Born: September 9, 1918 New London, Connecticut

Address: 16701 Shore Drive N.E.

Seattle, Washington 98155.

#### Academic training.

Roosevelt High School, Honolulu, Hawaii University of Virginia, 1934-38 (withdrew because of illness) University of California at Los Angeles, B.A., 1940; M.A., 1942. University of California at Berkeles, Ph.D., 1954.

# Teaching fields in recent years.

#### Undergraduate

Industrial Organization Economics of Natural Resources Intermediate Economic Theory (micro and macro)

#### Graduate

Industrial Organization and Price Policy
Seminar in Resource Economics
Policy Development and Administration: Natural Resources

### Academic employment.

University of California at Los Angeles, 1940-1942, Teaching Assistant, Economics.

University of California at Berkeley, 1946, Teaching Assistant, Economics; 1947-1949, Lecturer, School of Business Administration.

University of Washington, 1949-present, Assistant, Associate, Full Professor, Department of Economics. Joint appointments in Economics, Graduate School of Public Affairs, Institute for Marine Studies; Adjunct appointment, Institute for Environmental Studies.

#### Research grants.

Resources for the Future, Inc., 1956. Compilation and Rectification of Fishery Statistics of the United States, 1890-1955. \$1,000

State of Washington, Department of Fisheries, 1956. An Economic Valuation of the Commercial Fisheries of Washington, 1955. \$2,000

# Research grants (continued).

- U. S. Fish and Wildlife Service, 1957-1959. Analysis of the Economic Effects of Controlled Fishing in the Pacific Halibut Industry.
  \$39,000
- Resources for the Future, Inc., 1960-1962. Economic Evaluation of Pacific Coast Fisher, Management Programs. \$28,000
- U. S. Fish and Wildlife Service, 1961-1962. A Theoretical and Empirical Analysis of Valuation of Fishery Resources. \$11,000
- State of Washington, 1962. Legal, Management and Economic Study of the Puget Sound Salmon Fishery (with Dr. William Royce and Dr. Robert Fletcher). \$44,000
- State of Washington, Department of Fisheries. Economic Analysis of Proposals for International Management of Canadian-American Silver Salmon Resources, 1963. \$3,000
- National Science Foundation. Economic Aspects of Weather Modification, 1966-1967.
  \$3,000
- State of Washington, Department of Fisheries. Economic Valuation of Sport and Commercial Fisheries of Washington, 1966-1967 (with Dougald MacFarlane). \$7,200
- Socioeconomic Effects of Alternative Columbia River Diversion Proposals. Part of Water Research Center Master Project on Columbia River Diversion, June, 1969. \$16,000
- Economic Criteria for Flood Control Planning. Water Research Center project financed by the State Department of Water Resources, February, 1969. \$16,000
- Social, Economic and Legal Factors in Development of Puget Sound. Project director with seven associate investigators. Financed by the Federal Water Pollution Control Administration, July, 1969.
  \$30,000
- Continuation of Puget Sound Study, financed by the National Science Foundation, Sea Grant Program, 1969-1972. \$49,000

# Research grants (continued).

- Economic and Institutional Barriers to Efficiency in the American Fishing Industry (with Dr. J. Paulik). Financed by the Bureau of Commercial Fisheries, 1970-1972. \$105,000
- -Low Flow Criteria for Washington Rivers (with Drs. J. Orsborn and B. Mar). State of Washington, Department of Ecology. \$90,000
  - The Economics of Fish Protein Concentrate (with Robert Deacon).
    National Oceanic and Atmospheric Agency, National Marine
    Fisheries Service, 1971-1972.
    \$4,750
- Alternative International Management Regimes for the West African Fisheries (with Dr. R. Lawson): Ford Foundation, 1972-1973. (Completed) \$25,000
- Economic, Legal and Social Aspects of Weather Modification Programs (Dr. H. Taubenfeld, principal investigator). National Science Foundation, 1971-1973. (Completed) \$9,500
- Social Management of Technology, National Science Foundation (Dr. Edward Wenk, principal investigator); Associate investigator and director of study, "Oil Transport and the Environment." 1970-1972. \$276,000
- /Economic Impact of Oil on Puget Sound. NOAA, National Sea Grant Program, 1973. \$12,000
- Economic Costs of Water and Air quality Standards in Washington.
  Institute of Environmental Studies, University of Washington,
  1972-1973
  \$5,000
- Economic Dimensions, Puget Sound Baseline Study (with Robert Stokes). Department of Ecology, State of Washington, 1974-1975. \$62,000
- Development of course in Economic Aspects of Marine Affairs (with Robert Stokes). NOAA, National Sea Grant Program, 1974-1975. \$15,000

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# Research grants (continued).

Energy and Growth in the Pacific Northwest: Projects in Citizen Awareness (with Dr. Kai N. Lee and Dr. Pat Cranston). U.S. Department of Health, Education and Welfare. 1975-1976. \$30,000.

