

## RICHARD GEORGE DUDLEY

### Summary

Dr. Richard Dudley has over 25 years experience working with developing country scientists and managers to better understand, conserve and manage their natural resources. Dr. Dudley's experience has been in fishery management, aquatic and marine resource conservation, assessment of societal impacts on natural resources and their management, as well as university teaching and research. Since 1998 Dudley has also pursued an interest in applying system dynamics modeling to policy questions related to both resource management, as well as more general concerns in international development. Dudley has held long term project leadership positions in Indonesia and Oman, and has held other long term positions in Indonesia, Malawi and Zambia. Prior to much of his international work Dudley held teaching / research positions at the University of Georgia and Oregon State University.

### Education

B. S. Cornell University, College of Agriculture. Ithaca, New York, USA. 1964 - 1967.  
Fields: fisheries, natural resources, zoology.

M. S. Cornell University, College of Agriculture. Ithaca, New York, USA. 1967-1969.  
Fields: fisheries, international development.

Ph. D. University of Idaho College of Forestry, Wildlife and Range Sciences. Moscow Idaho, USA. 1969-1972.  
Field: fisheries.

### Other Training

Study Program in System Dynamics Modeling (distance learning). 10 months 1998-99. Massachusetts Institute of Technology, Systems Dynamics Group.

Advanced Techniques for System Dynamics Modeling (distance learning). 2004.  
Worcester Polytechnic Institute, Advanced Study Program in System Dynamics

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## Professional Experience

### Experience - Long Term (please also see short term assignments below)

- Fisheries Specialist. Segara Anakan Conservation and Development Project. Cilacap, Central Java. BCEOM French Consulting Group. Asian Development Bank. Various periods between Apr 1998 - May 2004.

Fisheries management in Segara Anakan Lagoon and adjacent coastal waters. Close cooperation with villagers, local government. Emphasis: relationship between lagoon management and coastal shrimp fisheries and relation to engineering intervention to protect lagoon.
- Advisor Wetlands Assessment and Monitoring Unit, Wetlands International - Indonesia Program. Jan 1996 - Jan 1997.

Support Wetlands International - Indonesia Program's Wetland Assessment and Management Unit. Analysis of fishery data from the Danau Sentarum Wildlife Reserve, West Kalimantan. Assisted Environmental Research Center at Universitas Lambung Mangkurat, South Kalimantan. Encouraged the overall scientific output of the Wetlands International - Indonesia Program.
- Team Leader, Higher Education Specialist. Indonesia Marine Sciences Education Project. Eduplus of Montreal. Asian Development Bank. Jan 1994 - Nov 1995.

Coordinated work of 50+ short term consultants assigned to six Indonesian Universities for to strengthen university teaching and research programs in all aspects of marine science. Provided support to, and reviewed work of, consultants. Close cooperation with the Directorate General of Higher Education, Ministry of Education and Culture.
- Team Leader, Fishery Specialist. Indonesia Tropical Forestry Management Project -- Conservation Component. Asia Wetlands Bureau (Wetlands International). ODA (United Kingdom). May 1992 - Aug 1993.

Coordinated work to create realistic management plan for the Danau Sentarum Wetlands National Park, West Kalimantan, Indonesia. Construction and equipping of field center within the reserve, obtained supplies, equipment, worked closely with the provincial office of the Directorate General of Forest Protection and Nature Conservation. On site responsibility for ecological and biological components of management plan related to the extensive small scale fisheries of the area. Studies related to management of fishery in cooperation with local people.
- Marine and Fishery Ecologist, Faculty of Fisheries, University of Riau, Pekanbaru. Indonesia. Marine Sciences Education Project. EDUPLUS of Montreal Canada. Asian Development Bank. Jul 1991 - Apr 1992.

Improve teaching / research related to marine ecology, particularly mangroves. Provided advice new marine station construction, selected books and scientific equipment for the expanded marine science programs. Prepared course materials for mangrove ecology, designed course schedules for marine science.
- Chief of Party / Chief Scientist Oman Fisheries Project / Associate Professor, Oregon State University. USAID / Omani - American Joint Commission. Jun 1986 - Jun 1990.

