



Raymond C. P. Beamesderfer

Senior Fish Scientist

Education

B.S., Wildlife & Fisheries Biology, 1979, University of California, Davis.

M.S., Fishery Resources, 1983, University of Idaho.

Employment

President, Fish Science Solutions, Inc. 2016-present.

R2 Resource Consultants, Senior Fish Scientist, 2013-2016.

Cramer Fish Sciences, Senior Fish Scientist, 2000-2013.

Oregon Department of Fish & Wildlife, Fishery Management Biologist, 1997-2000.

ODFW, Staff Biologist/Analyst, 1994-1997.

ODFW, Fish Research, 1983-1993.

Ray has analyzed applied problems of fish biology and management for over 30 years. He has:

- ❑ Extensive experience with salmon, steelhead, trout, sturgeon, warmwater gamefish, and nongame species.
- ❑ Worked in Oregon, Washington, Alaska, Idaho, Montana, California, British Columbia, Russia and Japan.
- ❑ Completed numerous reports, plans and peer-reviewed scientific publications on fish monitoring and evaluation, population dynamics, species interactions, conservation, and management.
- ❑ Special expertise in the use of quantitative analysis, statistics, and computer modeling to solve difficult fish questions and in synthesizing and translating scientific analyses for a variety of audiences.

As a consulting fish scientist, Ray has completed a wide variety of projects for State and Federal agencies, Indian tribes, private industry, and non-governmental organizations regarding:

- ❑ Fish monitoring, research & evaluation
- ❑ Biological assessment
- ❑ Conservation & recovery analysis & planning
- ❑ Research, monitoring, and evaluation planning
- ❑ Fishery management & regulation
- ❑ Hatchery evaluation
- ❑ Fishery sustainability certification

Previously, he worked for the Oregon Department of Fish and Wildlife as a management biologist for Columbia River salmon and sturgeon fisheries and U.S. v. Oregon Technical Advisory Committee; staff analyst and agency representative for inter-jurisdictional Columbia River salmon, resident fish, and hydropower issues; and program and project leader for research on salmon predation, sturgeon stock assessment, fish management evaluations, and adult and juvenile salmon passage at dams and diversions.

Current & Past Clients

Federal Agencies

Bonneville Power Administration
Canadian Dept. of Fisheries & Oceans
National Marine Fisheries Service
Pacific Fishery Management Council
Pacific Salmon Commission
U.S. Bureau of Reclamation

State & Local Agencies

Alaska Department of Fish & Game
British Columbia Ministry of the Environment
Matanuska-Susitna Borough (Alaska)
Oregon Department of Fish & Wildlife
Washington Department of Fish & Wildlife
Washington Lower Columbia River Fish
Recovery Board

Non-governmental Organizations

Kenai River Sportfishing Association
Marine Stewardship Council
Salmon for All

Indian Tribes

Coeur d'Alene Tribe
Columbia River Inter-Tribal Fish Commission
Confederated Tribes of the Umatilla Indian
Reservation
Kootenai Tribe of Idaho
Shoshone-Bannock Tribes
Spokane Tribe of Indians
Yakama Indian Nation

Private Industry

Alaska Power & Telephone
American Forest Resources Council
Battelle Pacific Northwest Laboratory
British Columbia Hydropower
California State Water Contractors
Metropolitan Water District of Southern
California
Pacific Gas & Electric Company
PacifiCorp
Portland General Electric

Projects

Conservation & Recovery Analysis & Planning

Columbia Basin Partnership. 2017. *National Marine Fisheries Service Northwest Region.*

Lower Columbia River salmon and steelhead recovery plan. 2010. *National Marine Fisheries Service Northwest Region.*

Lower Columbia salmon and steelhead recovery plan. 2004-2010. *Washington Lower Columbia River Fish Recovery Board.*

Green Sturgeon Recovery Team. 2010. *National Marine Fisheries Service, Southwest Region.*

Peer review of critical habitat designation for white sturgeon populations in British Columbia, Canada under the Species at Risk Act. 2009. *Department of Fisheries and Oceans Canada.*

