

# **COASTAL AND OCEAN RESOURCES INC.**

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## **SPECIALTIES:**

- coastal and nearshore habitat mapping
- multidisciplinary marine studies
- coastal zone management
- oilspill research and planning

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## **EDUCATION:**

B.Sc. Geology (cum laude), University of Massachusetts (1973);  
L.R. Wilson Award for Excellence in Geology  
M.Sc. Marine Science, Louisiana State University (1976)  
Ph.D. Marine Science, Louisiana State University (1978)

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## **WORK EXPERIENCE:**

1987-present **Principal**, Coastal and Ocean Resources (previously Harper Environmental Services), British Columbia and Nova Scotia  
1989-present **Adjunct Professor**, Centre of Earth and Ocean Resources, University of Victoria, Victoria, British Columbia  
2004 – present **Vice Chair** of Board, New marine Centre at Sidney  
2004-2006 **President** of the Board of Directors, Marine Ecology Centre  
1987-1989 **Marine Geologist/Coastal Coordinator**, Committee for Co-ordination of Joint Prospecting for Mineral Resources in South Pacific Offshore Areas (CCOP/SOPAC), Suva, Fiji  
1986-1987 **Manager**, Maritime Region, Dobrocky Seatech Ltd., Halifax, Nova Scotia  
1985-1986 **Manager**, West Coast Region, Dobrocky Seatech Ltd., Sidney, BC  
1983-1985 **Manager**, Geosciences and Hydrographic Services, Dobrocky Seatech Ltd.  
1980-1983 **Senior Project Scientist**, Woodward-Clyde Consultants, Victoria, British Columbia and San Francisco, California  
1978-1980 **Post-Doctoral Fellow**, Geological Survey of Canada, Pacific Geoscience Centre., Sidney, British Columbia  
1973-1978 **Research Assistant**, Coastal Studies Institute, Louisiana State University, Baton Rouge, Louisiana

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## **GEOGRAPHIC EXPERIENCE**

East, west and arctic coasts of Canada; east, west and arctic coasts of the United States; Brazil; Costa Rica; Fiji; Kenya; Kiribati; Papua New Guinea; Tonga; Western Samoa

Over the past 30 years, Dr. Harper has personally managed over 250 separate projects related to coastal and marine resources including the following disciplines:

**Coastal Habitat Mapping** - Dr. Harper has been closely involved with the development of coastal habitat classification and mapping systems over the past three years, using state-of-the-art remote sensing and GIS systems. This includes the development of the ShoreZone system, widely applied on the west coast of North America and the Seabed Imaging and Mapping System (SIMS), a high-resolution videographic seabed mapping system.

**Oil Spill Research, Planning and Response** - oil spill research studies since 1980, including several years of field studies associated with the Baffin Island Oil Spill experiment, sensitivity evaluations for the coasts of northern California, British Columbia, Kodiak Island, the Chukchi and Beaufort Sea coasts of Alaska, the Beaufort Sea coast of Canada, Labrador and Newfoundland. Other research areas have included the long-term fate of oil on shorelines, decision-making for shoreline cleanup operations and long-term monitoring programs. In 1984, he designed and implemented a physical monitoring program of the MV Puerto Rican oil spill off San Francisco. In 1991, Harper Environmental Services compiled the first Directory of Canadian Marine Oilspill Specialists. In 1992, he directed an Oil Spill Sensitivity Mapping Workshop in Costa Rica for ARPEL.

Dr. Harper has been extensively involved in the *EXXON Valdez* oil spill cleanup operation in Prince William Sound (1989-2002) with participation in quality assurance for preparation of oiling maps, coordination of the Prince William Sound Fate and Persistence Studies, bioremediation monitoring surveys. Dr. Harper conducted numerous post-*Exxon Valdez* oil spill experiments for Environment Canada.

**Coastal Research/Marine Geology** - coastal and nearshore studies since 1971 and with research projects on all major coastlines of North America and throughout the South Pacific. Research topics have included: beach monitoring, coastal mapping, sediment transport predictions and measurements, coastal erosion and scour monitoring, and coastal storm surge surveys.

**Environmental Impact** - since 1973, Dr. Harper has been closely involved with large, multidisciplinary impact assessments including: the first superport to be developed in the US (Harper, 1974), major construction projects at Prudhoe Bay (causeway construction and oil field waterflood construction), siting and impact evaluation of a major marine oil terminal in Santa Barbara, and the Beaufort Sea Environmental Monitoring Project (BEMP). Also he has been extensively involved with oil spill contingency planning in the marine environment with input to plans for offshore drilling in western Canada (Chevron, PetroCanada), the Beaufort Sea (Dome Petroleum) and Prudhoe Bay, Alaska (ARCO). Dr. Harper is presently part of the environmental team for the Baffinlands iron mine proposal for northern Baffin Island.

**Marine Parks** - numerous marine park studies including field studies of coastal landforms to delineation of new marine park sites in the Canadian arctic. In 1983, Dr. Harper conducted a strategic planning study for Parks Canada to delineate the marine regions of Canada; major segments of this study, including the delineated regions, have recently been incorporated into Parks Canada policy. Two field seasons of field work have been conducted within Pacific Rim National Park. He is currently directing a major biophysical mapping project of the newest marine park in Canada, South Moresby/Gwaii Haanas National Park Reserve.

