a firm timeline for action plan completion. Timing for action plan finalization is loosely left to the recovery strategy stage. Section 41(1)(g) requires a recovery strategy to provide “a statement of when one or more action plans” will be completed. Such a timing statement seems to be quite hortatory as section 50(4) simply requires the competent minister to include in the public registry a summary of “what has been prepared with respect to the plan” where an action plan is not finalized in the time set out in the recovery strategy.

Only when the competent minister actually includes a proposed action plan in the public registry will a strict timeline apply. Section 50(2) provides 60 days for written comments from the public after registry inclusion and the competent minister is then given 30 additional days to finalize the action plan.¹²⁴

Contents of action plans are also open to considerable uncertainty. Species’ critical habitats are to be identified “to the extent possible.” Regulations may be issued by the GIC prescribing additional matters to be included in an action plan beyond the elements listed in section 49.¹²⁵ A competent minister may also choose to incorporate any part of an existing plan relating to a wildlife species into a proposed action plan¹²⁶ or to adopt an existing plan as a proposed action plan.¹²⁷

How action plans will be given “legal teeth” is also left open. Section 53 requires the Minister of Fisheries and Oceans to make regulations to implement action plan measures in relation to aquatic species if regulations are thought “necessary in the opinion of” the Minister. No precise time limit is established for passing such regulations. Section 54 allows action plan measures to be implemented under powers granted under other acts of Parliament. Thus, for example, the Minister of Fisheries and Oceans might place restrictions on proposed offshore activities pursuant to a grant of authorization under the Fisheries Act¹²⁸ to harm/disrupt fish habitat.¹²⁹ SARA provides an especially complicated seascape for ensuring the protection of critical habitats, as discussed below.

What could become a very controversial issue under SARA is the provision in section 83(4) that activities permitted by a recovery strategy or action plan would exempt persons engaging in those activities from various prosecutions, including taking/harming listed wildlife species, damaging/destroying residences, and destroying critical habitats. The exemption for recovery strategy and action plan–authorized activities could prove to be a huge door for allowing substantial interferences with listed species. A key question is what limits there might be on government officials who actually authorize the activities permitted by strategies or plans. For such authorized activities SARA does not provide the checks on discretion found for incidental harm permits, for example, the need for the competent minister to believe “the activity will not jeopardize the survival or recovery of the species.” Perhaps a similar “implicit” check might be argued by referring to the purpose section of SARA, which sets as a basic goal the prevention of wildlife species from becoming extirpated or extinct.¹³⁰

Critical Habitat Issues

Besides the major limitation previously mentioned where critical habitats only need to be identified in a recovery strategy or action plan “to the extent possible,”¹³¹ at least four

other implementation issues stand out. First, SARA does not spell out the identification process to be followed for critical habitats. One issue looming on the horizon is whether recovery and action plan consultation processes will simply subsume the critical habitat identification component or whether a more distinct critical habitat review procedure will be followed, for example, requiring offshore license holders and others to be notified of possible habitat designations and allowing for written comments. Other process questions are whether persons will be allowed to petition for critical habitat designation and the extent to which identification of critical habitat should be an ecologically based exercise.

A *Federal Policy Discussion Paper: Critical Habitat*,¹³² not meant to be a final or even a draft statement of SARA-implementing department policy positions,¹³³ suggests a five-step process for critical habitat identification:

- Description of the biological, physical, and/or functional attributes required by the species at risk;
- Location, to the greatest extent practically possible, of all species at risk habitat range;¹³⁴
- Rationalization of the step 2 habitat area based upon the population target of the species at risk and practical implementation factors, such as stakeholder views;
- Determination by the competent minister of critical habitat;
- Identification of critical habitat in the recovery strategy and the public registry.

A second issue area relates to surveying and mapping of critical habitats, since SARA has no explicit requirements for these practical exercises.¹³⁵ Which Minister is responsible for surveying and mapping may be a question, as well as how frequently critical habitat surveys should be reviewed for changes.¹³⁶ Mapping questions include what scale standard should be used,¹³⁷ when general publication of maps should be denied,¹³⁸ and whether maps should be incorporated into the Canada Gazette description of critical habitat or whether they should remain ungazetted materials.¹³⁹

A third implementation complexity is determining how the critical habitat destruction prohibition will actually be activated. The greatest certainty is provided for critical habitats located in a national park, a marine protected area under the Oceans Act,¹⁴⁰ a migratory bird sanctuary under the Migratory Birds Convention Act, 1994,¹⁴¹ or a national wildlife area under the Canada Wildlife Act.¹⁴² In those situations, the competent minister must publish a description of the critical habitat in the Canada Gazette within 90 days after the recovery strategy or action plan that identified the critical habitat is included in the public registry.¹⁴³ The destruction prohibition is to apply 90 days after description is published in the Canada Gazette.¹⁴⁴

For aquatic species outside the above "special areas," a less certain route for critical habitat protection applies. The competent minister, which is the Minister of Fisheries and Oceans in relation to aquatic species, must within 180 days after the recovery strategy or action plan that identified the critical habitat is included in the public registry, make an order activating the general critical habitat destruction prohibition if the critical habitat (or any portion thereof) is not legally protected by provisions in or measures under SARA or other acts of Parliament.¹⁴⁵ If the competent minister does not make the order, he/she must include in the public registry a statement of how the critical habitat or portions thereof will be legally protected.¹⁴⁶ SARA also allows the competent minister to enter into stewardship agreements (with any government in Canada, organization, or person) which may include critical habitat conservation measures.¹⁴⁷

A fourth implementation issue is whether compensation might be available for persons suffering losses from critical habitat designations. Section 64 of SARA provides that the Minister of the Environment may, in accord with regulations, provide fair and reasonable compensation to any person for losses suffered as a result of any “extraordinary impact” of the application of the critical habitat prohibition. The GIC is authorized to make regulations describing the compensatory principles to be followed, eligibility criteria, quantification of losses, and terms/conditions for compensation.¹⁴⁸ No regulations have been issued.

Unsettled Relationships with Other Federal Laws

SARA does not “swim alone” in potentially protecting endangered/threatened marine species, and how SARA will relate to other federal laws that may protect species or habitats remains unsettled with at least three main “cross-currents.” How SARA will relate to federal laws governing marine habitat protection, permitting/authorizing of marine uses, and environmental impact assessment remains uncertain.

SARA-implementing departments to date have rather minimally addressed the various “entanglements.” A document posted on the SARA Public Registry, “SARA is one of several federal laws protecting wildlife,”¹⁴⁹ is largely descriptive of the federal laws meant to protect Canada’s natural heritage, including the Migratory Birds Convention Act, 1994,¹⁵⁰ the Fisheries Act, Canada National Parks Act,¹⁵¹ Canada Wildlife Act,¹⁵² Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act (WAPPIITA),¹⁵³ and the Canadian Environmental Assessment Act (CEAA).¹⁵⁴ DFO, in a fact sheet on critical habitat for aquatic species,¹⁵⁵ does not analyze in detail the legislative overlaps but simply describes the “vision of DFO ... to marry the considerations of SARA seamlessly with those of other legislation such as the CEAA, the Fisheries Act and the Navigable Waters Protection Act.”¹⁵⁶

Habitat Protection. Perhaps the greatest uncertainty is the relationship of SARA’s prohibition of critical habitat destruction to the general prohibition in the Fisheries Act against harmful alteration, disruption, or destruction of fish habitat.¹⁵⁷ Since the Fisheries Act casts a wider protective net in relation to fish habitat protection, covering not just destruction but also harmful alterations and disruptions, it remains doubtful whether SARA will in fact be used to protect most critical fish habitat. Section 58(5) allows the Minister of Fisheries and Oceans to bypass SARA critical habitat listing where the critical habitat or portions of it are “legally protected” under other acts of Parliament. Section 58(2) only ensures SARA protection where critical habitat would fall within a national park, an Oceans Act marine protected area, a migratory bird sanctuary, or a national wildlife area.

A big question that might arise is whether critical habitat is actually “legally protected” under the Fisheries Act in light of DFO’s refusal to apply the s. 35 fish habitat protection provision to trawling by fishing vessels. In *Ecology Action Centre Society v. Canada (Attorney General)*,¹⁵⁸ the Federal Court, Trial Division, upheld DFO’s interpretation that the Fisheries Act’s harmful alteration provision was not intended to apply to effects on habitat by fish harvesters.

Permitting/Authorizing Marine Uses. Keeping track of how federal permits and authorizations might affect listed wildlife species, their residences, and critical habitats may prove complicated in two ways. First, since section 74 of SARA allows competent ministers

to authorize scientific or incidental inferences with listed species or their residences or critical habitat through authorizations issued under other acts of Parliaments, a rather fragmented authorization system is possible. For example, the Minister of Fisheries and Oceans might choose to allow incidental takes of a threatened fish species through a fisheries license and might further authorize harm to a critical habitat through an authorization under the Fisheries Act. Another example would be Environment Canada choosing to use the Migratory Birds Convention Act, which enables permitting activities that affect migratory birds or their nests.¹⁵⁹ Since the Migratory Birds Convention Act does not enable general habitat protection, SARA would have to be used for authorizing an activity affecting critical habitat.¹⁶⁰ For permissions issued under other acts, SARA is not clear on whether the competent ministers would have to provide a justification in the public registry.

A second complexity is sorting out the limitations on other federal ministers (other than the three competent ministers under SARA) to issue permits/licenses authorizing activities that may result in destruction of any part of a critical habitat. Section 77 allows issuance of permits/licenses pursuant to other acts of Parliament even though critical habitat may be affected. However, the person or body issuing the authorization would need to meet a number of conditions, including consulting with the competent minister responsible for the critical habitat and considering the potential impacts on the species' critical habitat. In addition, the body or person would need to be of the opinion that:

- (a) all reasonable alternatives to the activity that would reduce the impact on the species' critical habitat have been considered and the best solution has been adopted; and
- (b) all feasible measures will be taken to minimize the impact of the activity on the species' critical habitat.

Section 77 raises additional uncertainties. The meanings of "reasonable alternatives," "best solution," and "all feasible measures" are open to interpretation. Exactly what consultation with a competent minister should involve is vague with no timelines or procedural details provided. Section 77(2) appears to set an "outer limit" for federal ministers in issuing permits affecting critical habitat areas of listed species, namely, that the activity will not actually destroy any part of the critical habitat. However, the term "destruction" is not defined in the Act.

Environmental Impact Assessment. Section 79 of SARA, which imposes environmental assessment requirements in relation to listed wildlife species or their critical habitats, also raises numerous uncertainties. Exactly who is subject to the section 79 project review requirements is not "crystal clear." Two rather open-ended triggers for invoking the requirements are established: a person must be required by or under an act of Parliament to assess the environmental effects of a project, and a project must meet the definition in section 2(1) of the Canadian Environmental Assessment Act (CEAA). Section 2(1) of CEAA defines project to include undertakings in relation to physical works and proposed physical activities not relating to physical works that are prescribed in the Inclusion List Regulations.¹⁶¹

The first project review requirement under section 79, that a project proponent give notice to the competent minister or ministers under SARA, also raises questions. The timing of notice is left rather vague through the wording "without delay." The CEAA also leaves considerable interpretive room for when federal projects should be subject to

assessment review. Section 11 of CEAA calls on federal authorities to ensure that environmental assessments are considered as early as is practicable in the planning stages and before irrevocable decisions are made. Notice is only required under section 79 if a project is likely to affect a listed wildlife species or its critical habitat, which opens up a further judgment call.

Section 79 of SARA also leaves a wide spectrum for protective measures if a reviewed project is carried out. The person undertaking the project must ensure that measures are taken to "avoid or lessen" effects on the listed wildlife species and its critical habitat and to monitor the effects. Measures taken must also be consistent with any applicable recovery strategy and action plans.