Preparation of background materials for the development of the recovery plan for the southern distinct population segment of North American green sturgeon. 2009. *National Marine Fisheries Service Southwest Region.*

Assessment of adult population objectives and monitoring needs for Pallid Sturgeon. March 23-24, 2009. *Pallid Sturgeon Conference and Workshop. Billings MT.*

Estimation of salmon recovery targets for ESA-listed lower Columbia and Willamette river coho, Chinook, Chum, and steelhead using population viability analysis. 2007. *Oregon Department of Fish and Wildlife and Washington Lower Columbia River Fish Recovery Board.*

Lower Columbia salmon and steelhead recovery plan (interim). 2002-2004. *Washington Lower Columbia River Fish Recovery Board.*

Kootenai River Burbot conservation plan. 2004. *Kootenai Tribe of Idaho*.

Upper Columbia River white sturgeon recovery plan. 2002. *Spokane Tribe of Indians, British Columbia Ministry of Water, Land and Air Protection, and BC Hydro Corporation*.

Research, Monitoring & Evaluation Plans

Matanuska-Susitna salmon research, monitoring and evaluation plan. 2014-2015. *Matanuska-Susitna Borough, Alaska*.

Fish habitat status and trends monitoring strategy and protocol for the Lower Columbia River. 2013. *Washington Lower Columbia River Fish Recovery Board*.

Research, monitoring and evaluation plan for the Shoshone-Bannock Tribal Fishery and Hatchery Program. 2013. *Shoshone-Bannock Tribe*.

Harvest monitoring plan for tribal salmon fisheries in Idaho. 2010. *Shoshone-Bannock Tribe*.

Research, monitoring and evaluation program for Lower Columbia Salmon and Steelhead. 2008. *Washington Lower Columbia River Fish Recovery Board*.

Kootenai River White Sturgeon Recovery Implementation Plan and Schedule, 2005-2010. 2005. *Kootenai Tribe of Idaho and the Bonneville Power Administration*.

ESA fisheries management and evaluation plan for lower Columbia River coho in Oregon freshwater fisheries of the lower Columbia River. 2005. *Oregon Department of Fish and Wildlife*.

ESA fisheries management and evaluation plan for lower Columbia River Chinook in Oregon freshwater fisheries of the lower Columbia River. 2001. *Oregon Department of Fish and Wildlife*.

ESA fisheries management and evaluation plan for upper Willamette Spring Chinook in freshwater fisheries of the Willamette basin and lower Columbia River. 2000. *Oregon Department of Fish and Wildlife*.

Fish Monitoring, Research & Evaluation

Evaluation of juvenile salmonid outmigration and survival from the Umatilla River. 2011, 2012. *Confederated Tribes of the Umatilla Indian Reservation*.

Status and limiting factors of ESA-listed lower Columbia and Willamette River chum, Chinook, coho, and steelhead in supplemental comprehensive analysis of the federal Columbia River power system and mainstem effects of the upper Snake and other tributary actions. 2007. *National Oceanic and Atmospheric Administration and the Bonneville Power Administration*.

Oregon Native Salmon and Steelhead Conservation Assessment. 2005. *Oregon Department of Fish and Wildlife*.

Analysis of cutthroat trout population viability in Timothy Lake, Oregon. 2002. *Portland General Electric*.

Evaluation and modeling of steelhead capacity, population dynamics, and reintroduction potential above impoundments in the upper Deschutes River, Oregon. 2001. *Portland General Electric*.

Analysis of salmon rearing, migration, survival, and passage based on PIT tag detections for the Clackamas River. 2001. *Portland General Electric*.

Biological Assessment

Deschutes River macroinvertebrate study. 2013-2015. *Portland General Electric*.

Assessment of salmon and steelhead impacts of transmission line corridor alternatives in Southwest Washington. 2012. *Bonneville Power Administration*.

Kenai River Habitat Assessment. 2010. *Alaska Department of Fish and Game and the Kenai River Sportfishing Association*.

