

## CURRICULUM VITAE

### HOWARD POWLES, Ph. D.

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**Citizenship** – Canadian

**Languages** – English, French (fluent, written and spoken), Spanish (spoken), Italian (basic)

### Education

Bachelor of Science, McGill University, Montréal, Canada, 1966.

Master of Science, Marine Sciences, McGill University, 1968. Thesis on distribution and biology of the spider crab *Chionoecetes opilio* in the Gulf of St. Lawrence

Doctor of Philosophy, Marine Sciences, McGill University, 1975. Thesis on distribution and ecology of larval fishes off Barbados

### Experience

**2005 – present.** Independent scientist and consultant, Gatineau, Québec, Canada

- management, policy and program advice in fisheries and aquatic sciences and conservation, species and ecosystem conservation
- projects include Marine Stewardship Council assessments of several Canadian northern shrimp fisheries, Greenland shrimp fishery, Nova Scotia offshore lobster fishery, Maine lobster fishery (Intertek Fisheries Certification); implementation of the precautionary approach for American lobster fisheries in Canada, development of interjurisdictional management plan for American eel (Department of Fisheries and Oceans); development of strategic plan for Canada's CITES program (Environment Canada); evaluation of Madagascar's shrimp research program (Groupement des aquaculteurs et des pêcheurs de crevette de Madagascar); support to FAO Ad Hoc Panels (2007, 2009) to assess proposals to list exploited marine species on CITES (FAO, Rome)
- Co-Chair, Marine Fishes Species Specialist Subcommittee, Committee on Status of Endangered Wildlife in Canada (COSEWIC) (2006-2009); member of COSEWIC's Marine Fishes Specialist Subcommittee (2005-present)
- Adjunct Professor, Telfer School of Management, University of Ottawa (2005-2012)

**2003 – 2005.** Head, Species at Risk Secretariat, Department of Fisheries and Oceans (DFO), Ottawa, Canada.

- Overall coordination of DFO's program for identification, protection and recovery of

aquatic and marine species at risk

- Preparation of advice for Ministers and senior managers on strategic program directions, financial allocations, implementation policies for new Species at Risk legislation
- Worked in close collaboration with different levels of government (federal Departments, provincial and territorial governments), stakeholder groups (industry, ecological) and Aboriginal groups
- Co-Chair, Canadian Council of Fisheries and Aquaculture Ministers' Aquatic Species at Risk Task Group

**2000 – 2003.** Director, Biodiversity Science Branch, DFO, Ottawa, Canada

- Coordination of DFO's national biodiversity and ecosystem science programs
- Overall coordination of DFO's species at risk program : legislative and policy development, development of program strategies and funding allocations
- Briefings for senior officials, Minister of Fisheries and Oceans, media on biodiversity, endangered species and ecosystem issues
- Member Committee on Status of Endangered Wildlife in Canada (COSEWIC) (1998-2004), Canadian Wildlife Directors' Committee (1998-2004)
- Co-lead on DFO's Working Group on Ecosystem Objectives, developing objectives-based approaches to marine ecosystem management
- Lead for DFO's responsibilities with respect to CITES (Convention on International Trade in Endangered Species), the World Conservation Union (IUCN), the Convention on Biological Diversity (1998-2004)
- Canadian observer to International Whaling Commission (1997-2002)
- Commissioner, Canada-Greenland Joint Commission on Conservation and Management of Narwhal and Beluga (1998-2004)

**1998 – 2000.** Director, Fisheries Research Branch, DFO, Ottawa, Canada.

- Coordinated policy development and program implementation for national fisheries science program including assessment of exploited marine fish stocks and ecosystem effects of fishing
- Coordinated DFO activities for protection and recovery of species at risk : developing policy options, estimating financial implications in relation to new legislation; liaison with Department of Environment, provinces and stakeholders
- Briefings for senior officials, Minister of Fisheries and Oceans, media on resource status, endangered species and ecosystem issues
- Other responsibilities as above 2000-2003

**1993 - 1998.** Senior Policy/Program Advisor, Fisheries Research Branch, Department of Fisheries and Oceans, Ottawa, Canada.