For projects subject to review under the CEAA, which also are likely to affect listed wildlife species under SARA, there may be issues of compatibility in measures called for under the differing legislative schemes. For example, in 2003 CEAA was amended to include quite a strong version of the precautionary approach in the purpose section of the Act which might be the basis for strict control measures, including prohibition of some projects by federal authorities.¹⁶² SARA, meanwhile, has a weaker version of the precautionary approach in the preamble¹⁶³ and section 79 speaks of avoiding or lessening adverse effects.

SARA does not address in the species at risk context the numerous environmental assessment frailties of CEAA.¹⁶⁴ For example, SARA does not require a level of review above a screening report. SARA does not provide for strengthened public participation which, under CEAA, is particularly weak at the screening level, where participation is largely discretionary with the responsible authority. CEAA sets no minimum timeline for public comments and does not require that public views be responded to.¹⁶⁵

Methodological Tensions

At least three main methodological approaches to risk management in relation to species conservation are in competition within the Species at Risk Act.¹⁶⁶ The Scientific Method emphasizes careful scientific peer review and is loath to conclude that a cause-and-effect relationship exists without a high level of confidence.¹⁶⁷ The Professional Judgment Method places great faith in administrative expertise to exercise discretion in accordance with legal mandates.¹⁶⁸ The Precautionary Principle Method, in its strong form, would place the burden on development proponents to demonstrate a lack of significant harm to listed species before being allowed to proceed.¹⁶⁹ The method seeks to err on the side of species protection.¹⁷⁰

The scientific methodology surfaces at various points in SARA. COSEWIC is mandated to assess biological status of species, based upon the best available information including scientific knowledge.¹⁷¹ COSEWIC is required to identify threats to the survival of species including losses of habitat as part of the recovery strategy development process.¹⁷² If information is inadequate to identify critical habitat, a schedule of studies must be drawn up as part of the recovery strategy.¹⁷³

The precautionary methodology also lingers within SARA. The preamble adopts precaution as a guiding principle:

[T]he Government of Canada is committed to conserving biological diversity and to the principle that, if there are threats of serious or irreversible damage to a wildlife species, cost-effective measures to prevent the reduction or loss of the species should not be postponed for a lack of full scientific certainty.

A precautionary methodology is also required in the preparation of recovery strategies, actions plans and management plans for listed species as provided in section 38 of SARA:

In preparing a recovery strategy, action plan or management plan, the competent minister must consider the commitment of the Government of Canada to conserving biological diversity and the principle that, if there are threats of serious or irreversible damage to the listed wildlife species, cost-effective measures to prevent the reduction or loss of the species should not be postponed for a lack of full scientific certainty.

By far the most dominant methodology within SARA is the professional judgment approach. All the key decision nodal points leave considerable room for discretionary judgments. For example, listing of wildlife species ultimately depends on a recommendation of the Minister of the Environment to the GIC (Cabinet)¹⁷⁴ and limited preconditions are placed upon the recommendation power. The Minister must “take into account the assessment of COSEWIC in respect of the species”¹⁷⁵ and must consult with the competent minister or ministers.¹⁷⁶ Competent ministers are left to determine whether recovery of listed species is technically and biologically feasible based upon the best available information including information provided by COSEWIC.¹⁷⁷

In finalizing recovery strategies, competent ministers are given considerable discretion. They must *consider* any public comments received¹⁷⁸ and *may* adopt a multispecies or an ecosystem approach.¹⁷⁹ As discussed previously,¹⁸⁰ competent ministers are given considerable latitude to issue incidental harm permits by leaving the determination of “no jeopardy to the survival or recovery of the species” to ministerial opinion.¹⁸¹

Part III: Charting a Course

Visioning a future course for protecting Canada's marine species at risk might be viewed as premature. The Species at Risk Act is still in the early stages of implementation and how some of the management approaches will work in practice remains to be seen. That is particularly true for recovery strategies and action plans¹⁸² which have yet to be formally proposed and placed on the public registry.¹⁸³

How broad to cast the law and policy “radar screen” is a practical issue. For example, climate change might arguably be the most substantial threat to marine biodiversity and species at risk but adequate analysis of Canadian responses might merit full articles or manuscripts on the topic.¹⁸⁴ Because of the horrific moral implications of losing marine species forever,¹⁸⁵ the need to engender a common law “safety net” for preserving endangered/threatened species might also be advocated. The public trust doctrine, recently acknowledged by the Supreme Court of Canada to be a potential area for legal development,¹⁸⁶ might offer powerful checks on administrative decision-making in relation to species at risk¹⁸⁷ and could also consume much of the law and policy discussion.¹⁸⁸

The following “charting a course” discussion narrows the discourse to largely legislative and regulatory implementation efforts and reforms that should be considered to strengthen species at risk protection. Fully implementing Canada's Oceans Act is first suggested, followed by a discussion of the need to get Canada's overall “oceans governance act” together through addressing legal shortcomings such as an antiquated Fisheries Act and the lack of federal aquaculture legislation. Attention then turns to ways that SARA might be fleshed out, for example, through firm implementation policies and guidelines, and strengthened through future amendments.¹⁸⁹

Implementing Canada's Oceans Act

Canada's Oceans Act, in force since January 1997,¹⁹⁰ holds numerous promises for supporting species at risk protection, but the Act's potentials have yet to be fully realized.¹⁹¹ One of the most powerful protective tools is the establishment of marine protected areas (MPAs) which the Act encourages.¹⁹² Section 35(2) requires the Minister of Fisheries and Oceans to lead and coordinate the development and implementation of a national system of MPAs, and the Act explicitly authorizes the establishment of MPAs for the purpose of conserving and protecting "endangered or threatened marine species, and their habitats."¹⁹³

However, only two MPAs have been formally established to date. They include the Gully Marine Protected Area on the Scotian Shelf off Nova Scotia¹⁹⁴ and the Endeavour Hydrothermal Vents Marine Protected Area off British Columbia.¹⁹⁵ Twelve additional Areas of Interest remain under consideration as part of the Fisheries and Oceans' Marine Protected Areas program.¹⁹⁶

The Oceans Act also calls for the Minister of Fisheries and Oceans to lead and facilitate the development and implementation of integrated management plans for coastal and marine waters.¹⁹⁷ Such plans could be relevant to species at risk. For example, plans might help identify and map critical habitats for species at risk and planning processes might assist in developing and implementing recovery strategies and measures.¹⁹⁸

However, Canada has moved slowly and in an *ad hoc* manner in integrated planning efforts. It was not until July 2002 that DFO released a policy document to guide integrated planning,¹⁹⁹ and the document was quite general in the directions given. For example, while setting an ultimate objective of establishing integrated management plans for all Canadian marine waters, the document established the short-term goal of initiating planning efforts where intensity of ocean uses are greatest and where stakeholder capacities and interests exist.²⁰⁰ Besides clarifying six steps in the planning process²⁰¹ and confirming guiding principles,²⁰² the document proposed two main types of integrated management planning: large ocean management areas and smaller coastal management areas.²⁰³

Integrated planning efforts are still largely at the initial stages. DFO is giving priority to developing ocean management area plans in five regions: the Scotian Shelf; the Gulf of St. Lawrence; Placentia Bay/Grand Banks; the Beaufort Sea; and the Pacific North Coast (Queen Charlotte Basin).²⁰⁴ DFO has reported that 21 coastal management processes have also been initiated.²⁰⁵ It remains to be seen how Canada's Oceans Action Plan, first announced in the 2004 Speech from the Throne and subsequently budgeted with an initial \$28 million over two years for the first phase,²⁰⁶ will affect planning initiatives. Development of integrated management plans is one of the four pillars of the Plan with the others being ocean health, marine ecosystem science, and international leadership.²⁰⁷

One of the more advanced large-scale planning efforts, the Eastern Scotian Shelf Integrated Management (ESSIM) Initiative, has developed a draft plan,²⁰⁸ but numerous questions still surround the process. How quickly the plan (expected to be adopted in 2006) can move from general ecosystems and human use objectives to concrete actions remains uncertain. How conflicts over proposed uses will be resolved is not clear.²⁰⁹ How far regulatory authorities participating in the process will actually agree to implement agreed management measures is an open question.²¹⁰ The Oceans Act itself does not specifically authorize the GIC to make regulations giving "teeth" to integrated plans.²¹¹

The Oceans Act also opens the door to major shifts in overall approaches to ocean governance, but unfortunately the Act provides minimal guidance on how the approaches

should be operationalized. The preamble of the Act identifies an ecosystem approach as of fundamental importance in maintaining marine biological diversity and productivity and the precautionary approach to the management of marine resources is advocated in order to protect resources and to preserve the marine environment. The ecosystem approach is not defined in the Act while the precautionary approach, upon which Canada's National Oceans Strategy is to be based along with the principles of sustainable development and integrated management,²¹² is simply defined as "erring on the side of caution."²¹³

Perhaps as a result of the "ambiguous situation," DFO has struggled to understand the approaches and their practical management implications through numerous workshops. For example, in 2001, DFO convened a National Workshop on Objectives and Indicators for Ecosystem-based Management which identified three "high level" objectives, namely: to conserve enough components (ecosystems, species, populations, etc.) so as to maintain the natural resilience of the ecosystem; to conserve each component of the ecosystem in order that it can play its historic role in the food web; and to conserve the physical and chemical properties of the ecosystem.²¹⁴ The workshop also identified ten components of the objectives.²¹⁵ In 2004, DFO, through an additional meeting, developed 32 guidelines to further "unpack" the three conceptual ecosystem objectives and ten components.²¹⁶

DFO has also sought to get a grip on what the precautionary approach means in fisheries management. Among the efforts has been a national workshop on implementing the precautionary approach²¹⁷ and various research projects on how to incorporate precaution into the Canadian context.²¹⁸

What stands out from the discussion exercises to date is the overall dominance of natural science "fixations" and the growing laments over the lack of scientific understanding of marine ecosystems. The "sound science" mantra has especially dominated the discourse in the precautionary fisheries management context where the emphasis has been on setting quantifiable target and limit reference points for fisheries,²¹⁹ while the broader fisheries management implications seem to have been ignored or marginalized.²²⁰

The lack of ecosystem understandings that has permeated the DFO discussions relating to ecosystem-based management is exemplified in a key statement from DFO's recent report on ecosystem objectives:

Management in an ecosystem approach will have to operate at multiple spatial scales from the sub-population scale up to the very large scales. There is very limited understanding of how ecosystem properties and management consequences scale up and down. The area needs more study and management need to be cautious in making assumptions about consequences and interactions of management actions which pursue Ecosystem Objectives on several scales.²²¹

Meanwhile, an overall federal interdepartmental process has been used to largely "gut" the potential power of the precautionary approach. In July 2003, the Privy Council Office issued *A Framework for the Application of Precaution in Science-based Decision Making about Risk*²²² which established 10 guiding principles for application of precaution. The Framework fails to embrace the most fundamental implication of precaution, namely the reversal of the burden of proof to development proponents to meet a requisite standard of proof and leans in favor of promoting free trade and economic agendas.²²³

Getting Canada's "Oceans Act" Together

Although Canada has been a world leader in adopting the Oceans Act, Canada is lagging in getting its overall "oceans act" together. The Act left the fragmented array of statutes and federal departments addressing ocean/coastal governance largely intact.²²⁴ Weaknesses and gaps abound in the various sectors of marine management.²²⁵ Three sectoral examples are highlighted, including the ongoing challenges to address marine mammal regulation, marine fisheries management, and aquaculture governance.

Marine Mammal Regulation. Marine Mammal Regulations²²⁶ under the Fisheries Act remain quite unclear regarding what interferences with whales, seals, and sea otters are unlawful. The Regulations make it an offence to disturb a marine mammal,²²⁷ but exactly what behaviors are caught by the prohibitions remains uncertain.

