

The Great Lakes Basin: From Pristine to Degraded to Rehabilitated

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Scientific researchers and environmental professionals have come to perceive the Great Lakes basin as comprising a nested hierarchy of ecosystems at several scales: local degraded areas of concern as well as relatively pristine areas in the coastal zone of the lakes; the five Great Lakes and the four major interconnecting rivers; and the entire set of lakes and rivers with their contiguous watersheds. With each of these three scales a broad generic conceptualization appears to be appropriate. This sketch of a model can be attributed, in parts, to Ramon Margalef and John Caddy.

In a pristine state the waters of these ecosystems were dominated by self-organizing communities of relatively large benthic or demersal biota that thrived at the edges and near the bottoms of these waters. Most of the cultural stresses that exploitive humans then applied to these lakes had the effect of suppressing, crippling or vitiating the original inshore sub-system but also, directly and indirectly, of fostering an offshore pelagic sub-system of small biota with relatively little self-organizing capability. Though similar in general terms, this transformation involved different species complexes in shallower and deeper basins. Waters upstream in the basin and distant from cities were generally less abused than were downstream waters near cities, and consequently exhibit fewer of the symptoms of this "general distress syndrome."

Pacific salmon that thrived in the stress-dependent offshore fish associations came to be highly prized by anglers. With rehabilitation the balance between a reconstituted near-shore association and the stress-dependent offshore association appears to be swinging toward a state with some ecosystemic resemblance to the original pre-stressed nearshore association. Anglers and their billion dollar service industry involved in the offshore fishery are quite concerned, while human inhabitants of coastal zone settlements and recreationists and anglers who use the near-shore beaches and waters are generally pleased.