

Exhibit E:

COSEWIC. 2005. Guidelines for Recognizing Designatable Units Below the Species Level.

Guidelines for Recognizing Designatable Units Below the Species Level (Appendix F5 in the COSEWIC O&P Manual)

Prepared by COSEWIC in 2004
Reviewed and approved by COSEWIC in 2005

Preamble:

It is widely recognised that species status assessment and conservation of biological diversity require that populations below the species level (using “species” in the accepted sense of the taxonomic hierarchy) be considered when appropriate. Most legislation allows for status designation of populations below the species level. For example, the federal Species at Risk Act (SARA) includes subspecies, varieties and “geographically or genetically distinct” populations in its definition of wildlife species thus allowing for listing of populations below the species level. COSEWIC's recognition of populations below the species level for assessment (i.e. designatable units) is guided by the same general objective of preventing wildlife species from becoming extinct or extirpated.

COSEWIC strives to recognize designatable units that are significant and irreplaceable units of biodiversity yet there are difficulties inherent in achieving a uniform interpretation of the word "significant". Furthermore, because patterns of population structure, life history, and genetic variability differ across taxonomic groups, use of uniform criteria in determining appropriate designatable units *a priori* can be difficult. Guidelines are needed in order to interpret, on a case-by-case basis, what constitutes a significant element of biological diversity to be recognized for the purpose of conservation status assessment by COSEWIC.

Approach:

COSEWIC's usual approach to assigning status is, first, to examine the species as a whole and then, if deemed appropriate, to examine the status of designatable units (DUs) below the species level.

In cases where particular DUs are strongly suspected of being at risk, or where DUs are so different in distribution or conservation status that an overall assessment would not capture the conservation concerns, COSEWIC will assess single designatable units below the species level.

Status may be assigned to subspecies, varieties, or geographically or genetically distinct populations which may be recognized in cases where a single status designation for a species is not sufficient to accurately portray probabilities of extinction within the species. Designatable units are to be recognized in accordance with the following guidelines.

Guidelines:

Specifically, the units to which status may be assigned below the species level are recognized on the basis of any one of the four criteria (1 - 4) described below. Typically, COSEWIC will consider, in order of precedence, 1) established taxonomy, 2) genetic evidence, 3) range disjunction, and 4) biogeographic distinction.

1) named subspecies or varieties:

published subspecies of animals according to the Code of Zoological Nomenclature or published subspecies or varieties of plants according to the Code of Botanical Nomenclature.

Examples:

Water Snake: *Nerodia sipedon sipedon* (NAR), *N. s. insularum* (E)

Loggerhead Shrike: *Lanius ludovicianus migrans* (E), *L. l. excubitorides* (T)

or,

2) units identified as genetically distinctive:

evidence of genetic distinctiveness including, but not limited to, appropriate inherited traits (morphological, life history, behaviour) and/or genetic markers (e.g. allozymes, DNA microsatellites, DNA restriction fragment length polymorphisms (RFLPs), DNA sequences, etc.).

Example:

Coho salmon: Interior Fraser River (E), as opposed to other populations

or,

3) units separated by major range disjunction:

disjunction between substantial portions of the species' global geographic range such that dispersal of individuals between separated regions has been severely limited for an extended period of time and is not likely in the foreseeable future.

Examples:

Boreal Felt Lichen: Atlantic (E), Boreal (SC)

Blanding's Turtle: Atlantic population (T), as opposed to other populations

or,

4) units identified as biogeographically distinct:

occupation of differing eco-geographic regions that are relevant to the species and reflect historical or genetic distinction, as may be depicted on an appropriate ecozone or biogeographic zone map (Figs. 1 - 3).

Examples:

Mormon Metalmark: Southern Mountain population (E), Prairie population (T).

Woodland Caribou: an assortment of designations based on biogeographic zones.

Precautions:

Appropriate caution in interpreting data should be exercised when identifying designatable units. The biological significance of phenotypic, genetic or geographic variation, must be considered in light of potential limitations in the data available. Inadequate information on temporal variability, insufficient sample sizes, or evidence from inappropriate traits (those which are either inordinately variable or overly conservative) will compromise the significance of available information.

Separate status designations should **not** be recognized for management units that are not based on biological criteria consistent with these guidelines.

Status designations should **not** be individually assigned to units below the species level if all such units within the species have the same status designation. In such cases, the status designation should be applied to the entire species.

