

Curriculum Vitae

NIGEL HAGGAN

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I. Position

- a) **Principal**, Nigel Haggan & Associates

II. Education

- a) **PhD** University of BC, 2012. Interdisciplinary Studies. [Dissertation](#).
- b) **MA, Trinity College Dublin** 1986.
- c) **MSc, Trinity College Dublin**. 1974. Psychology (fish behaviour). Thesis: 'Ethology of the Two-Spot Goby, *Chaparrudo flavescens*.'
- d) **BA, Trinity College Dublin**. 1971. Honours Modern Languages.

III. Research and contracts

2010/12 Completing PhD at UBC.

2006/10

- **Consultant** to Fisheries and Oceans Canada on case for including cultural and spiritual values of eulachons in policy and decision-making;
- **Advisor** to Pacific Fisheries Resources Conservation Council on bringing traditional and local knowledge to bear on salmon management;
- **Outreach programme** to recruit Aboriginal students in fisheries and marine ecosystem science and management careers;
- **Lead editor** on peer-reviewed book [Fishers' Knowledge in Fisheries Science and Management](#), UNESCO, Paris.
- **Technical editor** [Seamounts: Ecology, Fisheries and Conservation](#), Blackwell, UK.

2005/06

- **Project manager** contract to explore ecosystem effects of interaction of fishing pressure, protected areas and artificial reefs in Hong Kong waters;
- **Project manager** contract to develop first ecosystem models of west coast of Scotland and Sea Lochs, Report;
- **Co-Investigator** Back to the Future / [Coasts Under Stress project](#).

1999-2004

- **Coordinator**, [Sea Around Us Project](#) (\$US1million/year) to determine ecosystem impacts of fishing at ocean basin and global level. Responsible for communication, milestones watch, managing consultants and interns, major event organization, consultant terms of reference and reporting;
- **Executive Coordinator**, [UBC Fisheries Centre](#). Develop partnerships with local, national and international universities, First Nations, NGOs, governments and industry. Draft Memoranda of Agreement (e.g. Indonesian Ministry of Marine Affairs and Fisheries, World Wildlife Fund, United Fishermen and Allied Workers Union). Develop financial policies. Prepare contract budgets and workplans. Write consultant and graduate student terms of reference. Manage research contracts.

1996-2005

- ***Back to the Future. Conceived*** and developed this innovative ecosystem restoration approach with Tony Pitcher and Daniel Pauly. This is now a global activity with projects in Canada, Hong Kong, Brazil, Mexico and the UK:
 - a) Rebuilding, not sustainability as the proper goal of fisheries management;
 - b) Computer simulation of today's ecosystems using [Ecopath, Ecosim and Ecospace](#);
 - c) Reconstruction of ecosystems prior to industrial fishing in collaboration with Aboriginal peoples, commercial fishers, government, archaeologists and other experts;
 - d) Evaluation of ecological, economic, social, cultural and other benefits of rebuilding to some level of past abundance;
 - e) Simulation of ecosystem states which could be expected to result under different management and harvest regimes;
 - f) Development of consensus on rebuilding strategies and share of costs and benefits; and,
 - g) Policies that maximize ecological, livelihood and lifestyle benefits.

1996-2005

- ***Aboriginal Fisheries Initiatives*** to make university science more responsive to community priorities; enroll Aboriginal graduate students; and bring traditional ecological knowledge and values together with the new ecosystem science being developed at UBC Fisheries Centre. Projects and highlights include:
 - a) An Aboriginal Fisheries Unit in new Aquatic Ecosystems Research Laboratory;
 - b) 4 Aboriginal Masters students, 2 graduated, 2 enrolled 2004/5;
 - c) 24 papers by First Nation authors and co-authors;
 - d) Fund-raising for 10-year Aboriginal scholarship programme to enroll 3 Masters' or PhD students annually;
 - e) Concept for the World's first Endowed Chair of Aboriginal Fisheries;
 - f) [Putting Fishers' Knowledge to Work](#) - First international conference on applying fishers' knowledge to science and management, Vancouver 2001;
 - g) Workshop on [Education for Aboriginal Fisheries Science and Ecosystem Management](#), UBC 2001;
 - h) Chief Simon Lucas awarded honorary degree and appointed as Adjunct Professor at Fisheries Centre 2002;
 - i) First Nations collaboration on the Back to the Future project:
 - i) First spatial models of north and central BC;
 - ii) Ecosystem models of Northern BC for the 1750s (pre-contact); 1900s (pre-trawling); 1950s and present day;
 - iii) 4 workshop and 4 additional reports.
 - j) Memorandum of Understanding with the BC Aboriginal Fisheries Commission and UBC First Nations House of Learning.

