Ecological regions are areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. They serve as a spatial framework for the research, assessment, management, and monitoring of ecosystems and ecosystem components. They are effective for national and regional state of the environment reports, environmental resource inventories and assessments, setting regional resource management goals, determining carrying capacity, as well as developing biological criteria and water quality standards. The development of a clear understanding of regional and large continental ecosystems is critical for evaluating ecological risk, sustainability, and health.

The maps shown here represent a second attempt to holistically classify and map ecological regions across the North American continent (Commission for Environmental Cooperation Working Group, 1997). The mapping from 1997 and 2006 was built upon earlier efforts that had begun individually in all three countries (e.g., Wiken 1986, Omernik 1987). These approaches recognized the need to consider a full range of physical and biotic characteristics to explain ecosystem regions (Omernik 2004). Equally, they recognized that the relative importance of each characteristic varies from one ecological region to another regardless of the hierarchical level. In describing ecoregionalization in Canada, Wiken (1986) stated:

> *Ecological land classification is a process of delineating and classifying ecologically distinctive areas of the Earth's surface. Each area can be viewed as a discrete system which has resulted from the mesh and interplay of the geologic, landform, soil, vegetative, climatic, wildlife, water and human factors which may be present. The dominance of any one or a number of these factors varies with the given ecological land unit. This holistic approach to land classification can be applied incrementally on a scale related basis from very site-specific ecosystems to very broad ecosystems.*

Determining ecological regions at a continental level is a challenging task. It is difficult, in part, because North America is ecologically diverse and because a nation's territorial boundaries can be a hindrance to seeing and appreciating the perspectives across the land-mass of three countries. Developing and refining a framework of North American ecological regions has been the product of research and consultation between federal, state, provincial and territorial agencies. These agencies were often government departments, but the initiative also involved nongovernmental groups, universities and institutes. The Commission for Environmental Cooperation (CEC) was instrumental in bringing these groups together. The CEC was established in 1994 by Canada, Mexico, and the United States to address environmental concerns common to the three countries. The CEC derives its formal mandate from the North American Agreement on Environmental Cooperation (NAAEC), the environmental side accord to the North American Free Trade Agreement (NAFTA).

These maps represent the working group's best consensus on the distribution and characteristics of major ecosystems on all three levels throughout the three North American countries. The methodology incorporated these points in mapping ecological regions:

- Ecological classification incorporates all major components of ecosystems: air, water, land, and biota, including humans.
- It is holistic ("the whole is greater than the sum of its parts").
- The number and relative importance of factors that are helpful in the delineation process vary from one area to another, regardless of the level of generalization.
- Ecological classification is based on hierarchy—ecosystems are nested within ecosystems as mapped, although in reality, they may not always nest.
- Such classification integrates knowledge; it is not an overlay process.
- It recognizes that ecosystems are interactive—characteristics of one ecosystem blend with those of another.
- Map lines depicting ecological classification boundaries generally coincide with the location of zones of transition.

A Roman numeral hierarchical scheme has been adopted for different levels of ecological regions. Level I is the coarsest level, dividing North America into 15 broad ecological regions. These highlight major ecological areas and provide the broad backdrop to the ecological mosaic of the continent, putting it in context at global or intercontinental scales. The 50 Level II ecological regions that have been delineated are intended to provide a more detailed description of the large ecological areas nested within the level I regions. Level II ecological regions are useful for national and subcontinental overviews of ecological patterns. At level III, the continent currently contains 182 ecological regions. The level III ecological region map depicts revisions and subdivisions of earlier level I, II, and III ecological regions (CEC 1997, McMahon et al., 2001, Omernik 1987, USEPA 2006; Wiken 1986, Wiken et al., 1996). These smaller divisions enhance regional environmental monitoring, assessment and reporting, as well as decision-making. Because level III regions are smaller, they allow locally defining characteristics to be identified, and more specifically oriented management strategies to be formulated.

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