- Policy and program advice on research and resource assessment for Atlantic invertebrate and Pacific invertebrate and marine fish stocks
- Scientific leadership for new conservation program for Atlantic lobster: coordinated scientific support to Fisheries Resource Conservation Council review of lobster conservation strategies (1994-1995), led multidisciplinary Atlantic lobster research program (1996-2000)
- Secretary Treasurer, Canadian Conference for Fisheries Research (1995-2002)
- Member of Canadian delegations to Conference of Parties of Convention on International Trade in Endangered Species (CITES), UN Commission on Sustainable Development, SBSTTA of the UN Convention on Biological Diversity

**1991 - 1993.** Fisheries Specialist, Canadian International Development Agency, Hull, Québec, Canada.

- Technical advice on international development policies, programs and projects in fisheries, oceans and aquatic resource development in the Caribbean and West Africa
- Developed plans and budgets for international development projects (up to \$20m); led selection and contracting process for executing agencies, consultants
- Representative projects: CARICOM Fisheries Resource Assessment and Management Project (assess major Caribbean fisheries resources, strengthen regional and national institutional capacity for fisheries management); Regional Fisheries Management Project, West Africa (build regional cooperation in fisheries protection and surveillance in northwest Africa); Pro-Pêche, Sénégal (improve artisanal fishing and fish processing techniques, strengthen credit and financial services for fishing communities); Institutional Support II, Guinea (strengthen fisheries protection and surveillance systems in Guinea-Conakry, improve links between fisheries research and fisheries management)

**1989 - 1991.** Fisheries Specialist, Canadian International Development Agency/First Secretary (Development), Canadian High Commission, Bridgetown, Barbados.

- Technical advice on international development policies, programs and projects in fisheries and oceans in the Caribbean
- Representative projects: CARICOM Fisheries Resource Assessment and Management Project (see above); St. Vincent and the Grenadines Fisheries Development (strengthen fishing organisations and government support services for fisheries development)
- Developed a repertoire of regional fisheries and environmental consultants; maintained links with individuals and organisations active in fisheries and environmental areas in the Caribbean

**1984 - 1988.** Senior Program Officer (Fisheries), International Development Research Centre, Dakar, Sénégal.

- Responsible for program of applied research support in artisanal fisheries and aquaculture in Africa and Middle East
- Portfolio of approximately 15 applied research projects, average individual project budget \$150K over 3 years, in 10 countries in Africa and Middle East
- Developed priorities and strategy for program; advised national fisheries scientists on development, formulation and implementation of applied research projects; advised IDRC on projects for funding.
- Representative activities: linked projects in Uganda and Tanzania to develop monitoring and management programs for Lake Victoria following the introduction of Nile perch; linked projects on small-scale aquaculture systems suitable for African conditions, with nodes in Côte d'Ivoire, Ghana, Cameroun

**1982 - 1984.** Division Head, Fisheries Sciences, Department of Fisheries and Oceans, Québec, Canada.

- Led research program (12 staff) on exploited fish stocks of Gulf of St. Lawrence; with project leaders, planned, organised and conducted field and laboratory studies, formulated biological advice on stock management, managed financial and human resources

- Personal research program on pelagic fish stocks, early life history of fish; supervised summer and graduate students.
- Communicated scientific advice to management and industry through fisheries management committees, oral and written presentations, made presentations to media and fishing groups on resource assessment and fisheries management.
- Chairman of Marine Environment and Ecosystems Sub-Committee of the Canadian Atlantic Fisheries Scientific Advisory Committee.

**1981 - 1982.** Acting Associate Director, Fisheries Research Branch, Gulf Region, Fisheries and Oceans, Québec, Québec.