DFO is considering regulatory amendments in at least four main areas.²²⁸ General prohibitions may be expanded to prohibit feeding, touching, swimming with, and moving marine mammals.²²⁹ Watching of marine mammals may be restricted with approach distances, vessel number limitations, and licensing of commercial eco-tourism operators.²³⁰ Mandatory reporting of ship collisions and fishing gear entanglements might be imposed.²³¹ Permitting requirements for scientific research and media activities might be clarified.²³²

The need to address whale watching is becoming particularly pressing.²³³ The number of charter and cruise operators has been expanding. In 1998 alone, over one million persons took a whale watching excursion in Canada and direct revenues were estimated at about \$50 million.²³⁴

Marine Fisheries Management. With a growing number of marine fish species being listed as endangered or threatened, the adequacy of Canadian fisheries management has increasingly been questioned. While some may point the finger of blame at changing ocean conditions, such as warmer water temperatures or current shifts,²³⁵ a good number of commentators have identified a combination of fisheries management shortcomings and weaknesses contributing to fisheries collapses. These factors include:

- Failures to heed scientific advice because of socio-economic and political pressures;²³⁶
- Adoption of a "top-down" approach by regulators contributing to social pressures to "beat the system," for example, through misreporting catches;²³⁷
- Exclusion of the public and NGOs from fishery decisionmaking;²³⁸
- Allowance for too many fishers for too few fish;²³⁹
- Commitment to single species quota management as the fundamental management approach without recognizing all the limitations, such as lack of adequate scientific information on biomasses of fish stocks and enforcement complications;²⁴⁰
- Faith in linear mathematical models for setting reference points for fisheries;²⁴¹
- Hesitancy to base Fisheries management on prudent principles;²⁴²
- Dominance of sociocultural and economic metaphors over a biological/ecological one.²⁴³

What should be a considerable embarrassment to Canada is the continued attempt to manage the intensities and complexities of modern day fisheries from the deck of an antiquated and outmoded statutory vessel, the Fisheries Act. Dating back to 1868, the Act has been outpaced by a sea change towards principled ocean governance²⁴⁴ emanating

from international environmental agreements²⁴⁵ and declarations²⁴⁶ as well as international fisheries-related agreements,²⁴⁷ codes,²⁴⁸ and guidelines.²⁴⁹ The Act is devoid of principles, fails to recognize the centrality of maintaining marine biodiversity and ecological integrity, is exceedingly hierarchical with fishery licensing authority being within the “absolute discretion” of the Minister of Fisheries and Oceans,²⁵⁰ and does not provide a firm foundation for promoting co-management arrangements.²⁵¹

Whether Canada will tackle the politically charged challenge of Fisheries Act revision and, if so, on what time scale remains uncertain. A major fisheries policy review for Pacific Coast fisheries published in April 2004 recommended that revision of the Fisheries Act is long overdue and the “task should be initiated without further delay.”²⁵² The review severely criticized the highly centralized management approach fostered by the Fisheries Act and the heavy reliance on criminal law enforcement versus more flexible administrative sanctions.²⁵³

However, other fisheries policy review processes have been less clear on the priority for Fisheries Act revision. A *Policy Framework for the Management of Fisheries on Canada's Atlantic Coast*, released in 2004,²⁵⁴ discusses the need to modernize the framework governing Atlantic fisheries but is quite vague as to what statutory and regulatory changes should be carried out in a Phase II of the Policy Review. The Policy Framework suggests that delegation of fisheries management planning to local and regional levels “may require legislative changes.”²⁵⁵ The document notes that “much of the framework can be implemented without modifying current laws.”²⁵⁶ The Framework suggests that in order to improve fisheries compliance, DFO “will work with resource users and other interested parties to further develop its statutory/regulatory framework to better provide for conservation and sustainable use.”²⁵⁷

A *Policy Framework for Conservation of Wild Pacific Salmon*, released in December 2004,²⁵⁸ is also quite ambiguous regarding fisheries management reforms. It emphasizes the need for an effective integrated planning process but notes that developing an appropriate process will be difficult.²⁵⁹ The document avoids suggesting a specific planning process and justifies the lack of detail by noting First Nations, communities and stakeholders must be directly involved in the process design and implementation.²⁶⁰ While the policy document suggests conservation of wild salmon should be a first priority,²⁶¹ the Framework appears to “hedge” somewhat on the role of ecological integrity by stating that biological, social and economic benefits and costs will be balanced.²⁶² The Policy, yet to be finalized,²⁶³ does not suggest legislative changes.

The Policy does refer to its relation to the Species at Risk Act. It states that the wild salmon policy “will facilitate taking management actions in advance of biological listing under COSEWIC and legal listing under the Species at Risk Act.”²⁶⁴

In a speech to the Standing Committee on Fisheries and Oceans on 18 November 2004, the Minister of Fisheries and Oceans, Geoff Regan, did recognize the need to revamp the Fisheries Act:

[I] am looking to modernize the way we manage the fisheries. The current instrument—the 136-year old Fisheries Act—is outdated and needs to be modernized. For too long, our governance structure has created an environment that has been challenging for conservation outcomes.²⁶⁵

However, the identified need has yet to translate into a certain agenda. For example, Fisheries and Oceans' 2005-2010 Strategic Plan states that over the next five years “a priority will be to develop a new governance model for fisheries management, including proposals to modernize the Fisheries Act.”²⁶⁶

Offshore Aquaculture Governance. A further area where Canada has yet to pull its governance act together is in addressing the potential environmental effects of aquaculture²⁶⁷ and the numerous conflicts that surround site access and allocation decisions.²⁶⁸ While the federal government has largely left aquaculture licensing to the provinces through memoranda of understanding²⁶⁹ and has sought to coordinate regulatory approaches through the Canadian Council of Fisheries and Aquaculture Ministers,²⁷⁰ a clear federal legislative foundation for aquaculture governance has yet to be forged. Federal aquaculture legislation²⁷¹ might serve many useful purposes, such as defining aquaculture; setting management objectives; embracing sustainability principles; authorizing federal-provincial aquaculture agreements; authorizing the making of aquaculture regulations; and clarifying the federal jurisdictional role and possibly providing for federal aquaculture licensing to deal with aquaculture developments beyond areas of provincial jurisdiction or beyond the 12 nautical mile territorial sea.²⁷² Such licensing may be critical for controlling aquaculture developments that choose to move into the open ocean areas, perhaps to avoid nearshore conflicts or to take advantage of better water quality.²⁷³

Perhaps the largest constraint to enacting federal aquaculture legislation is the lack of political will due to concerns over rocking the federal-provincial "jurisdiction boat" and the difficulty of sorting out legal complexities. The House of Commons Standing Committee on Fisheries and Oceans in a 2003 report²⁷⁴ recommended that the federal government enact a federal Aquaculture Act.²⁷⁵ However, the Government of Canada responded²⁷⁶ by saying further study and review would be necessary:

While the Government of Canada recognizes that an Aquaculture Act could provide some benefits, it must still examine the full range of advantages and disadvantages before making a decision. Some issues that need to be reviewed include the interaction between any proposed Act and existing legislation, the recognition of the provinces' jurisdiction over some aquaculture activities and the potential impact on wild fish and fish habitat. Furthermore, the Government first wishes to review the upcoming report of the Commissioner for Aquaculture Development prior to considering advisability of enacting new legislation.²⁷⁷

The 2004 Report of the Commissioner for Aquaculture Development to the Minister of Fisheries and Oceans Canada²⁷⁸ did not show strong leadership or vision in suggesting legal reforms. The Report did not explore the pros and cons of federal aquaculture legislation. It recommended that the federal government negotiate a new Aquaculture Framework Agreement followed by individual implementation agreements with the provinces and territories.²⁷⁹ It suggested three organizational options for improving support for aquaculture: giving Agriculture and Agri-Food Canada lead responsibilities; establishing an Aquaculture Agency; and leaving the DFO as the lead agency.²⁸⁰

Fleshing Out SARA

One of the main challenges in ensuring that SARA meets the legislative purposes of avoiding species extinctions and assisting the recovery of listed wildlife species²⁸¹ is to add regulatory and policy flesh to the SARA skeletal structure. SARA authorizes regulations to be issued in a substantial number of areas, including the appointment of COSEWIC members and further developing COSEWIC functions;²⁸² the making of applications to COSEWIC for emergency listing of endangered species;²⁸³ the adding of matters to be

addressed by recovery strategies²⁸⁴ and actions plans;²⁸⁵ the passing of regulations to protect critical habitat in internal waters and the territorial sea;²⁸⁶ and the spelling out of the procedures and methods for compensation of those suffering extraordinary impacts from critical habitat designations.²⁸⁷ No regulations have been issued to date.

What may prove to be particularly frustrating and controversial to both development proponents and NGOs is the lack of clear timelines and processes for developing guidelines and policies in key implementation areas of SARA. For example, clear and final policies on the concepts of residences and critical habitats of endangered and threatened species have yet to be issued.²⁸⁸

Strengthening SARA through Amendments

While various amendments to SARA might be considered, such as adding definitions,²⁸⁹ clarifying terms,²⁹⁰ spelling out the processes²⁹¹ and consultative procedures for developing recovery strategies,²⁹² setting timelines for completing action plans, and providing for independent audits of recovery strategies and action plans, this paper focuses on what are likely to be the “big three” in terms of amendment priorities. Three decision nodal points carry the potential to especially throttle the protective energies of SARA through considerable discretionary judgments allowed. Those decision points include listing of species at risk; granting of incidental harm permits; and exempting activities permitted by a recovery plan, action plan or management plan.

Listing of Species at Risk. There may be some merit in maintaining the present SARA listing process where species status assessments are undertaken by COSEWIC, but it is the responsibility of the GIC, based on recommendations made by the Minister of the Environment, to add species to the legal list. The process allows for an independent advisory body to assess species status and it allows for assessments to be communicated to the public without government intervention. It also leaves the responsibility of adding species to the legal list to publicly elected officials. If a species is not added to the list, either government must provide reasons for doing so or it can send the status reports back to COSEWIC for further consideration.²⁹³

However, as raised by many groups in criticizing SARA during its drafting stages, there is an alternative approach whereby species would be added to the legal list immediately after assessment by COSEWIC.²⁹⁴ The major argument in support of such an approach is the need to leave listing decisions in the hands of an expert body focusing on the potential for biological extinctions alone without the political pressures facing elected officials.

The “political pressures” reality was recently played out in relation to the proposed listing of Cultus and Sakinaw Lake sockeye salmon populations, assessed by COSEWIC to be endangered. The Minister of Environment, Stephane Dion, in consultation with the Minister of Fisheries and Oceans, Geoff Regan, decided not to recommend adding the populations to the SARA list. It was concluded that listing could cost the sockeye fishing industry \$125 million in lost revenue by 2008 and would also have significant impacts on First Nations’ food, social, and ceremonial fisheries and various industries. They concluded that a virtual shutdown of the Fraser River sockeye fishery would have been necessary in light of the impossibility of visually distinguishing Cultus and Sakinaw Lake sockeye from other larger sockeye populations.²⁹⁵

A major political hurdle in gaining acceptance for “COSEWIC empowerment” would likely be the worries of various industry and marine user groups that they would suddenly

become subject to all the draconian prohibitions of SARA, particularly the “no take” and “no damage to residence” provisions. Although it might be argued that considerable leeway already exists for delaying the imposition of SARA prohibitions,²⁹⁶ social and economic interests might be further accommodated by providing a time period, for example, 12 months from listing before prohibitions would apply.²⁹⁷ The period of time might be final in nature, allowing affected departments and stakeholders some leeway to adjust to the listing implications or the time period might be subject to an over-turning of the listing decisions by the GIC or the competent minister with reasons to be provided.