1998-2004

- ***Coasts Under Stress project***: Team and First Nation partnership building for multi-disciplinary collaboration with coastal communities, government and industry. To assess the impact of environmental and social re-structuring on coastal communities and research local, regional and national options and policies to ensure their survival.

1999-2001

- ***Aquatic Ecosystems Research Laboratory***, Secured \$10.6 million from the Canada Foundation for Innovation, BC Knowledge Development Fund and UBC, for new \$15million facility to house the Fisheries Centre and incorporate new Aboriginal, Social and Economic and Aquaculture Units, UBC Institute for Resources, Environment and Sustainability and the fisheries R&D branch of the BC government.

1998-2000

- **Hong Kong Agriculture, Fisheries and Conservation dept.** Provided expert advice on consultation and involvement of fishing communities in \$US20million artificial Reef/Marine Protected Area programme to restore marine ecosystems and maximize social and economic benefits.

1998-2000

- **Canada ASEAN Centre, Singapore,** Conducted three missions to Indonesia with Prof. Tony Pitcher to develop a multi-year approx \$US15 million ecosystem assessment and restoration programme to maximize the benefits from Indonesia's fisheries and marine ecosystems. The programme would include:
 - a) A cooperative policy-development process involving stakeholders, scientists, managers and government;
 - b) Mechanisms to assess the current state of Indonesia's marine ecosystems;
 - c) Strategies to rebuild depleted resources;
 - d) Post-harvest technologies to maximize value from current catch;
 - e) Processes to include coastal communities and traditional management systems;
 - f) Advanced, user-friendly computer simulation techniques for marine ecosystems;
 - g) A phased implementation strategy for a network of research and delivery centres throughout the archipelago; and,
 - h) A scientific review process and arm's length performance evaluation.

1997-1999

- **Principal Investigator, Hecate Strait BACK TO THE FUTURE project** to reconstruct the northern BC ecosystem prior to industrial fishing. A collaboration between UBC Fisheries Centre, UBC First Nations House of Learning, the Haida and Tsimshian Nations, commercial fishers, Fisheries and Oceans, Canada and the Northwest Maritime Institute.
- **Project Manager Hong Kong Artificial Reef Project** for UBC Fisheries Centre ecosystem and bio-economic modelling. Provide expert advice on assessing the degree of fishing community support and willingness to cooperate in managing a \$US20-million Artificial Reef programme.
- **Just Fish: Ethics and Canada's Marine Fisheries** Partner in 3 – year collaborative University of Victoria, UBC and Memorial University Newfoundland project to re-cast the Canadian fisheries debate in terms of ethics and justice.
- **Project Manager** for study on impact of distant water fleets for World Wildlife Fund Endangered Seas Campaign. Comprising: detailed case studies of Mauritania and Senegal; the N. Pacific 'donut hole'; Iceland, the Newfoundland cod fishery, Namibia and snapshots of illegal fishing in the Galapagos and Norwegian spring-spawning herring; ecosystem effects and an analysis of economic and social impacts;
- **Design Team Coordinator** for world's first endowed chair of Aboriginal fisheries sponsored by BC Aboriginal Fisheries, UBC Fisheries Centre / UBC First Nations House of Learning;
- **Course design** Designed and delivered Aboriginal fisheries module exploring pre and post European contact situations and partnerships and pitfalls in cooperative fisheries management.