- Bornhold, B.D., **Harper, J.R.**, McLaren, D. and Thomson, R.E., 2007, Destruction of the First Nations village of Kwalata by a rock avalanche-generated tsunami. *Atmosphere-Ocean*, 45, 123-128.
- Harper, J.R.**, N. Sloan, P. Bartier, M.C. Morris and C. Osborne. 2005. ShoreZone mapping for Haida Gwaii: Relevance for spill planning in Northern British Columbia. Proceedings of the 28<sup>th</sup> Arctic Marine Oilspill Technical Seminar. Calgary, AB.
- Owens, E.H., G. Sergy and **J.R. Harper** 2005. The behavior and treatment of Orimulsion<sup>®</sup> bitumen stranded on pebble, cobble or impermeable shorelines. Proceeding of the 2005 International Oil Spill Conference, American Petroleum Institute, Miami, Florida.
- Morris, M.C. and **J.R. Harper** 2005. Coastal Inventory of Katmai and Aniakchak, using the ShoreZone System (Abstract). Proceedings of the Southwest Alaska Network (SWAN) Meeting, Inventory and Monitoring Program of the U.S. Park Service, Anchorage, Alaska.
- Harper, J.R.** 2005. Clam gardens of British Columbia. Proceedings of the Canadian Archeological Conference, Nanaimo, BC (in prep).
- Harper, J.R.**, B.D. Bornhold and K. Kopeck. 2004. Pilot nearshore habitat mapping using acoustic and visual techniques Bristol Bay, Alaska (extended abstract). Proceedings of the Alaska Marine Science Conference, Exxon Valdez Oil Spill Trustee Council, Anchorage, AK.
- Harper, J.R.**, B.D. Bornhold, B. Burd, B. Emmett, C. Picard and P. Thuringer 2003. Use of Seabed Imaging and Mapping System for Use in Change Detection Monitoring (Abstract). Proceedings of the 2003 Georgia Basin/Puget Sound Conference, Vancouver, BC.
- Harper, J.R.**, B.D. Bornhold and B. Burd. 2003. Evaluation of the Towed Video Imagery for Eelgrass Mapping and Monitoring (Abstract). Proceedings of the 2003 Estuarine Research Federation Conference, Seattle, Washington.
- Harper, J.R.**, S. Saupe and M.C. Morris 2003. Mapping regional variations in nearshore habitat along the Gulf of Alaska coast (Abstract). Proceedings of the 2003 Estuarine Research Federation Conference, Seattle, Washington.
- Picard, C., B.D. Bornhold and **J.R. Harper** 2003. Wood debris accumulation and impacts on benthic ecology of British Columbia estuaries (Abstract). Proceedings of the 2003 Estuarine Research Federation Conference, Seattle, Washington.
- Berry, H., C. Schoch, Dethier, **J.R. Harper** and A. Bailey 2003. The abundance and distribution of nearshore habitats in Puget Sound: A comparison of the results of multiple habitat inventory techniques. (Abstract). Proceedings of the 2003 Estuarine Research Federation Conference, Seattle, Washington.
- Bloch, P., **J.R. Harper** and H. Berry 2003. Surveying Nearshore Habitat Using ShoreZone and the Rapid Shoreline Inventory. (Abstract). Proceedings of the 2003 Georgia Basin/Puget Sound Conference, Vancouver, BC.
- Picard, C., Bornhold, B.D. and **Harper, J.R.**, 2003, Impacts of wood debris accumulation on seabed ecology in British Columbia estuaries. Proceedings of the Second International Symposium on Contaminated Sediments, Quebec City, May 26-28. 6 pp.
