

COSEWIC
(COMMITTEE ON THE
STATUS OF
ENDANGERED
WILDLIFE IN CANADA)

COSEPAC
(COMITÉ SUR LA SITUATION
DES ESPÈCES EN PÉRIL
AU CANADA)

15 December 2006

The Honourable Rona Ambrose
Minister of the Environment
Environment Canada
Ottawa, ON
K1A 0H3

Dear Minister Ambrose,

I would like to begin by expressing my thanks for your invitation to attend the inaugural Ministerial Roundtable on the Species at Risk Act (SARA). I found the discussions informative and constructive. I am also pleased to inform you that COSEWIC has begun to explore the strengths and weaknesses associated with the incorporation of an 'ecosystem approach' to species assessment.

I wish to communicate to you the results of COSEWIC's recent deliberations pertaining to the Government of Canada's decision to refer seven species back to COSEWIC. In 2006, the Canada Gazette reported the decision by the Governor in Council (GIC) to refer six aquatic species (16 April 2006) and one terrestrial species (15 August 2006) back to COSEWIC for further information or consideration, rather than to add or not add the species to Schedule 1 of SARA.

Regarding the six aquatic species, I communicated to you COSEWIC's initial decisions regarding the six aquatic species in my letter of 24 May 2006 (Atlantic cod [Arctic Population], Bocaccio, Cusk, Harbour Porpoise [Northwest Atlantic Population], Lake Winnipeg Physa, Shortjaw Cisco). I received the rationales for these species referrals from the Department of Fisheries and Oceans (DFO) on 29 June 2006, more than six months after the Minister of the Environment's initial recommendation that these species be referred back to COSEWIC. I communicated these to the Marine Fishes, Freshwater Fishes, Marine Mammals, and Molluscs Specialist Subcommittees, instructing them to consider DFO's rationales and to determine whether the rationales provided COSEWIC with new information that would likely lead to a change in species status.

In response to the August 2006 decision by GIC to refer back to COSEWIC one terrestrial species, the Verna's Flower Moth, the Arthropods Specialist Subcommittee carefully considered the reasons for the species referral, as described in the Canada Gazette and in a letter to me (30 October 2006) from Michele Brenning, Director General, Canadian Wildlife Service.

Detailed responses by COSEWIC to the rationales for these seven species referrals are provided in two Appendices attached to this letter.

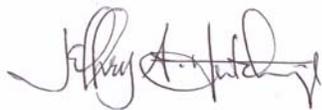
COSEWIC confirms its original assessments of five species: Lake Winnipeg Phya as an Endangered species; Bocaccio, Cusk and Verna's Flower Moth as Threatened species; and Atlantic Cod (Arctic Population) as a Species of Special Concern. The original status reports for these species contain the information on which these assessments are based.

COSEWIC re-assessed the Harbour Porpoise (Northwest Atlantic Population) as a species of Special Concern in April 2006. It will re-assess the Shortjaw Cisco at a future species assessment meeting. These two re-assessments were initiated because of new information pertaining to species status obtained by the Species Specialist Subcommittees, independent of the rationales provided by DFO.

The primary reason for not re-assessing 5 species was that COSEWIC was not provided with new information that would likely lead to a change in the status of these species. In the absence of such information, it is unlikely that COSEWIC would re-assess the status of a species at risk.

Given the delays that species referrals confer upon the legal listing process, I would like to reiterate COSEWIC's recommendations that (a) species referrals be accompanied by new information likely to lead to a change in species status and that (b) questions of clarification concerning species status reports be directed to COSEWIC before the Minister of the Environment's listing recommendations to GIC are published in Canada Gazette Part 1.

Yours sincerely,



Jeffrey Hutchings
Chair
COSEWIC

cc The Honourable Loyola Hearn, P.C., M.P., Minister of Fisheries and Oceans

APPENDIX 1

COSEWIC's Response to the Aquatic Species Referrals of 2006

This Appendix details the rationale, as communicated from the Department of Fisheries and Oceans (DFO) to the Chair of COSEWIC on 29 June 2006, for the species referrals identified in the Canada Gazette on 19 April 2006. Each species referral begins with a section entitled ***Supporting Rationale***, which provides a verbatim account of DFO's rationale, and a section entitled ***COSEWIC's Response***.

Bocaccio

Supporting Rationale

Abundance & Distribution:

Re-examination of the West Coast Vancouver Island (WCVI) shrimp trawl survey index time series data since the COSEWIC status report was prepared, identified errors in the time series data used in the 2002 COSEWIC assessment (Stanley, R.D., P. Starr, and N. Olsen. Can. Research Advisory Secretariat Res. Doc. 2004/027). The difference appeared to be caused by a data input error. The difference in the index related mainly to the estimate for 1979, which was about one order of magnitude lower in the re-analysis.

Re-evaluation of the shrimp survey index time series noted that bocaccio abundances in BC waters had risen from a stable period in the late 1970's to higher levels in the early 1980's, and then declined in the late 1990's to levels similar to those observed in the 1970's. The corrected 1979 index value supports this. The presentation of the shrimp survey indices with the points connected (Figure 1, from Stanley *et al*, 2004) instead of presentation as a scatter plot with a regression line drawn through the data points (Figure 2, from COSEWIC 2002, Assessment and status report on the Bocaccio, *Sebastes paucispinis* in Canada) emphasized the structure in the time series and demonstrated that there had been a period of lower abundance prior to the 1980's.