- Responsible for DFO's Québec-based fisheries and oceans research (70 staff)
- Planned, organised and directed research programs and projects in collaboration with personnel; assured administrative and physical support, including expansion and upgrading of facilities for new staff; prepared and monitored budgets to ensure that resources were utilised in priority areas; staffed positions and organised staff training; ensured communication of research results.
- Member of Steering Committee of Canadian Atlantic Fisheries Scientific Advisory Committee

**1978 - 1981.** Section Head, Pelagic Fishes, Fisheries Research Branch, Fisheries and Oceans, Québec, Canada

- Responsible for research program on biology and fisheries of pelagic species (herring, capelin, smelt); provided biological advice on stock management; supervised research team, graduate and summer students.

**1974 - 1978.** Assistant Marine Scientist, South Carolina Marine Resources Center, Charleston, South Carolina, USA.

- Research on taxonomy, ecology, distribution and abundance of larval fishes and on demersal fish stocks of the continental shelf between North Carolina and Florida.

**1970 - 1973.** Ph. D. research at Bellairs Research Institute of McGill University, Barbados on early life history stages of fishes.

**1968 - 1970.** Volunteer Fishery Biologist, Canadian University Services Overseas (CUSO), Ottawa, Ontario, Canada. Based with FAO/UNDP Pelagic Fish Survey at Freetown, Sierra Leone, contributed to assessment of pelagic and demersal fishery resources off West Africa.

**Summers, 1966 - 1967.** Summer Assistant, Biological Station, St. Andrews, New Brunswick, Canada. Research on ecology of snow and spider crabs in Gulf of St. Lawrence, particularly in relation to a rapidly developing fishery for snow crab. Work formed the basis of MSc thesis for McGill University.

## **Other Qualifications**

Certified SCUBA diver (Professional Association of Diving Instructors)

Larval Fish Identification Course, National Marine Fisheries Service (E. H. Ahlstrom), La Jolla, California, March 1976.

## **Professional Memberships and Affiliations**

American Fisheries Society, member since 1976. Member of Executive Committee 1993/4, Membership Concerns Committee 1994/5, Groundfish Project Steering Committee 1994 - 1997; Endangered Species Committee 2000.

American Society of Ichthyologists and Herpetologists: member 1975-2007

Canadian Aquatic Resources Section of AFS: President 1993/4, special advisor and coordinator Clemens-Rigler Travel Fund 2004-2009.

Canadian Committee for IUCN (International Union for the Conservation of Nature); member since 2005; member of the Board, 2007-2011

Committee on Status of Endangered Wildlife in Canada (COSEWIC), Member 1998-2003, 2006-2009; Co-Chair, Marine Fishes Specialist Subcommittee 2006-2009; member, Marine Fishes Specialist Subcommittee 2005-present.

IUCN Commission on Ecosystem Management : member 2003-2010

## **Community Activities**

Association des résidents de Deschênes (Gatineau, Québec): member since 2010, President October 2011-present. Research on historical and ecological heritage; conservation projects; represent residents to municipal government.

Canadian Museum of Nature, Ottawa : volunteer, school workshop program, October 2011-present.

Club des ornithologues de l'Outaouais, member since 2006, Member of Board 2008-2009

Georgian Bay Sailing Center (Gatineau, Québec), Member 2007-present, President 2010-2011