Established ongoing marine fishery research program at Oman's new Marine Science and Fishery Center in cooperation with the Oman Directorate General of Fisheries. Coordinated activities of biologists, seafood scientist, librarian, aquarium curator. Provided advice regarding fishing activities and fishery development. Provided advice to the Director regarding the Center's operation and the direction of programs for its 62 staff members. Carried out scientific studies of large pelagic fishes, particularly the Indopacific Spanish mackerel (*Scomberomorus commerson*).

- Artisanal Fishery Management Biologist / Assistant Professor. Indonesia Small Scale Fishery Development Project. Oregon State University. USAID. Oct 1982 - Jan 1985.

Studies to provide recommendations for the management of traditional inshore multi-species fisheries of northern Java. Data from fishing villages, fish auction places, artisanal fish catches. Assessed suitability of data from fisheries statistical system for fishery management. Cooperated with Directorate General of Fisheries and the Fisheries Services of several provinces.

- Assistant Professor / Columbia River Extension Fishery Specialist. Oregon State University. 1980 – 1982.

Taught Fishery Biology. Collected, analyzed, and summarized information regarding Columbia River fisheries management, and used that information to formulate training and information programs.

- Assistant Professor. University of Georgia, School of Forest Resources. 1972 -1980.

Taught Fishery Management, Fish Ecology. Advised graduate students. Carried out research in USA and Zambia. Especially: 1) Kafue Floodplain Zambia. Research with *Tilapia* and *Oreochromis* examined changes in fishery and fish populations for comparison with earlier predictions. 2) Field studies of striped bass (*Morone saxatilis*) in the Savannah River (1972 – 1979). Defined migratory limits via radio and ultrasonic tags. Examined effect of tide gate on the spawning success. 3) Investigated possible benefits resulting from in reservoir oxygenation on fishes in waters downstream from large reservoirs.

- Fishery Research Technician. Fishery Studies of the Kafue Floodplain. University of Idaho. UNDP/FAO. 1969 -1971.

Kafue Floodplain, Zambia. Predict effects of hydropower developments on commercial fishery especially *Tilapia* and *Oreochromis*. Work was used in analysis of benefits of various water management regimes on fisheries, wildlife, cattle grazing, etc.

- Research Assistant, Cornell University (1967-1969)  
Laboratory research investigating the relation of water quality to survival of fish eggs and larvae.

### **Experience - Short Term**

- Modeling Consultant. Center for International Forestry Research. October – November 2007. Modeling related to land requirements for biofuels, especially oil palm.
- Marine and Coastal Resource Management Specialist. ADB TA No.4551-INO: Marine and Fisheries Sector Strategy Study, Indonesia. Under contract with Uniconsult International Limited (UCIL) of Dhaka, Bangladesh. Jan - July 2006. Reviewed status

and potential of marine resources and developed strategy for their holistic development. Reviewed existing data, reports, made field visits to small and large scale fishery establishments. Prepared report providing advice regarding improved direction management of Indonesia's marine resources.