1994 – 1997

- **Chair of Project Management Team Stikine Nation Power Corporation;** raised equity funding for \$25million [Hluey Lakes Hydro-electric Project](#), built political support, and coordinated environmental permitting, land tenures and liaison.

1993-1995

- **Policy Advisor and Program Planner** Oweekeno, Alliance Tribal Council and Gwa'Sala-Nakwaxda'xw Nations.
- **Team Leader,** Common Ground Project at UBC Fisheries Centre.

- **Shuswap Nation Fisheries Commission:** Responsible for development of education and training policy and pilot program design. A joint effort between First Nations and academic institutions.
- **Council of the Haida Nation:** Prepared 5 Year Funding Strategy for Haida Fisheries Program incorporating: description of Haida; commercial and sport fisheries; analysis of contribution of Statistical Areas 1, 2E & 2W to overall B.C. commercial fisheries for all spp. and a description of fisheries management activities.

1989-1991

- **First Nations Summit:** Helped access \$300,000 to develop province-wide *Interim Measures* in fisheries as provided for in the 1991 *Report of the B.C. Claims Task Force*. Participated in 8 regional consultation meetings. Co-authored report setting out framework of Principles, Policies and Implementation Mechanisms acceptable to First Nations.
- **Skeena Fisheries Commission, Oweekeno-Kitasoo-Nuxalk Tribal Council and Union of Ontario Indians:** Reviewed legal and policy issues surrounding fisheries and natural resource management. Explored processes and options for agreement between First Nations and Canada. Identified ways and means to implement and resource agreements. Summarized in MAP 2000 concept paper prepared under contract to Canada's Department of Indian Affairs and Northern Development.
- **Fisheries Policy Advisor/Program Planner** for: Haida; Tsimshian; Gitksan-Wet'suwet'en; Natoot'en and Tahltan Nations and Oweekeno-Kitasoo-Nuxalk Tribal Council. Designed cooperative management policies, concepts, mechanisms and innovative approaches to coordinate and focus resources and funds available to First Nations, Canada, B.C. and industry with particular emphasis on application of resource revenues.
- **Skeena Fisheries Commission** Drafted "Memorandum of Understanding on Fisheries" between Tsimshian, Gitksan-Wet'suwet'en and Natoot'en Nations. (Signed Feb. 1990). Assisted with formation and development of Commission. Commission Coordinated the Commission from 1989 - 1991.

1986-1989

- **Tahltan and Haida Nations** Prepared and accessed 3-year human resource development and community participation program.
- **Set up BC's first Cooperative Fisheries Management Committee** between Tahltan Tribal Council, Department of Fisheries and Oceans and Indian and Northern Affairs, Canada. Chairman from 1986 - 1989.
- **Oweekeno Nation** Prepared a 7-year "Community Fisheries Strategy" in four volumes and coordinated aquaculture site survey.
- **Designed and accessed funding** for a fisheries technician training program for six Tahltan Nation members.
- **Technical Advisor** to Oweekeno Nation Salmonid Enhancement Program, Rivers Inlet, B.C. Responsible for technology transfer and enhancement program design. Jointly developed "Horizontal Fish Culture" concept in which eggs are hatched in incubators contained in a float. Fry are then ponded and reared in netpens of increasing volume and mesh size. Particular advantages lie in the use of locally-available building materials, low technology, low cost and portability. Provides an opportunity to "jump start" stocks by enhancing a small number of cycles while management strategies are adjusted to allow sufficient spawners to return. This is a viable alternative to multi-million dollar facilities which tend to acquire a "life of their own", sometimes more dependent on initial investment and employee considerations than salmon stocks.

1982-1983

- Coho mark/recovery program, Pitt River, B.C.
- **Indian Aquaculture Task Force** Prepared overview of species with aquaculture potential.
- **Project Biologist** for experimental culture of sablefish (*Anaplopoma fimbria*), Ocean Falls, B.C. Under direction of Dr. W.A. (Bill) Kennedy, Pacific Biological Station.

