

University of Hawaii at Manoa – Department of Oceanography

Honolulu, Hawaii USA

Current location: Sweden (Guest Researcher at SLU and Uppsala University)

Phone: +46 70-822-3808 Email: astrofish226@gmail.com

Educational Background

2009 Ph.D. Ichthyology and Fisheries Science, Rhodes University, Grahamstown, South Africa

1997 M.S. Marine Sciences, Moss Landing Marine Laboratories, California State University, San Jose

1991 B.S. Biological Sciences – Aquatic Biology/Chemistry Minor, California State University, Sacramento

Major Professional and Research Interests

- ⊗ Education: Creative writing and public outreach education in the natural sciences with laboratory teaching
- ⊗ Fisheries ecology: Ascertaining accurate life history characteristics for implementation in sustainable ecosystems
- ⊗ Sclerochronology: Use of natural growth structure to estimate age of marine and freshwater organisms
- ⊗ Geochemical dating: Pioneering research in the use of geochemical methods to determine life histories
- ⊗ Radiocarbon: Innovative use of ¹⁴C to validate the age of aquatic organisms and establishing new time-series

Employment and Professional Experience

2019-nunc Position: SOLE PROPRIETOR – Scientific Inquiries and Innovations, LLC (Age and Longevity Research Lab) – Service provides opportunity to *validate age reading protocols* and *derive age-validated life history characteristics* of fishes and other members of aquatic ecosystems. Technical writing in popular and applied science.

- ⊗ 2022-nunc CO-PRINCIPAL INVESTIGATOR – Age validated life histories of Atlantic pelagic fishes.
Partnership: University of Maine, SEFSC, ICCAT, IPMA
- ⊗ 2022-nunc CO-PRINCIPAL INVESTIGATOR – Eye lens radiocarbon assessment in teleost fishes of the Gulf of Mexico.
Partnership: University of South Carolina, SEFSC
- ⊗ 2022 TECHNICAL WRITER – White paper: Autonomous Robotic Asset Inspections
Contract: Airtonomy, Grand Forks, North Dakota
- ⊗ 2021-nunc CO-PRINCIPAL INVESTIGATOR – Preliminary analysis of bomb radiocarbon and fishes of Norway.
Partnership: IMR, LIP-ETH Zürich
- ⊗ 2021-nunc CO-PRINCIPAL INVESTIGATOR – Validation of school shark age to calibrate DNA-methylation rate.
Partnership: CSIRO, LIP-ETH Zürich
- ⊗ 2021-nunc PRINCIPAL INVESTIGATOR – Age validation of yellowfin and bigeye tuna in the Pacific Ocean.
Partnership: CSIRO, SPC, LIP-ETH Zürich
- ⊗ 2020-2022 GUEST RESEARCHER – Capacity building with bomb radiocarbon dating in the Baltic Sea.
Partnership: SLU Aqua
- ⊗ 2019-nunc PRINCIPAL INVESTIGATOR – Coral and LA-AMS: A first time series for bomb radiocarbon.
Partnership: LIP-ETH Zürich, USGS
- ⊗ 2019-2021 PRINCIPAL INVESTIGATOR – Coral and bomb radiocarbon: A new record for American Samoa.
Partnership: USGS, Santa Cruz (**Published**)

2014-nunc Position: AFFILIATE FACULTY – University of Hawaii, Manoa – Department of Oceanography & Marine Biology Graduate Program – Advise graduate students on thesis topics in scientific research through to publication. Serve as an official thesis advisor locally and abroad.

- ⊗ 2018-nunc CO-INVESTIGATOR – Eye lens radiocarbon to age Pacific sleeper shark (*Somniosus pacificus*).
Partnership: AFSC, Auke Bay Labs, LLNL, American River College
- ⊗ 2019-2020 CO-INVESTIGATOR – Paleo-reconstruction of coral reef fish communities.
Partnership: Smithsonian Tropical Research Institute (**Published**)