- Visiting Scholar. Cornell University, Department of Natural Resources. Mar 2002-May 2003. Application of system dynamics models to natural resource policy questions.
- Consultant. International Center for Forestry Research (CIFOR), Bogor, Indonesia. Developing research priorities to combat illegal logging. 5 months 2001. Worked with CIFOR and Indonesian colleagues to develop a better understanding of underlying causes of illegal logging in Indonesia. Developed possible research topics which CIFOR and other agencies might investigate to improve the success of strategies to combat illegal logging. Developed system dynamics models of various aspects of illegal logging.
- Visiting Fellow at BIOTROP. Indonesia Higher Education Project. World Bank. 3 months. 1997-1998. Assisted Southeast Asian Center for Tropical Biology develop MSc program in remote sensing, geographic information systems and modeling related to natural resource management. Provided advice related to aquatic ecology programs.
- Review Projects for Association of Canadian Community Colleges. Two weeks. Jan 98. Philippine projects related to fisheries. Southeast Asian Fisheries Development Center Aquaculture Department, and State Polytechnic University of Palawan.
- Revision Editor. Center for International Forestry Research, Bogor, Indonesia. 1 month during May, June, September 1997. Revise, rewrite and edit manual related to developing criteria and indicators for sustainable forest management.
- Advisor to Environmental Studies Center at Universitas Lambung Mangkurat, South Kalimantan. 8 weeks in May and November 1996 while contracted by Wetlands International (see page 2). (Consultant to Environmental Studies Centers Development in Indonesia Project carried out by Dalhousie University). Provided advice on MSc program design, wetlands research, modeling and internet use.
- Fisheries Specialist. Environmental Assessment of Kapuchira Dam, Malawi. Associates in Rural Development, Burlington, Vermont. World Bank. Dec 1990-Mar 1991; 10 weeks. Environmental assessment regarding proposed hydropower dam on the Shire River, Malawi. Investigated potential effects on floodplain and swamp fisheries, and analyzed and modeled probable reservoir discharges.
- Research Scientist. TROPISOILS project, Sitiung, West Sumatra, Indonesia. University of Hawaii. USAID. Various during 1985-1986. Taught computer short courses to American and Indonesian staff. Evaluated possible roles fish ponds and fish pond sediment for soil management.
- Consulting Fishery Biologist. Lotti Associati Engineers Italian Government Funding. April-June 1985. Planned fishery aspects in irrigation scheme in Anai River Basin, West Sumatra, Indonesia. Selection of fishery activities for proposed irrigation scheme.

## International Experience Summary

INDONESIA (Various) 2006-7

INDONESIA (Cilacap, Central Java) 1998-2001, 2004.

INDONESIA (Bogor, West Java) 2001-2002. (resident in Bogor 1996 – present)

PHILIPPINES (Iloilo and Palawan) 1998 (two weeks).  
INDONESIA (Bogor-West Java) 1996-1998.  
INDONESIA (Jakarta) January 1994 - Dec 1995.  
INDONESIA (West Kalimantan) May 1992 - August 1993.  
INDONESIA (Sumatra) July 1991-June 1992.  
MALAWI December 1990 - March 1991.  
OMAN June 1986- June 1990.  
INDONESIA (Sumatra) 1985-1986.  
INDONESIA (Semarang, Java) 1983-1985.  
ZAMBIA 1975-1976.  
VENEZUELA 1973.  
ZAMBIA 1969-1970.  
COSTA RICA 1971.

### Other Professional Activities

#### Organizations:

System Dynamics Society, Chair Environment Special Interest Group (2006-7)  
American Fisheries Society (certified) (1967- present)  
American Institute Fishery Research Biologists (Fellow)

### Related Skills

#### Languages:

English, fluent, mother tongue; Bahasa Indonesia, good working knowledge;  
Spanish, several years formal training but require retraining.

#### Other

Software: system dynamics modeling using Vensim and Stella, statistical packages, word processing, spreadsheets, database management, some programming, electronic communications, web page design, digital photo editing etc.

Experienced with small power and sail boats. Certified SCUBA diver.

### Publications, Reports and Presentations

(versions of most papers are available from <http://pws.prserve.net/RGDudley/> )

#### *Related to the application of system dynamics modeling*

Dudley, R. G. 2008. A Basis for Understanding Fishery Management Dynamics. **System Dynamics Review**. (accepted for publication October 2007).

Dudley, R. G. 2007. Payments, penalties, payouts, and environmental ethic: A system dynamics examination. **Sustainability: Science, Practice, Policy**. (accepted for publication August 2007).

Dudley, R. G. 2007. The Equity Supply Chain: Is it the Cause of So Few Women in Management and Leadership Positions? A paper prepared for presentation at the 25th International Conference of the System Dynamics Society August 2007. Boston, USA.

