

CURRICULUM VITAE

Name: Richard W. Brill

Academic Affiliation: Affiliated Scholar
Natural Resources Section
Virginia Institute of Marine Science

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Scientific Specialty: Regulatory and comparative animal physiology

Education: B.A., Lafayette College - 1970, Biology

M.S., Northeastern University - 1974, Biology

Ph.D., John A. Burns School of Medicine,
University of Hawaii - 1979, Biomedical Physiology

Research Interests: Physiological ecology of fishes
Sensory biology of fishes
Bioenergetics of fishes

Academic Affiliations:

2022-present	Affiliated Scholar Virginia Institute of Marine Science College of William and Mary
2002-2021	Adjunct Faculty Virginia Institute of Marine Science College of William and Mary
2013-2015	Special Member, Graduate Faculty University of Maryland Eastern Shore

1994-2012 Senior Fellow
Joint Institute for Marine and Atmospheric Research
School of Ocean and Earth Sciences and Technology
University of Hawaii

1982-1994 Affiliate Graduate Faculty
Department of Physiology
John A. Burns School of Medicine
University of Hawaii

Employment:

2009-2018 Fishery Biologist, Research
Behavioral Ecology Branch,
Ecosystems Processes Division
Northeast Fisheries Science Center,
National Marine Fisheries Service, NOAA

I was assigned to the Virginia Institute of Marine Science where I functioned as a faculty member in the Department of Fisheries Science. I participated directly in the education and research activities at VIMS by working with and advising graduate students, conducting my own research, and teaching graduate level courses.

2002-2009 Director, Virginia Institute of Marine Science-Hampton
University, Cooperative Marine Education and Research Program

The Cooperative Marine Education and Research (CMER) Program placed senior NMFS scientists at cooperating academic institutions to administer the program, while also participating in research and educational activities. As director, I solicited research proposals from VIMS and Hampton University Faculty targeted at addressing issues relevant to the mission and goals of the National Marine Fisheries Service. I also participated directly in the education and research activities at VIMS by working with and advising graduate students, conducting my own research, and teaching graduate level courses.

1998-2002 Fishery Biologist, Research
1982-1994 National Marine Fisheries Service, Honolulu Laboratory

I was assigned as a member of the Fisheries Biology and Ecology Investigation. My activities centered on the physiological responses of tunas to environmental factors such as temperature and oxygen, their sensory physiology, and bioenergetics. The work entailed physiological/biochemical laboratory studies, plus ultrasonic telemetry and the use of new data recording (i.e., archival) tags in free ranging fish. The goal of my research was to understand and predict the effects of oceanographic conditions on the distribution, abundance, and fishing gear

vulnerability of commercially important tuna and billfish species. My laboratory work and studies of fish in the open ocean existed in a reciprocal relationship where one generated hypotheses that were subsequently tested in the other. Over the years, I had sole and shared responsibility for planning, budgeting, executing, and publishing results from various research programs and supervisory responsibility for fishery biologists, NOAA Corps officers, technicians, graduate students and postdoctoral fellows. Before its decommissioning, I was responsible for the R/V *Kaahale 'Ale*, an 11 m research launch used for ultrasonic telemetry studies tunas, billfishes, and sea turtles. I also supervised graduate students and coordinated the activities of scientists visiting the Kewalo Research Facility to study tuna physiology.

1994-1998 Senior Fellow
 Joint Institute for Marine and Atmospheric Research
 School of Ocean and Earth Sciences Technology
 University of Hawaii

I was awarded a major grant from the University of Hawaii's Pelagic Fisheries Research Program and was temporarily transferred from the National Marine Fisheries Service to the University of Hawaii under the Interagency Personnel Act. This four-year project built upon my previous studies on the physiological abilities and habitat requirements of skipjack and yellowfin tunas and was designed specifically to enhance understanding of tuna movements and distributions, and to improve stock assessment models. The project included laboratory research, as well as ultrasonic telemetry of the behavior of fish in the open ocean. I supervised a post-doctoral researcher and full-time research associate, and bore overall responsibility for developing, integrating, and publishing the research carried out under the grant.