- Harper, J.R.**, S. Ward, T. Brown, G. Sergy and M. Dempsey 2002. Orimulsion<sup>®</sup> Penetration and Retention in Coarse Sediments. Proceedings of the 25<sup>th</sup> Arctic Marine Oilspill Technical Seminar. Calgary, AB.
- Harper, J.R.**, S. Ward and G. Sergy 2002. Hydraulic washing removal efficiencies of Orimulsion<sup>®</sup> from rock surfaces. Proceedings of the 25<sup>th</sup> Arctic Marine Oilspill Technical Seminar. Calgary, AB.
- Harper, J.R.** and S. Saupe 2001. Intertidal biophysical mapping of Kachemak Bay and Cook Inlet using low-tide oblique aerial video imaging (abstract). Kachemak Bay Science Conference, NOAA Estuarine Research Reserve, Homer, Alaska.
- Emmett, E., P. Thuringer and **J.R. Harper** 2001. Using towed underwater video to map the physical and biological features of Victoria and Esquimalt Harbours, British Columbia (Abstract). Proceedings of the Submerged Lands 2001 Conference, Seattle, Washington.
- Harper, J.R.**, B.D. Bornhold, P. Thuringer and D. McCullough 1999. Application of Underwater Video Imaging for Seabed Engineering and Habitat Assessment. *In* Proceedings of the 1999 Canadian Coastal Conference, Victoria, BC, 12p.
- Harper, J.R.**, B. Emmett, D.E. Howes and D. McCullough 1998. Seabed imaging and mapping system – seabed classification of substrate, epiflora and epifauna. *In* Proceedings of the 1998 Canadian Hydrographic Conference, Victoria, BC, 13p.
- Bornhold, B.D. and **Harper, J.R.**, 1998, Engineering geology of the coastal and nearshore Canadian Cordillera. *Proc. 8<sup>th</sup> International Association of Engineering Geologists Meeting, Vancouver, 63-75.*
- Zacharias, M.A., D.E. Howes, **J.R. Harper** and P. Wainwright 1998. The British Columbia Marine Ecosystem Classification: Rationale, development and verification. *Coastal Management* 26:105-124.
- Zacharias, M.A., D.E. Howes and **J.R. Harper** 1998. The development of an ecosystem classification using an ecosystem-based approach. Approaches to Marine Ecosystem Delineation in the Strait of Georgia: Proceedings of a DFO Workshop, Sidney, B.C., 4-5 November 1997 Canadian Technical Report of Fisheries and Aquatic Sciences 2247 p96-104
- Harper, J.R.**, G. Sergy and M. Kory. 1997. Orimulsion-sediment interaction scoping experiments. Proceedings of the 20th Annual Arctic Marine Oilspill Project (AMOP) Technical Seminar, Vancouver, BC, in press.
- Harper, J.R.** and D.E. Howes. 1997. Development of a shoreline protection strategy for the West Coast of Vancouver Island. Proceedings of the 20th Annual Arctic Marine Oilspill Project (AMOP) Technical Seminar, Vancouver, BC, in press.
- Odhambo, B.K., R.W. Macdonald, M.C. O'Brien, **J.R. Harper** and M.B. Yunker 1996. Transport and fate of mine tailings in a coastal fjord of British Columbia as inferred from the sediment record. *Science and the Total Environment*: 191:77-94.
- Hodgins, D.O., **J.R. Harper** and Andree Chevier 1995. Technical guidance for physical monitoring at ocean disposal sites. Proceedings of the 1995 Canadian Coastal Conference, National Research Council of Canada, (in press).