The scatter-plot presentation used in the earlier document de-emphasized this structure in the time series. The COSEWIC status report focussed more on the decline since the 1980's and did not address the structure in the survey time series, which indicated an earlier, lower level of abundance.

Further examination of the structure of the shrimp survey indices time series portrayed the data in four steps from the mid 1970s through 2003 (Figure 3, from Stanley, R.D. and P. Starr. Can. Research Advisory Secretariat Res. Doc. 2004/098). Depending on the interpretation of the survey indices, it is plausible to argue that current biomass is anywhere from 25% to 100% from a base level of abundance. It is not plausible to argue that the population has declined by 98% from an un-fished or "normal" state represented

by the high abundance levels observed in the 1980's given the existence of the lower levels observed in the 1970's which was followed by the high levels of the 1980's.

The emphasis on a decline beginning from 1980 in the status report relied on the assumption that the abundance observed in the early 1980's represented a "beginning", "normal" or "healthy" level of abundances. This hypothesis arises because it is the earliest data available from the NMFS survey. The WCVI shrimp survey, however, provides insight into an earlier period, which was not well developed in the initial reports on this species. The WCVI shrimp survey index time series indicates that the early 1980's are more likely to be a period of peak abundance, given the available data spanning 28 years (1975-2003).

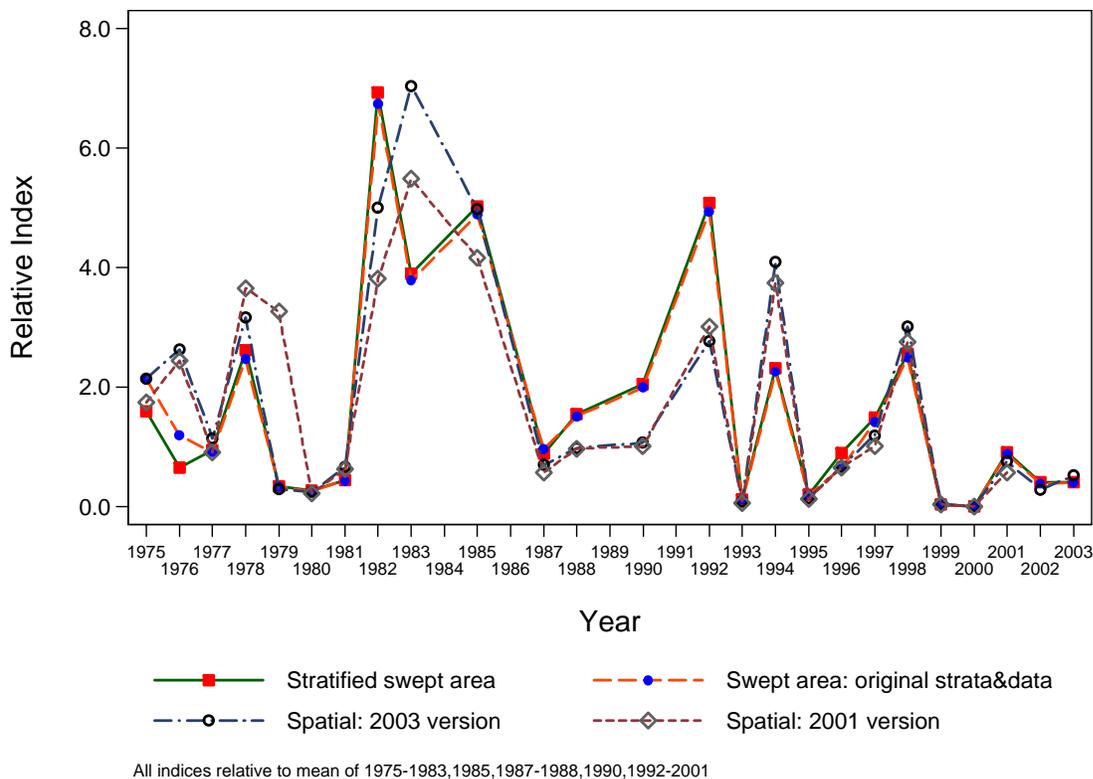


Figure 1. Comparison of a range of biomass indices using the WCVI shrimp trawl survey data: a) swept area using modified stratification; b) swept area using the original survey stratification and without dropping any tows; c) a recalculated spatial shrimp index and d) the original spatial index used in 2001 (from Stanley *et al.*, 2004).