1980-1982 Scientific Director
 Pacific Gamefish Foundation
 Honolulu, Hawaii

As scientific director, I bore complete responsibility for fund raising, financial management, production of grant proposals, and direction of the research programs of this private nonprofit organization. The Pacific Gamefish Foundation (now called the Pacific Ocean Research Foundation) is dedicated to encouragement and direct support of research programs intended to increase understanding and promote conservation of Pacific gamefish, especially tunas and marlin.

1979 Postdoctoral Fellow
 Department of Zoology
 University of British Columbia

During this fellowship, I worked as part of a group investigating the cardiovascular physiology of birds and mammals during forced breath holding. The work was designed to elucidate the interaction of chemoreceptors and baroreceptors, and cardiac energetics during the so called "diving reflex".

Research Grants and Contracts:

- 2024-2025: NOAA Bycatch Reduction Engineering Program “Shark bycatch monitoring and avoidance: strategies for sustainable purse seine fisheries” PIs: Victor Restrepo, Hilario Murua; Unpaid Consultant: Richard Brill. Amount Requested \$196,621. Approval pending.
- 2023-2024: NOAA Bycatch Reduction Engineering Program “Development and Testing of Bycatch Reduction Devices in the Mexican Longline Fishery.” PIs: Chugey Sepulveda and Scott A. Aalbers; Non-Compensated Partners: Richard Brill, Oscar Nishizaki-Sosa. Amount: \$207,917
- 2021-2023: Saltonstall-Kennedy Program “Demonstrating effectiveness of a microprocessor-based shark bycatch reduction device (BRD) in longline fisheries using an academic-industry partnership.” PIs: Sara Mirabilio, Richard Brill, Peter Bushnell, Walter Golet, Ilan Levine, John Mohan, Total Amount: \$263,283.
- 2019-2021: Sea Grant Highly Migratory Species Research “Refinement and testing of a microprocessor-based shark bycatch reduction device (BRD) using an academic-industry partnership”. PIs: Sara Mirabilio, Richard Brill, Peter Bushnell, Total Amount: \$40,899.
- 2017-2019: Research Mentor for NSF Research Initiation Award (RIA) “Linking environment to form and function by quantifying the effects of ocean acidification on visual and auditory neurobiology in marine fishes (OANeuro).” awarded to Andrij Horodysky, Hampton University.
- 2016-2017: NOAA Collaborating Investigator on Living Marine Resources Cooperative Science Center program project, “Effect of low taurine diet on visual function in aquacultured cobia, *Rachycentron canadum*. PIs: Andrij Horodysky and Allen Place. Total amount \$40,407.
- 2016-2017: Nova Southeast University internal funds award, “Modeling lionfish vision and determining metabolic scope under hypoxic conditions.” In association with David Kerstetter and Andrij Horodysky.
- 2014: Save Our Seas Foundation, AOld and Cold B Conservation and Natural History of the Greenland Shark.@. In association with Peter Bushnell and John Steffensen. Total amount \$30,000.

- 2012: NOAA Collaborating Investigator on Living Marine Resources Cooperative Science Center program project, ASensory ecology of Atlantic sturgeon: ecophysiological auditory and visual performance measures.@ In association with: Andrij Horodysky and Eric Hilton, Total amount: \$20,482.
- 2011-2012: NOAA Collaborating Investigator on Living Marine Resources Cooperative Science Center program project, ATemperature preferences of Atlantic croaker under hypoxic and normoxic conditions.@ In association with Andrea Johnson and Andrij Horodysky. Total amount: \$49,097.
- 2011-2012: NOAA Collaborating Investigator on Living Marine Resources Cooperative Science Center program project, ASensory ecology of tautog: ecophysiological auditory and visual performance measures.@ In association with Andrij Horodysky and Andrea Johnson. Total amount: \$24,490.
- 2011: VIMS Sea Grant Program, AEffects of hypoxia and mycobacteriosis in striped bass (*Morone saxatilis*).@ In association with Mary Fabrizio, Wolfgang Vogelbein, David Gauthier. Total amount \$40,000.
- 2010-2012: NOAA Chesapeake Bay Office, AQuantifying the interactive effects of hypoxia, temperature, and mycobacteriosis on striped bass (*Morone saxatilis*) and their impact on the energetics and ecology of these fish.@ In association with Mary Fabrizio, Wolfgang Vogelbein, David Gauthier. Total amount \$99,671.
- 2011-2012: NOAA Collaborating Investigator on NSF CREST Program award, APhysiological effects of hypoxia and environmental contaminants on Atlantic croaker in the Chesapeake and Coastal Bays.@ In association with Andrea Johnson and Mary Fabrizio.
- 2010-2012: NMFS - Pacific Islands Fisheries Science Center & Pelagic Fisheries Research Program (Univ. Hawaii), AEvaluating the Physiological Status of Pacific Blue Marlin Captured in the Pacific Longline Fisheries: Implications for Post-release Survival: II. Biochemical Correlates of Morbidity and Mortality.@ In association with Michael Musyl, Christopher Moyes, Daniel Curran. Total amount: \$116,000.
- 2011: Save Our Seas Foundation, AConservation and Natural History of the Greenland Shark.@ In association with Peter Bushnell and John Steffensen. Total amount \$25,000.
- 2011: National Geographic Society, AConservation and Natural History of the Greenland Shark.@ In association with Peter Bushnell and John Steffensen. Total amount \$14,947.