- Assessment of green sturgeon flow measures in the Feather River, California. 2010. *California State Water Contractors*.
- Conference and sturgeon age estimation and tagging workshop, Bozeman MT. 2010. *North American Chapter of the World Conservation Society*.
- Scientific review of the basis for Intake Dam modifications for the benefit of Pallid Sturgeon in the Yellowstone River, Montana. 2009. *PBS&J, Inc. and the U.S. Bureau of Reclamation*.
- Comments on green sturgeon portions of the Oroville Dam Draft Biological Opinion by the National Marine Fisheries Service. 2009. *California State Water Contractors*.
- Comments on green sturgeon portions of the Biological Opinion on the Long-term Central Valley Project and State Water Project Operations Criteria and Plan. 2009. *California State Water Contractors*.
- Independent technical review of predation scenarios on juvenile salmonids in the Columbia River. 2007. *Battelle Pacific Northwest Laboratory*.
- Independent technical review of evaluation of ladder use at John Day Dam by Chinook salmon and steelhead trout. 2006. *Battelle Pacific Northwest Laboratory*.
- Population dynamics and extinction risks of Kootenai River burbot. 2004. *Kootenai Tribe of Idaho and Idaho Department of Fish and Game*.
- Historical and current information on green sturgeon occurrence in the Sacramento and San Joaquin Rivers and tributaries. 2004. *California State Water Contractors*.
- Stranding of juvenile fall Chinook salmon in the Hanford Reach of the Columbia River as a result of hydropower operations. 2003. *Columbia River Intertribal Fish Commission for Alaska Department of Fish and Game*.
- Green sturgeon status review. 2002. *Metropolitan Water District of Southern California*.
- Indirect effects of water export on juvenile salmon in the Sacramento-San Joaquin Delta: a conceptual Foundation. 2002. *Metropolitan Water District of Southern California*.
- Biological assessment of effects of Sherman Island Levee repairs on listed Delta smelt and Sacramento splittail. 2001. *James C. Hanson Engineers*.
- Review of conservation assessment of steelhead populations in Oregon. 2001. *American Forest Resources Council*.
- Documentation of existing and historic habitat, and native and introduced fish in the Clackamas basin, Oregon. 2001. *Portland General Electric*.
- Relicensing studies of fish populations in the upper Stanislaus River, California. 2001. *Pacific Gas and Electric Company and Tri-dam Project*.
- Assessments of biological and habitat effects of Otter Creek and South Fork to Black Bear Creek projects. 2001. *Alaska Power and Telephone*.
- Fishery Management & Regulation**
- Report to the Alaska Board of Fisheries on the biological basis of Upper Cook Inlet fishery management proposals. 2017. *Kenai River Sportfishing Association*.
- Report to the Alaska Board of Fisheries on northern Cook Inlet fish runs and fisheries: Juneau we have a problem. 2017. *Matanuska-Susitna Borough, Alaska*.
- Independent technical review of Chinook Salmon forecast methodology and their application in the coast-wide Chinook Model. 2016. *Pacific Salmon Commission*.
- Allowable fishery impacts to lower Columbia River natural coho: a review of the harvest control rule for possible policy reconsideration. 2014. *Pacific Fishery Management Council*.