## PUBLICATIONS

### Refereed publications

- Powles, H. 2011. Assessing risk of extinction of marine fishes in Canada – the COSEWIC experience. "Fisheries" (American Fisheries Society) 36 (5): 231-246.
- Powles, H., M. J. Bradford, R. G. Bradford, W. G. Doubleday, S. Innes and C. D. Levings. 2000. Assessing and protecting marine endangered species. ICES J. Mar. Sci. 57: 669-676.
- Parsons, L. S., H. Powles and M. J. Comfort. 1998. Science in support of fishery management: new approaches for sustainable fisheries. Ocean and Coastal Management 39:151-166.
- Doubleday, W. G. and H. Powles. 1997. Recent steps in the evolution of fisheries resource conservation institutions in Canada. pp 707 - 712 in Hancock, D. A., D. C. Smith, A. Grant, J. P. Beumer "Developing and Sustaining World Fisheries Resources", Proceedings of the 2nd World Fisheries Congress.
- Luckhurst, B. E. and H. Powles. 1986. Ichthyoplankton of the central Venezuelan coast: composition, abundance and seasonality. Northeast Gulf Sci. 8 (2): 129 - 142.
- Henri, M., J. J. Dodson and H. Powles. 1985. Spatial configurations of young herring (*Clupea harengus harengus*) larvae in the St. Lawrence estuary: importance of biological and physical factors. Can. J. Fish. Aquat. Sci. 42 (Suppl. 1): 91 - 104.
- Powles, H. F. Auger and G. J. FitzGerald. 1984. Nearshore ichthyoplankton of a north temperate estuary. Can. J. Fish. Aquat. Sci. 41: 1653 - 1663.
- McQuinn, I. H., G. J. FitzGerald and H. Powles. 1983. Environmental effects on embryos and larvae of the Isle Verte stock of Atlantic herring (*Clupea harengus harengus*). Natural. Canadien 110: 343 - 355.
- Powles, H. 1983. Planning the sampling of commercial catches in the Gulf Region. Can. Spec. Pub. Fish. Aquat. Sci. (Workshop on Sampling of Commercial Marine Fish and Invertebrate Catches) 66: 263 - 267.
- Silvert, W. and H. Powles. 1983. Applications of operations research to the design of field sampling programs. Ibid. 268 - 278.
- Fréchet, A., J. Dodson and H. Powles. 1983. Les parasites de l'éperlan arc-en-ciel (*Osmerus mordax*) anadrome au Québec et leur utilité comme étiquettes biologiques. Can. J. Zool. 61: 621 - 626.
- Fréchet, A., J. J. Dodson and H. Powles. 1983. Use of variation in biological characters for the classification of anadromous rainbow smelt (*Osmerus mordax*) groups. Can. J. Fish. Aquat. Sci. 40: 718 - 727.
- Powles, H. 1981. Distribution and movements of neustonic young of estuarine-dependent (*Mugil* spp., *Pomatomus saltatrix*) and estuarine-independent (*Coryphaena* spp.) fishes off the south-eastern United States. ICES Rapp. Proc.-Verb. 178: 207 - 209.
- Powles, H. 1980. Descriptions of larval silver perch, *Bairdiella chrysoura*, banded drum, *Larimus fasciatus*, and star drum, *Stellifer lanceolatus* (Sciaenidae). Fish. Bull. 78: 119 - 136.
- Powles, H. and C. A. Barans. 1980. Groundfish monitoring in sponge-coral areas off the

southeastern United States. Mar. Fish. Rev. 42 (5): 21 - 35.

Powles, H. 1979. Larval distributions and recruitment hypotheses for snappers and groupers of the South Atlantic Bight. Proc. Ann. Conf. SE. Fish Wildl. Agencies 31: 362 - 371.

Powles, H. and W. E. Burgess. 1978. Observations on benthic larvae of Pareques (Pisces: Sciaenidae) from Florida and Colombia. Copeia 1978: 169 - 172.

Powles, H. 1977. Island mass effects on the distribution of larvae of two pelagic fish species off Barbados. FAO Fish. Rep. 200: 333 - 346 (CICAR-II Symposium, Progress in Marine Research in the Caribbean and Adjacent Regions).

Powles, H. 1977. Description of larval Jenkinsia lamprotaenia (Clupeidae: Dussumieriinae) and their distribution off Barbados, West Indies. Bull. Mar. Sci. 27: 788 - 801.

### **Book chapters and book**

Powles, H. 2003. The Virgin Sturgeon – Fish Songs and Poems. Canadian Aquatic Resources Section, Gatineau, Québec. 51 pp.