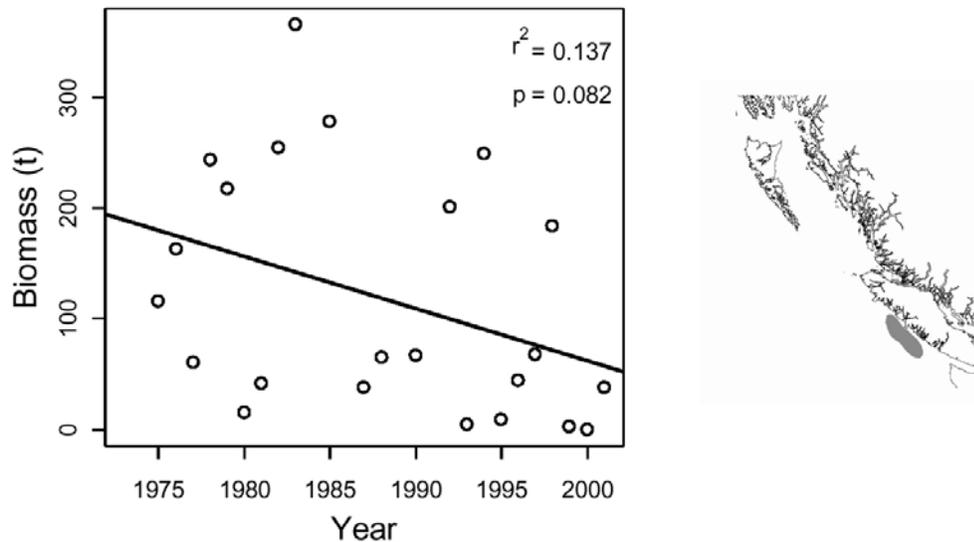


Figure 2. Bocaccio biomass estimates from the WCVI shrimp survey. The shaded region on the inset chart indicates the area that was surveyed (from Stanley, R. D., K. Rutherford, and N. Olsen Stanley 2001 Can. Research Advisory Secretariat Res. Doc. 2001/148 and COSEWIC 2002).

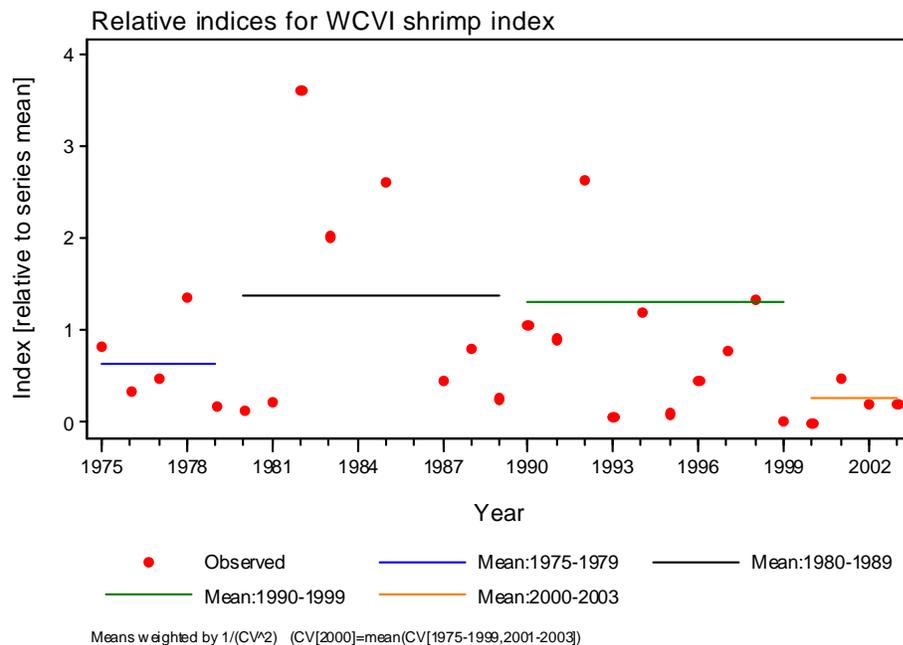


Figure 3. Four step function for the WCVI shrimp survey index, plotted relative to the mean 1975-79 survey estimates, weighted by the inverse of the CV^2 for each survey. The mean CV for the entire series (0.653) was used for the 2000 index because $CV_{2000}=0$ (from Stanley and Starr, 2004).

COSEWIC's Response

Prior to addressing government comments on the assessment, it appears appropriate to summarize the basis for COSEWIC's assessment of this species.

Several indices of abundance from surveys and commercial fisheries were available to support the COSEWIC assessment, covering varying periods of time. Biological information from fisheries and surveys was extremely limited as there has been little sampling of this relatively uncommon species over time. Most weight was given to information from a US research trawl survey that covers part of the southwestern part of Canada's Pacific continental shelf. The survey has been conducted with consistent methodology since 1980. Results from this survey showed an abundance decline of over 95% from 1980 to 2000. Although there is variability around the annual abundance estimates (typical for trawl surveys), the difference between abundance early and late in the series is statistically significant. COSEWIC also examined results from a shrimp trawl survey covering areas slightly further north on the southwestern continental shelf, covering the period 1975-2001. Variability around annual estimates was extremely high in this survey and there was no statistical difference between any of the annual estimates. Inspection of points suggested higher levels in the early 1980's than toward 2000. As indicated in the Status Report, the variability precludes inferring a decline but does not refute the decline observed in the US survey series. Bottom trawl assemblage surveys covering two areas in Hecate Strait from the early 1980's to early 2000's were also examined; although one survey showed two years of high values in the early 1980's, there was little trend otherwise. Both the latter indices (shrimp trawl survey and assemblage surveys) were given little weight relative to the US survey. Other indices were considered unreliable or covered time periods too short to be useful in assessing risk. Information on changes in distribution, size composition or other indicators that might be useful to the assessment was not available. Bocaccio in the USA, contiguous with the species in Canada, had shown serious abundance declines based on several independent abundance indices and had experienced recruitment failure in the period 1990-1998, resulting in an assessment of "critically endangered" by the IUCN Species Survival Commission.