Granting Incidental Harm Permits. As discussed previously,²⁹⁸ section 73 of SARA allows competent ministers to issue “incidental harm” permits subject to three criteria which are left to “opinionated” interpretation. Perhaps the most important criterion is the determination that the “activity will not jeopardize the survival or recovery of the species.”²⁹⁹

Given the potential for the incidental harm permitting power to become a “runaway ship,” substantial checks on ministerial discretion should be considered. The gamut of possible checks include establishing an independent peer review process to advise on the jeopardization determination;³⁰⁰ providing for an appeal mechanism for those dissatisfied with the jeopardy decision;³⁰¹ and placing the burden of proof on proponents of taking to demonstrate that their activities will not jeopardize the survival or recovery of the species.³⁰²

Exempting Activities Permitted by a Recovery Plan, Action Plan or Management Plan. A potential “Trojan horse” of SARA lies within section 83(4), which allows activities permitted by a recovery strategy, action plan, or management plan to be exempted from the various prohibitions including takings, damaging of residences, and destruction of critical habitats. As previously discussed,³⁰³ not only does SARA not establish clear processes and procedures for adoption of recovery strategies and action plans, SARA does not provide any explicit curbs on the strategizing and planning exercises in endorsing “acceptable” development and exploitation activities.

To ensure that the major purposes of SARA are not thwarted, namely the prevention of species extinctions and the recovery of listed wildlife species,³⁰⁴ a menu of checks should be considered. Checks might include, among others, a “no jeopardy” determination as a precondition for recovery strategy or action plan approval and an appeal process for those who wish to contest the allowance of activities that may jeopardize the survival or recovery of a listed wildlife species.³⁰⁵

Conclusion

Canada’s Species at Risk Act has notionally placed law and science at the helm in the quest to protect endangered and threatened species. COSEWIC, a committee with scientific expertise, has been formally established to assess the status of wildlife species. The statutory tiller provides nine major legal levers for protecting listed species including general prohibitions against harming species or damaging their residences and the designation of critical habitats for protection.

However, as decision-makers, bureaucracies, and societal passengers leave port into practical implementation, a sea of uncertainties must be faced. The tangle of challenges include contested listing criteria; politically dependent listing decisions; hazy general prohibitions; leeway for incidental harm permitting; recovery strategy and action plan

fogginess; critical habitat issues; unsettled relationships with other federal laws; and methodological tensions in how risks should be managed.

Perfect storms are brewing on the horizon in light of the “low pressure systems” converging. The “low” of losing species to extinction meeting up with the “low” of losing jobs and social displacements seems bound to spawn gargantuan political waves.

In order to weather the storms, the paper suggested a number of future directions. Canada cannot rely on the SARA boat alone but must tether SARA to full implementation of Canada's Oceans Act, including the establishment of a network of MPAs and the development of integrated management plans. Modernization of the Fisheries Act is long overdue and enactment of a federal Aquaculture Act is needed.

Shoring up the SARA gunnels is also necessary. Administrative policies remain to be finalized, particularly how residences and critical habitats will be addressed in the marine context. Regulatory clarifications have yet to be put in place, for example, how compensation issues are to be addressed and what the full contents of recovery strategies and action plans should be.

Chinking the three main loopholes of SARA through future amendments is also proposed. Listing of species at risk could be more prominently placed in the hands of COSEWIC, while reducing, although not necessarily eliminating, political influence on listing decisions. Ministerial discretion to grant incidental harm permits needs to be curbed, for example, through independent peer review and public review processes of the “no jeopardy” judgment. The largest gash in the SARA keel may prove to be the ability for recovery strategies and action plans to legitimize harmful and destructive activities. Criteria and a process or processes should be put in place to avoid swamping the purposes of SARA which are to avoid species' extinctions and to allow listed species to recover.

Saving of species in the end will involve much more than law reforms and improving scientific knowledge regarding species and marine ecosystems. Society as a whole has to move from a “deathbed” approach to conservation³⁰⁶ towards “holistic health” where humans live within the bounds of ecological integrity and biodiversity richness.³⁰⁷ Changing human values and curbing strong commercial, industrial, and recreational interests will not occur through “quick fixes” or come easy. Legal principles, such as the precautionary approach, ecosystem-based management, and intergenerational equity, are contributing to paradigm shifts, but societal transition will take all the energies that the humanities and social sciences can muster.³⁰⁸

Notes

1. Ransom A. Myers and Boris Worm, “Rapid worldwide depletion of predatory fish communities” (2003) 423 *Nature* 280 at 282. The authors note that less-than-average declines were seen on the Southern Grand Banks but the large predator communities may already have been affected by intense pre-industrial fisheries.

2. COSEWIC, *Canadian Species at Risk*, November 2004 (Ottawa: COSEWIC Secretariat, 2004) as updated in May 2005, *Detailed COSEWIC Species Assessments, May 2005*, online: <http://www.COSEWIC.gc.ca/rpts/Detailed_Species_Assessment_e.pdf>. Listed as endangered are 9 marine mammal populations (beluga whale (Eastern Hudson Bay), beluga whale (Ungava Bay), blue whale (Atlantic Ocean), blue whale (Pacific Ocean), killer whale (Northeast Pacific, southern resident population), North Atlantic right whale, North Pacific right whale, northern bottlenose whale (Scotian Shelf), sei whale (Pacific)) and nine marine/anadromous fishes (Atlantic cod (Newfoundland and Labrador), Atlantic salmon (Inner Bay of Fundy), Atlantic whitefish, coho salmon (Interior Fraser), sockeye salmon (Sakinaw population, Pacific Ocean), sockeye salmon (Cultus population, Pacific Ocean), porbeagle shark, white sturgeon, winter skate (Southern Gulf population)).

Listed as threatened are nine marine mammal populations (sea otter, beluga whale (St. Lawrence Estuary), beluga whale (Cumberland Sound), bowhead whale (Hudson Bay-Foxe Basin population), bowhead whale (Davis Strait-Baffin Bay population), fin whale (Pacific population), humpback whale (North Pacific), killer whale (Northeast Pacific transient population) and killer whale (Northeast Pacific northern resident population)) and eight marine/anadromous fishes (striped bass (Southern Gulf of St. Lawrence), striped bass (Bay of Fundy), bocaccio, Atlantic cod (Laurentian North population), cusk, winter skate (Eastern Scotian Shelf population), northern wolffish, spotted wolffish)). Species of special concern include 12 marine mammals and seven marine/anadromous fishes.

3. Ibid. at 10 (Newfoundland/Labrador), 17 (Laurentian).

4. Ibid. at 10.

5. Atlantic Salmon Federation, *The Wild Atlantic Salmon: State of the Populations in North America 2000* at 2 and Environment Canada, *Atlantic Salmon Inner Bay of Fundy Populations*, online: Species at Risk <http://www.speciesatrisk.gc.ca/search/speciesDetails_e.cfm?SpeciesID=672#protection>. The inner Bay of Fundy includes 32 rivers where salmon were known to spawn.

6. COSEWIC, COSEWIC assessment and update status report on the North Atlantic Right Whale *Eubalaena glacialis* in Canada (Ottawa: COSEWIC Secretariat, 2003) at 14.

7. See John Lien, "The Conservation Basis for the Regulation of Whale Watching in Canada by the Department of Fisheries and Oceans: A Precautionary Approach," *Can. Tech. Rep. Fish. Aquat. Sci.* 2363 (2001).

8. Fisheries and Oceans Canada, Legal listing consultation workbook: North Atlantic Right Whale (*Eubalaena glacialis*) (Ottawa: DFO, 2004) at 7.

9. Mark Shrope, "Whale deaths caused by U.S. Navy's sonar" (2002) 415 *Nature* 106; OCEANA, *The Death of Cetaceans through the Use of LFA Sonar in Naval Military Manoeuvres* (August 2004), and Nate Cihlar, "The Navy and Low Frequency Active Sonar: Stripping the Endangered Species Act of Its Authority" (2004) 28 *Wm. & Mary Envtl. L. & Pol'y Rev.* 913.

10. For an overview of land-based marine pollution sources in Canada, see Federal/Provincial/Territorial Advisory Committee on Developing Canada's National Programme of Action for the Protection of the Marine Environment from Land-based Activities, *Canada's National Programme of Action for the Protection of the Marine Environment from Land-based Activities* (1999).

11. Among the concerns are audio-based predator control systems in some areas, pesticide uses and wastes. Fisheries and Oceans Canada, *The Aquaculture Industry and the Species at Risk Act*, online: <http://www.dfo-mpo.gc.ca/species-especes/actmeans/actmeans_aquaculture_factsheet_e.asp>. Escape of farmed fish and spread of diseases from aquaculture sites are other threats. See David VanderZwaag, Gloria Chao and Mark Covan, "Canadian Aquaculture and the Principles of Sustainable Development: Gauging the Law and Policy Tides and Charting a Course" (2002) 28:1 *Queen's L.J.* 279 at 282.

12. See W.M. von Zharen, "Ocean Ecosystems Stewardship" (1998) 23 *Wm. & Mary Envtl. L. & Pol'y Rev.* 1 at 20-23; and Moira L. McConnell, *GloBallast Legislative Review—Final Report*, Globallast Monograph Series No. 7 (London: International Maritime Organization, 2002).

13. Myers and Worm, *supra* note 1 at 282.

14. For a discussion of how values and interests may influence perceptions of what is "good" decision-making, see David L. VanderZwaag "On the Road to Kingdom Come" in David L. VanderZwaag and Cynthia Lamson, eds., *The Challenges of Arctic Shipping: Science, Environmental Assessment, and Human Values* (Montreal & Kingston: McGill-Queen's University Press, 1990). For discussions regarding confusion and controversies over interpretation of the precautionary principle or approach, see Carolyn Raffensperger and Joel A. Tickner, eds., *Protecting Public Health and the Environment: Implementing the Precautionary Principle* (Washington, D.C.: Island Press, 1999); Nicolas de Sadeleer, *Environmental Principles: From Political Slogans to Legal Rules* (Oxford: Oxford University Press, 2002); and Rosie Cooney, *The Precautionary Principle in Biodiversity Conservation and Natural Resource Management: An Issues Paper for Policy-Makers, Researchers and Practitioners* (Gland, Switzerland: IUCN, 2004).

15. David VanderZwaag, "The Precautionary Principle in Environmental Law and Policy:

Elusive Rhetoric and First Embraces" (1998) 8 *J. Envtl. L. & Prac.* 355 at 361. For a view that the principle does not reverse the burden of proof requiring proponents to prove a particular activity is free of risks, see Jaye Ellis, "The Precautionary Principle in International Law: Lessons from Fuller's Internal Morality" (2004) 49 *McGill L.J.* 779 at 782.

16. See Laura Westra, *An Environmental Proposal for Ethics: The Principle of Integrity* (Lanham, Maryland: Rowman & Littlefield Publishers, Inc., 1994) and Laura Westra, *Living in Integrity: A Global Ethic to Restore a Fragmented Earth* (Lanham, Maryland: Rowman & Littlefield Publishers Inc., 1998). For the view that ecosystem integrity should be promoted through establishment of biodiversity reserves while ecosystem health should be encouraged through ecologically sustainable human uses, see J. Baird Callicott and Karen Mumford, "Ecological Sustainability as a Conservation Concept" in John Lemons, Laura Westra and Robert Goodland, eds., *Ecological Sustainability and Integrity: Concepts and Approaches* (Dordrecht: Kluwer Academic Publishers, 1998).