Fig. 1. Terrestrial ecozones of Canada

COSEWIC National Ecological Areas

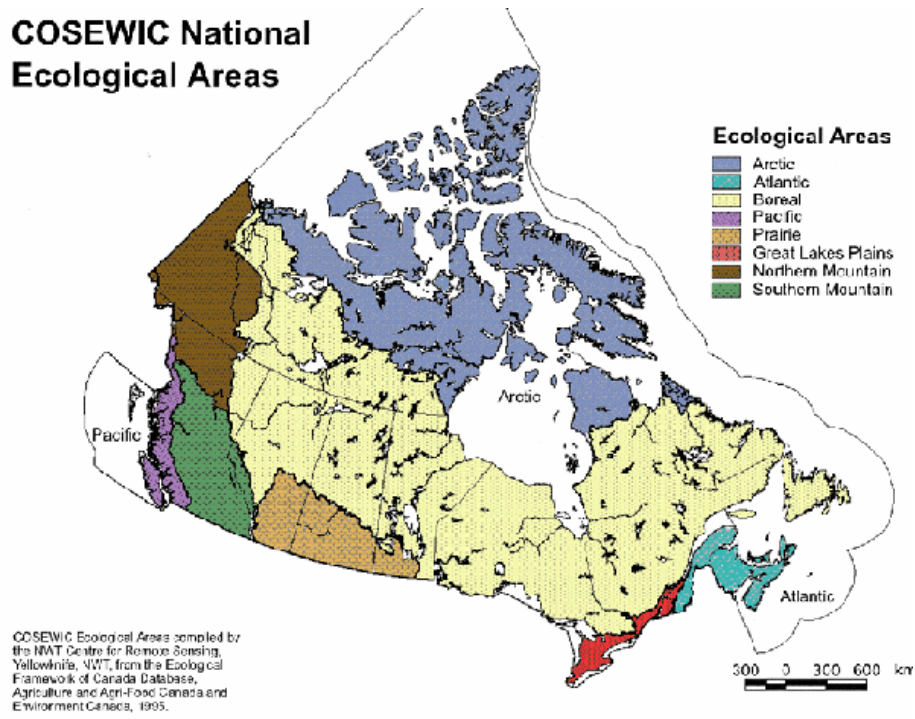


Fig. 2. Aquatic ecozones of Canada.

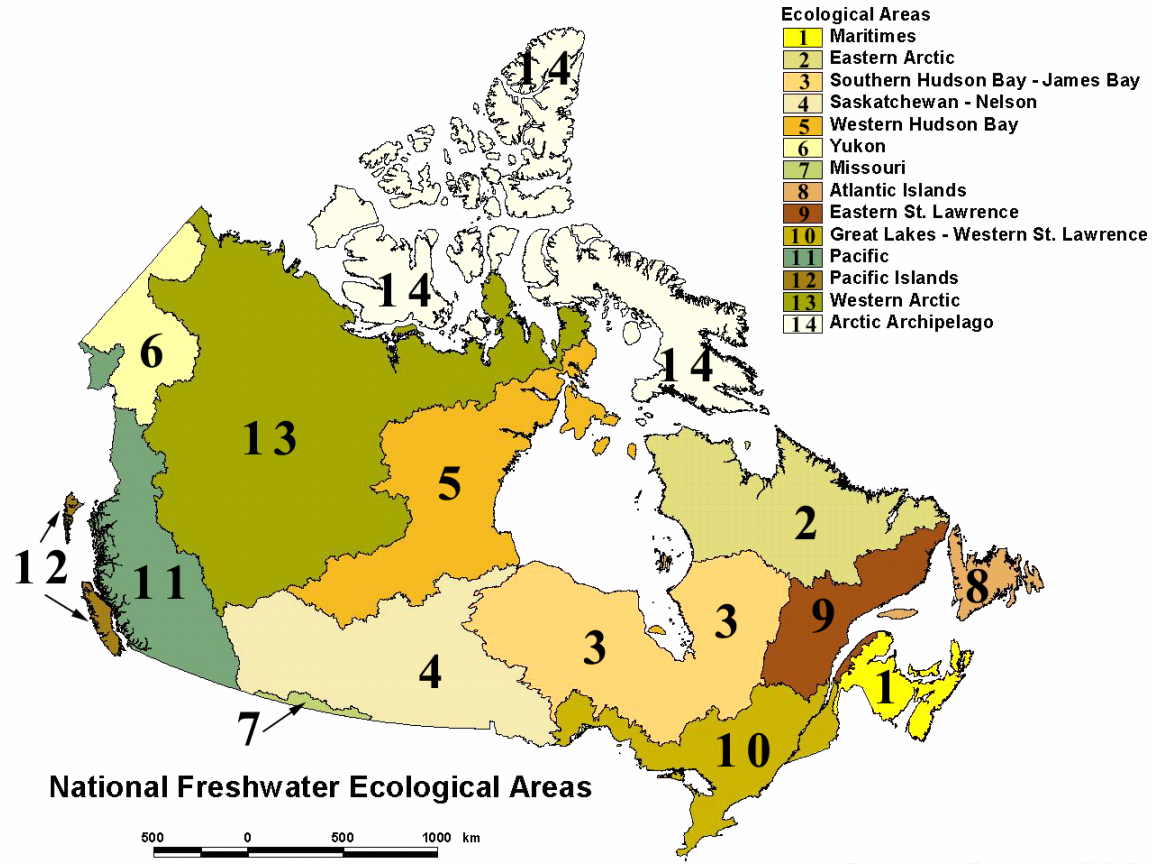


Fig. 3. Faunal provinces of terrestrial amphibians, reptiles, and molluscs in Canada. (unpublished, prepared by David Green, Co-chair of the Amphibians and Reptiles Specialist Subcommittee, 2003)