- Report to the Alaska Board of Fisheries on the biological basis of Upper Cook Inlet fishery management proposals. 2014. *Kenai River Sportfishing Association*.
- Report to the Alaska Board of Fisheries on northern Cook Inlet fish runs and fisheries: Juneau we have a problem. 2014. *Matanuska-Susitna Borough, Alaska*.
- Analysis of the feasibility and effects of the potential use of alternative fishing gears in Lower Columbia River salmon commercial fisheries. 2012. Washington Department of Fish & Wildlife.
- Development of an abundance-based management approach for Lower Columbia River tule Chinook. 2010-11. *Pacific Fishery Management Council*.
- Report to the Alaska Board of Fisheries on the biological basis of Upper Cook Inlet fishery management proposals. 2010-11. *Kenai River Sportfishing Association*.
- Fishery assessments and regulatory proposals. 2010. *Matanuska-Susitna Borough, Alaska*.
- Conservation and Sustainable Fishery Plan Review. 2010. *Washington Department of Fish and Wildlife and Lower Columbia Fish Recovery Board*.
- Identification and description of essential fish habitat, adverse impacts, and recommended conservation measures for salmon. 2009. *Pacific Fishery Management Council*.
- Biometrics and fishery analysis support for the Pacific Fishery Management Council Scientific and Statistical Committee. 2009. *Oregon Department of Fish and Wildlife*.
- Risk Analysis of All-H Recovery Strategies for Tule Fall Chinook. 2009. *Washington Lower Columbia River Fish Recovery Board*.
- Problems and solutions in escapement goal management of upper Cook Inlet salmon fisheries. 2008. *American Fisheries Society Alaska Chapter Meeting*.
- Upper Cook Inlet salmon fishery model for analyzing harvest, allocation, and escapement effects of alternative management strategies. 2008. *Kenai River Sportfishing Association*.
- Report to the Alaska Board of Fisheries on the biological basis of Upper Cook Inlet fishery management proposals. 2008. *Kenai River Sportfishing Association*.
- Fishery risk assessment for Columbia River coho based on population viability analysis. 2007. *Washington Department of Fish and Wildlife and the Lower Columbia Fish Recovery Board*.
- Biological analysis of population and fishery effects of *de minimis* fisheries for Klamath Fall Chinook. 2007. *Pacific Fishery Management Council*.
- Kasilof sockeye escapement goal analysis. 2007. *Kenai River Sportfishing Association*.
- Analysis of size-selective Kenai King salmon fisheries and regulations. 2007. *Alaska Department of Fish and Game*.
- Analysis of the potential effects and alternatives for selective fishing in the lower Columbia River commercial and recreational fisheries. 2005. *Bonneville Power Administration*.
- Report to the Alaska Board of Fisheries on the biological basis of Upper Cook Inlet fishery management proposals. 2005. *Kenai River Sportfishing Association*.
- Review of the Coded Wire Marking Program for Columbia Basin Hatchery Salmon and Steelhead, Phase I. 2004. *Bonneville Power Administration*.
- Review of live capture selective harvest methods study for Columbia River spring Chinook. 2003. *Salmon for All*.
- Report to the Alaska Board of Fisheries on the biological basis of Upper Cook Inlet fishery management proposals. 2002. *Kenai River Sportfishing Association*.

Effects of large-mesh gillnet use on steelhead and salmon catch in Columbia River Zone 6 gillnet fisheries. 2001. *Yakama Nation and the Bonneville Power Administration*.

Conservation risks of mixed stock fisheries for wild spring Chinook salmon from Oregon's McKenzie River based on a population viability analysis. 2000. *Oregon Department of Fish and Wildlife*.

Hatchery Management & Evaluation

Evaluation of mid-Columbia River sturgeon hatchery management objectives. 2016. *Yakama Nation*.

Kootenai River sturgeon hatchery and endangered species evaluations. 2001-2014. *Kootenai Tribe of Idaho*.

Kootenai River Native Fish Conservation Aquaculture Program – Hatchery Master Plan. 2011-2012. *Kootenai Tribe of Idaho*.

Hatchery master plans for impounded white sturgeon populations of the lower Columbia and Snake rivers. 2008-2017. *Columbia River Inter-tribal Fish Commission*.

Sturgeon hatchery planning and evaluation technical assistance. 2009. *Yakama Nation Fisheries*.

Upper Columbia sturgeon hatchery release strategy. 2008. *British Columbia Ministry of Environment and BC Hydropower*.

Kootenai River White Sturgeon Conservation Aquaculture Program Overview, 1990-2007. 2008. *Kootenai Tribe of Idaho*.

Hatchery genetic management plans for the Sandy and Clackamas River Hatcheries. 2005. *Oregon Department of Fish and Wildlife*.

Coeur d'Alene Tribe Trout Production Master Plan. 2002. *Coeur d'Alene Tribe*.

Fishery Sustainability Certification

Marine Stewardship Council assessment of the sustainability of commercial salmon fishery in Prince William Sound, Alaska. 2017. *Scientific Certification Systems*.

Marine Stewardship Council assessment of the sustainability of commercial salmon fishery on Annette Island, Alaska. 2017. *Scientific Certification Systems*.

Peer review of certification report on sustainability of British Columbia salmon fisheries. 2016. *Marine Stewardship Council*.