- 2010-2011: NOAA Collaborating Investigator on Living Marine Resources Cooperative Science Center program award, AReproductive and immunological health assessment of Atlantic croaker exposed to hypoxia in Chesapeake Bay@. In association with Andrea Johnson and Yonathan Zohar. Total amount \$27,644
- 2010-2011: NOAA Collaborating Investigator on Living Marine Resources Cooperative Science Center program award, ASensory ecology of juvenile and adult black sea bass: ecophysiological auditory and visual performance measures.@ In association Andrij Horodysky and Andrea Johnson. Total amount \$42,482
- 2008: Grant from the National Shark Research Consortium, AInvestigation of the ability of electropositive metals to reduce catch rates of juvenile sandbar sharks (*Carcharhinus plumbeus*) in a model longline fishery@. In association with Peter Bushnell, John Wang, and Eric Stroud. Total amount \$9,500.
- 2007: Grant from the NMFS - Northwest Fisheries Science Center, AInvestigation of the effects of capture and release (discarding) on visual function in recreationally and commercially important Pacific coast fishes.@ In association with Michael Davis, Robert Hannah, and Steve Parker. Total amount \$8,410.
- 2007: Grant from the NOAA Fisheries Pacific Island Fisheries Science Center, AA proposal to investigate the ability of electropositive metals to repel captive juvenile sandbar sharks (*Carcharhinus plumbeus*) from simulated longline gear.@ In association with Yonat Swimmer, John Wang, and Eric Shroud. Total amount \$5K.
- 2006-2007: Grant from the Virginia Recreational Fisheries Advisory Board, AVisual function in Chesapeake Bay sport and prey fishes: summer flounder, bluefish, cobia, and Atlantic menhaden@. In association with Andrij Hordosky, VIMS. Total amount \$100K.
- 2005-2006: Grant from the Virginia Recreational Fisheries Board AVisual function in Chesapeake Bay sportfishes: striped bass, weakfish, spotted seatrout, Atlantic croaker, spot, and red drum@. In association with Andrij Hordosky and Jack Musick. Total amount \$54,818.
- 2004: Contract from National Marine Fisheries Service, Pacific Islands Fisheries Science Center, for management of the projects associated with program AInvestigation of Sea Turtle and Pelagic Fish Sensory Physiology and Behavior, with the aim of developing techniques that reduce or eliminate the interactions of sea turtles with fishing gear@. In association with Soraya Moein Bartol. Total amount \$45,000.
- 2004: Grant from the Pelagic Fisheries Research Program, Univ. of Hawaii, title: AModeling the

eco-physiology of large pelagic fish@. In association with Christina Larsen (deceased), Hans Malte, and Michael Musyl. Total amount \$185,000.