- Morris, M., **J.R. Harper**, P.D. Reimer, H.R. Frith and D.E. Howes 1995. Coastal biotic mapping system using aerial video imagery. *In* Proceedings of the Third Thematic Conference on Remote Sensing for Marine and Coastal Environments, Seattle WA, p. 200-210.
- Sergy, G., S. Blenkinsopp, **J.R. Harper**, B. Humphrey and E.H. Owens 1995. Recent and emerging Canadian studies addressing oil-on-shoreline issues. Proceedings of Special Conference on Oil Pollution, International Maritime Organization, London, 13p.
- Harper, J.R.** and P.D. Reimer 1995. Review of aerial video imagery (AVI) applications and development of AVI standards for the Province of British Columbia. *In* Proceedings of the Third Thematic Conference on Remote Sensing for Marine and Coastal Environments, Seattle WA, p. 700-709.
- Harper, J.R.**, G. Sergy and T. Sagayama 1995. Subsurface oil in coarse sediments experiments (SOCSEX II). Proceedings of the 18th Annual Arctic Marine Oilspill Project (AMOP) Technical Seminar, Edmonton, AB, p.867-886.
- Sergy, G., S. Blenkinsopp, **J.R. Harper**, B. Humphrey and E.H. Owens 1995. Recent and emerging Canadian studies addressing oil-in-shorelines issues. Proceedings of the Second International Research and Development Forum, International Maritime Organization, London.
- Humphrey, B. and **J.R. Harper**, 1993. Coarse sediment oil persistence laboratory studies and model. Proceedings of the 1993 Arctic Marine Oil Spill Conference, Calgary, AB
- Gillie, R.D., **J.R. Harper** and R. Howarth, 1992. Beach profile changes at Tarawa, Kiribati, 1991-92. 7<sup>th</sup> International Coral Reef Symposium.
- Harper, J.R.**, D.F. Dickins, D. Howes and G. Sergy, 1992. Recent shoreline mapping projects in British Columbia and significance to oil spill countermeasure planning. Proceedings of the 15th Arctic and Marine Oil Spill Technical Seminar (AMOP), Environment Canada, p. 293-300.
- Harper, J.R.**, 1991. Non-carbonate sediment budgets. Keynote Paper, Proceedings of the 1987 CCOP/SOPAC Workshop on Coastal Processes in the South Pacific Island Nations, SOPAC Technical Bulletin 7:55-58.
- Harper, J.R.** and E.H. Owens, 1991. Post-cyclone coastal hazard assessment and mapping using a simple aerial videorecording system. Proceedings of the 1987 CCOP/SOPAC Workshop on Coastal Processes in the South Pacific Island Nations, SOPAC Technical Bulletin 7:163-164.
- Harper, J.R.**, J. Dempsey, W. Duval, J. Haggarty, B. Humphrey, L. Solsberg and G. Tidmarsh, 1991. Development of a directory of Canadian marine oilspill response specialists. Proceedings of the 14th Arctic and Marine Oilspill Program (AMOP) Technical Program, Environment Canada, p. 207-213.
- Harper, J.R.**, D.E. Howes and P.D. Reimer 1991. Shore-zone mapping system for use in sensitivity mapping and shoreline countermeasures. Proceedings of the 14th Arctic and Marine Oilspill Program (AMOP) Technical Program, Environment Canada, p. 509-523.
- Hill, P.R., S.M. Blasco, **J.R. Harper** and D.B. Fissel, 1991. Sedimentation on the Canadian Beaufort Shelf. Continental Shelf Research, Special Issue for the Canadian Continental Shelf Seabed Symposium, Halifax, Nova Scotia, 11(8-10):821-842.
- Reimnitz, E., P.W. Barnes, and **J.R. Harper**, 1990. A review of beach nourishment from ice transport of shoreface material, Beaufort Sea, Alaska. *Journal of Coastal Research* 6(2):439-470.
- Harper, J.R.**, 1990. Morphology of the Canadian Beaufort Sea coast. *Marine Geology*, 91:75-91.
- Vandermeulen, J.H., **J.R. Harper** and B. Humphrey, 1988. Environmental factors influencing oil penetration and persistence in fine sediment tidal flats. *Oil and Chemical Pollution* 4:155-177.
- Owens, E.H., B. Humphrey, D. Hope, W. Robson and **J.R. Harper**, 1987. The fate of stranded oil four years after an experimental spill on a sheltered gravel beach. Proceedings of 1987 Oil Spill Conference, American Petroleum Institute Publication No. 4452:473-478.
- Harper, J.R.**, R.F. Henry and G.G. Stewart, 1988. Maximum storm surge elevations in the Tuktoyaktuk region of the Canadian Beaufort Sea. *Arctic* 41(1):48-52.
- Harper, J.R.** and S. Narayanan, 1986. Wave climate study, northern coast of British Columbia. Proceedings of the International Workshop on Wave Forecasting (Dartmouth, Nova Scotia), Sponsored by the Environmental Studies Revolving Fund, Ottawa, p.49-58.
- Goldby, H.M., J.H.A. Crooks, **J.R. Harper** and B. Stukert, 1986. A novel approach to fill material quality assessment; near real time grading of dredged sand. Proceedings of the Canadian Geotechnical Conference, St. John's, Newfoundland.
- Owens, E.H, **J.R. Harper**, W. Robson and P. Boehm, 1986. Fate and persistence of crude oil stranded on a sheltered beach. *Arctic* (Special Issue on the Baffin Island Oil Spill Experiment) 40(Supplement 1):109-123.
- Harper, J.R.**, E.H. Owens and P.D. Reimer, 1986. Physical shore-zone mapping in Canada. (Invited Paper). *Coastal Mapping in Canada Symposium* (ed., Roland Perrotte), Dartmouth, N.S., *Cartographica* 23(1&2):97-106.
- Harper, J.R.** and F. Beech 1985. Fraser Estuary protection trials. Proceedings of the 8<sup>th</sup> Annual Arctic and Marine Oil Spill Program (AMOP) Technical Seminar (Environment Canada) Edmonton, AB, p. 324-350.
- Harper, J.R.** 1985. Ice interaction with coastal processes. Paper presented at the 1985 Canadian Coastal Conference Short Course, St. John's, NF, p. 91-113.
- Harper, J.R.**, R.D. Gillie, M.J Hill, R.K. Kashino, R. Foster and T. Boone 1985. Seabed scour monitoring at a caisson retained island in the Canadian Beaufort Sea. Proceedings of the 1985 Canadian Coastal Conference, St. John's, NF, p. 413-425.
- Harper, J.R.**, G. Miskulin, D. Green and D. Hope 1985. Experiments on the fate of oil in low energy marine environments.