17. VanderZwaag, *supra* note 15.

18. For the view that sustainable development as a legal concept implies the pursuit of economic development, environmental protection and social development as non-hierarchical objectives of international society, see Alhaji B.M. Marong, "From Rio to Johannesburg: Reflections on the Role of International Legal Norms in Sustainable Development" (2003) 16 *Geo. Int'l Envtl L. Rev.* 21. However, the author in fact seems to embrace a form of hierarchy by concluding that economic development must remain within the bounds of what is ecologically sustainable. *Ibid.*, at 33.

19. S.C. 2002, c. 29 [SARA].

20. Most provisions were proclaimed in force as of June 5, 2003 while various prohibitions, such as those against taking an individual of a listed wildlife species or damaging/destroying a residence of a listed species, entered into force on June 1, 2004. See SI/2003-11.

21. S.C. 1996, c. 31.

22. Fisheries Act, R.S.C. 1985, c. F-14.

23. The topic would deserve a separate paper or papers in light of the numerous threatened transboundary marine species and the large number of existing, emerging, and needed transboundary management arrangements. For an overview of existing transboundary arrangements between Canada and the United States, see Lawrence P. Hildebrand, Victoria Pebbles and David A. Fraser, "Co-operative ecosystem management across the Canada—US border: approaches and experiences of transboundary programs in the Gulf of Maine, Great Lakes and Georgia Basin/Puget Sound" (2002) 45 *Ocean & Coastal Mgmt.* 44. For a description of emerging efforts by the North American Commission for Environmental Cooperation (NACEC) to protect marine species of common conservation concern among Canada, Mexico and the United States with an initial focus on three marine species (leatherback turtle, humpback whale and pink-footed shearwater) and through a North American Marine Protected Areas Network, see NACEC, *North American Agenda for Action: 2003-2005*, sections 2.2.3 (Marine Species of Common Conservation Concern) and 2.2.4 (North American Marine Protected Areas Network) available online: <http://www.cec.org/files/pdf/BIODIVERSITY/223-07-05_en.pdf> and <http://www.cec.org/files/pdf/BIODIVERSITY/224-03-05_en.pdf>. For a review of the numerous transboundary issues surrounding the need to protect leatherback turtles in Pacific and Atlantic Canadian waters and the need for Canada to consider becoming a party to the Inter-American Convention for the Protection and Conservation of Sea Turtles, available online: <<http://www.seaturtle.org>>, and the 1979 Bonn Convention on the Conservation of Migratory Species of Wild Animals, (1980) 19 *I.L.M.* 15, which encourages development of further regional agreements for addressing migratory species conservation, see Fisheries and Oceans Canada and the Pacific Leatherback Turtles Recovery Team, *National Recovery Strategy for the Leatherback Turtle (Dermochelys coriacea) in Pacific Canadian Waters* (Vancouver, British Columbia, 2004).

24. SARA, s. 15(2).

25. SARA, s. 16(2).

26. SARA, s. 17.

27. COSEWIC *Operating Procedures*, online: COSEWIC <http://www.cosewic.gc.ca/eng/sct6/sct6_5_e.cfm>.
28. SARA, ss. 15(2) and 16(6).
29. COSEWIC, *Summary of COSEWIC assessment results as of May 2005: risk status according to taxonomic group*, online: <http://www.COSEWIC.gc.ca/rpts/Full_List_Species.html>.
30. SARA, section 2(1) defines extirpated species as “a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the world.”
31. Endangered species is defined in SARA, section 2(1) as “a wildlife species that is facing imminent extirpation or extinction.”
32. SARA, section 2(1) defines threatened species as “a wildlife species that is likely to become an endangered species if nothing is done to reverse the factors leading to its extirpation or extinction.”
33. Species of special concern is defined in SARA, section 2(1) as “a wildlife species that may become threatened or an endangered species because of a combination of biological characteristics and identified threats.”
34. SARA, s. 7(1).
35. SARA, s. 7(2).
36. SARA, s. 32(1) Individual is defined in section 2(1) as: “an individual of a wildlife species, whether living or dead, at any developmental stage and includes larvae, embryos, eggs, sperm, seeds, pollen, spores and asexual propagules.”
37. SARA, s. 32(2).
38. Residences of extirpated species are also protected if a recovery strategy has recommended a reintroduction of the species into the wild in Canada.
39. SARA section 2(1) provides for three competent ministers: the Minister of Canadian Heritage with respect to individuals in or on federal lands administered by that minister and that are national parks, national historical sites, or national marine conservation areas; the Minister of Fisheries and Oceans with respect to aquatic species not in heritage areas; and the Minister of Environment with respect to all other individuals.
40. SARA, s. 42. For species listed in the original Schedule 1, on the date when entering into force, a proposed recovery strategy for endangered species must be entered into the public registry within three years, and within four years for threatened or extirpated species. For subsequently listed species, the recovery strategy for endangered species must be proposed within one year of listing and within two years for threatened or extirpated species.
41. SARA, section 40 provides that the competent minister must determine whether the recovery of the listed wildlife species is technically and biologically feasible and the determination must be based on the best available information including information provided by COSEWIC.
42. SARA, s. 41(1)(b)–(d).
43. SARA, s. 41(1)(g).
44. SARA, s. 49.
45. SARA, section 2(1) defines critical habitat as “the habitat that is necessary for the survival or recovery of a listed wildlife species that is identified as a species’ critical habitat in the recovery strategy or in an action plan for the species.”
46. SARA, s. 68(2).
47. SARA, s. 68(1).
48. SARA, s. 73(2).
49. SARA, s. 73(6).
50. S.C. 1992, c. 37 [CEAA].
51. SARA, s. 80.
52. IUCN, *IUCN Red List Categories and Criteria: Version 3.1*. (Cambridge: IUCN Species Survival Commission, 2001).
53. *Ibid.* at 16.
54. J.A. Hutchings and J.D. Reynolds, “Marine fish population collapses: consequences for recovery and extinction risk” (2004) 54 *Bioscience* 297 at 305.

55. J.A. Musick, "Criteria to define extinction risk in marine fishes" (1999) 24 *Fisheries* 6 and H. Powles et al., "Assessing and protecting endangered marine species" (2000) 57 *ICES J. Marine Science* 669.
 56. J.A. Hutchings, "Collapse and recovery of marine fishes" (2000) 406 *Nature* 882; J.A. Hutchings, "Influence of population decline, fishing, and spawner variability on the recovery of marine fishes" (2001) *J. Fish Biol. Suppl.* A 306; J.A. Hutchings, "Conservation biology of marine fishes: perceptions and caveats regarding assignment of extinction risk" (2001) 58 *Can. J. Fish. Aquat. Sci.* 108; and N.K. Dulvy, Y. Sadovy and J.D. Reynolds, "Extinction vulnerability in marine fish populations" (2003) 4 *Fish and Fisheries* 25.
 57. R. Hilborn and C. Walters, *Quantitative Fisheries Stock Assessment* (New York: Chapman and Hall, 1992)
 58. Supra note 55.
 59. Myers and Worm, supra note 1 at 282; Hutchings and Reynolds, supra note 54 at 305; and J.A. Hutchings and J.K. Baum, "Measuring marine fish biodiversity: temporal changes in abundance, life history, and demography" (2005) 360 *Phil. Trans. R. Soc.* (315).
 60. On instructions from the federal Minister of the Environment, COSEWIC held an international workshop on 2-4 March 2005 to address questions pertaining to the applicability of the IUCN criteria, notably the decline-rate criterion, to marine fish. The results of the workshop included the consensus decisions that: (a) the probability of extinction for marine fish is unlikely to differ from that of other taxa; (b) the means by which COSEWIC currently applies the decline-rate criterion during its assessments of marine fish is appropriate; and (c) high fecundity (the production of very large numbers of eggs) is not an informative metric of recovery potential.
 61. SARA, s. 25(3).
 62. SARA, s. 27(1.1).
 63. See Fisheries and Oceans Canada, *Extended Listing Process for 12 Aquatic Species: The Species at Risk Act* (SARA), online <http://www.dfo-mpo.gc.ca/media/backgrou/2004/sara_e.htm>.
 64. On summary conviction persons; other than corporations, are liable to a fine of not more than \$50,000 or to imprisonment for a term of not more than one year or to both; persons guilty of an indictable offence are liable to a fine of not more than \$250,000 or to imprisonment for a term of not more than 5 years, or to both. SARA, s. 97(1).
 65. Such life stages are included in the definition of individual provided in section 2(1) of SARA.
 66. 16 U.S.C. § 1531-44 [Endangered Species Act].
 67. For a listing of cases, see Susan Gray, "*Straham v. Cox*: Massachusetts' Issuance of Commercial Fishing Permits Constitutes a Violation of the Endangered Species Act" (1998) 6 *U. Balt. J. Envtl. L.* 260 at n. 5. For a further discussion of the proximate cause issue, see Paul Boudreaux, "Understanding 'Take' in the Endangered Species Act" (2002) 34 *Ariz. St. L.J.* 733 at 756.
 68. 127 F. 3d 155 (1st Cir. 1997).
 69. It should be noted that the U.S. Endangered Species Act authorizes citizen suits to enjoin any person from violating provisions of the Act, 16 U.S.C. § 1540(g)(1). Since SARA does not provide for injunctive relief, Canadian private plaintiffs would face various hurdles including the difficulty of establishing legal standing. For a good description of the variations in Canadian court decisions over the willingness to grant public interest standing, see Claude Martin, "Interlocutory Injunctions and the Environment: Comparing the Law Between Quebec and the Other Provinces" (2004) 13 *J. Envtl. L. & Prac.* 359.
 70. *Straham v. Cox*, supra note 68 at 158.
 71. A federal discussion paper on the residence concept defines damage or destroy as:
Any alteration to the topography, geology, soil conditions, vegetation, chemical composition of air/water, surface or groundwater hydrology, micro-climate, or sound environment which either temporarily or permanently impairs the function(s) of the residence of one or more individuals.
- Environment Canada Species at Risk Recovery Program, *Federal Policy Discussion Paper: Residence* (Ottawa: Environment Canada, 2004) at s. 2.4.1.