2003-2004: Grant from NMFS, Northeast Fisheries Science Center, title: A Project to determine pot designs that reduce the risk of sea turtle entanglement, and their relative efficacy at capturing targeted whelk species.@ In association with Jack Musick, Roy Pemberton, Katherine Mansfield. Total amount \$50,000

2004: Grant from NOAA Chesapeake Bay Fisheries Research Program, title: AInvestigation of the chemosensory abilities of commercially harvested whelk species (*Busycotypus canaliculatus* and *Busycon carica*), with the ultimate goal of developing an artificial whelk bait (and thus reduce the harvest of horseshoe crabs in the Chesapeake and Delaware Bays).@ In association with: Soraya Moein Bartol, Robert Fisher, and Roy Pemberton. Total amount \$22,500.

2003: Contract from National Marine Fisheries Service, Honolulu Laboratory, for management of the projects associated with program AInvestigation of Sea Turtle and Pelagic Fish Sensory Physiology and Behavior, with the aim of developing techniques that reduce or eliminate the interactions of sea turtles with fishing gear@. In association with Soraya Moein Bartol. Total amount: approximately \$50,000.

2003: Operational funds from National Marine Fisheries Service, Honolulu Laboratory, for project entitled: AInvestigation of Sea Turtle and Pelagic Fish Sensory Physiology and Behavior, with the aim of developing techniques that reduce or eliminate the interactions of sea turtles with fishing gear@. In association with eight principal investigators from U.S., Australia, Sweden and Canada. In association with Yonat Swimmer and Soraya Moein Bartol. Total amount: approximately \$1,300,000.

2002-2003: Grant from the Pelagic Fisheries Research Program, School of Ocean and Earth Sciences and Technology, University of Hawaii, title: ASurvivorship, migrations, and diving patterns of sea turtles released from commercial longline fishing gear, determined with pop-up satellite archival transmitters.@ In association with Yonat Swimmer. Total amount: approximately \$80,000

2002-2003: Grant from the Pelagic Fisheries Research Program, School of Ocean and Earth Sciences and Technology, University of Hawaii, title: ADirect tests of the efficacy of bait and gear modifications for reducing interactions of sea turtles with longline fishing gear in Costa Rica@. In association with Yonat Swimmer, Randall Arauz, Todd Steiner, and Christofer Boggs. Amount approximately \$105,000

2002-2003: Grant from the Pelagic Fisheries Research Program, School of Ocean and Earth Sciences and Technology, University of Hawaii, title: AEvaluating the biochemical and physiological predictors of long term survival in released Pacific blue marlin

tagged with pop-up satellite archival transmitters (PSATs). In association with: Dr. Michael Musyl and Dr. Chris Moyes. Amount approximately \$99,000 per year.

2002: Operational funds from National Marine Fisheries Service, Honolulu Laboratory, for project entitled: An investigation of Sea Turtle and Pelagic Fish Sensory Physiology and Behavior, with the aim of developing techniques that reduce or eliminate the interactions of sea turtles with fishing gear. In association with eight principal investigators from U.S., Australia, Sweden and Canada. Total amount: approximately \$520,000.

2001: Operational funds from National Marine Fisheries Service, Honolulu Laboratory, for project entitled: An investigation of Sea Turtle and Pelagic Fish Sensory Physiology and Behavior, with the aim of developing techniques that reduce or eliminate the interactions of sea turtles with fishing gear. In association with eight principal investigators from U.S., Australia, and Sweden. Total amount: approximately \$470,000.

2000-2003: Grant from the Pelagic Fisheries Research Program, School of Ocean and Earth Sciences and Technology, University of Hawaii, title: A pop-off satellite archival tags to chronicle the survival and movements of blue sharks following release from longline gear. In association with Dr. Mike Musyl. Total amount: approximately \$50,000 per year.

2000: Grant from the Pelagic Fisheries Research Program, School of Ocean and Earth Sciences and Technology, University of Hawaii, title: A trophic ecology and aggregation behavior in bigeye and yellowfin tuna in Hawaiian waters. In association with Dr. Kim Holland and Dr. Laurent Dagorn. Total amount: approximately \$95,000.

2000: Grant from the Pelagic Fisheries Research Program, School of Ocean and Earth Sciences and Technology, University of Hawaii, title: A survivorship, migrations, and diving patterns of sea turtles released from commercial longline fishing gear, determined with pop-up satellite archival transmitters. In association with Dr. George Antonelis, George Balazs, and Dr. Jeff Polovina. Total amount: approximately \$80,000.