- Proceedings of the Eighth Annual Arctic Marine Oilspill Program Technical Seminar, Edmonton, AB, p. 383-399.
- Owens, E.H. and **J.R. Harper**, 1985. British Columbia shorelines. In (Eric C. Bird and Maurice Schwartz, eds.) *The World's Coastlines*, Van Nostrand Reinhold Co., N.Y., N.Y., p. 11-15.
- Perrott, T., **J.R. Harper**, P. Hill and S. Blasco, 1984. The analysis of LANDSAT MSS data for characterizing sediment dispersal in the Beaufort Sea. Proceedings of the 8th Canadian Symposium on Remote Sensing, Paper 513, p. 283-291.
- Harper, J.R.**, G.A. Robilliard, J. Issacs and E.H. Owens, 1984. Coastal sensitivity analysis of the northern Chukchi Sea coast of Alaska. Proceedings of the 7th Arctic Marine Oil Spill Program (AMOP) Technical Seminar (Edmonton, Alberta), May 1984, Environment Canada, Ottawa, p. 278-294.
- Blasco, S.M., **J.R. Harper** and D.L. Forbes, 1983. Sediment distribution and dynamics in the Southern Beaufort Sea (Abstract). Contribution to Workshop on Coastal Processes Related to Beaufort Sea Resource Development (Calgary, Alberta), Associate Committee of Research on Shoreline Erosion and Sedimentation (ACROSES), National Research Council of Canada, Ottawa.
- Owens, E.H., W. Robson, C.R. Foget and **J.R. Harper**, 1983. The BIOS shoreline experiments: results from 1980 - 1982 field studies. Proceedings of the 6th Arctic Marine Oil Spill Program (AMOP) Technical Seminar (Edmonton, Alberta), June 1983, Environment Canada, Ottawa.
- Owens, E. H. and **J.R. Harper**, 1983. Arctic coastal processes - state-of-the-art knowledge review. Proceedings of the 1983 Canadian Coastal Conference (Vancouver), Associate Committee of Research on Shoreline Erosion and Sedimentation (ACROSES), National Research Council of Canada, Ottawa, p. 3-18.
- Robilliard, G.A., E.H. Owens, **J.R. Harper** and T.P. Winfield, 1983. Biological sensitivity, oil residence and human-use indices for coastal environments threatened by oil spills. Proceedings of Coastal and Ocean Management Symposium, San Diego, June 1-4, 1983.
- Robilliard, G.A., E.H. Owens, **J.R. Harper** and T.P. Winfield, 1983. Oil residence and oil spill biological sensitivity indices for coastal and marine environments (Abstract). Proceedings of the 1983 Oil Spill Conference (San Antonio, Texas), American Petroleum Institute, Washington, D.C.
- Harper, J.R.** and E. H. Owens, 1983. Coastal environments of British Columbia. In (B. Sadler, ed.) *Coastal Zone Management Symposium*, University of Victoria Press, Victoria, BC
- McLaren, P., **J.R. Harper** and P. Hale, 1983. Coastal environments of southern Vancouver Island, Field Guide. Geological Association of Canada (Victoria, BC), Annual Meeting, May 10-11, 1983.
- Harper, J.R.**, S.M. Blasco and P.R. Hill, 1983. Modern sediment dispersal and Holocene sediment budget of the Canadian Beaufort Sea (Abstract). Geological Association of Canada (Victoria, BC), Annual Meeting, May 10-11, 1983.
- Harper, J.R.**, 1983. Shore-zone ice statistics: Implications to coastal development. Proceedings of the Montebello Ice Scour Conference (Montebello, Quebec), National Research Council of Canada, Ottawa.
- Clague, J.J., **J.R. Harper**, R.J. Hebda and D.E. Howes, 1982. Late Quaternary sea levels and crustal movements in coastal British Columbia. *Canadian Journal of Earth Sciences* 19(3):597-618.
- Harper, J.R.**, 1982. Geological applications of a wave climate model - southern British Columbia (Abstract). Coastal Erosion and Sedimentation Workshop (Vancouver), Associate Committee of Research on Shoreline Erosion and Sedimentation (ACROSES), National Research Council, Ottawa.
- Harper, J.R.** and E.H. Owens, 1981. Analysis of ice override potential along the Beaufort Sea coast of Alaska. POAC 81, Port and Oceans under Arctic Conditions (Quebec City, Quebec), National Research Council of Canada, Ottawa, p. 974-984.
- Owens, E.H., **J.R. Harper** and D. Nummedal, 1980. Sediment transport processes and coastal variability on the Alaskan North Slope. Proceedings of the 17th International Coastal Engineering Conference (Sydney, Australia), American Society of Civil Engineers, Washington, D.C., p. 1344-1363.
- Harper, J.R.**, 1980. Seasonal changes to beach morphology along the British Columbia coast. Proceedings of the 1980 Canadian Coastal Conference (Burlington, Ontario), Associate Committee of Research on Shoreline Erosion and Sedimentation (ACROSES), National Research Council, Ottawa.
- Harper, J.R.** and R.K. Kashino, 1980. A dependable shallow-water, bottom-mounted current meter system. *Geological Survey of Canada, Current Research* 80-1C:146-148.
- Harper, J.R.**, 1980. Coastal processes on Graham Island, Queen Charlotte Islands, BC Geological Survey of Canada, Report of Activities 80-A:13-28.
- Harper, J.R.**, 1980. Littoral drift and erosion at Belle Pass, Louisiana: a discussion. *American Society of Civil Engineers, Journal of Waterway, Port Coastal and Ocean Division* 106:134-136.
- Harper, J.R.**, 1980. Coastal processes on Graham Island, Queen Charlotte Islands, BC (Abstract). Geological Society of America, Cordillerian Section Meeting (Corvallis, Oregon), March 1980.
- Harper, J.R.**, E.H. Owens and W.J. Wiseman, Jr., 1978. Arctic beach processes and the thaw of ice-bonded sediments in the littoral zone. Proceedings of the Third International Permafrost Conference (Edmonton, Alberta), National Research Council of Canada, Ottawa, p. 195-199.
- Harper, J.R.**, 1978. Physical processes affecting tundra cliff form on the Alaskan Arctic Coastal Plain (Abstract). Paper presented at the Association of American Geographers and International Geographical Union Coastal Symposium (New Orleans), p. 26.
- Harper, J.R.**, 1978. Coastal erosion rates along the Chukchi Sea coast near Barrow, Alaska. *Arctic* 31(4):428-433.
- Harper, J.R.**, 1977. Sediment dispersal trends of the Caminada beach ridge system, south Louisiana. *Transactions of the Gulf Coast Geological Societies* 27:283-289.
- Harper, J.R.** and W.H. Wiseman, 1977. Temporal variation of surface roughness over a tundra surface. *Journal of Geophysical Research* 83: 3495-3497.