Review of National Marine Policy (with Dr. Donald McKernon and Dr. Robert Stokes). U. S. General Accounting Office. 1976 \$25,000.

Impact of Limited Entry on Washington State Fishermen (with Dr. Robert Stokes). Sea Grant Program/NOAA U. S. Department of Commerce. 1976 \$25,000.

Economic Analysis of Washington State Recreational Charterboat Industry. NMFS, 1976. \$21,000.

Economic Baseline Data for Hood Canal Region. Hood Canal Advisory Commission, 1976. \$6,750.

Socio-Economic Profile of Major Regional Fisheries (with Dr. Robert Stokes). NMFS, 1976. \$75,000.

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# Other activities outside University.

- Research Consultant, Oregon State College (contract with U.S. Fish and Wildlife Service for study of marketing of Pacific Coast fishery products).

  1955-1956
- -Participant, Conference on Fishery Economics, International Economics Association, Rome.
  1956
- Technical Assistance Expert, Food and Agriculture Organization of the United Nations, assigned to Uganda and Kenya.
  1957-1958
- Technical Consultant, Conference on Costs and Earnings of Fishing Enterprises. Food and Agriculture Organization of the United Nations, London.
- Participant, Federal Reserve Seminar, San Francisco, California.
- Participant and rapporteur, American Assembly Regional Conference on Monetary Policy.

  May, 1959
- Director, Training Center in Fisher, Survey and Development Planning. Food and Agriculture Organization of the United Nations.

  November-December, 1959
- Participant, Alaska Conference, American Academy for the Advancement of Science.
  1959-1960
- Technical Assistance Expert, Group Country Project (Argentina, Uruguay, Brazil). Director, preliminary survey and formulation of project.

  1960
- Participant, Conference on Fishery Regulation, FAO, Montreal. June, 1961
- Participant, FAO World Tuna Conference, La Jolla, California. 1962
- Consultant, U. S. Fish and Wildlife Service on reorganization of Economics Branch and its research program. 1962
- Editorial Consultant, U. S. Fish and Wildlife Service. Review manuscripts by staff and contract research personnel on economic aspects of fisheries.

  1962

# Other activities outside University (continued).

- Chief of Mission, United Nations Special Fund Mission to Ghana. To advise on establishment of university research institute in fisheries and oceanography.
- Participant and Technical Advisor, FAO Conference on Business Decisions, Rome.
  1964
  - Chief of Mission, United Nations Special Fund to Nigeria. To reformulate Special Fund project for fisher, development in Nigeria.

    1965
  - Consultant, U. S. Coast and Geodetic Survey. Economic evaluation of U.S. Coast and Geodetic Survey oceanographic missions. 1965
  - Member, Advisory Committee on Fisheries Research. National Academy of Sciences. This Committee is particularly concerned with development and application of fish protein concentrates in world nutrition programs.

    1965-present
  - Consultant, Resources Agency of California. Formulation of long range plan for development and management of natural resources in California.

    1965-1966
- Member, Governor's Fishery Advisory Committee, State of Washington. 1966-1969
- Member, International Commission of the North Atlantic Fisheries Working Group on Economic and Biological Assessment of Fisher, Regulation in the North Atlantic.
- Participant, Symposium on Wildlife Mangement, Nairobi, Kenya. 1967
- Consultant to Kaiser Industries and State of California on Bay Area-Delta Water quality Study. 1967-1968
- Member, National Commission on Marine Science, Engineering and Resources (Chairman, Marine Resources Panel).

  1968-1969
- Member, Governor's State Planning Advisory Council, State of Washington.
  1967-1970

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# Other activities outside University (continued).

- Consultant to United Nations Development Project, Lake Victoria Fisheries Research Project, Uganda. Food and Agriculture Organization of the United Nations. 1967-1968
- -Member, National Science Foundation Review Panel for Sea Grant proposals. 1968-present
  - Executive Board, Universities Council on Water Resources. 1970-1972
- Consultant, University of Alaska Project; Conflicts in Land Use in Alaska (Ford Foundation). 1970-1971
- Member, Advisory Panel on Committee on Water Law, Department of Ecology, State of Washington. 1971-1972
- Member, National Marine Fisheries Advisory Committee, National Marine Fisheries Service, U. S. Department of Commerce. 1971-1974
- Member, Committee on Aquatic Resources, National Academy of Sciences.
  1970-1974
- Chairman, State of Washington Energy Policy Council. 1973-1974
- Consultant, South China Seas Development Program, United Nations Development Program.
  1974-present
- Consultant State of Alaska, Commercial Fisheries Limited Entry Program.

  1974-present
- Head of Mission, Review of Indian Ocean Programme, United Nations
  Development Program-Food and Agriculture Organization of the
  United Nations.

  January-February 1976
- Member, Aquatic Resource Panel, World Food and Nutrition Committee, National Academy of Sciences. 1975-1976
- Member, Pacific Regional Fisheries Management Council, U.S. Department of Commerce. 1976-78.