2000-2001: Grant from the Pelagic Fisheries Research Program, School of Ocean and Earth Sciences and Technology, University of Hawaii, title: A biochemical predictors of blue shark survival following release from longline gear. In association with Dr. Chris Moyes. Total amount: approximately: \$56,000 per year.

1999: Grant from the National Marine Fisheries Service (Highly Migratory Division), title: A joint U.S.-Canada pop-up satellite tagging of giant bluefin tuna in the Gulf of Maine and Canadian Atlantic Region, 1999. In association with Dr. Molly

Lutcavage. Total amount: approximately \$70,000.

- 1999: Contract from the from the National Marine Fisheries Service (through the Inter-American Tropical Tuna Commission) for a project to determine the frequency range and sensitivity of yellowfin tuna hearing utilizing auditory evoked brainstem response technique. In association with Kurt Schaefer. Amount: \$8,000.
- 1994-1998: Grant from the Pelagic Fisheries Research Program, School of Ocean and Earth Sciences and Technology, University of Hawaii, title: ALaboratory and field research to enhance understanding of tuna movements and distributions, and to improve stock assessment models.@ In association with Dr. Gordon Grau and Dr. Kim Holland. Total amount: approximately \$800,000.
- 1998: Grant from the National Marine Fisheries Service (Highly Migratory Division), title: AJoint U.S.-Canada pop-up satellite tagging of giant bluefin tuna in the Gulf of Maine and Canadian Atlantic Region, 1998.@ In association with Dr. Molly Lutcavage. Total amount: approximately \$80,000.
- 1998: Grant from the National Marine Fisheries Service (Highly Migratory Division), title: ASurfacing behavior and residence times of juvenile bluefin tuna off the mid-Atlantic region. In association with Dr. Molly Lutcavage. Total amount: \$79,200.
- 1997: Grant from the National Marine Fisheries Service (Highly Migratory Division) and the National Geographic Society, title: AMovements of giant bluefin tuna in New England waters, 1997.@ In association with Dr. Molly Lutcavage. Total amount: approximately \$74,000.
- 1996: Grant from the National Geographic Society (#6005-97) title: AMovements of giant bluefin tuna in New England waters determined by ultrasonic telemetry.@ In association with Dr. Molly Lutcavage. Total amount: approximately \$14,000.
- 1996: Grant from the National Marine Fisheries Service (Highly Migratory Division) and the National Geographic Society, title: AMovements of giant bluefin tuna in New England waters determined by ultrasonic telemetry.@ In association with Dr. Molly Lutcavage. Total amount: approximately \$73,000.
- 1991-1993: Grant from the University of Hawaii Sea Grant Program, title: ADetermination of the causes of burnt tuna and reasons for differential susceptibility to the problem.@ In association with Dr. Kim Holland. Amount: approximately \$54,000.
- 1988: Contract from the State of Hawaii for collaborative work involving ultrasonic telemetry (tracking) of yellowfin tuna. In association with Dr. Kim Holland. Amount: approximately \$20,000.

- 1988: Contract from NMFS Southwest Region (through the Pacific Gamefish Research Foundation) for study of the horizontal and vertical movements of Pacific blue marlin using ultrasonic telemetry. In association with Dr. Kim Holland and Dr. David Grobecker. Amount: \$10,000.
- 1987-1989: Grant from the State of Hawaii, title: ADetermination of the cause and development of appropriate strategies for the mitigation or prevention of burnt tuna.@ In association with Dr. David Grobecker and Dr. Peter Hochachka. Amount: \$40,000.
- 1985-1987: Grant from the University of Hawaii Sea Grant Program and the State of Hawaii, title: AUltrasonic telemetry of horizontal and vertical movements of pelagic fish species associated with fish aggregation devices@. In association with Dr. Kim Holland. Amount: approximately \$58,000.
- 1983-1985: Grant from the University of Hawaii Sea Grant Program, title: AShort-term tracking of yellowfin tuna in the vicinity of fish aggregation devices@. In association with Dr. Kim Holland and Lt. (j.g.) J. Scott Ferguson. Amount: approximately \$28,000.
- 1981-1985: Research contract from the Western Pacific Regional Fishery Management Council, title: ABiochemical genetic analysis of the population structure of the blue marlin (*Makaira nigricans*) and striped marlin (*Tetrapturus audax*) in the Pacific@. In association with Dr. James B. Shaklee. Amount: \$15,000.
- 1980-1981: Grant from the University of Hawaii Sea Grant Program, title: APreliminary study of olfactory responses to amino acids and natural prey odors in pelagic marine fishes@. In association with Dr. Andrew Dizon and Mr. Walter Ikehara. Amount: \$2,000.
- 1976-1978: Research contract from the Honolulu Laboratory of the National Marine Fisheries Service, title: AInvestigation of the physiology of tunas, including their ability to function under sub-optimal temperature conditions@. In association with Dr. G. Causey Whittow. Amount: \$11,000.