TECHNICAL REPORTS

- Harper, J.R.**, B.D. Bornhold, P. Thuringer and D. McCullough 1999. Seabed resource survey using underwater video imagery, Gabriola Passage Pilot Marine Protected Area (MPA). Contract Report by Coastal & Ocean Resources Inc., Sidney, BC for the Canadian Hydrographic Service, Fisheries and Oceans Canada, Sidney, BC, 9p. (w appendices).
- Harper, J.R.**, B.D. Bornhold, P. Thuringer and D. McCullough 1999. Seabed resource survey using underwater video imagery, Race Rocks Pilot Marine Protected Area (MPA). Contract Report by Coastal & Ocean Resources Inc., Sidney, BC for the Canadian Hydrographic Service, Fisheries and Oceans Canada, Sidney, BC, 9p. (w appendices).
- Morris, M.C., H.R. Frith and **J.R. Harper** 1998. Biological interpretation of the Queen Charlotte and Johnstone Straits and Mid-Coast of British Columbia. Contract Report by Coastal & Ocean Resources Inc., Sidney, BC for the Land-Use Coordination Office, Victoria, BC, 20p.
- Schoch, G.C., **J.R. Harper** and M. Dethier 1998. The physical classification and biological modeling of nearshore habitats in Carr Inlet. Technical Report for the Washington State Department of Natural Resources, Olympia, WA, 70p.
- Harper, J.R.**, R.D. Gillie and M. Morris 1997. Biophysical shore-zone mapping of the outer Washington coast. Contract Report by Coastal & Ocean Resources Inc., Sidney, BC for the Department of Fish and Wildlife, Olympia, WA, 24p.
- Harper, J.R.** 1997. Review of the Queen Charlotte Sound/ Strait of Georgia Marine Region Boundary. Contract Report by Coastal & Ocean Resources Inc., Sidney, BC for Parks Canada, Hull, Quebec, 46p.
- Howes, D.E., M.A. Zacharias and **J.R. Harper** 1997. British Columbia marine ecological classification: Marine ecoregions and ecounties. Technical Report of the Resource Inventory Committee of British Columbia, 22p.
- Davis, T.J. and **J.R. Harper** 1996 (draft). Estuary mapping and classification system for British Columbia. Technical Report prepared by Coastal & Ocean Resources Inc., Sidney, BC for the Land-Use Coordination Office, Victoria, BC, 40pp.
- Harper, J.R.**, R.D. Gillie and D. McCullough 1996. Development of a probe to measure oiled shorelines: concepts for a probe and initial testing. Contract Report by Coastal & Ocean Resources Inc. of Sidney, BC for Environment Canada, Ottawa.
- Harper, J.R.**, P. Douglas Reimer, H.R. Frith and L. Armstrong 1996. Biophysical shore-zone mapping of the West Coast of Vancouver Island. Technical Report prepared by Coastal & Ocean Resources Inc., Sidney, BC for the Land-Use Coordination Office, Victoria, BC, 39pp.
- Harper, J.R.** 1995. Robson Bight coastal and nearshore sediment transport survey. Technical Report by Coastal and Ocean Resources Inc., Sidney, BC for the BC Ministry of Forests, Nanaimo, BC, 20 p.
- Harper, J.R.**, J. Haggarty and M.C. Morris 1995. Broughton Archipelago Clam Terrace Survey. Technical Report by Coastal and Ocean Resources Inc., Sidney, BC for the Land-Use Coordination Office (LUCO), Victoria, BC, 39 p.
- Harper, J.R.** 1995. Implementation of National Marine Conservation Area (NMCA) Strategy for Gwaii Haanas, Preliminary Concepts. Technical Report prepared by Coastal & Ocean Resources Inc., Sidney, BC for Heritage Canada - Parks Canada, Queen Charlotte, BC, 43p.
- Harper, J.R.** and M. Kory 1995. Subsurface oil in coarse sediment experiments (SOCSEX II). Technical Report by Coastal and Ocean Resources Inc., Sidney, BC for Environment Canada, Edmonton, AB, 44 p. w appendices.
- Hodgins, D.O. and **J.R. Harper** 1995. Technical guidelines for physical monitoring at ocean disposal sites. Contract Report by Seaconsult Marine Research Ltd., Vancouver, BC for Environment Canada, Ottawa, ON, 143p
- Harper, J.R.** and P.D. Reimer 1995. Review of aerial video survey techniques and recommendations of survey standards. Technical Report by Coastal and Ocean Resources Inc., Sidney, BC for the Ministry of Agriculture, Fisheries and Food, Victoria, BC, 32 p. w appendices
- Dempsey, J., A. Simms, **J.R. Harper**, E. Lambert and R. Hooper 1995. West Coast Newfoundland oil spill sensitivity atlas. Environmental Studies Research Funds, Report No. 127, 60p.
- Harper, J.R.**, M. Morris and P.D. Reimer, 1994. Flightline log and aerial video survey of West Coast Vancouver Island, 23-26 June 1994. Technical Report by Coastal and Ocean Resources Inc., Sidney, BC for the Ministry of Environment, Lands and Parks, Victoria, BC, 13p. w appendices.
- Howes, D.E., P. Wainwright, R. Baird, L. Berg, J. Cooper, J.M. Haggarty, **J.R. Harper**, E.H. Owens, P.D. Reimer and K. Summers 1995. Oil spill response atlas for Southern Strait of Georgia. Environmental Emergency Services, BC Ministry of Environment, Victoria, BC., 317p.
- Harper, J.R.**, M.C. Morris and P. D. Reimer 1994. Shoreline habitat mapping, San Juan Island, Washington. Technical Report by Coastal and Ocean Resources Inc., Sidney, BC for the Department of Fish and Wildlife, State of Washington, Olympia, WA, 9p.
- Harper, J.R.**, H.R. Frith and M.C. Morris 1994. The British Columbia coastal biotic mapping system, field verification of mapping procedures. Contract Report by Coastal & Ocean Resources Inc., Sidney, BC to BC Ministry of Environment, Lands and Parks, Victoria, BC, 15p.
- Howes, D.E., **J.R. Harper** and E.H. Owens 1994 (in press). Physical shore-zone mapping system for British Columbia. BC Ministry of Environment, Lands and Parks, Victoria, BC, 71p.
- Harper, J.R.**, W.C. Austin, M. Morris, P.D. Reimer and R. Reitmeier, 1994. A biophysical inventory of the coastal resources in the Gwaii Haanas/South Moresby National Park Reserve. Contract Report by Coastal and Ocean Resources, Sidney, BC for the Canadian Park Service, Calgary, AB, 114 p.
- Harper, J.R.** and F. Harvey-Kelley 1993. Subsurface oil retention in coarse sediment beaches. Environment Canada, Environmental Technology Centre, Emergency Science Division, Report Series No. EE-147, 34p. w appendices.