1980-1981

- **Deputy Director, Derry Youth and Community Workshop**, Derry, Northern Ireland. Responsible for direction of employment and lifeskills training for 100 young people from the "war zones." Responsible for the supervision of 20 staff and \$1,000,000 budget.

1977-80

- **Managing Director** of marine and freshwater fishfarms, Donegal, Ireland.

1973-77

- **Contract manager Bord Iascaigh Mhara** (Irish Sea Fisheries Board) for demonstration project on marine and freshwater salmon netpen farming in Killary Harbour and Lough Fee. Ireland.

IV. Publications

Peer-reviewed

- Haggan, N., Jackson, G.D. and Lacroix, P. (2009) [*Salmon and Eulachon in Ecosystem Space and time: A Plea for Better Collaboration and Data Integration*](#). Pages 619-636 in: *Challenges for Diadromous Fishes in a Dynamic Global Environment* (ed Cunjak, R., Dadswell, M., Haro, A., Klauda, R., Moffitt, C., Rulifson, R. and Smith, K.) American Fisheries Society, Bethesda, MD.
- Lozano-Montes, H.M., Pitcher, T.J. and Haggan, N. (2008) [*Shifting environmental and cognitive baselines in the upper Gulf of California*](#). *Frontiers in Ecology and the Environment* **6**(1): 75-80.
- Haggan, N. and Klah-Kist-Ke-Is, Chief Simon Lucas (2008) [*Reconciling Aboriginal Fisheries with Conservation: Themes, concepts and examples*](#). Pages 495-497 in Nielsen, J.; Dodson, J.J.; Friedland, K.; Hamon, T.R.; Musick, J.; Verspoor, E. (eds) *Reconciling Fisheries with Conservation: Proceedings of the Fourth World Fisheries Congress*, American Fisheries Society, Bethesda.
- Haggan, N., Neis, B. and Baird, I.G. (eds) (2007) [*Fishers' Knowledge in Fisheries Science and Management*](#). Coastal Management Sourcebooks 4. UNESCO LINKS, Paris, 437p. [*Contents. Introduction. Chapter 1.*](#)
- Haggan, N. and Neis, B. (2007) [*The changing face of Fisheries Science and Management*](#). Pages 421-432 in: Haggan, N., Neis, B. and Baird, I.G. (eds) *Fishers' Knowledge in Fisheries Science and Management*. Coastal Management Sourcebooks 4. UNESCO LINKS, Paris, 437p.
- Pitcher, T.J., Morato, T., Hart, P.J.B., Clark, M., **Haggan, N.** and Santos, R. (eds) (2007) [*Seamounts: Ecology, Fisheries and Conservation*](#). Blackwell, Oxford, UK, 536p.
- Pitcher, T.J., Morato, T., Hart, P.J.B., Clark, M.R., **Haggan N.** and Santos, R.S. (2007) [*The Depths of Ignorance: An Ecosystem Evaluation Framework for Seamount Ecology, Fisheries and Conservation*](#). Chapter 21 in: Pitcher, T.J., Morato, T., Hart, P.J.B., Clark, M.R., Haggan, N. and Santos, R.S. (eds) *Seamounts: Ecology, Fisheries and Conservation*. Fish and Aquatic Resources Series, Blackwell, Oxford, UK, 536p.
- Pitcher, T.J., Ainsworth, C., Buchary, E.A. Cheung, W.W.L., Forrest, R. **Haggan, N.**, Lozano, H., Morato, T. and Morissette, L. (2005) [*Strategic Management of Marine Ecosystems using Whole-Ecosystem simulation Modelling: The "Back to the Future" Policy Approach*](#). Pages 199-258 in: Levner, E., Linkov, I. and Proth, J.M. (eds) *Strategic Management of Marine Ecosystems*. NATO Science Series IV. Earth and Environmental Sciences, 50: 313p.
- Clarke, S., Leung, A.W.-Y., Mak, Y.M., Kennish, R. and **Haggan, N.** (2002) [*Consultation with Local Fishers on the Hong Kong Artificial Reefs Initiative*](#). *ICES Jnl. of Marine Science*, **59**, S171-S177. [also issued separately with same title as Clarke *et al.* Pages 190-197 in: Relini, G., Ferrara, G. and Massaro, E. (eds) *Proceedings of the 7th International Conference on Artificial Reefs and Related Aquatic Habitats*, San Remo, Italy. 717p.]
- Pitcher, T.J., Watson, R., **Haggan, N.**, Guénette, S., Kennish, R. and Sumaila, U.R. (2000) [*Marine Reserves and the Restoration of Fisheries and Marine Ecosystems in the South China Sea*](#). *Bulletin of Marine Science*, **66**(3), 543-566.