Service on Scientific and Technical Committees:

- 2017 Guest editor, Review in Fish Biology and Fisheries for a series of articles on tunas and their fisheries.
- 2008-present Subject editor, AFS journal: *Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science*.

- 2008-present Member, Pelagic Team for The Nature Conservancy's Northwest Atlantic Marine Ecoregional Assessment
- 2008 Guest editor, Ecological Society of America Journals
- 2007-present Member, Technical Advisory Panel, NOAA Living Marine Resources Cooperative Science Center
- 2005-2009 Member, Scientific Advisory Board, Large Pelagics Research Program, University of New Hampshire
- 2003-2007 Co-chair of Working Group 2 (Physiology, behavior and distribution of top predators) in the Climate Impacts on Top Ocean Predators (CLIOTP) Program
- 1995-2000: Member, Executive Committee and Board of Governors, Pacific Ocean Research Foundation (Kailua-Kona, Hawaii)
- 1992-1995: Member, Scientific Advisory Committee, Pacific Ocean Research Foundation (Kailua-Kona, Hawaii)
- 1991: Organizer and Co-Chairman of the Third International Congress of Comparative Physiology and Biochemistry Symposium entitled "Tunas and billfishes: An examination of life on the knife edge". Held August 1991 in Tokyo, Japan.
- 1986: Chairman, 37th Annual Tuna Conference, (conference sponsored by the National Marine Fisheries Service and the Inter-American Tropical Tuna Commission), May 18-21, 1986.
- 1985 - 1989: Member, Scientific Advisory Committee, Pacific Gamefish Research Foundation
- 1985 - 1988: Working Party on Tuna and Billfish Tagging, Fisheries and Resources Environment Division, U.N. Food and Agricultural Organization
- 1982 - 1985: Chairman, Pelagic Species Management Plan Development Team, Western Pacific Regional Fishery Management Council
- 1980 - 1982: Member, Scientific and Statistical Committee, Western Pacific Regional Fishery Management Council

Professional Societies:

Sigma Xi Scientific Research Society
American Institute of Fishery Research Biologists
American Fisheries Society

Awards:

- 2010: Honorable Mention, 2009 Fishery Bulletin Best Paper Award: Richard Brill, Peter Bushnell, Leoni Smith, Coley Speaks. The repulsive and feeding-deterrent effects of electropositive metals on juvenile sandbar sharks (*Carcharhinus plumbeus*). Fishery Bulletin 107: 298-307 (2009)
- 2021: Best Paper Award, MDBI Biology. Gail D. Schwieterman, Daniel P. Crear, Brooke N. Anderson, Danielle R. Lavoie, James A. Sulikowski, Peter G. Bushnell and Richard W. Brill. Combined Effects of Acute Temperature Change and Elevated pCO₂ on the Metabolic Rates and Hypoxia Tolerances of Clearnose Skate (*Rostaraja eglanteria*), Summer Flounder (*Paralichthys dentatus*), and Thorny Skate (*Amblyraja radiata*)

PUBLICATIONS

Abstracts in conference proceedings:

- Brill, R. W. 1981. The future of billfish research: where can we go from here? Proceedings of the 61st Conference of Western Association of Fish and Wildlife Agencies.
- Brill, R. W. 1983. Current and future research projects on tuna behavior, physiology, and energetics at the Kewalo Research Facility. Proceedings of the 34th Annual Tuna Conference.
- Brill, R. W., K. N. Holland and J. S. Ferguson. 1984. Use of ultrasonic telemetry to determine the short-term movements and residence times of tunas around fish aggregating devices. Proceedings of the Pacific Congress on Marine Technology, PACON84.
- Holland, K. N. and R. W. Brill. 1984. Progress report on ultrasonic tracking of FAD-associated yellowfin tuna. Proceedings of the 35th Annual Tuna Conference.
- Brill, R. W. 1985. Physiological factors affecting tuna distributions and movements. Proceedings of the 36th Annual Tuna Conference.