72. SARA, s. 2(1).
73. Residence Discussion Paper, *supra* note 71.
74. As discussed in the *Technical Guidelines on SAR Residence Description*, appended to Residence Discussion Paper, *supra* note 71.
75. Examples given include amphibian over-wintering sites in pond-bottoms and fish redds. *Ibid.*
76. *Ibid.*
77. *Ibid.*
78. SARA, s. 2(1).
79. Environment Canada Species at Risk Recovery Program, *Federal Policy Discussion Paper: Critical Habitat* (Ottawa: Environment Canada, 2004) at s. 1.4.2.
80. Technical Guidelines, *supra* note 74.
81. Residence Discussion Paper, *supra* note 71 at s. 13.
82. *Ibid.*
83. Technical Guidelines, *supra* note 74. An additional list of residence descriptions, numbering 12 at the time of writing, was included on the SARA Registry, but no fish species were included. Government of Canada, *Residence Description*, online: <http://www.sararegistry.gc.ca/search/advsearchresults_e.cfm?type=doc&doc_ID=34>.
84. For an excellent discussion of the same policy questions arising in the United States' endangered species context, see Daniel J. Rohlf, "Jeopardy Under the Endangered Species Act: Playing a Game Protected Species Cannot Win" (2001) 41 *Washburn L.J.* 114 at 127.
85. *Ibid.* at 140–143.
86. The important distinction between policy and scientific questions is also noted by Rohlf. See *ibid.* at 158–159.
87. Hutchings and Baum, *supra* note 59.
88. For the importance of the disjunctive wording, see Rohlf, *supra* note 84 at 126–136.
89. 16 U.S.C. § 1539(a)(2)(B).
90. The legislative grant of such ministerial discretion may result in maximum judicial deference through a standard of review of patent unreasonableness. See *Mr. Shredding Waste Management Ltd. v. New Brunswick (Minister of Environment and Local Government)* (2004), 10 C.E.L.R. (3d) 1 (N.B.C.A.).
91. For a further discussion of burden of proof reversal and the closely related issue of standard of proof, see David L. VanderZwaag, Susanna R. Fuller and Ransom A. Myers, "Canada and the Precautionary Principle/Approach in Ocean and Coastal Management: Wading and Wandering in Tricky Currents" (2002–2003) 34 *Ottawa L. Rev.* 117.
92. Fisheries and Oceans Canada, Species at Risk Act, *Section 73 Permits for Commercial Fishers*, online: <http://www.dfo-mpo.gc.ca/species-especies/news/news_01062004_e.asp>.
93. Canada, Species at Risk Public Registry, *Notice of Permit* (Ottawa: SARA Secretariat, 2004), online: <http://www.sararegistry.gc.ca/agreements/viewPermit_e.cfm?id=47>.
94. *Ibid.*
95. *Ibid.*
96. Canada, Species at Risk Public Registry, *Notice of Permit* (Ottawa: SARA Secretariat, 2004), online: <http://www.sararegistry.gc.ca/agreements/viewPermit_e.cfm?id=48>.
97. *Ibid.*
98. Canadian Science Advisory Secretariat, Allowable Harm Assessment for Inner Bay of Fundy Salmon, 2004/030 (Ottawa: Fisheries and Oceans, 2004).
99. *Ibid.* at 2.
100. Section 73 Permits, *supra* note 92.
101. Canadian Science Advisory Secretariat, *Status Reports Guide*, online: <http://www.dfo-mpo.gc.ca/csas/English/Publications/Guide_SSR_e.htm>.
102. See, Canadian Science Advisory Secretariat, Proceedings of a Regional Advisory Process Meeting on the Level of Allowable Mortality for Leatherback Turtle in Support of Species at Risk, 31 March 2004, Proceed. Series 2004/11 (Ottawa: Fisheries and Oceans, 2004); Canadian

Science Advisory Secretariat, Proceedings of a Regional Advisory Process Meeting on the Level of Allowable Harm for Inner Bay of Fundy Atlantic Salmon in Support of Species at Risk, 6 April 2004, Proceed. Series 2004/020 (Ottawa: Fisheries and Oceans, 2004); and Canadian Science Advisory Secretariat, Proceedings of Species at Risk Atlantic Zonal Assessment Process - Determination of Allowable Harm for Spotted and Northern Wolffish, 7 May 2004, Proceed. Series 2004/028 (Ottawa: Fisheries and Oceans, 2004).

103. The Association had two representatives at the meeting.

104. They included the Nova Scotia Swordfishermen's Association, the Area 21 Crab Association, the Atlantic Shark Association, and the Prospect Area Full-time Fishermen's Association.

105. Representatives from Duke University and Dalhousie University attended.

106. They included the Ecology Action Centre and the World Wildlife Fund—Atlantic Regional Office.

107. Canadian Science Advisory Secretariat, Proceedings of the National Peer Review Meeting on the Level of Allowable Harm for Newfoundland and Labrador Atlantic Cod, Laurentian North Atlantic Cod, Cusk and Boccaccio in Support of Species at Risk, Halifax, 25–29 October 2004, Proceed. Ser. 2004/040 (Ottawa: Fisheries and Oceans, 2005).

108. Canadian Science Advisory Secretariat, *Revised Framework for Evaluation of Scope of Harm under Section 73 of the Species at Risk Act*, Stock Status Report 2004/048 (Ottawa: Fisheries and Oceans, 2005).

109. Ibid. at 1–2.

110. Ibid. at 4.

111. Ibid.

112. Ibid.

113. Ibid. at 3. It should be noted that SARA, section 73(9) provides that no permit may be issued for a term longer than three years and that no agreement may be entered for a term longer than five years.

114. Ibid. at 2.

115. Ibid. at 1. Section 83(4) of SARA exempts from prosecution for general prohibitions and critical habitat destruction, a person engaging in activities permitted by a recovery strategy, action plan, or management plan and who is also authorized under an Act of Parliament to engage in that activity.

116. At times the Revised Framework seems to equate the recovery plan with a recovery strategy, the term used by SARA, but at other times there seems to be a differentiation between recovery plan and recovery strategy as shown by the following language:

Many of the considerations with regard to scientific advice in permitting under section 73 are also relevant to scientific advice for components of recovery plans, and it is often efficient to advise on permitting and recovery from the same review. However, the revised Framework will *not* be an approach for determining the types and levels of activities which can be included in a Recovery Plan. This is because the goal of a Recovery Plan is to facilitate recovery of the species, and not just to prevent further decline while a recovery strategy and action plan is developed and implemented.

Ibid. at 5.

117. SARA, s. 41.

118. SARA, s. 40.

119. SARA, s. 41(4).

120. SARA, s. 41(3).

121. SARA, s. 41(1)(c).

122. Critical Habitat Discussion Paper, *supra* note 79.

123. SARA, s. 48(2).

124. SARA, s. 50(3).

125. SARA, s. 49(1)(f).

126. SARA, s. 51(2).

127. However, the minister would have to be of the opinion that the existing plan meets the content requirements of section 49. SARA, s. 51(1).
128. R.S.C. 1985, c. F-14.
129. Section 35(2) of the Fisheries Act allows the Minister of Fisheries and Oceans to authorize harmful alterations, disruptions, or destruction of fish habitat and to impose conditions.
130. SARA, s. 6.
131. See text accompanying, supra notes 121 and 125.
132. Critical Habitat Discussion Paper, supra note 79.
133. Ibid. at 1.
134. The Critical Habitat Discussion Paper indicates that this step is intended to be an ecologically based exercise, including aboriginal and traditional knowledge, and the paper notes the need for an appropriate level of peer review. Ibid. at s. 1.4.
135. Ibid. at s. 2.2.
136. Ibid. at s. 2.4.
137. Technical Guidance for Critical Habitat and Residence Mapping, appended to the *Federal Policy Discussion Paper: Critical Habitat*, suggests the mapping scale standard should be 1:5,000 or finer, depending upon the circumstances. Ibid.
138. Section 124 of SARA allows the Minister of the Environment to restrict the release of any information required to be included in the Public Registry if that information relates to the location of a wildlife species or its habitat and restricting release would be in the best interest of the species.
139. Critical Habitat Discussion Paper, supra note 79 at s. 1.4.
140. S.C. 1996, c. 31.
141. S.C. 1994, c. 22.
142. R.S.C. 1985, c. W-9.
143. SARA, s. 58(2).
144. SARA, s. 58(3).
145. SARA, s. 58(5)(a).
146. SARA, s. 58(5)(b).
147. SARA, s. 11.
148. SARA, s. 64(2).
149. Government of Canada, online: <http://www.sararegistry.gc.ca/gen_info/HTML/Laws_e.cfm>.
150. S.C. 1994, c. 22.
151. S.C. 2000, c. 32.
152. R.S.C. 1985, c. W-9.
153. S.C. 1992 c. 52.
154. S.C. 1992, c. 37 [CEAA].
155. Fisheries and Oceans Canada, *The Species at Risk Act and Critical Habitat for Aquatic Species*, online: <http://www.dfo-mpo.gc.ca/species-especes/actMeans/actMeans_criticalHabitat_factsheet_e.asp>.
156. Ibid.
157. Fisheries Act, s. 35.
158. [2004] F.C.J. No. 1318.
159. S.C. 1994, c. 22, s. 12.
160. Critical Habitat Discussion Paper, supra note 79 at s. 3.8.4.1.
161. SOR/94-637.
162. S.C. 2003, c. 9, s. 2. Section 4(1)(a) states as a purpose "to ensure that projects are considered in a careful and precautionary manner before federal authorities take action in connection to them, in order to ensure that such projects do not cause significant adverse environmental effects."
163. The preamble to SARA states "the Government of Canada is committed to conserving biological diversity and to the principle that, if there are threats of serious or irreversible damage to wildlife species, cost-effective measures to prevent the reduction or loss of the species should not be postponed for a lack of full scientific certainty." It should be noted, however, that a Canadian Wildlife Service "best practice" guide, not meant to be specific to any one piece of

legislation, does recommend that the onus of proof should be on the proponent to demonstrate to the satisfaction of the decision-maker that adverse effects on wildlife at risk or biological diversity are not significant in situations where there is a threat of serious or irreversible harm. See Canadian Wildlife Service, Environment Canada, *Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada*, 1st ed. (27 February 2004) at 25, available online: <<http://www.cws-scf.ec.ca/publications/AbstractTemplate.cfm?lang=e&id=1059>>.

164. For a general critique see Robert B. Gibson, "The Major Deficiencies Remain: A Review of the Provisions and Limitations of Bill C-19, an Act to Amend the *Canadian Environmental Assessment Act*" (2001) 11 *J. Envtl L. & Prac.* 83.

165. For a further critique, see A. John Sinclair and Meinhard Doelle, "Using Law as a Tool to Ensure Meaningful Public Participation in Environmental Assessment" (2003) 12 *J. Envtl L. & Prac.* 27.

166. The three methodologies are drawn from J.B. Ruhl, "The Battle over Endangered Species Methodology" (2004) 34 *Envtl Law* 554. However, other approaches to risk management also exist, for example, community-based management and co-management where decision-making would be devolved or shared.

167. *Ibid.* at 570.

168. *Ibid.* at 578.

169. *Ibid.* at 592.

170. *Ibid.*, at 561.

171. SAA, s. 15(2).

172. SARA, s. 41(1).

173. SARA, s. 41(1)(c.1).

174. SARA, s. 27(1).

175. SARA, s. 27(2)(a) (emphasis added).

176. SARA, s. 27(2)(b).

177. SARA, s. 40.

178. SARA, s. 43(2).

179. SARA, s. 41(3).

180. See above section 2.4.

181. SARA, s. 73(3).

182. Fisheries and Oceans Canada has reported plans to contribute to the development and implementation of recovery strategies and action plans for approximately 12 of the species listed under the Species at Risk Act. See Fisheries and Oceans Canada, *Report on Plans and Priorities 2004-2005*, online: <http://www.tbs-sct.gc.ca/est-pre/20042005/FO-PO/FO-POr4501_e.asp>.

183. According to the timelines set out in SARA s. 42(1), proposed recovery strategies must be included in the public registry by 23 October 2005 for the endangered marine species: blue whale (Atlantic population), blue whale (Pacific population), and sei whale (Pacific population), and by 23 October 2006 for the threatened humpback whale (Northern Pacific population). Under s. 42(2) proposed recovery strategies for species listed in the original Schedule 1 are due for endangered species in 2006, including the killer whale (Northeast Pacific southern resident population), leatherback turtle, North Atlantic right whale, and Atlantic salmon (inner Bay of Fundy populations). Recovery strategies are due in 2007 for the following threatened marine species: sea otter, killer whale (Northwest Pacific northern resident population), killer whale (Northeast Pacific transient population), northern wolffish, spotted wolffish, and the extirpated grey whale (Atlantic population).

184. For discussions see, James T. Bruce, "Controlling the Temperature: An Analysis of the Kyoto Protocol" (1999) 62 *Sask. L. Rev.* 379; Alastair R. Lucas, "Voluntary Initiatives for Greenhouse Gas Reduction: The Legal Implications" (2000) 10 *J. Envtl L. & Prac.* 89; Steven Bernstein, "International Institutions and the Framing of Domestic Policies: The Kyoto Protocol and Canada's Response to Climate Change" (2002) 35 *Pol'y Sci.* 203; and Meinhard Doelle, "Linking the Kyoto Protocol and Other Multilateral Agreements: From Fragmentation to Integration" (2004) 14 *J. Envtl L. & Prac.* 75.

