

## **Narratives about the Complex of {Policies / Strategies / Tactics} Relevant to Governance of Fish and Fisheries in Ontario's Waters.**

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The most condensed text that I have found on the subject of the title above is from the second paragraph of the 2015 "Ontario's Provincial Fish Strategy: Fish for the Future": ... The **conservation** and management of fisheries and the ecosystems on which fish communities depend; ..." (The boldface is in the original text.)

I attach the code *Fish and Fish Ecosystems for the Future, FFEF*, to that 2015 document. It has a glossary of nearly 100 terms. Could you as a well-informed hermeneut immerse yourself in a study of those 100 terms and then conjure up a narrative like that found in the official text? Give it an hour's thought; you get a grade of A+ if your answer is cautiously affirmative....

The glossary includes explicit definitions of the terms *conservation* and of several special versions of *management*; e.g., *adaptive, fisheries, landscape*,...

In my earlier texts that Jessica and Lee forwarded to you, I offered what is implicitly a complementary narrative to that in FFEF about *conservation ... management* in a context something like that in the title above. The 100 terms in the Glossary of FFEF all make sense to me in the context of my narrative; I had to put on my hermeneutic analytical hat to check into that....

My narrative about *conservation*, as in my earlier forwarded texts, links into what I perceive to be a world-wide *conservation movement* which may have been an essential part of humanity's self-organizing cultures for a million years and counting. In 2016, to do effective *conservation* as in the title requires reaction to the increasing number of global stresses (climate change, acid rain, floating plastics, hazardous contaminants, genomic pollution, etc.) generated by humanity for which linkage with the global conservation movement would seem to be helpful, I suggest.

With respect to *management*, I have a query. Here again my conceptual context may include more than is explicit in the FFEF document.

From the Internet I note the word *manage* with explication as follows ...

*From Early Modern English manage, menage, from Middle English \*manage, \*menage, from Old French manège "the handling or training of a horse, horsemanship, riding, maneuvers, proceedings"), probably from Old Italian maneggiare "to handle, manage, touch, treat"), from mano, from Latin manus "the hand"); see manual.*

In my earlier document I note that the etymology of *manage* goes back to the Latin "manus" or "hand" and perhaps to how an ancient horse whisperer used his hands to induce a behavioural shift in a horse so that it would do the horse whisperer's bidding.

For decades I have been interested in how versions of that *manage* term are actually used. I conjecture that in practice it commonly relates to the complex of interactions of a

complex person (horse whisperer) and another complex thing (horse) to foster a desirable kind of complex collaboration (horse-back riding). If so, then linear hierarchic control as in an old-fashioned Tayloresque bureaucracy isn't consistent with conservation-relevant management. The FFEF document does not err in this respect, I infer; e.g., I personally could be a 'stakeholder' in a governance decision process. A take home message that I find to be consistent with FFEF: If it ain't 'hands-on', then it ain't 'management'.

I turn now to a nexus of *conservation and management related to fish and their ecosystemic homes/habitats*. Consider human influences in a watershed landscape ecosystem. During recent centuries in our Great Laurentian Basin fisheries researchers have *necessarily* had to focus on many kinds of human-generated distresses that have led to major unwanted ecosystemic adaptive syndromes with massive and insidious adverse effects on the extant fish associations and their habitats. So:

- exploitive opportunistic fishing suppressed the large native benthic species and freed small, and especially non-native pelagic species with the small adult pelagics preying on the young of the large adult benthics;
- activation of human, livestock and pet wastes not in safe disposal systems through weather events intensified risk of disease to humans in degraded saprobic locales;
- destruction of vegetation, including trees, near water margins through forestry, agriculture, transportation infrastructure, etc., with drastic hydrographic, hydrologic and trophic alteration of habitats of stream and nearshore fish;
- enrichment with plant nutrients led to plankton blooms and 'dead spots' in stratified waters, as in 'classical eutrophication';
- hydrographic restructuring, intended and unintended, leading to reservoirization with loss of connectivity and barring migration to natal spawning locales, inter alia;
- dumping of industrial waste solids and liquids into natural waters including unnumbered substances toxic to aquatic biota;
- release and invasion of non-native species that were pre-adapted to degraded ecosystems suppressed valued native species;
- release of organic hazardous materials led to bioconcentration in trophic chains and loss of reproduction in piscivorous birds;
- warming of the climate through heat-trapping gases, resulting in loss of temperature-sensitive taxa at the naturally-warmer edges of their ranges and expansion of habitat for such species at the naturally-colder edges of their ranges;
- usually any manifestation of the ecosystem responses to a particular kind of meta-stress as above is associated systemically with the manifestation of one or more other

kinds of meta-stress acting concurrently in an afflicted water body; often these syndromes interact synergistically to augment the unwanted features of each. (Alert: The term 'eutrophication' has been expanded by some writers from its classical rather narrow definition to include features of other stresses or even a 'general adaptive syndrome' or chaotic slum-like state due to interactions of numerous strains, i.e. effects of stress.)

In doing our stewardly duties, we have had to combat many kinds of human abuses that had adverse effects on humans far beyond a fisheries connection. In effect we have performed as public and community health workers, with little explicit recognition by the public for this larger service. (Advisers to Stephen Harper may have known about this; have they crawled back into their burrows?)

For the meta-stresses above and some of their interactions, we now have a good working knowledge of the ecosystemic etiology of the resulting complex adaptive ecosystemic syndromes that have followed, sometimes stepwise, as these meta-stresses have intensified. Producing practically-useful manuals – a kind of ecosystemic vade mecum – should be a major responsibility of fisheries experts. With collaboration of academics and private organizations, this could be a low-cost service of high practical significance and could be fostered by a non-governmental organization like the American Fisheries Society, perhaps as an on-line compendium of documents. It could complement a celebratory retrospective of 150 years of service in 2017.

Ecosystemically-oriented fisheries experts participated in the Great Laurentian Spring, 1968-93, facilitated by the International Joint Commission through the Great Lakes Water Quality Agreements. In effect, fisheries experts led in with the acceptance of an ecosystem approach in the transjurisdictional efforts to remediate intense abuses of these waters. Among the elders of Ontario's provincial fisheries researchers active in this role in the Great Laurentian Spring 1968-93 I recall Jack Christie, Doug Dodge, Joe Leach, Nigel Lester, Steve Nepszy and Dick Ryder.

Bottom line: Fisheries experts in Ontario have acted effectively, if not always efficiently, as stewards of sustainable fisheries and of healthy aquatic ecosystems since Canadian Confederation in 1867. We need to mobilize for the greater challenges ahead. Ontario's provincial fisheries professionals should continue to play major stewardship roles in coming decades.

H. Regier on behalf of E. Prince, W. Wakeham, S. Wilmot, J. Loudon, R. Ramsay Wright, B. Bensley, A. Huntsman, W. Clemens, W. Harkness, J. Dymond, D. Rawson, W. Ricker, F. Ide, F. Fry, A. Knight, W. Harkness, A. Pritchard, W. Sprules, W. Martin, H. Battle, C. Sullivan, D. DeLury, W. Scott and many less-ancient colleagues.