Although the situation appeared relatively clear for the southwestern portion of the range in Canada, and was consistent with the status of the contiguous part of the distribution in the USA, there was essentially no clear information from the remainder of the range (other than some partial corroboration of a decline from one Hecate Strait survey). COSEWIC accordingly made the assumption that the available information represented the status of the species in Canada and assessed status based on the available information. Although the observed decline of over 95% would have been consistent with a status of "endangered" following COSEWIC's criteria, a status of "threatened" was assigned because the species remained widely distributed in Canadian waters and removals in the fishery (the primary identified threat) were apparently relatively low.

The "Supporting Rationale" from the federal government focuses on interpretation of the shrimp trawl series which, as noted above, was given relatively low weight in the COSEWIC assessment.

(1) It is noted that the 1979 point in the series had been miscalculated in the COSEWIC Status Report and that the real value is an order of magnitude lower. COSEWIC

considers that this change to a single point in the 28 year series would have little influence on interpretation of the series overall.

(2) The document suggests that the shrimp trawl series shows periods of low values (late 1970's), high values (early 1980's) and low values (late 1990's), and argues that the pattern should be interpreted as an increase in abundance in the 1980's followed by a return to the 1970's abundance, rather than a decline from some "normal" value. A step function analysis which averages index values from four series of years is provided in support of this interpretation.

COSEWIC believes that, because of the high variability and the lack of statistically significant differences between points, detailed analysis of this series is not likely to be informative. The high variability is well demonstrated in Figure 5 of Stanley et al. (2004: Stanley, R. D., P. Starr and N. Olsen. 2004. Bocaccio update. Can. Sci. Advisory Secretariat Res. Doc. 2004/27) which shows the 95% confidence intervals around the individual points in the series. The step function approach is a good one and merits further consideration for assessments of this type. However, development of an objective protocol for selecting break points between steps and further examination of statistical comparison of the "levels" (for example basing analysis on a lognormal distribution) would be essential if this were to become a useful tool.

No biological or other information is provided to support the hypothesis of an increase in abundance (approximately a doubling if one takes the step function graph at face value) from the late 1970's to early 1980's. This could only result from an exceptional recruitment event occurring over a brief period between the late 1970s and early 1980s, as a result of which one would have expected to see marked changes in age or size distributions or perhaps some indication from fishermen's observations of an increase. From what is known to COSEWIC's marine fish specialists, such fluctuations in population biomass are not common for rockfishes, and this seems to be a dangerous assumption to make without additional supporting data.

Summary: COSEWIC has considered the points raised in the "Supporting Rationale" and has reviewed the available information, and believes that there is no reason to change its assessment of "Threatened" for this species. A clear signal of serious decline is available in a relatively reliable survey index, and this is consistent with the very substantial decline in this species observed in the USA. Other indices available are given less weight but are not inconsistent with the US trawl survey index. The reliable information available covers only part of the species' distribution in Canada, so there is obviously some uncertainty regarding the overall situation. However, in the absence of complete information, COSEWIC considers that application of the precautionary approach justifies the assumption that the available information is applicable to the species in Canada.

Harbour Porpoise (Northwest Atlantic Population)

Supporting Rationale

Designatable Unit:

In the review of the status report, the appropriateness of the unit of assessment and the status were questioned. The outcome of the assessment (special concern for the entire Northwest Atlantic) was difficult to reconcile with the information provided in report. For example:

- While COSEWIC concluded that the appropriate unit of assessment for this species was at the scale of the Northwest Atlantic, their assessment summary states: “Harbour porpoise are widely distributed and can be divided into three populations that summer in the Gulf of Maine/Bay of Fundy, the Gulf of St. Lawrence, and Newfoundland-Labrador”. This suggests that there were three designatable units under consideration.
- While there is arguably sufficient data to assess one of the three purported populations (Gulf of Maine/Bay of Fundy), COSEWIC acknowledges that there is insufficient information to assess the status of the other two. The COSEWIC Status Report states that “Current knowledge is insufficient to determine the status of harbour porpoises in Newfoundland, Labrador and the Gulf of St. Lawrence; there are no estimates of total abundance or bycatch mortality from either area...”.

Abundance & Distribution:

With respect to the Gulf of Maine/Bay of Fundy population, COSEWIC reports (page 21 of the Status Report) that:

- Important conservation benefits have been derived from management measures underway;
- Current bycatch levels are less than that allowable under the *U.S. Marine Mammal Protection Act* and pose little or no threat to the future viability of this population; and
- The U.S. removed this population from the list of candidate species under their *Endangered Species Act*.

Further, COSEWIC’s assessment guidelines specify that status designations be applied to the entire species if the individual units have the same designation. The assessment for the Northwest Atlantic population of harbour porpoise as special concern seems at odds with this policy, as the COSEWIC status report indicates there is insufficient information to determine status and no estimates of abundance or mortality for two of the three sub-populations.

It should also be noted that although there is a bycatch of harbour porpoise from the Bay of Fundy herring weir fishery and the groundfish gillnet fisheries, approximately 93% of harbour porpoise captured in the Bay of Fundy herring weir fishery are released alive. Various time and area closures have been conducted in the gillnet groundfishery to, in part, minimize the level of impact on the harbour porpoise. Other bycatch mitigation

measures are being investigated and could include the use of acoustic deterrents or modified gear (i.e. barium sulfate coated nets that reflects sound waves back to the porpoises), such as that being tested by Dr. Ed Trippel (Canadian winner of the WWF Smart Gear competition). In conjunction with these efforts, bycatch monitoring has taken place.