- Dudley, R. G. 2004. The dynamic structure of social capital: How interpersonal connections create communitywide benefits. A paper prepared for presentation at the 22nd International Conference of the System Dynamics Society July 25 – 29 2004. Oxford, UK. 22p + Figs.
- Dudley, R. G. 2004. Modeling the Effects of a Log Export Ban in Indonesia. **System Dynamics Review** 20 (2): 99-116.
- Dudley, R. G. 2004. A System Dynamics Examination of the Willingness of Villagers to Engage in Illegal Logging. **Journal of Sustainable Forestry** 19 (1/2/3):31-53. Co-published in **Illegal Logging in the Tropics: Strategies for Cutting Crime**. Ravenel, R.M., I.M.E. Granoff, and C.A. Magee, eds. Haworth Press.
- Dudley, R. G. 2003. Are International Development Projects Unfair to Local Staff? Dynamics of the Dual Salary Scale Question. Presented at the 2003 International System Dynamics Conference, New York City, July 20 - 24, 2003.
- Dudley, R. G. 2003. A Basis for Understanding Fishery Management Complexities. Presented at the 2003 International System Dynamics Conference, New York City, July 20 – 24. (substantial revision currently, late 2007, under review for publication)
- Dudley, R. G. 2001. Dynamics of Illegal Logging in Indonesia. Chapter 16 in: Colfer, Carol J. Pierce, and Ida Aju Pradnja Resosudarmo, Editors. 2001. **Which way forward? Forests, People and Policymaking in Indonesia**. RFF. Washington, D. C.
- Dudley, R. G. 2000. The Rotten Mango: The Effect of Corruption on International Development Projects. Part 1: Building a System Dynamics Basis for Examining Corruption. Eighteenth International Conference of the System Dynamics Society. August 6-10, 2000. Bergen, Norway. 19p + app. (available as contribution 6 from the Internet Center for Corruption Research at: [http://www.icgg.org/corruption.research\\_contributions.html](http://www.icgg.org/corruption.research_contributions.html)).
- Dudley, R. G. and Chris S. Soderquist. 1999. A Simple Example of How System Dynamics Modeling Can Clarify, and Improve Discussion and Modification, of Model Structure. 129<sup>th</sup> Annual Meeting of the American Fisheries Society, Charlotte, North Carolina. August 1999.

### ***Related to Fisheries and Natural Resource***

(versions of some papers are available from <http://pws.prserv.net/RGDudley/> )

- Dudley R. G. and Abdul Ghofar. 2006. Technical report no 2: Marine and coastal resource management. Marine and Fisheries Sector Strategy Study (ADB TA 4551 - INO), Prepared by Uniconsult International Limited (UCIL), Jakarta. 74p +app.
- Dudley, R. G. 2000. The Fishery of the Danau Sentarum Wildlife Reserve. **Borneo Research Bulletin** 31:261-306.
- Colfer, C.J. Pierce, A. Salim, R.L. Wadley & R.G. Dudley. 2000. Understanding patterns of resource use and consumption: a prelude to co-management. **Borneo Research Bulletin** 31:29-88.
- Dudley, R. G. 2000. Segara Anakan Fisheries Management Plan. Segara Anakan Conservation and Development Project, Components B & C. Consultant's Report. 33p + app. (note: This report and related data is available from <http://pws.prserv.net/RGDudley/>)
- Ravi Prabhu, Carol J. P. Colfer and Richard G. Dudley. 1999. **Guidelines for developing, testing & selecting criteria and indicators for sustainable forest management.**