Haggan, N. (1998) [Reinventing the Tree: Reflections on the organic growth and creative pruning of fisheries management structures](#). Pages 19-30 in: Pitcher, T.J., Hart, P.J.B. and Pauly, D. (eds) *Reinventing Fisheries Management*, Chapman and Hall, London, 435p.

Book Chapters

Haggan, N. (2011) [You don't know what you've got till its gone: The case for spiritual values in marine ecosystem management](#). In: *World Fisheries: A Social-Ecological Analysis*. Perry, I., Ommer, R.E., Cury, P. et al. (eds). Wiley-Blackwell, Oxford.

Haggan, N., Ainsworth, C., Pitcher, T.J. and Heymans, J.J. (2008) [Life in the fast food chain: Où sont les poissons d'antan?](#) Pages 51-74 in: Parrish, C.C., Turner, N. and Solberg, S. (eds) *Resetting the Kitchen Table: Food Security, Culture, Health and Resilience in Coastal Communities*. Nova Science Publishers, Inc., New York, 247p.

Haggan, N. (2000) [Back to the Future and Creative Justice: Recalling and Restoring Forgotten Abundance in Canada's Marine Ecosystems](#). Pages 83-99 in, Coward, H., Ommer, R.E. and Pitcher, T.J. (eds) *Just Fish: Ethics in the Canadian Coastal Fisheries*. ISER Books, St. Johns, Newfoundland, 304p.

Alcock, E., Harris, D., Ings, D., Kennedy, J., Mackie, Q., Fedje, D., Murray, G., Neis, B., Pitcher, T.J., **Haggan, N.**, Ainsworth, C., Sumaila, U.R., Rogers, K., Ryan, D., Vodden, K. and Whelan, J. (2007) A Social-Ecological History of Canada's Fisheries. Chapter 1 in: Ommer, R.E. and the Coasts Under Stress Team. *Coasts under stress: Restructuring and social-ecological health in coastal communities*. McGill-Queens University Press, Montreal, 624p.

Conference Proceedings

Haggan, N. (2008) You don't know what you've got till it's gone: Including cultural and spiritual values in Pacific NW ecosystem management. Coping with global change in marine socio-ecological systems, Rome, July 2008;

Haggan, N., Lucas, C.S., Sumaila, U.R., Turner, N.J., Pitcher, T.J. and Ainsworth, C.H. (2007) [Ecosystem-based management and the principle of 'Discovery'. Bridging Western Science and Indigenous Traditional Ecological Knowledge Ethically: What Works and What Doesn't](#). Ecological Society of America/Society for Ecological Restoration International, San Jose, CA, August 5-10;

Haggan, N., Narcisse, A., Sumaila, U.R., Lucas, C.S. and Turner, N.J. (2005) [Pacific Ecosystems, past, present and future: Integrating Knowledge and Values, Anticipating Climate Change](#). Earth in Transition, Martinez, D. (ed.). Zaragoza, Spain, September 12-18. URL:

Haggan, N., Turner, N.J., Carpenter, J., Jones, J.T., Menzies, C. and Mackie, Q. (2004) 12,000+ years of change: Linking traditional and modern ecosystem science in the Pacific NW. Restoration on the Edge: 16th Society for Ecological Restoration Conference, Victoria, BC, August 24-26.

Haggan, N., Pitcher, T.J. and Sumaila, U.R. (2004) [Back to the Future in the Strait of Georgia](#). Proceedings of the 2003 Georgia Basin/Puget Sound Research Conference, Droscher, T.W. and Fraser, D.A. (eds.) Vancouver.