Powles, H. and D. F. Markle. 1984. Identification of larvae. pp 31 - 33 in "Ontogeny and Systematics of Fishes - an International Symposium dedicated to Elbert H. Ahlstrom". Am. Soc. Ichthyol. Herpetol. Spec. Publ. 1.

Powles, H. 1981. Eggs and larvae of North American sciaenid fishes. pp. 99 - 110 in "Sciaenids: Territorial Sea Demersal Resources", Sport Fishing Institute, Washington DC.

### **Technical Reports and Others**

Worcester, T. and 19 co-authors including H. Powles 2009. Status of Atlantic Cod (*Gadus morhua*) in 2008. Can Sci. Adv. Sect. Res. Doc. 2009/027: 167 pp.

Powles, H. and J. Rice eds 2008. Assessing marine fish species: relating approaches based on reference points with approaches based on risk-of-extinction criteria. A workshop organized by COSEWIC (Committee on Status of Endangered Wildlife in Canada) and DFO (Department of Fisheries and Oceans, March 20-22, 2007. Can. Sci. Adv. Secretariat Proceedings Series 2007/024: 63 pp.

Powles, H., V. Vendette, R. Siron and R. O'Boyle eds. 2004. Proceedings of the Canadian Marine Ecoregions Workshop, March 23-25 2004, Ottawa. Can. Sci. Adv. Secretariat Proceedings 2004/016: 47pp.

Randall, R. G., J. B. Dempson, C. K. Minns, H. Powles and J. D. Reist eds. 2003. Proceedings of the national DFO workshop on quantifying critical habitat for aquatic species at risk. Can. Sci. Adv. Sect. Proc. Ser. 2003/012: 44 pp.

Powles, H. ed. 2002. Proceedings of the National Science Review Meeting on Species at Risk Issues, March 18-22, 2002, Halifax, Nova Scotia. Can. Sci. Adv. Secretariat Proceedings Series 2002/007: 66 pp.

Parsons, L. S. and H. Powles. 1997. Behind the headlines: toward world food security from fisheries and aquaculture. ACOPS (Advisory Committee on Protection of the Sea) Report of the Conference Oceans and Security, May 1997. Annex V pp 46-58.

Powles, H. and D. MacDonald. 1994. Development of a Canadian office for the American Fisheries Society. "Fisheries" (American Fisheries Society) 19 (2): 30-31.

Bernacsek, G. M. and H. Powles eds 1992. Aquaculture Systems Research in Africa: Report of a Workshop, Bouaké, Côte d'Ivoire, November 18 - 20, 1988. Int. Devt. Research Centre, MR-308e,f. 426 pp.

Powles, H. 1987 ed. Cage Culture Research Projects - report of a workshop held in Cairo, Egypt 23 - 26 October 1985. Int. Devt. Res. Centre, Ottawa, Canada. IDRC-MR 164e,f. 182 pp.

Powles, H. 1987 MS. Fisheries Research Support in Africa - Needs and Mechanisms. Presented at Consultation on Fisheries in Africa, 13 - 15 Oct. 1987, Banque Africaine pour le Développement, Abidjan, 9 pp.

Powles, H. ed. 1987. Research Priorities for African Aquaculture. Report of a Workshop held in Dakar, Sénégal, October 13 - 16, 1986. Int. Devt. Research Centre, Ottawa, Canada, IDRC-MR149e: 172 pp. Also published in French as IDRC-MR149f. Includes:

Powles H., History and Status of African aquaculture research, pp. 2 - 13;

Timoulali, M., M. Nageri, M. Tall and H. Powles, African aquaculture research priorities: a questionnaire survey, pp. 25 - 37.