- Harper, J.R.**, M. Morris and P.D. Reimer, 1993. Western Vancouver Island aerial video survey (1993). Unpublished Report by Coastal and Ocean Resources Inc., Sidney, BC for the Ministry of Environment, Lands and Parks, Victoria, BC, 11p. w appendices.
- Frith, H.R., G. Searing, P. Wainwright, **J.R. Harper** and B. Emmett 1993. Review of habitat classification systems and an assessment of their suitability to coastal BC Unpublished Report by LGL Ltd., Sidney, BC for the Ministry of Environment, Lands and Parks, Victoria, BC, 87p.
- Harper, J.R.** 1993. Cordova Bay shore stability assessment. Unpublished Report by Coastal and Ocean Resources Inc., Sidney, BC for the Municipality of Saanich, Victoria, BC, 17p.
- Reimer, P.D. and **J.R. Harper**, 1993. Physical shore-zone mapping of the northern strait of Georgia for oil spill Sensitivity assessment. Contract Report prepared by EML Environmental Mapping Ltd., Victoria, BC for the Ministry of Environment, Victoria, BC, 56 p.
- Harper, J.R.**, S. Peters, J. Booth, D.F. Dickins and M. Morris, 1993. Coastal information resource inventory for the Province of British Columbia. Contract Report by Coastal and Ocean Resources Inc., Sidney, BC for the Ministry of Agriculture, Fisheries and Food, Victoria, 37 p.
- Harper, J.R.**, Christian, William E. Cross, R. Frith, G. Searing and D. Thomson, 1993. A classification of the marine regions of Canada. Contract Report by Coastal and Ocean Resources, Sidney, BC for the State of the Environment Office, Environment Canada, N. Vancouver, BC, 66 p.
- Harper, J.R.**, W. Austin and D.F. Dickins, 1991. Pacific Coast Oil Spill Concept: preliminary site survey. Contract Report by Harper Environmental Services to the Technology Development Branch, Environment Canada, Edmonton, 31 p. w appendices.
- Harper, J.R.** and P.D. Reimer, 1991. Physical shore-zone mapping of the Southern Strait of Georgia for oilspill sensitivity assessment. Contract Report prepared by Harper Environmental Services for the Environmental Emergencies Branch of the Ministry of Environment, Victoria, BC, 34 p.
- Harper, J.R.** and G. Sergy, 1991. Pacific Coast Oil Spill: Preliminary experimental design for the assessment of shoreline cleanup options. Workshop Report by Technology Development Branch, Environment Canada, Edmonton, 22p.
- Harper, J.R.**, 1990. Pacific coast oil spill: Preliminary experimental design for the assessment of shoreline cleanup options. Workshop Proceedings, Environment Canada, Technology Development Branch, Edmonton, Alberta. 22p.
- Harper, J.R.**, J. Dempsey, W. Duval, J. Haggarty, B. Humphrey, L. Solsberg and G. Tidmarsh, 1991. 1991 directory of Canadian marine oilspill response specialists. Published Report by Harper Environmental Services, Sidney BC, 119p.
- Harper, J.R.**, 1990. Environmental concerns related to reef mining. In Nearshore Minerals Exploration and Mining: Proceedings of the SOPAC-ICOD Nearshore Minerals Workshop, Savusavu, Fiji. SOPAC Misc. Report 104.
- Harper, J.R.**, 1990. Proceedings of the CIDA/ICOD Coastal Investigations and Engineering Workshop. SOPAC Training Report 36, 29p.
- Harper, J.R.**, 1990. Pacific coast oil spill: Preliminary experimental design for the assessment of shoreline cleanup options. Workshop Proceedings, Environment Canada, Technology Development Branch, Edmonton, Alberta. 22p.
- Lawrence, M., **J.R. Harper**, W. Duval and R. Hurst, 1990. Wildlife and wildlife habitat restoration in the event of an oil spill in the Beaufort Sea (Part III). Unpublished Workshop Synopsis for the Beaufort Sea Steering Committee, Task Group 2, Indian and Northern Affairs Canada, Ottawa, 20p.
- Harper, J.R.**, 1990. Bibliography of marine environmental resource information for the South Inner Coast of British Columbia. Contractor Report by Harper Environmental Services to the Environmental Emergencies and Coastal Protection Branch, Ministry of Environment, Victoria.
- Harper, J.R.**, 1990. User manual for the Ministry of Environment Oilspill Bibliography and Directory System (OBADS). Contractor Report by Harper Environmental Services to the Environmental Emergencies and Coastal Protection Branch, Ministry of Environment, Victoria, BC.
- Dickins, D.F., H. Rueggeberg, M. Poulin, I. Bjerkelund, J. Haggarty, L. Solsberg, **J. Harper**, A. Godon, D. Reimer, J. Booth and K. Neary, 1990. Oil spill response atlas for the southwest coast of Vancouver Island. Technical Report of the Environmental Emergencies and Coastal Protection Branch, Ministry of Environment, Victoria, BC.
- Harper, J.R.** and Howes, D.E., 1990. Directory of oilspill and environmental resource specialists for British Columbia. Technical Report of the Environmental Emergencies and Coastal Protection Branch, Ministry of Environment, Victoria, BC., 67p.
- Harper, J.R.**, P.D. Reimer and A. Pittenger, 1989. Quality Assurance and quality control of shoreline cleanup advisory team (SCAT) and video oiling maps. Confidential report to EXXON Corp., Anchorage, Alaska.
- Harper, J.R.**, 1989. Prince William Sound September Fate and Persistence Survey - Debriefing summary. Confidential Report to EXXON Corp., Anchorage, Alaska, 11p.
- Pflueger, J. and **J.R. Harper**, 1989. Preliminary evaluation of seafloor transient electromagnetic system for use in the nearshore minerals prospecting program. CCOP/SOPAC Miscellaneous Report 58, 4 p.
- Harper, J.R.**, P. Colotte and M. Drechsler, 1989. Geological and geophysical survey of a proposed outfall at Joyce Bay, Port Moresby, Papua New Guinea. CCOP/SOPAC Technical Report, DRAFT.
- Kitekei'aho, F. and **J.R. Harper**, 1989. High resolution seismic survey for lagoonal sand and gravel resources in Tongatapu, Kingdom of Tonga. CCOP/SOPAC Technical Report, DRAFT.
- Harper, J.R.** and R. Smith, 1989. Offshore survey for precious corals in the Lau Group of Fiji, 10-27 May 1988. CCOP/SOPAC Cruise Report, DRAFT.
- Harper, J.R.**, 1989. Offshore survey for deepwater precious corals in the Gilbert Islands, Kiribati, 20-29 January 1988. CCOP/SOPAC Cruise Report 124, DRAFT.