- Brill, R. W., R. Bourke, J. Brock, M. Dailey, and G. Weber. 1985. Description of newly re-discovered parasite from the dorsal aorta of yellowfin tuna (*Thunnus albacares*). Proceedings of the 36th Annual Tuna Conference.
- Jones, D. R. and R. W. Brill. 1985. The influence of blood gas properties on gas tensions and pH of ventral and dorsal aorta blood in free swimming tuna. Proceedings of the 1985 Fall Meeting of the American Physiological Society.
- Weber, J.-M., R. W. Brill, and P. W. Hochachka. 1985. Mammalian metabolic flux rates in a teleost: Lactate and glucose turnover in tuna. Proceedings of the 1985 Fall Meeting of the American Physiological Society.
- Holland, K. N., R. W. Brill, and R. K. C. Chang. 1986. Ultrasonic telemetry of horizontal and vertical movements of tuna associated with FADs. Proceeding of Pacific Congress of Marine Technology, PACON86.
- Jones, D. R., R. W. Brill, P. J. Butler, P. G. Bushnell, M. Heieis. 1986. Gill ventilation and perfusion in free swimming tuna. Proceedings of the 37th Annual Tuna Conference.
- Holland, K. N., R. W. Brill, R. K. C. Chang. 1986. Horizontal and vertical movements of FAD-associated yellowfin tuna. Proceedings of the 37th Annual Tuna Conference.
- Bushnell, P. W., R. W. Brill, R. E. Bourke. 1986. Cardiovascular responses of skipjack and yellowfin tuna exposed to brief periods of low ambient oxygen. Proceedings of the 37th Annual Tuna Conference.
- Milsom, W. K. and R. W. Brill. 1986. Oxygen-sensitive afferent information arising from the first gill arch of yellowfin tuna. Proceedings of the 37th Annual Tuna Conference.
- Hochachka, P. W. and R. W. Brill. 1986. A new analysis of the tuna burn problem. Proceedings of the 37th Annual Tuna Conference.
- Brill, R.W. 1986. The standard metabolic rate of tunas: Why is it so high? Proceedings of the 37th Annual Tuna Conference.
- Bourke, R. E. and R. W. Brill. 1986. Effect of a cestode (tapeworm) pleurocercoid parasite infesting the dorsal aorta of the yellowfin tuna, *Thunnus albacares*. Proceedings of the 37th Annual Tuna Conference.
- Bushnell, P. G., R. W. Brill, and R. E. Bourke. 1986. Changes in respiratory and cardiovascular parameters in two species of tuna exposed to acute hypoxia. Proceedings of the International Union of Physiological Sciences 30th Congress.