#### University activities.

Chairman, Faculty Seminar on Public Policy Issues in Natural Resources, University of Washington. 1964-1972

Chairman, Water Resources Research Group, University of Washington. 1965-present

Chairman, Joint Scientific Committee, State of Washington, Water Research Center.
1966. Reappointed 1972-1973.

Member, Marine Sciences Research Committee, University of Washington. 1965-1966

Member, Technical Advisory Committee, Division of Marine Sciences, University of Washington. 1967-present

University Senate. 1968-1970

University of Washington delegate to Universities Council on Water Resources.
1968-present

Director, Regional Environmental Policies Studies, Division of Environmental Affairs.
1971-1972

Member, Committee on Environmental Impact Assessment, Institute for Water Resources, U. S. Corps of Engineers.
1972-present

Executive Committee, Institute for Environmental Studies.

Adjunct member, initial faculty, Institute for Marine Affairs. 1973-1975.

Joint appointment, Institute for Marine Studies. 1976-present.

Adjunct appointment, Institute for Environmental Studies.

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### Other employment.

- Office of Price Administration, District Economist, San Diego and Los Angeles District Offices.
  1942-1945
- Office of Price Stabilization, Regional Economist, Seattle Regional Office. 1950-1951
- Economist, L. P. Smith and Company (Market Research and Real Estate Consultants).
  1954-1955
- Technical Assistance Expert, Food and Agriculture Organization of the United Nations, assigned to Uganda and Kenya. 1957-1958

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#### Publications

- "Marine Resources: The Economics of U.S. Ocean Policy," AER, May, 1979, 266-272.
- "Economic and Societal Implications of Policy Alternatives for Controlling Fishing Effort," Journal of the Fisheries Research Board of Canada, 1979, 36:742-752.
- "Nuclear Power in Long Run Energy Supply." In K. Kennedy (ed.),
  Irish Economic Prospects, Economic and Social Research Institute,
  Dublin, September, 1978.
- "An Economic Analysis of Washington Ocean Recreational Salmon Fishing,"
  Pacific Fishery Management Council, Portland, OR, October, 1978.

#### 2. Teaching Ratings

Not rated this year. Nominated for alumni teaching award. u

#### 3. University Committees

Sea Grant Advisory Committee

Faculty Affairs Committee, Institute for Marine Studies

Joint Scientific Committee, U.W.-W.S.U. Water Research Center

Faculty Advisory Committee, U.W.-W.S.U. Energy Research Center

Chairman, Water Resources Research Group

#### 4. Lectures at Other Universities

- Western Washington University, "Economic Consequences of the 200-Mile Limit," July, 1978.
- University College, Dublin, "Long Run Energy Supply Functions," March, 1979.
- University of Victoria, "Impact of Indian Fishing Controversy on Salmon Management," November, 1978.
- University College, Galway, "The Role of Economics in Marine Research," April, 1979.
- Chancellor's Visiting Scholar, University of California, Santa Barbara, June, 1979.

### 5. Papers Given at Meetings

- "Alternative Approaches to Rationalization of Commercial Fisheries,"
  Symposium on Rationalization of Fisheries, Univ. of British Columbia and Department of Energy and Environment of Canada, Powell River, B. C., September 1978.
- "The Economics of Nuclear Power: U.S. and Irish Perspectives," Symposium on Nuclear Power, Committee on Economics and Statistics, Royal Irish Academy, Dublin, April 1979.
- "The 200-Mile Limit: Opportunities and Hard Choices," Northwest Regional Economics Association, Vancouver, B. C., May, 1979.
- "Oil Interactions with Living Marine Resources," Symposium on Marine Science and Ocean Policy, Univ. of California, Santa Barbara, June, 1979.

# 6. References from <u>Social Science Citation Index</u>

Cited 30 times during period 1976-78.

### 7. Community Service, Professional

Member, National Weather Modification Advisory Board.

Member, Climate Research Board, National Research Council, NAS.

Member, Scientific and Statistical Committee, North Pacific Fishery Management Council.

Member, Policy Advisory Board, International Council for Living Aquatic Marine Resources, Manila.

#### 8. Research in Progress

- "Legal and Socio-Economic Conflicts Between Fishery Conservation and Management Act and Other Federal and State Legislation and Programs," grant from NOAA, U.S. Department of Commerce, \$50,000 (with Profs. W. Burke and M. Hershman), April, 1979-September 1980.
- "Public Regulation of Commercial Marine Fisheries," grant from Economic Council of Canada, \$160,000 (with Profs. A. D. Scott, P. Pearse, G. Munro and J. Wilen), April 1979-June 1981.
- "The Irish Sea Fisheries and the Regional Programme of the European Economic Community," grant from Republic of Ireland and EEC to Economic and Social Research Institute, Dublin. (I am Principal Investigator and responsible for writing final monograph.)