- Harper, J.R.**, 1989. Follow-up survey of the Betio/Bairiki causeway, Tarawa, Kiribati. CCOP/SOPAC Technical Report 86, DRAFT.
- Groves, S., W.G. Green and **J.R. Harper** 1988. Queen Charlotte Islands coastal zone: digital mapping and linked data base system. Environmental Studies Revolving fund, Report 085, 115p w appendices.
- Harper, J.R.**, 1987. Precious corals prospecting strategies for the South Pacific region. CCOP/SOPAC Technical Report 84, 77p.
- Harper, J.R.**, 1987. Initial survey of the Betio/Bairiki causeway, Tarawa, Republic of Kiribati. CCOP/SOPAC Technical Report 82, 34p.
- D.F. Dickins, L. Martin, I. Bjerkelund, S. Potter, D. Erickson, **J.R. Harper**, P. Norton, S. Johnson and P. Vonk 1987. Environmental Atlas for Beaufort Sea oil spill response. Contract Report by D.F. Dickins Associates Ltd. for Environment Canada, Yellowknife, Northwest Territories, 182p. w appendices.
- Harper, J.R.**, 1986. Kugmallit Bay storm-surge survey. Technical Report to Fisheries and Oceans Canada, Sidney, BC by Dobrocky Seatech Ltd., Sidney, BC
- Harper, J.R.**, I. Robertson and K. Thomson, 1986. Identification of marine areas of Canadian Significance in the Viscount Melville Sound Marine Region. Technical Report to Parks Canada, Hull, Quebec by Dobrocky Seatech Ltd., Dartmouth, N.S.
- Harper, J.R.** and B. Humphrey, 1986. Stranded oil in coastal sediments: permeation in tidal flats. Environmental Studies Revolving Fund, Ottawa, Report 031, 24 p.
- Harper, J.R.**, P.D. Reimer and R.W. Drinnan, 1986. A biological, geological, oceanographic study of the Lancaster/Eclipse Sound Region for purpose of potential marine park delineation. Technical report to Parks Canada, Hull, Quebec, by Dobrocky Seatech Ltd., Sidney, BC 246 p.
- Harper, J.R.** and S. Narayanan, 1986. Wave climate study, northern coast of British Columbia. Environmental Studies Revolving Fund Report, 44 p.
- Harper, J.R.**, 1986. Practical insights into decision-making for shoreline clean-up of oil spills. Environmental Studies Revolving Fund Report No. 033, 44 p.
- Harper, J.R.**, and E.H. Owens, 1985. Shoreline monitoring programs for spill-of-opportunity. Environmental Studies Revolving Fund, Ottawa, Report No. 012, 62 p.
- Harper, J.R.**, 1985. Fraser River Estuary Protection Study. Technical Report to the Environmental Protection Service, West Vancouver, BC by Dobrocky Seatech Ltd., Sidney, BC, 41 p.
- Harper, J.R., P.D. Reimer and A.D. Collins, 1985. Canadian Beaufort Sea physical shore-zone analysis. Technical Report to Northern Oil and Gas Action Plan, Indian and Northern Affairs Canada, Ottawa, by Dobrocky Seatech Ltd., Sidney, BC
- Harper, J.R.**, and R.K. Kashino, 1984. Caisson retained island erosion protection monitoring program. Technical Report to Esso Resources Canada Ltd., Calgary, by Dobrocky Seatech Ltd., Sidney, BC, 38 p.
- Howes, D. and **J.R. Harper**, 1984. Physical shore-zone analysis of Saanich Peninsula. BC Ministry of Environment, Assessment and Planning Report Series, 42 p. with maps.
- Owens, E.H., C. Foget and **J.R. Harper**, 1983. Baffin Island Oil Spill Project - 1982 shoreline component. Prepared for the Environmental Protection Service, Edmonton, Alberta by Woodward-Clyde Consultants, Victoria, BC
- Harper, J.R.** and B. Sawyer, 1983. Coastal analysis of Pacific Rim National Park. Unpublished Report to Parks Canada (Western Region), Calgary, Alberta by Woodward-Clyde Consultants, Victoria, BC
- Harper, J.R.**, G.A. Robilliard and J. Lathrop, 1983. Delineation of the marine regions of Canada. Unpublished Report to Parks Canada, Systems Planning Division, Ottawa by Woodward-Clyde Consultants, Victoria, BC, 149p.
- Owens, E.H., **J.R. Harper** and C. Foget, 1982. Baffin Island Oil Spill project - 1981 shoreline component. Prepared for the Environmental Protection Service, Edmonton, Alberta by Woodward-Clyde Consultants, Victoria, BC
- Mangarella, P., **J.R. Harper** and T. Weingartner, 1982. Prudhoe Bay Waterflood Monitoring Studies - physical processes. Unpublished Report to U.S. Army Corps. of Engineers, Anchorage, Alaska by Woodward-Clyde Consultants, Anchorage, Alaska.
- Harper, J.R.** and P.S. Penland, 1982. Beaufort Sea sediment dynamics. Unpublished Report to Geological Survey of Canada, Dartmouth, Nova Scotia by Woodward-Clyde Consultants, Victoria, BC, 198 p.
- Harper, J.R.**, 1981. Coastal landform inventory of the West Coast Trail, Pacific Rim National Park. Unpublished Report to Parks Canada (Western Region), Calgary, Alberta by Woodward-Clyde Consultants, Victoria, BC
- Harper, J.R.**, 1980. Analysis of ice override potential along the Beaufort Sea coast of Alaska. Unpublished report to Chevron U.S.A., San Francisco, California by Woodward-Clyde Consultants, Victoria, BC, 114 p.
- Harper, J.R.**, 1978. Physical processes affecting tundra cliff stability. Unpublished Ph.D. Dissertation, Louisiana State University, Marine Science Department, 212 p.
- Harper, J.R.**, 1976. Cuspate spits: A shoreline response to longshore power gradients. Unpublished M.Sc. Thesis, Louisiana State University, Marine Science Department, Baton Rouge, 128 p.
- Harper, J.R.**, 1974. Nearshore oceanography. In (J.G. Gosselink, R.R. Miller, M. Hood, L.J. Bahr, eds.) Louisiana Offshore Oil Port, Environmental Baseline Study, Louisiana Offshore Oil Port, Inc., V. 2(2), 41 p., 113 p.