- No. 1 in the Criteria and Indicators Toolbox Series. Center for International Forestry Research. Bogor, Indonesia. 186p.
- Dudley, R. G. 1997. Fisheries Management in a Borneo Wildlife Reserve: Danau Sentarum Wildlife Reserve, West Kalimantan, Indonesia. Presentation at the Annual Meeting of the American Fishery Society. Monterey, California. August 1997.
- Dudley, R. G. 1996. The Fishery of the Danau Sentarum Wildlife Reserve, West Kalimantan, Indonesia (two parts). Report prepared for the ODA Tropical Forest Management Programme, Project 5: Conservation. 52 p. + 113p tables and figs.
- Dudley, R. G. 1995. Final Report - Team Leader: Consultants' Activities. Marine Science Education Project. Ministry of Education and Culture, Directorate General of Higher Education in cooperation with Lavalin International, IDP Education Australia and P. T. Hasfarm Dian Consultan. ADB Loan No. 894-INO/895-INO SF. 64p + app.
- Dudley, R. G. 1994. Third World Fisheries: Who Cares? **Fisheries** 19(6):6-11.
- Colfer, Carol J. Pierce, with Richard G. Dudley (in cooperation with Herri Hadikusumah, Rusydi Niken Sakuntaladewi and Amblani). 1993. Shifting Cultivators of Indonesia: Marauders or Managers of the Forest. Rice Production and Forest Use Among the Uma' Jalan of East Kalimantan. Food and Agriculture Organization of the United Nations, **Community Forestry Series**. Number 6. 119p.
- Dudley, R. G., A. Prabhakar Aghanashinikar, and E. B. Brothers. 1992. Management of Indo-Pacific Spanish mackerel (*Scomberomorus commerson*) in Oman. **Fisheries Research** 15:17-43.
- Dudley, R. G. 1992. Collected Reports and Papers. Marine Science Education Project, Local Project Implementation Unit, Universitas Riau. app. 150 p. (includes scientific keys to mangrove plant species, course materials for marine ecology, suggested course scheduling etc).
- Dudley, R. G. 1990. Summary Final Report of the Contract for Technical Services for Staffing the Marine Science and Fisheries Center. Omani-American Joint Commission Project Number 272-0101.1-1. 23p + tables.
- Dudley, R. G. 1990. Large Pelagics Final Report of the Contract for Technical Services for Staffing the Marine Science and Fisheries Center. Omani-American Joint Commission Project Number 272-0101.1-1. 33p + tab., fig. and appen.
- Dudley, R. G. 1989. Kingfish and small tunas in Oman: assessment and management considerations. Paper presented at the International Agriculture and Fisheries Symposium held in Muscat, Oman. 15 - 19 October 1989. 8p.
- Al-Barwani, M., R. G. Dudley, J. A. Dorr III, S. R. Hare and D. W. Johnson. 1989. The extent of fishery resources in Oman: stock assessments and the potential for new resources. Paper prepared for the International Agriculture and Fisheries Symposium held in Muscat, Oman. October 1989.
- Dudley, R. G. 1989. Oman's large pelagic species: management and research considerations. **Report of the Third Southeast Asian Tuna Conference**, Bali Indonesia 22-24 August 1989.
- Dudley, R. G. and Arundhati Prabhaker Aghanashiniker. 1989. Growth and Population Characteristics of *Scomberomorus commerson* in Oman based on length data. **Report of the Workshop on Tunas and Seerfishes in the Arabian Sea Region**. Indopacific Tuna Program Workshop. Muscat, Oman. February 1989.