Research Reports

Haggan, N. (2010) [The case for including the cultural and spiritual values of eulachon in policy and decision-making](#). Report for Fisheries and Oceans, Canada, 44p.

Haggan, N., Turner, N.J., Carpenter, J., Jones, J.T., Menzies, C. and Mackie, Q. (2006) [12,000+ years of change: Linking traditional and modern ecosystem science in the Pacific Northwest](#). UBC Fisheries Centre Working Paper #2006-02, Vancouver. Originally presented at the 16th Society for Ecological Restoration Conference, Victoria, August 24-26, 2004.

Haggan, N. and Pitcher, T.J. (eds) (2005) *Ecosystem Simulation Models of Scotland's West Coast and Sea Lochs*. Fisheries Centre Research Reports, **13**(4), 67p. Available from [UBC Fisheries Centre](#).

Power, M.D., **Haggan, N.** and Pitcher, T.J. (2004) [The Community Workshop: how we did it and what we learned from the results](#). Pages 125-128 in: Pitcher, T.J. (ed.) *Back to the Future: Advances in Methodology for Modelling and Evaluating Past Ecosystems as Future Policy*

- Goals. Fisheries Centre Research Reports* **12**(1), 158p;
- Haggan, N. (2004) [Evaluating Future Ecosystems: A Great Step Backward?](#) Pages 109-111 in: Pitcher, T.J. (ed.) *Back to the Future: Advances in Methodology for Modelling and Evaluating Past Ecosystems as Future Policy Goals. Fisheries Centre Research Reports*, **12**(1), 158p.
- Haggan, N., Brignall, C. and Wood, L. (eds) (2003) *Putting Fishers' Knowledge to Work. Fisheries Centre Research Reports*, **11**(1) 504p. Available from [UBC Fisheries Centre](#)
- Haggan, N. and Brown, P. (2003) [Aboriginal Fisheries Issues: the West Coast of Canada as a Case Study](#). Pages 17-19 in: Pauly, D and Palomares, M.L.D. (eds) *Production systems in fishery Management. Fisheries Centre Research Reports*, **10**(8), 28p;
- Pitcher, T.J. and Haggan, N. (2003) [Cognitive Maps: Cartography and Concepts for an Ecosystem-based Fisheries Policy](#). Pages 456-463 in: Haggan, N., Brignall, C. and Wood, L. (eds) *Putting Fishers' Knowledge to Work. Fisheries Centre Research Reports*, **11**(1), 504p;
- Haggan, N. and Pitcher, T.J. (2002) [Introduction to the Prince Rupert Community Participation Workshop for 'Back to the Future' in Northern British Columbia](#). Pages 6-9 in: Pitcher, T.J., Power, M.D. and Wood, L. (eds) *Restoring the past to salvage the future: report on a community participation workshop in Prince Rupert, BC. Fisheries Centre Research Reports*, **10**(7), 56p;
- Haggan, N., Brignall, C., Peacock, B. and Daniel, R. (2002) [Education for Aboriginal Fisheries Science and Ecosystem Management](#). *Fisheries Centre Research Reports*, **10**(6), 49p. URL: www.fisheries.ubc.ca/publications/reports/report10_6.php
- Pitcher, T.J., Vasconcellos, M., Heymans, J.J., Brignall, C. and Haggan, N. (eds) (2002) *Information Supporting Past and Present Ecosystem Models of Northern British Columbia and the Newfoundland Shelf. Fisheries Centre Research Reports*, **10**(1), 116p. Available from [UBC Fisheries Centre](#).
- Sumaila, U.R., Pitcher, T.J., Haggan, N. and Jones, R.R. (2001) [Evaluating the Benefits from Restored Ecosystems: A Back to the Future Approach](#). Pages 1-7, Chapter 18 in: Shriver, A.L and Johnston, R.S. (eds) *Proceedings of the 10th International Conference of the International Institute of Fisheries Economics and Trade, Corvallis, Oregon, USA, July, 2000. (on CD-ROM)*.