185. For a recent discussion of moral philosophy and its relation to animal rights, see Julian H. Franklin, *Animal Rights and Moral Philosophy* (New York: Columbia University Press, 2005).

186. In *British Columbia v. Canadian Forest Products*, 2004 S.C.C. 38, 240 D.L.R. (4th) 1, the Court recognized the extensive *parens patriae* and public trust doctrinal developments, particularly in the United States, but noted the novel policy questions raised by such actions and refused to consider the difficult issues due to the lack of full argument in the courts below.

187. For a discussion of the varying ways the public trust doctrine has been used in the United States including as a vehicle for requiring a “hard look” in administrative review, see David VanderZwaag, *Canada and Marine Environmental Protection: Charting a Legal Course Towards Sustainable Development* (London: Kluwer Law International, 1995) at 413–416. For an argument that a wildlife trust approach should allow for stronger judicial review of “no jeopardy” determinations under the U.S. Endangered Species Act with a “no further harm” litmus, see Mary Christina Wood, “Protecting the Wildlife Trust: A Reinterpretation of Section 7 of the Endangered Species Act” (2004) 34 *Envtl L.* 605.

188. For further discussions in the Canadian context, see John L. McGuire, “Fashioning an Equitable Vision for Public Resource Protection and Development in Canada: The Public Trust Doctrine Revisited and Reconceptualized” (1997) 7 *J. Env'tl L. & Prac.* 1 and Jerry V. DeMarco “Law for Future Generations: The Theory of Intergenerational Equity in Canadian Environmental Law” (2004) 15 *J. Env'tl L. & Prac.* 1.

189. The need to encourage legislative reform towards more comprehensive biodiversity legislation might also be considered but is beyond the scope of this paper. For example, Australia's Environmental Protection and Biodiversity Conservation Act 1999 (Cth) will subject quite a broad array of proposed marine activities to approval by the Minister of Environment and Heritage along with environmental assessment reviews. Matters of national environmental significance triggering approval by the Environment Minister include significant impacts on: world heritage properties, wetlands of international importance, listed threatened species; migratory species protected under international agreements; and the Commonwealth marine environment. See Australia Department of the Environment and Heritage, *EPBC Act Administrative Guidelines on Significance*, July 2000 available online: <<http://www.deh.gov.au/epbc/assessmentsapprovals/guidelines/administrative/index.html>>. For an academic discussion of the legislation, see Michael Kennedy, Nicola Beynon, Alistair Graham and Jamie Pittock, “Development and Implementation of Conservation Law in Australia” (2001) 10 *RECIEL* 296.

190. Proclaimed in force through SI/97-21.

191. For a review of the Act's legislative history and main provisions, see Aldo Chircop, Hugh Kindred, Phillip Saunders and David VanderZwaag, “Legislating for Integrated Marine Management: Canada's Proposed Oceans Act of 1996” (1995) 33 *Can. Y.B. Int'l. Law* 305.

192. On the important rules played by marine protected areas, including provision of “safe refuge” to threatened species but also enhancing biological productivity in adjacent areas, see Donna R. Christie, “Marine Reserves, the Public Trust Doctrine and Intergenerational Equity” (2003) 19 *J. Land Use & Env'tl L.* 427.

193. S.C. 1996 c. 31, s. 35(1)(b).

194. Gully Marine Protected Area Regulations, SOR/2004-112.

195. Endeavour Hydrothermal Vents Marine Protected Area Regulations, SOR/2003-87.

196. Fisheries and Oceans Canada, *Marine Protected Areas of Interest*, online:<http://www.dfo-mpo.gc.ca/canwaters-eauxcan/oceans/mps-zpm/mpa_e.asp>.

197. S.C. 1996, c. 31, s. 31.

198. The draft plan for the Eastern Scotian Shelf Integrated Management Initiative in fact envisages such actions in relation to aquatic species at risk. See ESSIM Planning Office, Oceans and Coastal Management Division, Oceans Habitat Branch, Maritimes Region, Fisheries and Oceans Canada, *Eastern Scotian Shelf Integrated Ocean Management Plan (2006-2011): Draft for Discussion*, Oceans and Coastal Management Report 2005-02 (February 2005) at 56.

199. Fisheries and Oceans Canada, *Policy and Operational Framework for Integrated Management of Estuarine, Coastal and Marine Environments in Canada* (Ottawa: Fisheries and Oceans Canada, 2002).

200. *Ibid.* at iii.
201. The six steps are: defining and assessing the management area; engaging affected interests, developing an integrated management plan; receiving endorsement of the plan; implementing the plan; and monitoring and evaluating outcomes of the plan. *Ibid.* at 23.
202. Key principles include: ecosystem-based management, sustainable development, the precautionary approach, conservation, shared responsibility, flexibility and inclusionary. *Ibid.* at 9–10.
203. *Ibid.* at 15–20.
204. Report on Plans and Priorities, *supra* note 182 at 29.
205. Fisheries and Oceans Canada, *Sustainable Development Strategy: Progress Report on 2001-2003 Strategy* (Ottawa: Fisheries and Oceans Canada, 2004) at 14.
206. As announced in the federal budget in February 2005. Fisheries and Oceans Canada, "Oceans Action Plans: Phase I" *Backgrounder* BG-PR-05-0020 (March 2, 2005).
207. *Ibid.* at 2.
208. Eastern Scotian Shelf Plan, *supra* note 198.
209. See R. J. Rutherford, G. J. Herbert, and S. S. Coffen-Smout, "Integrated ocean management and the collaborative planning process: the Eastern Scotian Shelf Integrated Management (ESSIM) Initiative" (2005) 29 *Marine Pol'y* 75 at 82.
210. *Ibid.*
211. S.C. 1996, c. 31, s. 52.1.
212. *Ibid.* s. 30(a)(b).
213. *Ibid.* s. 30(c).
214. Department of Fisheries and Oceans, Proceedings of the National Workshop on Objectives and Indicators for Ecosystem-based Management; Sidney; British Columbia, 27 February–2 March 2001, DFO Can. Sci. Advis. Sec. Proceed. Ser. 2001/1009 (2001).
215. These components are:
 1. To maintain communities within bounds of natural variability;
 2. To maintain species within the bounds of natural variability;
 3. To maintain populations within the bounds of natural variability;
 4. To maintain primary production within the historic bounds of natural variability;
 5. To maintain trophic structure so that individual species/stage can play their historic role in the food web;
 6. To maintain mean generation times of populations within bounds of natural variability;
 7. To conserve critical landscape and bottomscope features;
 8. To conserve water column properties;
 9. To conserve water quality; and
 10. To conserve biota quality.
- Ibid.*
216. Fisheries and Oceans Canada, Habitat Status Report on Ecosystem Objectives, Habitat Status Report 2004/001 (September 2004).
217. Fisheries and Oceans Canada, Canadian Science Advisory Secretariat, Proceedings of the DFO Workshop on Implementing the Precautionary Approach on Assessments and Advice, Proceed. Ser. 2002/009 (April 2002). Also see Fisheries and Oceans Canada, Canadian Science Advisory Secretariat, Proceedings of the National Meeting in Applying the Precautionary Approach in Fisheries Management, February 10–12, 2004, DFO Can. Sci. Advis. Sec. Proceed. Ser. 2004/003.
218. See, e.g., Fisheries and Oceans Canada, Canadian Science Advisory Secretariat, Limits to overfishing: reference points in the context of the Canadian perspective on the precautionary approach, Research Document 2002/084 and Fisheries and Oceans Canada, Canadian Science Advisory Secretariat, Incorporating Uncertainty in Population Assessments, Research Document 2003/087.
219. *Ibid.*
220. Some of the key management emphases emerging from the academic literature include placing the burden on fishing proponents to demonstrate no significant ecological damage or some other legal litmus, ensuring fish spawn at least once, limiting a fishery by the catch of a

non-target species, conducting environmental assessments of fishing gears and adopting adaptive management processes. See VanderZwaag et al., *supra* note 91, at 121.

221. Habitat Status Report, *supra* note 216 at 9.

222. Government of Canada, Privy Council Office, *A Framework for the Application of Precaution in Science-based Decision-Making about Risk*, online: <<http://www.pco-bcp.bgc.ca/default.asp?Language=E&page=publication&doc=precaution/pr>>.

223. VanderZwaag, et al., *supra* note 91, at 125-127, discussing the precursor document, *A Canadian Perspective on the Precautionary Approach/Principle: Discussion Document* (2001).

224. Some 23 department and agencies have oceans-related programs. Fisheries and Oceans Canada, *The Role of the Federal Government in the Oceans Sector* (Ottawa: Fisheries and Oceans Canada, 1997) at 1.

225. For a critical review of Canadian Environmental Law in general, including management of chemicals and land-based pollution, see David Boyd, *Unnatural Law: Rethinking Canadian Environment Law and Policy* (Vancouver: UBC Press, 2003).

226. SOR/93-56.

227. *Ibid.*, at s. 7.

228. Fisheries and Oceans Canada, "Marine Mammal Regulation Consultations, Protecting Canada's Marine Mammals Proposed Regulatory Amendments," *Marine Mammal Bulletin* (December 2002), online: <http://www.dfo-mpo.gc.ca/mammals-mammferes/bulletin/mmr-rmm_e.htm>.

229. *Ibid.* at 5.

230. *Ibid.* at 6.

231. *Ibid.*

232. *Ibid.*

233. See Lien, *supra* note 7.

234. Marine Mammal Consultations, *supra* note 228 at 4.

235. As noted in Anthony T. Charles, "The Atlantic Canadian Groundfishery: Roots of a Collapse" (1995) 18 *Dal. L.J.* 65 at 77-78.

236. J.A. Hutchings and R.A. Myers, "What Can Be Learned from the Collapse of a Renewable Resource? Atlantic Cod, *Gadus Morhua*, of Newfoundland and Labrador" (1994) 51 *Can. J. Fish. Aquat. Sci.* 2126.

237. Charles, *supra* note 235 at 67-68.

238. *Ibid.* at 68-69.

239. *Ibid.* at 79-80.

240. *Ibid.* at 80-82.

241. Peter Underwood, "To Manage Quotas or Manage Fisheries? The Root Cause of Mismanagement of Canada's Groundfish Fishery" (1995) 18 *Dal. L.J.* 37 at 40.

242. *Ibid.* at 41-43.

243. David Ralph Matthews, "Constructing Fisheries Management: A Values Perspective" (1995) 18 *Dal. L.J.* 44.

244. See Donald R. Rothwell and David VanderZwaag, "The Sea Change Towards Principled Oceans Governance" in Donald R. Rothwell and David VanderZwaag, eds., *Towards Principled Oceans Governance: Australian and Canadian Approaches and Challenges* (London: Routledge Press, in press). Also see Tim Eichenberg and Mitchell Shapson, "The Promise of Johannesburg: Fisheries and the World Summit on Sustainable Development" (2004) 34 *Golden Gate U.L. Rev.* 587; and Montserrat Gorina-Ysem, "World Ocean Public Trust: High Seas Fisheries after Grotius Towards a New Ocean Ethos?" (2004) 34 *Golden Gate U. L. Rev.* 645.

245. For example, pursuant to the 1992 Convention on Biological Diversity, (1992) 31 *I.L.M.* 818, Parties have adopted Guidelines on the Ecosystem Approach. See Decisions, V/6 and VII/11 on the Ecosystem Approach.

246. For example, the Rio Declaration on Environment and Development in principle 15 calls for a precautionary approach (1992) 31 *I.L.M.* 874.

247. For example, the UN Convention Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks urges a precautionary approach to fisheries management and emphasizes the need to conserve marine biodiversity (1995) 34 *I.L.M.* 1542.