Marine Stewardship Council surveillance audit of the Alaska commercial salmon fishery. 2016. *MRAG International*.

Marine Stewardship Council assessment of the sustainability of the commercial salmon fishery for West Kamchatka, Russia. 2016. *MRAG International*.

Marine Stewardship Council assessment of the sustainability of the commercial salmon fishery for West Kamchatka, Russia. 2015. *MRAG International*.

Marine Stewardship Council assessment of the sustainability of the commercial salmon fishery for Narody-Severa & Bolsheretsk, Kamchatka, Russia. 2014. *MRAG International*.

Marine Stewardship Council 5-year assessment of the sustainability of the commercial pink and chum salmon fishery for on Iturup Island in the south Kuriles. 2014. *Scientific Certification Systems*.

Marine Stewardship Council assessment of the sustainability of the commercial salmon fisheries for pink salmon in the Aniva District on Sakhalin Island, Russia. 2014. *MRAG International*.

Marine Stewardship Council assessment of the sustainability of the commercial chum salmon fishery for Kitami District, Hokkaido, Japan. 2014. *Scientific Certification Systems*.

- Marine Stewardship Council surveillance audit of the commercial fishery for pink salmon in the Nogliki-Smirnykh District on Sakhalin Island, Russia. 2013. *MRAG International*.
- Marine Stewardship Council assessment of the sustainability of the commercial salmon fishery for pink salmon in the Nogliki-Smirnykh District on Sakhalin Island, Russia. 2012. *MRAG International*.
- Marine Stewardship Council surveillance audit of the commercial salmon fishery for Ozernaya sockeye, Russia. 2013, 2014, 2016. *MRAG International*.
- Marine Stewardship Council assessment of the sustainability of commercial fishery for Ozernaya sockeye, Russia. 2012. *MRAG International*.
- Marine Stewardship Council surveillance audit of the commercial salmon fishery on Annette Island, Alaska. 2011, 2012, 2013, 2014, 2015. *Scientific Certification Systems*.
- Marine Stewardship Council assessment of the sustainability of commercial salmon fishery on Annette Island, Alaska. 2010. *Scientific Certification Systems*.
- Peer review of Marine Stewardship Council certification report on the sustainability of British Columbia commercial salmon fishery. 2009. *TAVEL Certification*.
- Marine Stewardship Council surveillance audit of Russia's JSC Gidrostroy commercial salmon fishery on Iturup Island in the south Kuriles. 2010, 2011, 2012, 2013, 2014. *Scientific Certification Systems*.
- Marine Stewardship Council assessment of the sustainability of Russia's JSC Gidrostroy commercial salmon fishery on Iturup Island in the south Kuriles. 2008. *Scientific Certification Systems*.
- Marine Stewardship Council assessment of the sustainability of Alaska commercial salmon fisheries. 2007. *Scientific Certification Systems and the Alaska Department of Fish and Game*.
- Peer review of certification report on sustainability of Alaska salmon fisheries. 2000. *Marine Stewardship Council*.

Scientific Publications

- 2009 Evidence of density- and size-dependent mortality in hatchery-reared juvenile white sturgeon in the Kootenai River. *Canadian Journal of Fisheries and Aquatic Sciences* 66:802-815. (Justice, Pyper, Beamesderfer, Paragamian, Rust, Neufeld & Ireland).
- 2008 Population dynamics and extinction risk of burbot in the Kootenai River, Idaho, USA and British Columbia, Canada. *American Fisheries Society Symposium* 59:213-234. (Paragamian, Pyper, Daigneault, Beamesderfer & Ireland).
- 2007 Use of life history information in a population model for Sacramento green sturgeon. *Environmental Biology of Fishes* 79:315-337. (Beamesderfer, Simpson, & Kopp).
- 2005 Status, population dynamics, and future prospects of the endangered Kootenai River white sturgeon population with and without hatchery intervention. *Transactions of the American Fisheries Society* 134:518-532. (Paragamian, Beamesderfer & Ireland).
- 2004 Dilemma on the Kootenai River - The risk of extinction or when does the hatchery become the best option? *American Fisheries Society Symposium* 44:377-385. (Paragamian & Beamesderfer).
- 2003 Growth estimates from tagged white sturgeon suggest that ages from fin rays underestimate true age in the Kootenai River, USA and Canada. *Transactions of the American Fisheries Society* 132:895-903. (Paragamian & Beamesderfer).
- 2002 Success of hatchery-reared juvenile white sturgeon (*Acipenser transmontanus*) following release in the Kootenai River, Idaho, USA. *Journal of Applied Ichthyology* 18: 642-650. (Ireland, Beamesderfer, Paragamian, Wakkinen & Siple).