COSEWIC's Response

Incorporating new information on bycatch and subpopulation structure, COSEWIC reassessed the Harbour Porpoise in eastern Canada at its April 2006 Species Assessment Meeting. COSEWIC reaffirmed its previous assessment of the Harbour Porpoise (Northwest Atlantic Population) as a Species of Special Concern in Canada and reconfirmed the appropriateness of assigning a single designation to the species throughout its range in Atlantic Canada. The results of this assessment were communicated to the Minister of the Environment in the 24 May 2006 letter sent by the Chair of COSEWIC and in COSEWIC's 2006 Annual Report to the Minister.

Atlantic Cod (Arctic Population)

Supporting Rationale

Aboriginal Traditional Knowledge:

During DFO's consultations in Nunavut, Aboriginal communities questioned why they were not contacted by someone from COSEWIC regarding the preparation of a status report. They did not agree with the data in the COSEWIC report. It is clear that use of Aboriginal Traditional Knowledge was extremely limited in the assessment. Some reported that information on distribution was incorrect in the COSEWIC report. For example, numerous individuals residing on Broughton Island stated that, contrary to the COSEWIC report, there was no lake as referenced by COSEWIC. However, individuals from 3 different communities noted there were several other lakes they were aware of that contained landlocked cod but were not mentioned in the COSEWIC report meaning that the distribution of the landlocked form is greater than COSEWIC suggests. Because people in all communities stated that Inuit rarely if ever use Atlantic Cod from remote lakes, they wondered why the population was in danger.

Designatable Unit:

There was some confusion on whether the COSEWIC assessment encompassed the landlocked populations or both landlocked and marine populations; the COSEWIC assessment seems to apply to both. Little data is presented about the marine population. Consequently, the similarities of habitat and threats were questioned. Clarification is sought on the rationale for combining these groups.

Abundance & Distribution:

There was no evidence presented to support a supposed decline in the species in either or both of the marine and landlocked environments. Inuit sought information on when researchers had been to specific lakes to study this population; Inuit were unaware of such research and questioned the theory of declining populations presented in the COSEWIC report. People in several communities reported that they knew of lakes which

held landlocked populations of cod not identified in the COSEWIC report meaning that the distribution of the landlocked form has been underestimated.

COSEWIC's Response

COSEWIC responded to comments in the GIC orders returning this assessment to COSEWIC in the 24 May 2006 letter to Minister Ambrose, specifically on the collection and compilation of Aboriginal traditional knowledge, and on the fact that both marine and land-locked cod were included in the assessment. The response also noted the importance of differentiating Arctic cod (*Boreogadus saida*) and Atlantic cod (*Gadus morhua*) in discussions of "Arctic cod" in northern Canada. Responses to points raised in the "Supporting Rationale" are provided below.

1. The "Supporting Rationale" suggests that COSEWIC's assessment means the population is "in danger" and is based on decline. Rather, the Special Concern category identifies species which may become Threatened or Endangered because of a combination of biological characteristics and identified threats. The COSEWIC assessment was not based on any indices of decline. The general lack of information on species status, the known sensitivity of the species to human activities, and the potential for unregulated fisheries were noted as reasons for the "Special Concern" designation. The existence of the Special Concern category in SARA and COSEWIC's assessment protocols is an extremely important tool for identifying species that could become at risk, and, hopefully, initiating management action before further decline into the "at-risk" categories.
2. The "Supporting Rationale" provides some further unattributed observations from Aboriginal groups on distribution of cod in the Arctic. As noted in the 24 May 2006 letter to Minister Ambrose, appropriate contacts were made to obtain Aboriginal traditional knowledge for this assessment. With regard to communities that had identified additional lakes containing landlocked cod, it would be important to confirm that this refers to *G. morhua* rather than Greenland cod (*G. ogac*), a species known to inhabit coastal lakes on Baffin Island. Additional information on the species in this area would be valuable in support of improved knowledge and management action, but is unlikely to change the COSEWIC assessment given the reasons for assessment noted above.
3. The "Supporting Rationale" seeks clarification on the rationale for combining cod from marine and landlocked areas in a single unit for designation. This was essentially based on simplifying the approach to identifying designatable units for this species. As noted in the Status Report, Atlantic cod appear to be very uncommon in marine waters in this area and most of the available information is on the landlocked populations.

Summary: COSEWIC has reviewed the government comments and the available information and sees no reason to change its designation of "Special Concern" for this population. COSEWIC strongly supports the efforts to obtain additional information on this little-known population, in particular knowledge from Aboriginal communities, and will certainly make use of this information when the species is reassessed.

Shortjaw Cisco

Supporting Rationale

Aboriginal Traditional Knowledge:

There was no incorporation of ATK in the COSEWIC status report or decision. Aboriginal communities questioned the validity of the science data that was used in the assessment.

Designatable Unit:

The COSEWIC designation is based on limited, and somewhat dated information that has been applied beyond the range of the original “type” specimens for the Great Lakes. Species taxonomy is still not reconciled particularly for specimens originating outside of the Great Lakes. The designated unit used by COSEWIC was applied to all “shortjaw cisco like” occurrences across Canada. The underlying assumption that all specimens are shortjaw cisco cannot be supported by definitive scientific information at this time including the identification of genetic markers. The COSEWIC default approach of treating Great Lakes and “inland” populations as the same species is based on the lack of evidence to the contrary but may be attributable to a deficiency of data.