- Brill, R. W. and P. G. Bushnell. 1987. Heart rate responses of swimming yellowfin and skipjack tunas exposed to brief periods of lowered ambient oxygen. Proceedings of the 38th Annual Tuna Conference.
- Bushnell, P. G. and R. W. Brill. 1987. Cardio-respiratory responses in spinally blocked and free swimming tunas exposed to acute hypoxia. *The Physiologist* 30: 189.
- Brill, R. W., K. N. Holland and R. K. C. Chang. 1987. Horizontal and vertical movement patterns of yellowfin tuna associated with fish aggregation devices. Proceedings of the Fourth International Conference on Artificial Habitats for Fisheries.
- Brill, R. W. and P. G. Bushnell. 1989. Low ambient oxygen tolerance of tropical tunas: Results of experimental and modeling efforts. Proceedings of the 40th Annual Tuna Conference.
- Holland, K. N. and R. W. Brill. 1989. Evidence of thermoregulation from free-ranging fish. Proceedings of the 40th Annual Tuna Conference.
- Brill, R. W. 1989. Comparative physiology of animal athletes: tunas and other fast fishes. Proceedings of the XXXI International Congress of Physiological Sciences.
- Holland, K. N., R. W. Brill, and R. K. C. Chang. 1990. Behavioral and vertical distribution of Pacific blue marlin in Hawaiian waters as determined by ultrasonic telemetry. Proceedings of the 41st Annual Tunas Conference.
- Brill, R. W. 1990. Metabolic and cardiac scope of high energy demand teleosts -- the tunas. *Bulletin Canadian Society of Zoologists*. M.N. Arai and H.P. Arai (eds.).
- Bushnell, P. G. and R. W. Brill. 1990. Oxygen transport in tunas during acute hypoxia. *The Physiologist* 33: A-69.
- Brill, R. W. and P. G. Bushnell. 1990. Effects of open and closed system temperature changes on blood oxygen dissociation curves of tunas. *The Physiologist* 33: A-68.
- Brill, R.W. 1991. Lactate metabolism and acid-base balance in the tuna. Society of Experimental Biology Birmingham Meeting.
- Brill, R.W. 1991. Basic concepts in steady state and nonsteady state heat transfer in fishes, and their relevance to thermoregulation in tunas. Proceedings of the 3rd International Congress of Comparative Physiology and Biochemistry.
- Bushnell, P. G., R. W. Brill, and D. R. Jones. 1991. Cardio-respiratory systems of tunas and billfishes; adaptations for support of exceptional metabolic rates. Proceedings of the 3rd International Congress of Comparative Physiology and Biochemistry.

- Holland, K. N., R. W. Brill and J. Sibert. 1991. Short term behavior patterns of tunas as determined by ultrasonic telemetry. Proceedings of the 3rd International Congress of Comparative Physiology and Biochemistry.
- Keen, J. E., A. P. Farrell, G. F. Tibbits, and R. W. Brill. 1991. Effects of ryanodine, calcium and adrenaline on force-frequency in atrial strips from skipjack tuna. Proceedings of the 3rd International Congress of Comparative Physiology and Biochemistry.
- Dewar, H., J. B. Graham, and R. W. Brill. 1991. Physiological thermoregulation in the yellowfin tuna, *Thunnus albacares*. Amer. Zool. 31: 41A.
- Keen, J. E., R. W. Brill, A. P. Farrell. 1994. Cholinergic and adrenergic regulation of resting heart rate and ventral aortic pressure in tunas. High Performance Fish Symposium.
- Brill, R. W. 1994. Evolutionary and ecological aspects of high performance fish physiology. High Performance Fish Symposium.
- Brill, R. W. 1994. Designs for fuel delivery and heat conservation in tunas. High Performance Fish Symposium.
- Keen, J. E., K. L. Cousins, A. P. Farrell, R. W. Brill, K. R. Olson. 1994. Exogenously-applied and endogenously-derived atrial natriuretic peptide in the yellowfin tuna (*Thunnus albacares*): cardiovascular responses, plasma natriuretic peptide concentration and distribution of immunoreactive granules. The Physiologist.
- Brill, R., K. Cousins, and P. Klieber. 1995. Test of long term intramuscular implantation of model archival tags in yellowfin tuna. Proceedings of the 46th Annual Tuna Conference.
- Brill, R., B. Block, C. Boggs, K. Bigelow, E. Freund, and D. Marcinek. 1996. Horizontal and vertical movements of adult yellowfin tuna near the Hawaiian Islands observed by acoustic telemetry. Proceedings of the 47th Annual Tuna Conference.
- Brill, R.W. 1996. Fast fish physiology -- are tunas mammals with gills? The Physiologist 39: A-1.
- Brill, R., T. Lowe, and K. Cousins. 1997. How water temperature limits the vertical movements of pelagic fishes. Proceedings of the 48th Annual Tuna Conference, Lake Arrowhead, California.
- Lutcavage, M., J. Goldstein, R. Brill, B. Chase, and G. Skomal. 1997. Tracking giant bluefin tuna in New England waters. Proceedings of the 48th Annual Tuna Conference.
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