248. See, e.g., Food and Agriculture Organization, *Code of Conduct for Responsible Fisheries* (Rome: FAO, 1995). The Canadian industry has adopted a voluntary *Canadian Code of Conduct for Responsible Fishing Operations* (1998), online: <http://www.dfo-mpo.gc.ca/communic/fish_man/code/cccrfo-cccpr_e.htm>.
249. See, e.g., FAO, "The Ecosystem Approach to Fisheries" *FAO Technical Guidelines for Responsible Fisheries* No. 4, Suppl. 2 (Rome: FAO, 2003) and FAO, "Precautionary Approach to Capture Fisheries and Species Introductions" *FAO Technical Guidelines for Responsible Fisheries* No. 2 (Rome: FAO, 1996).
250. R.S.C. 1985 c. F. 14, s. 7.
251. Donald M. McRae and Peter H. Pearse, *Treaties and Transition: Towards a Sustainable Fishery on Canada's Pacific Coast* (April 1, 2004) at 52.
252. *Ibid.*
253. *Ibid.*
254. Fisheries and Oceans Canada, *A Policy Framework for the Management of Fisheries on Canada's Atlantic Coast*, online: <<http://www.dfo-mpo.gc.ca/afpr-rppa>>.
255. *Ibid.* at section 6.2.2.
256. *Ibid.* at section 1.1.
257. *Ibid.* at section 3.2.3.
258. Fisheries and Oceans Canada, *A Policy Framework for Conservation of Wild Pacific Salmon*, online: <http://www-comm.pac.dfo-mpo.gc.ca/publications/wspframework/wspdoc_e.htm>.
259. *Ibid.*, at 26.
260. *Ibid.*, at 28.
261. *Ibid.*, at 12 (Principle 1).
262. *Ibid.* (Principle 3).
263. The framework has been released for public review and comment and is expected to be finalized in June 2005. *Ibid.* at 39.
264. *Ibid.* at 35.
265. Fisheries and Oceans Canada, *Speaking Notes for the Honourable Geoff Regan, P.C., M.P. Minister of Fisheries and Oceans at the Standing Committee on Fisheries and Oceans on the Department's Main Estimates*, online: <http://www.dfo-mpo.gc.ca/media/speech/2004/20041118_e.htm>.
266. Fisheries and Oceans Canada, *2005-2010 Strategic Plan: Our Waters, Our Future*, online: <http://www.dfo-mpo.gc.ca/dfo-mpo/plan_e.htm>.
267. See Fisheries and Oceans Canada, "A scientific review of the potential environmental effects of aquaculture in aquatic systems," *Can. Tech. Rep. Fish. Aquat. Sci.* 2450 (2003).
268. See, e.g., Henry D. McCoy II, *American and International Aquaculture Law: A Comprehensive Legal Treatise and Handbook Covering Aquaculture Law, Business and Finance of Fisheries, Shellfish and Aquatic Plants* (Peterstown, West Virginia: Supranational Publishing Co., 2000) at 115-121.
269. For a detailed discussion, see VanderZwaag, et al., *supra* note 11 at 299, 315-316 and David VanderZwaag, Gloria Chao, and Mark Covan, "Canadian Aquaculture and the Principles of Sustainable Development: Gauging the Law and Policy Tides and Charting a Course—Part II" (2003) 28 *Queen's L.J.* 529 at 532-534.
270. The Aquaculture Task Group has been involved in various integrative initiatives including the drafting and implementation of a Canadian Action Plan for Aquaculture. See Canadian Intergovernmental Conference Secretariat—News Release Ref. 830-762/004, Canadian Council of Fisheries and Aquaculture Ministers' Meeting, Halifax, Nova Scotia—September 26, 2002 *Fisheries and Aquaculture Ministers Move Forward on a Number of Joint Initiatives*, online: <http://scics.gc.ca/cinfo.02/8300762004_e.html>.
271. Various options exist for legislative strengthening including "stand alone" federal aquaculture legislation or substantial amendments to the Fisheries Act. See Bruce H. Wildsmith, "Towards an Appropriate Federal Aquaculture Role and Legislative Base," *Can. Tech. Rep. of Fish. Aquat. Sci.* 1419 (1985).
272. For a discussion of the rather uncertain limits of provincial jurisdiction over marine areas, see Ted L. McDorman, "Canada's Ocean Limits and Boundaries: An Overview" in Lorne

K. Kriwoken, Marcus Haward, David VanderZwaag, and Bruce Davis, eds., *Oceans Law and Policy in the Post-UNCED Era: Australian and Canadian Perspectives* (London: Kluwer Law International, 1996).

273. Regarding the fast-paced development of open ocean aquaculture technologies, see Christopher J. Bridger and Barry A. Costa-Pierce, *Open Ocean Aquaculture: From Research to Commercial Reality* (Baton Rouge, Louisiana: The World Aquaculture Society, 2003).

274. Standing Committee on Fisheries and Oceans, House of Commons, *The Federal Role in Aquaculture in Canada* (April 2003).

275. *Ibid.*, at 21–22 (Recommendation 1).

276. Fisheries and Oceans Canada, *Government Response to the 3rd Report of the Standing Committee on Fisheries and Oceans on the Federal Role on Aquaculture and in Canada*, online: <http://www.dfo-mpo.gc.ca/communic/reports/aquaculture2003/resp-rep_e.htm>.

277. *Ibid.* at 3.

278. Fisheries and Oceans Canada, *Recommendations for Change* (Ottawa: Office of the Commissioner for Aquaculture Development, 2004).

279. *Ibid.* at 42–44 (Recommendation 7).

280. *Ibid.* at 46–52.

281. SARA, s. 6.

282. SARA, s. 17.

283. SARA, s. 28(3).

284. SARA, s. 41(1)(e).

285. SARA, s. 49(1)(f).

286. SARA, s. 59.

287. SARA, s. 64.

288. Federal policy discussion papers have noted the tentative nature of the documents and the need for further policy dialogues. See text accompanying *supra* notes 73 and 133. In fact, a long list of policies and guidelines remain under development or await final approval. Policies include: Permitting Policy and Procedure; Federal Enforcement Policy for SARA; Compensation Policy; Critical Habitat Policy; and Residence Policy. Guidelines for internal decision-making include: Federal SARA-CEAA Policy and Procedures; Species Prioritization (for recovery purposes); SARA Governance (roles of responsible departments and their components); Exceptions (such as permitted activities under a recovery strategy, an action plan, or a management plan); Delivery of Protection for Exceptional Circumstances—Safety Net & Emergency Orders; Criteria for Listing under SARA; and Dealing with Section 93 Investigation Requests. Guidelines for implementation include: Cooperation and Consultation with Aboriginal Organizations and Wildlife Management Boards in Recovery Planning; Establishing Population and Distribution Objectives and Identifying Critical Habitat; Socio-economics in Recovery; Critical Habitat Protection; Cooperation and Consultation with Jurisdictions and Stakeholders in Recovery Planning; Alternative Measures; Technical Guidelines for Describing Residence; and Clarification of Key Recovery Concepts and Processes. Information provided by Environment Canada “Tracking SARA Policies and Guidelines—Summary Status Sheets for October 2004” (on file with the authors).

289. For example, the meanings of take, harm, and harassment might be further articulated. Experiences from other countries might be drawn upon including United States’ attempts to define harassment of marine mammals under the Marine Mammal Protection Act (MMPA), 16 U.S.C. §1361-1362. For a recent recommendation that Congress revise its definition of harassment under the MMPA, see U.S. Commission on Ocean Policy, *An Ocean Blueprint for the 21st Century*, Final Report, Pre-Publication Copy (2004), available online: <<http://www.oceancommission.gov>>.

290. For example, the term “wildlife species” presently defined in SARA section 2(1) might be further clarified along with the terms of art, “endangered” and “threatened” species. For an excellent discussion of the debate over the extent such terms are scientific questions versus policy questions, see Holly Doremus, “Listing Decisions Under the Endangered Species Act: Why Better Science Isn’t Always Better Policy” (1997) 75 *Wash. U.L.Q.* 1029.

291. For example, the role of the national recovery program known as RENEW (Recovery of Nationally Endangered Wildlife) and initiated in 1988, might be formally recognized. At the

time of its 2003–2004 annual report, RENEW had published 25 recovery plans and 146 recovery strategies were in development even though strategies had not been included on the SARA public registry. Recovery of Nationally Endangered Wildlife, *RENEW Annual Report* No. 14 (Ottawa: Minister of Public Works and Government Services, 2004) at 2.

292. For example, the Species at Risk Working Group (SARWG), a collection of NGO and industry representatives formed in 1998 to critique species at risk legislative proposals, suggested providing a clear definition of consultation which would include notice of recovery planning processes, a reasonable period of time for parties to prepare views, an opportunity to present those views and a requirement that presented views be considered fully and impartially. SARWG, *A Response to the Species at Risk Act: Brief Presented to the Standing Committee on Sustainable Development and the Environment* (September 2000).

293. SARA, s. 27.

294. See, e.g., 1999 Scientists' Letter to the Right Honourable Jean Chretien, available online: <<http://www.sfu.ca/2amooefs/scientists4species/1999letter.html>> and G.C.E. Scudder, "Endangered Species Protection in Canada" (1999) 13 *Conservation Biology* 963 at 965. For a further critique of SARA's listing process, see Boyd, *supra* note 225 at 185–186.

295. See Environment Canada, *Minister of the Environment Makes Recommendations on Adding New Species to the Species at Risk Act* (October 22, 2004), online: <http://www.ec.gc.ca/press/2004/0410_22_n_e.htm>.

296. Section 76 of SARA allows the GIC, on recommendation of a competent minister, by order to exempt application of various prohibitions for those holding permits, licenses, or authorizations issued under another Act of Parliament. Section 78 allows provincial or territorial permits, licenses, or authorizations to exempt persons from SARA prohibitions subject to various conditions including that the province or territory has entered into an administrative agreement with the federal government.

297. See SARWG, *supra* note 292 at s.4.2.

298. See above section 2.4.

299. SARA, s. 73(3)(c).

300. For a similar suggestion in the United States context, see Ruhl, *supra* note 166 at 600–601.

301. For example, the Canadian Environmental Protection Act allows Boards of Review to be established to review various contested decisions including the ministerial decision to grant an ocean dumping permit. See VanderZwaag, *supra* note 187 at 338.

302. For the argument that a precautionary approach should require the onus of proof to be placed on proponents of development to establish that development proposals will not result in a loss of biodiversity, see Karla Sperling, "If Caution Really Mattered" (1999) 16 *Env'tl & Plan. L.J.* 425. The list of checks is not exhaustive, for example, all competent ministers might be required to endorse the "no jeopardy" assessment before an incidental harm permit could be issued.

303. See above section 2.5.

304. SARA, s. 6.

305. Such checks might be similar as those suggested for the granting of incidental harm permits. See text accompanying *supra* notes 300–302.

306. John Charles Kunich, "The Fallacy of Deathbed Conservation Under the Endangered Species Act" (1994) 34 *Env'tl L.* 501.

307. Raymond A. Rogers and Christopher J.A. Wilkinson, "Policies of extinction: The live and death of Canada's endangered species legislation" (2000) 28 *Pol'y Stud. J.* 190. For a further articulation of the need to promote ecosystem management to ensure healthy ecosystems operating with ecological integrity, see J.B. Ruhl, "The Myth of What Is Inevitable Under Ecosystem Management: A Response to Pardy" (2004) 21 *Pace Env'tl L. Rev.* 315.

308. For a recent reminder that risk assessment must be understood within the growing body of social science literature which emphasizes differing political, social and cultural contexts for determining acceptable risks, see David Winickhoff, Sheila Jasonoff, Lawrence Busch, Robin Grove-White, and Brian Wynne, "Adjudicating the GM Food Wars: Science, Risk, and Democracy in World Trade Law" (2005) 30 *Yale J. Int'l L.* 81.