Abundance & Distribution:

Identification problems may have resulted in under-reporting of the “species” from many locations where it is likely reported as cisco (*C. artedii*) or tullibee. Its status is unknown for many remote northern locations. Inclusion of recent preliminary, unsubstantiated, reports of occurrences from Great Bear Lake, NT and Lake Mistasinni QC has been questioned. There is little information on historical or current abundance of the species outside the Great Lakes.

COSEWIC's Response

Following a request from the Freshwater Fishes Species Specialist Subcommittee, COSEWIC has decided to initiate a reassessment of the Shortjaw Cisco and looks forward to receiving constructive assistance from DFO in obtaining Aboriginal Traditional Knowledge and any information that may be useful for the identification and assessment of designatable units below the species level.

Lake Winnipeg Physa

Supporting Rationale

Designatable Unit: Concerns are related to eligibility of the “species”. The COSEWIC Assessment Process and Criteria outlines the conditions required for COSEWIC to consider a “species” for listing:

- 1) taxonomic validity (a true species in the taxonomic sense of the word);
- 2) must be native to Canada;
- 3) must regularly occur in Canada (excluding vagrants);
- 4) must require habitat in Canada (year round residents or those requiring Canadian habitat for a key life stage) and
- 5) special cases.

While it is clear that conditions 2 through 4 have been met by the Lake Winnipeg Physa, the same can not be said for condition 1 – taxonomic validity. The COSEWIC criteria state that COSEWIC will “normally only consider species and subspecies or varieties that have been established as valid in published taxonomic works or in peer-reviewed communications from taxonomic specialists”. The Lake Winnipeg physa (*Physella winnipegensis*) does not appear in the latest version of the *Code of Zoological Nomenclature* as a recognized species, subspecies or variety. Furthermore, the description of this “species” was published in a non peer-reviewed periodical, VISAYA, a publication of the commercial shell trading company Conchology Inc. Given the extremely limited number of individuals who have viewed a specimen, inherent problems in the taxonomy of the Physidae, and the lack of an examination of soft tissues or genetics in the VISAYA article, peer-review of this new species description is considered to be required.

On the basis of these two observations, it is our view that the Lake Winnipeg Physa does not meet tests required under the condition of taxonomic validity therefore that it does not meet the COSEWIC criteria for consideration. It is possible that this “species” could have been assessed under condition 5, special cases, however there is no justification provided in the status report for a special case designation.

COSEWIC does have guidelines for assessing designatable units at a level below the species level. However, it does not appear that the Lake Winnipeg Physa was assessed at a level below the true species level as no indication of this has been made in the status report. However, if the snail had been assessed using a designatable unit below the species level, COSEWIC identifies 4 conditions, any one of which could trigger a valid assessment as a designatable unit:

- 1) named subspecies or variety – published subspecies according to the *Code of Zoological Nomenclature* or
- 2) units identified as genetically distinct or
- 3) units separated by major range disjunction or
- 4) units identified as biogeographically distinct.

As outlined above the Lake Winnipeg Physa is not recognized by the *Code of Zoological Nomenclature* and has not been described in a peer-reviewed format making it ineligible under condition 1. The status report does not contain any information regarding the genetics of the Lake Winnipeg Physa or the other physa species within Lake Winnipeg leaving its genetic status ambiguous. Without this information it is impossible to determine if this “species” is genetically distinct. Without genetic analysis of this “species” it is also impossible to determine if it is a population separated by a major range disjunction or is biogeographically distinct. Consequently, until such time as the genetic analyses determine the appropriate reference population for comparison, conditions 3 and 4 can not be properly assessed. For example, if the Lake Winnipeg Physa is determined to be genetically indistinct from any of the three co-occurring physa species in Lake Winnipeg, little evidence can be provided to support the contention that it is spatially isolated or geographically distinct. If it is genetically similar to another species outside of

the Lake Winnipeg drainage then it may still be eligible for listing under conditions 3 or 4. At this time it is impossible to determine if this is the case.

Abundance & Distribution:

The assessment inadequately described the threats to this “species”. The threats were hypothesized and there was a lack of clarity concerning the relationship between the general threats to Lake Winnipeg and their effects on the physa.

Total distribution and abundance within Lake Winnipeg, and perhaps nearby waters, may be underestimated although there has been extensive survey in most of the south basin. It was reported in 2004 that two areas in which the Physa had previously been found in Lake Winnipeg were now devoid of the species while one new location had been found. This new information provided by the report’s author should be included the assessment.

COSEWIC's Response

COSEWIC's identification of the Lake Winnipeg Physa as a Designatable Unit is based on the following rationale. The International Code of Zoological Nomenclature (4th edition, 1999), which outlines the rules to follow for the description of new taxa, does not require that the description of a new species appear in a peer-reviewed publication (see Articles 7-9). Nonetheless, the description of this species has been published (Pip. 2004. VISAYA II: 42-48) and the holotype deposited in the Canadian Museum of Nature. The holotype (CMNML 093695) was collected by E. Pip, 22 August 1976: length 10.7 mm, width 8.6 mm. The remaining specimens examined (spanning 43 years of collection) are in the E. Pip's collection and will be given in due time to the Canadian Museum of Nature. The Type Locality is Victoria Beach, Lake Winnipeg, Manitoba, Canada (N 5 degrees, 42', W 96 degrees 34').