- Beattie, A., Wallace, S. and Haggan, N. (1999) [Report of the Back to the Future Workshop on Reconstruction of the Hecate Strait Ecosystem](#). Pages 1-12 in: Haggan, N and Beattie, A. (eds) *Back to the Future: Reconstructing the Hecate Strait Ecosystem. Fisheries Centre Research Reports*, **7**(3), 65p.
- Haggan, N. and Beattie, A. (1999) (eds) *Back to the Future: Reconstructing the Hecate Strait Ecosystem. Fisheries Centre Research Reports*, **7**(3), 65p. URL: Available from [UBC Fisheries Centre](#).
- Pitcher, T.J., Pauly, D., Haggan, N. and Preikshot, D. (1999) 'Back to the Future' a method employing ecosystem modelling to maximise the sustainable benefits from fisheries. Pages 447 – 466 in: *Ecosystem Approaches for Fisheries Management*. Fairbanks: Univ. of Alaska Sea Grant College Program Report No. 99-01. Fairbanks, 738p.
- Bonfil, R., Munro, G., Sumaila, U.R., Valtysson, H., Wright, M., Pitcher, T.J., Preikshot, D., Haggan, N. and Pauly, D. (eds) (1998) *Impacts of distant water fleets: an ecological, economic and social assessment*. Pages 11-111 in: *The footprint of distant water fleets on world fisheries. Endangered Seas Campaign, WWF International, Godalming, Surrey, 111p.* [Also issued separately, with same title, as Bonfil *et al.* (eds) *Fisheries Centre Research Reports*, **6**(6), Available from [UBC Fisheries Centre](#).
- Haggan, N. (1998) [Back to the Future with Ecopath and Ecosim](#). Page 26 in: *Use of Ecopath with Ecosim to Evaluate Strategies for Sustainable Exploitation of Multi-Species Resources. Fisheries Centre Research Reports*, **10**(2), 156p.
- Haggan, N., Archibald, J. and Salas, S. (1998) [Knowledge Gains Power When it is Shared](#). Pages 8-13 in: Pauly, D., Pitcher T.J. and Preikshot, D. (eds) *Back to the Future: Reconstructing the Strait of Georgia Ecosystem, Fisheries Centre Research Reports*, **6**(5), 99p.
- Munro G. and Haggan, N. (1998) [Distant Water Fishing Nations: Economic and Social aspects of their interactions](#). Pages 94-101 in: Bonfil, R. *et al.* (eds) *Distant Water Fleets: An Ecological, Economic and Social Assessment. Fisheries Centre Research Reports*, **6**(6), 111p.
- Salas, S., Archibald, J-a. and Haggan, N. (1998) [Aboriginal Knowledge and Ecosystem Reconstruction](#). Pages 22-28 in: Pauly, D., Pitcher, T.J. and Preikshot, D. (eds) *Back to the*

- Future: Reconstructing the Strait of Georgia Ecosystem, *Fisheries Centre Research Reports*, **6**(5), 99p.
- Haggan, N. (1996) [*Integration of Traditional Environmental Knowledge*](#). Page 88 in: Pauly D. and Christensen, V. (eds) Mass-Balance Models of NE Pacific Ecosystems. *Fisheries Centre Research Reports*, **4**(1), 131p.
- Pauly, D., Christensen, V. and **Haggan, N.** (eds) (1996) Mass-Balance Models of North-eastern Pacific Ecosystems. *Fisheries Centre Research Reports*, **4**(1), 131p. URL: Available from [UBC Fisheries Centre](#).

Studies for First Nations and government

1983-1999 Prepared 46 substantial documents (Sole author on 26, lead author on 18) for clients including the First Nations' Summit, Haida, Gitksan-Wet'suwet'en, Tahltan, Tsimshian, Oweekeno-Kitasoo-Nuxalk and Alliance Tribal Councils and Indian and Northern Affairs Canada. Major topics: cooperative management; resource rebuilding, access and sharing mechanisms; options for interim measures and treaty settlement; education, training, aquaculture and other policy considerations.