- 2000 Managing fish predators and competitors: Deciding when interspecific intervention is effective and appropriate. *Fisheries* 25(6):18-23. (*Beamesderfer*).
- 1997 Alternatives for the protection and restoration of sturgeons and their habitat. *Environmental Biology of Fishes* 48:407-417. (*Beamesderfer & Farr*).
- 1996 Evaluation of the biological basis for a predator control program on northern squawfish (*Ptychocheilus oregonensis*) in the Columbia River. *Canadian Journal of Fisheries and Aquatic Sciences* 53:2898-2908. (*Beamesderfer, Ward & Nigro*).
- 1995 Growth, natural mortality, and predicted response to fishing for largemouth and smallmouth bass populations in North America. *North American Journal of Fisheries Management* 15:688-704. (*Beamesderfer & North*).
- 1995 Differences in the dynamics and production of impounded and unimpounded white sturgeon populations in the lower Columbia River. *Transactions of the American Fisheries Society* 126:857-872. (*Beamesderfer, Rien & Nigro*).
- 1994 Accuracy and precision in age estimates of white sturgeon using pectoral fin rays. *Transactions of the American Fisheries Society* 123:255-265. (*Rien & Beamesderfer*).
- 1994 Retention, recognition, and effects on survival of several tags and marks on white sturgeon. *California Fish and Game* 80:161-170. (*Rien, Beamesderfer & Foster*).
- 1993 Distribution and movements of white sturgeon in three lower Columbia River reservoirs. *Northwest Science* 67:105-111. (*North, Beamesderfer & Rien*).
- 1993 A standard weight equation for white sturgeon. *California Fish and Game* 79:63-69. (*Beamesderfer*).
- 1992 Book review of "Pacific Salmon Life Histories." *Fisheries* 17:56-58. (*Beamesderfer*).
- 1992 Reproduction and early life history of northern squawfish (*Ptychocheilus oregonensis*) in Idaho's St. Joe River. *Environmental Biology of Fishes* 35:231-241. (*Beamesderfer*).
- 1991 Abundance and distribution of northern squawfish, walleyes, and smallmouth bass in John Day Reservoir, Columbia River. *Transactions of the American Fisheries Society* 120:439-447. (*Beamesderfer & Rieman*).
- 1991 Estimated loss of juvenile salmonids to predation by northern squawfish, walleyes, and smallmouth bass in John Day Reservoir, Columbia River. *Transactions of the American Fisheries Society* 120:448-458. (*Rieman, Beamesderfer & Poe*).
- 1990 Management implications of a model of predation by a resident fish on juvenile salmonids migrating through a Columbia River reservoir. *North American Journal of Fisheries Management* 10:290-304. (*Beamesderfer, Rieman, & Vigg*).
- 1990 Comparison of efficiency and selectivity of three gears used to sample white sturgeon in a Columbia River reservoir. *California Fish and Game* 76:174-180. (*Elliott & Beamesderfer*).
- 1990 Dynamics of a northern squawfish population and the potential to reduce predation on juvenile salmonids in a Columbia River reservoir. *North American Journal of Fisheries Management* 10:228-241. (*Rieman & Beamesderfer*).
- 1990 White sturgeon in the lower Columbia River: Is the stock overexploited? *North American Journal of Fisheries Management* 10:388-396. (*Rieman & Beamesderfer*).
- 1988 Size selectivity and bias in estimates of population statistics of smallmouth bass, walleye, and northern squawfish in a Columbia River reservoir. *North American Journal of Fisheries Management* 8:505-510. (*Beamesderfer & Rieman*).