The Mollusc Species Specialist Subcommittee is unanimous in its opinion that this is a distinct species and not a ‘variant’ of another species. The language of the Species at Risk Act is clear in what constitutes a Designatable Unit, as stated in Section 2 of the Act: “*“wildlife species” means a species, subspecies, variety or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus, that is wild by nature*”. COSEWIC affirms its conclusion that the Lake Winnipeg Physa (*Physella winnipegensis*) is a Wildlife Species and reaffirms its status as an Endangered species.

Regarding threats to this wildlife species, the Status Report makes it clear that the shoreline habitats where the Lake Winnipeg Physa (LWP) occurs have undergone significant alterations attributable to increased recreational use. The report also indicates that this deterioration in habitat quality can be attributable to a number of factors, but that the relative contribution of each factor to the persistence of the LWP is not known. The Status Report concludes that the limiting factors and threats to this species are those that affect the quality and quantity of the shallow, nearshore habitat where the species is located and those factors that affect lake eutrophication.

The rationale notes that sampling undertaken in 2004 was unable to locate the Physa in

two areas where it had previously been reported and that one new location had been documented. COSEWIC looks forward to receiving this new information and will ensure that it is included when an update status report on the species is written.

Cusk

Supporting Rationale

Abundance & Distribution:

DFO Science concluded that the Halibut and 4VsW sentinel surveys (as opposed to the DFO bottom trawl survey) were a more appropriate information-source to estimate the abundance and survey trend for cusk. Cusk is considered common and widespread in commercial catches and industry longline surveys; abundance, as observed by the Halibut and 4VsW sentinel surveys, has fluctuated without trend since 1998 & 1995 respectively.

The main concerns with the DFO survey relate to the low catchability of cusk by the trawl gear and the lack of sampling in deeper waters. Cusk predominantly live in rough and rocky bottom, often hiding in crevices, areas intentionally avoided by the DFO survey even though these can be areas of cusk abundance (e.g., between Browns and German Banks where commercial landings of cusk are high). The areas sampled by the DFO survey may be considered marginal habitat for cusk. As cusk abundance declines, it is possible that these areas are relatively less occupied by cusk, implying a decline in the survey catchability for this species. This would lead to an exaggerated perspective of resource decline by the DFO survey. In addition to low catchability, the DFO survey samples only part of cusk's distribution, concentrating on the trawlable bottom and depths less than 150 m. The catch distribution of the Halibut Industry survey demonstrates that cusk occur in deeper waters. As stated above, the Halibut survey is considered a more appropriate indicator of abundance trends. Delaying the reassessment until after 2007/08 would allow consideration of 10 years of Halibut survey information in the assessment of status.

Studies are currently underway to both better document bycatch levels of cusk in invertebrate fisheries as well as their survival rates after being returned to the ocean. These studies will assist in the overall evaluation of the impacts of the fishery on cusk.

Aging studies will provide essential information on the species' growth characteristics. Studies are also underway to generate information on the sex and size composition of the population, maturity schedules, and spawning locations. These studies will lead to better estimates of the number of mature animals in the population. COSEWIC stated that in 2001, mature numbers were 314,250 which compares to an estimate of 1,033,280 individuals (500,000 + greater than 51 cm) landed in the commercial fishery, as calculated from landings and sampling information. Consequently, the total mature population abundance would have been significantly greater than that in the 2003 COSEWIC assessment.

COSEWIC's Response

The following response addresses specific points raised in the "Supporting rationale" that accompanied the referral of cusk back to COSEWIC.

1. *Halibut and 4VsW sentinel surveys are a more appropriate information source than the DFO bottom trawl survey.* These surveys may indeed cover cusk habitat (bottom type and depth) better than the trawl and probably have higher catchability. COSEWIC agrees that information from well-designed longline surveys over an appropriate period of time would be very valuable in increasing our knowledge of cusk status. However, the key weakness of the two longline surveys is their short time frame. Information from these surveys is only available from the mid to late 1990's, after the large decline in abundance observed in trawl surveys had taken place. Trawl and longline surveys are consistent in showing stable CPUE from the mid 1990's on. Commercial longline CPUE declined between 1998 and 2001 to a lesser extent but with a similar pattern to the trawl survey CPUE, which at least suggests that trawl and longline CPUEs may act in similar fashion for this species; however the commercial longline CPUE was given lower weight in the COSEWIC assessment because values for earlier values could have been affected by misidentification of cusk.

2. *"...as cusk abundance declines, it is possible that these areas are relatively less occupied by cusk" ("these areas" referring to smooth bottom areas sampled by the trawl survey).* The "supporting rationale" provides no evidence for a possible decline in catchability of the survey trawl with declining abundance, and we are unaware of this being a significant factor in assessments for other species. This statement seems speculative in the absence of supporting information.

While it is possible that the relative abundance trend from the trawl survey may be biased by density-dependent habitat selection, there is no evidence available to confirm that habitat selection by cusk is indeed density-dependent or to determine the extent of any bias in the trawl-survey trend. A 90% decline in survey catch rates indicates a substantial decline in cusk abundance even if habitat selection is density-dependent and optimal habitat is untrawlable. In the absence of any evidence on the existence and extent of the hypothesized bias in the survey trends, a precautionary approach would favour interpreting the 90% decline in survey catch rates as an indication of a very serious decline in cusk abundance.