Powles, H. 1986. "Fencing off Fish". IDRC Reports 15 (4): 18 - 19. Also as "La pisciculture en cage: un avenir prometteur", Le CRDI Explore 15 (4): 18 - 19. Reprinted in Aquaculture Magazine 13(1): 41 - 43 and several African newspapers

Powles, H. 1983. Review of Rothschild, B. ed. (1983) "Global Fisheries: Perspectives for the 1980s". Naturaliste canadien 110: 370 - 371.

Tremblay, D., H. Powles and J. Moores. 1983. Status of the 4R herring stock in 1982. Canadian Atlantic Fisheries Scientific Advisory Committee (CAFSAC) Res. Doc. 83/33: 39 pp.

Tremblay, D. and H. Powles. 1982. Fishery, biological characteristics and abundance of herring in NAFO Subdivision 4S. CAFSAC Res. Doc. 82/13: 34 pp.

Powles, H. 1981. What does purse seine catch per unit effort measure ? A simple fishery model. CAFSAC Res. Doc. 81/36: 27 pp.

Maranda, Y. S. S. M. Labonté and H. Powles. 1981. Exploitation potentielle du capelan au Québec: débarquements (1950 - 1979) et caractéristiques biologiques (1979 - 1980). Rapp. Manusc. Can. Sci. Hal. Aquat. 1604: 43 pp.

Greendale, R. and H. Powles. 1980. La pêche côtière au hareng en Gaspésie, 1970 - 1978. Rapp. techn. can. sci. halieut. aquat. 945: 58 pp.

Auger, F. and H. Powles. 1980. Estimation of the herring spawning biomass near Isle Verte in the St. Lawrence estuary from an intensive larval survey in 1979. CAFSAC Res. Doc. 80/59: 29 pp.

Powles, H., J. Boulva and P. Spenard. 1979. Herring catch per unit effort in the Magdalens trap fishery and implications for Gulf herring stock assessment. CAFSAC Res. Doc. 79/29: 11 pp.

Messieh, S., H. Powles and G. Côté. 1979. Food and feeding of the Atlantic herring (Clupea harengus L.) in the Gulf of St. Lawrence and adjacent waters. CAFSAC Res. Doc. 79/15: 19 pp.

Côté, G. and H. Powles. 1978. The herring population of the St. Lawrence estuary. Can. Atl. Fish. Scient. Adv. Comm. (CAFSAC) Res. Doc. 78/44: 12 pp.



Powles, H. and B. W. Stender. 1978. Taxonomic data on the early life history stages of Sciaenidae of the South Atlantic Bight of the United States. South Carolina Mar. Resour. Center Tech. Rep. 31: 64 pp.

Powles, H. and B. W. Stender. 1976. Observations on composition, seasonality and distribution of ichthyoplankton from MARMAP cruises in the South Atlantic Bight in 1973. South Carolina Mar. Resour. Center Tech. Rep. 11: 47 pp.

Powles, H. 1975. On the potential for small-scale development of marine resources of the Caribbean, with particular reference to aquaculture. McGill Univ., Marine Sciences Center, MS. Rep. 29: 63 pp.

Butler, M. J. A., F. Berkes and H. Powles. 1974. Biological aspects of oil pollution in the marine environment: a review. McGill Univ., Mar. Sci. Center, MS Rep. 22A: 133 pp.

Powles, H. 1968. Distribution and biology of the spider crab Chionoecetes opilio in the Magdalen Shallows, Gulf of St. Lawrence. Fish. Res. Bd. Canada MS. Rep. Ser. (Biol.) 997: 106 pp.

Powles, H. 1968. Observations on the distribution and biology of the spider crab Chionoecetes opilio. Fish. Res. Bd. Canada MS Rep. Ser. (Biol.) 950: 10 pp + 4 figs.

Powles, H. 1966. Observations on the biology of two species of spider crabs, Chionoecetes opilio and Hyas araneus, in the Gulf of St. Lawrence. Fish. Res. Bd. Canada MS Rep. Ser. (Biol.) 884: 15 pp + 14 figs.