- Arundhati Prabhakar Aghanashiniker and Richard G. Dudley. 1989. Age, growth, and mortality rates of longtail tuna *Thunnus tonggol* (Bleeker) in Omani waters based on length data. **Report of the Workshop on Tunas and Seerfishes in the Arabian Sea Region**. Indopacific Tuna Program Workshop. Muscat, Oman. February 1989.
- Dudley R. G., Endang Hidayat and Carol J. Pierce Colfer 1989. A survey of small fishponds (West Sumatera, Indonesia). p 243-248 in TropSoils Technical Report 1986-1987. TropSoils Management Entity, Box 7113, North Carolina State University, Raleigh, NC 27695-7113.
- Dudley R. G. and Kenneth C. Harris. 1987. The fisheries statistics system of Java, Indonesia: operational realities in a developing country. **Aquaculture and Fisheries Management** 18:365-374.
- Dudley R. G. and Arundhati Prabhakar Aghanashiniker. 1987. Preliminary Studies of *Scomberomorus commerson* and *Thunnus Tonggol* in Omani Waters. pp 62-68 in **Report of the Workshop on Small Tuna, Seerfish, and Billfish in the Indian Ocean**. IPTP/87/GEN/13. Colombo, Sri Lanka. February 1988.
- Dudley R. G. 1987. Linkage Between Technical Assistance and Fishery Management. Presented at the Annual Meeting of the American Fisheries Society. Winston-Salem, North Carolina. September 1987.
- Dudley, R. G. and G. Tampubolon. 1986. Artisanal seine and liftnet fisheries of the north coast of Java. **Aquaculture and Fisheries Management** 17(3):167-184.
- Dudley, R. G. 1986. Mail order technical assistance: can it work? **Naga**, the ICLARM Quarterly 9(3):16-17.
- Dudley, R. G. 1985. Fisheries Development Possibilities. Chapter 8 in Dataran Anai Feasibility Study (West Sumatera, Indonesia). Lotti Associati Engineers, Rome.
- Dudley, R. G. and G. Tampubolon. 1985. The trammel net shrimp fishery of Java, Indonesia. **Oceanologi di Indonesia** 19:41-56.
- Dudley, R. G. 1985. Recommendations for the improved management of small scale marine fisheries of northern Java, Indonesia. A final report to the Directorate General of Fisheries, Indonesia for the USAID Small Scale Fisheries Development Project. 90p.
- Dudley, R. G. and K. C. Harris. 1984. Field review of the standard system of fishery statistics for Indonesia with recommendations for its improved operation. Prepared for the Directorate General of Fisheries, Indonesia as part of the USAID Small Scale Fisheries Development Project. 40p.
- Dudley, R. G. and T. G. McGahee. 1983. Winter and altered spring movements of striped bass in the Savannah River, Georgia. **Fishery Bulletin** 81(2):420-425.
- Dudley, R. G. and R. J. Scully. 1980. Changes in experimental gillnet catches from the Kafue River Floodplain, Zambia, since construction of the Kafue Gorge Dam. **J. Fish Biol.** 16:521-537.
- Dudley, R. G., R. D. Quintrell and G. S. Beisser. 1980. Hypolimnial oxygen injection: a benefit to downstream fish populations? **Environmental Biol. Fishes** 5(3):235-242.
- Quintrell, R. D. and R. G. Dudley. 1980. Effects of hypolimnial oxygenation on fish populations and water chemistry in Clarke Hill Reservoir tailwaters. Annual Meeting of the American Fisheries Society, 1980.

- Dudley, R. G. 1979. Changes in growth and size distribution of *Sarotherodon macrochir* and *Sarotherodon andersoni* from the Kafue Floodplain, Zambia, since construction of the Kafue Gorge Dam. **J. Fish Biol.** 14:205-223.
- Dudley, R. G. and K. N. Black. 1978. Distribution of striped bass eggs and larvae in the Savannah River Estuary. **Proc. Southeastern Assoc. of Fish and Wildlife Agencies.** 32:561-570.
- Dudley, R. G., A. W. Mullis, and J. W. Terrell. 1977. Movements of adult striped bass (*Morone saxatilis*) in the Savannah River, Georgia. **Trans. American Fishery Soc.** 106(4):314-322.
- Dudley, R. G. 1976. Status of major fishes of the Kafue Floodplain, Zambia, five years after completion of the Kafue Gorge Dam. Final Report to the National Science Foundation, Scientists and Engineers in Economic Development Program. (Grant Number: OIP75-09239). 71p.
- Dudley, R. G., and A. W. Eipper. 1975. Survival of largemouth bass embryos at low dissolved oxygen concentrations. **Trans. American Fish. Soc.** 104(1):122-128.
- Dudley, R. G. 1974. Growth of Tilapia of the Kafue Floodplain, Zambia: predicted effects of the Kafue Gorge Dam. **Trans. American Fish. Soc.** 103(2):281-291.
- Dudley, R. G. 1970. Biology of Tilapia of the Kafue Floodplain, Zambia. Annual Meeting of the American Fisheries Society, 1970, New York.