3. *".. the DFO survey samples only part of cusk's distribution, concentrating on ... depths less than 150 m".* Figure 5 in Harris et al. (2002) shows survey coverage to depths greater than 200m. No additional information on survey depth distribution was available to COSEWIC for this assessment. COSEWIC was well aware that the trawl survey did not cover the full depth range for cusk. But, as explained in the 24 May 2006 letter from the Chair of COSEWIC to the Minister of the Environment, in the absence of information to the contrary, COSEWIC made the assumption that survey trends in the area sampled were representative of trends in the entire depth distribution.

Figure 23 in Harris et al. (2002) shows trend in non-zero catches of cusk at stations less than and greater than 150 m depth. The proportion of stations where cusk was found is

greater at shallower stations throughout the time series (1970 – 2001), suggesting that cusk is generally more abundant at depths less than 150 m. Abundance in both shallow and deep stations declined in a similar pattern over this period; although a detailed analysis has not been done, inspection of the figure suggests that the decline was at least as great, and possibly greater, in deep stations than in shallow stations. In summary, this figure suggests that cusk are more commonly encountered in the depth range the “Supporting rationale” says was well-covered by the trawl than in deeper waters, and that abundance declined in a similar fashion both in shallower and deeper areas.

4. *“Delaying the reassessment until after 2007/8 would allow consideration of 10 years of Halibut survey information...”* As noted in the 24 May 2006 letter to Minister Ambrose, a long time series (30+ years) of what is considered a valid abundance index showed an abundance decline of greater than 90%, along with substantial contraction of range and decline in mean size of individuals. Surveys based on shorter time series and using different gear, while useful in providing additional information, are unlikely to provide information that would contradict the trawl survey information.

5. *Studies underway on bycatch and survival of individuals returned to the ocean.* These studies will be very useful in better defining fishery impacts on the species and in establishing recovery strategies. However, the COSEWIC assessment was primarily based on decline in abundance.

6. *Studies on age, growth, maturation, spawning and abundance.* These studies will be very useful in providing a better understanding of the species biology, and in establishing recovery protocols, and will be incorporated in the Update Status Report when COSEWIC next assesses this species. The abundance estimate (314,250 mature individuals) was identified in the COSEWIC Status Report as a minimal estimate from the trawl survey. Given the known low catchability of cusk in the trawl surveys, COSEWIC agrees that this was obviously a substantial underestimate. However, COSEWIC's assessment of cusk was based on the estimated magnitude of population decline, not on current estimates of population abundance.

Summary: COSEWIC has considered the points raised in government responses to its assessment of cusk, and has reviewed the available information on this species. COSEWIC affirms its original status assessment of the cusk as a Threatened species.

APPENDIX 2

COSEWIC's Response to the Referral of Verna's Flower Moth

This Appendix details the reasons for the referral of Verna's Flower Moth back to COSEWIC, as reported in the Canada Gazette (6 September 2006).

Supporting Rationale

"The assessment for the Verna's Flower Moth (*Schinia verna*) is being recommended for return to COSEWIC based on several factors including lack of data on the species distribution, abundance, range, threats and suitable habitat." (Canada Gazette Part 2 (Vol. 140, No. 18 – September 6, 2006) ANNEX 2)

COSEWIC's Response

Lack of data on species distribution: All of the available and actual data on the distribution of Verna's Flower Moth are presented in the status report. All 55 records of the species were obtained from prairie grassland habitats. Prairie remnants are of particular interest to biologists. They have been surveyed and collected extensively by both moth and butterfly experts. The Arthropods Specialist Subcommittee does not expect any change in distribution as a result of increased search efforts although it is possible that the number of occurrences may increase.

Lack of data on the species abundance: Although there is no information on this moth's population size or trends, it is reasonable to infer that the population declined when a historic massive conversion of native prairies to agriculture took place. The fact that the moth has been recorded so few times since its discovery suggests that it is truly rare and occurs in low numbers. That its scarcity is real is further supported by the fact that grasslands have been relatively well surveyed by entomologists and by the lack of discovery of the moth following repeated sampling efforts over a substantial period of time. Verna's Flower Moth has been found only intermittently. Repeated visits to the single known location suggest an unpredictable and ephemeral occurrence in low numbers.

Lack of data on the species range: All records for Verna's Flower Moth are from the Canadian prairies. Despite inventories in the US prairies, this species has not been found there and is likely a Canadian endemic. As noted above, moth specialists believe that any additional records of this species will not change its currently known range.

Lack of data on threats: More than 75% of native prairie habitats have been lost or degraded, and over extensive areas only a fraction of a percentage of certain types of prairie remain. Because much of this habitat decline took place during the nineteenth century, the population and distribution of Verna's Flower Moth were likely already reduced by the time the species was discovered. Prairie grasslands continue to be lost or degraded, and some are under management regimes that are detrimental to prairie lepidopterans. The information suggests that only certain kinds of prairie can support this

moth and much of the prairie is so fragmented that local disappearance of a rare species due to any factor is often unlikely to be followed by recolonization.

Lack of data on suitable habitat: Although our knowledge of the exact habitat requirements of this species is limited, the information available suggests that this moth has specific habitat requirements and some of these, such as extensive blooming *Antennaria* and floristic biodiversity to provide adult foodplants, are understood.

Summary: The best available information on the biological status of Verna's Flower Moth indicates that the moth is genuinely very rare and has specific habitat requirements. It is extant at one small prairie grassland site, is known from very few locations, occurs intermittently in low numbers, and its habitat -- remnant prairie grasslands -- is fragmented and continues to be lost and/or degraded. These factors combined meet criterion B2ab(iii) for Threatened.