- ⊗ 2019-2020 PRINCIPAL INVESTIGATOR – Lifespan and growth of giant trevally in Hawaii.
Partnership: Pacific Island Fisheries Group (**Published**)
 - ⊗ 2018-2020 CO-INVESTIGATOR – Longevity and growth of alligator gar (*Atractosteus spatula*).
Partnership: Texas Parks and Wildlife (**Published**)
 - ⊗ 2018-2020 CO-INVESTIGATOR – Life history of bigmouth buffalo (*Ictiobus cyprinellus*).
Partnership: North Dakota State University (**Published 2x**)
 - ⊗ 2017-2020 CO-PRINCIPAL INVESTIGATOR – Age validation of Atlantic yellowfin and bigeye tuna.
Partnership: University of Maine, ICCAT, SEFSC (**Published**)
 - ⊗ 2017-2020 CO-PRINCIPAL INVESTIGATOR and THESIS ADVISOR – Age and growth of opakapaka in Guam (Graduated)
 - ⊗ 2015-2019 CO-PRINCIPAL INVESTIGATOR and THESIS ADVISOR – Life history of ehu in Hawaiian Islands (Graduated)
 - ⊗ 2014-2017 CO-PRINCIPAL INVESTIGATOR and THESIS ADVISOR – Life histories of abyssal and hadal fishes (**Published**)
Note: First PhD student to graduate from the Marine Biology Graduate Program at University of Hawaii, Manoa.
- 2010-2019 Position:** VOLUNTEER EDUCATOR – Hawaii Sea Grant, Hanauma Bay Education Program - Assistance with the public education program associated with the Hanauma Bay Marine Reserve. Regular seminar speaker on the life history and conservation of fishes and the use of ocean chemistry in marine science.
- 2009-2019 Position:** RESEARCH FISHERIES BIOLOGIST (ZP-0482-IV) – NOAA Fisheries, Pacific Islands Fisheries Science Center, Fisheries Research and Monitoring Division, Life History Program, Age and Longevity Research Laboratory - Age estimation and validation of marine organisms using sclerochronology and innovative geochemical techniques (e.g., bomb radiocarbon & lead-radium dating). Colleague guidance and student mentoring on local, national, and international levels. Laboratory management with execution of projects and budgetary responsibility. Produce written proposals, final reports, peer-reviewed publications and popular articles with regular professional and public presentations.
- ⊗ 2016-2019 CO-INVESTIGATOR – Anthropogenic coral disturbance dating events with bomb radiocarbon.
Partnership: Hawaii Pacific University
 - ⊗ 2016-2017 PRINCIPAL INVESTIGATOR – Age and longevity validation of blue marlin with new bomb ¹⁴C approach.
Partnership: Life History Program (**Published**)
 - ⊗ 2016-2017 CO-PRINCIPAL INVESTIGATOR – Life history of parrotfishes of Hawaii with first use of post-peak ¹⁴C decline.
Partnership: Life History Program (**Published**)
 - ⊗ 2015-2019 CO-PRINCIPAL INVESTIGATOR – Laser ablation accelerator mass spectrometry for ¹⁴C assays in carbonates.
Partnership: LIP-ETH Zürich (**Published**)
 - ⊗ 2015 **FACTOR IV PROMOTION** – *Advanced to ZP-4 Research Fisheries Biologist for Research and Publication Merit*
 - ⊗ 2014-2019 PRINCIPAL INVESTIGATOR – Age-validated life histories using bomb ¹⁴C dating in Territorial Science.
Partnership: University of Guam, University of the Ryukyus under Saltonstall-Kennedy Grant (**Published**)
 - ⊗ 2014-2019 PRINCIPAL INVESTIGATOR – Validation of age estimates for red snapper and gray snapper in Gulf of Mexico.
Partnership: PCL-SEFSC under MARFIN grant (**Published 2x**)
 - ⊗ 2014-2016 CO-INVESTIGATOR – Small-vessel and auction sampling to improve data-limited stock assessments.
Partnership: NOAA Science & Technology (Specimen acquisition used in published works)
 - ⊗ 2014-2018 PRINCIPAL INVESTIGATOR – Age validation of endemic red steenbras of South Africa.
Partnership: SAIAB and Port Elizabeth Museum, South Africa (**Published**)
 - ⊗ 2013-2019 CO-PRINCIPAL INVESTIGATOR – Age validation of European hake of the Mediterranean.
Partnership: National Concilium of Research, Italy (**Published**)
 - ⊗ 2012-2013 STUDENT ADVISOR – Summer Internship - Age and maturation of gindai snapper.
Partnership: University of Hawaii – Marine Option Program (**Published**)
 - ⊗ 2012-2016 PRINCIPAL INVESTIGATOR – Bomb radiocarbon benchmarks of the central and western Tropical Pacific.
Partnership: UC Santa Cruz (Kure Atoll coral) & University of the Ryukyus (Guam coral) (**Published 2x**)
 - ⊗ 2012 **EMPLOYEE OF THE YEAR** at NOAA Fisheries – *Recognition for significant advances in fisheries research.*
 - ⊗ 2011-2015 CO-PRINCIPAL INVESTIGATOR – Bomb ¹⁴C dating of hawksbill sea turtle.
Partnership: Marine Turtle Assessment Program, Protected Species Division. (**Published**)
 - ⊗ 2011-2015 PRINCIPAL INVESTIGATOR – Bomb ¹⁴C dating of bumphead parrotfish and humphead wrasse of GBR.

- Partnership: NOAA Office of Protected Resources, James Cook University (**Published**)
- ⊗ 2011-2013 CO-PRINCIPAL INVESTIGATOR – Bomb ¹⁴C dating of speckled hind and sand tiger shark.
Partnership: PCL-SEFSC NOAA Office of Protected Resources (**Published 2x**)
 - ⊗ 2011-2012 CO-PRINCIPAL INVESTIGATOR – Bomb ¹⁴C dating of three important reef-fish species using Indo-Pacific.
Partnership: Western Australian Fisheries and Marine Research Laboratories (**Published**)
 - ⊗ 2009-2012 PRINCIPAL INVESTIGATOR – Age and longevity validation of opakapaka snapper in Hawaii.
Partnership: MLML, LLNL (**Published**)
- 2004-2007 Position**: INSTRUCTOR – Monterey Peninsula College, Physical Sciences – Astronomy 10 Laboratory for a Living Room Series class. Laboratories performed Friday nights and Saturday mornings during the regular semester. Outdoor labs performed with hands-on physics experiments and night-time telescope operations for 35 students each semester. Design and execution of new lab material with written contributions to student lab book.
- 1997-2009 Position**: RESEARCH ASSOCIATE – Moss Landing Marine Laboratories, California State University - Management and operation of *Age and Longevity Research Laboratory* as a world-class facility in age estimation and validation of marine organisms. Produce written proposals, manage contracts and budgets, and write final reports and publications. Thesis advisor and student mentoring to publication.
- ⊗ 2008-2009 PRINCIPAL INVESTIGATOR – The feasibility of lead-radium dating of opakapaka otoliths.
Partnership: NOAA Fisheries, PIFSC (**Published**)
 - ⊗ 2008-2009 PRINCIPAL INVESTIGATOR – The feasibility of bomb radiocarbon dating ossicles from leatherback turtles.
Partnership: NOAA Fisheries, Beaufort Laboratory (not feasible)
 - ⊗ 2008-2009 PRINCIPAL INVESTIGATOR – Lead-radium dating of blue roughy from Taiwan.
Partnership: Nat Museum Mar Biol Aquarium (Final report: DOI: 10.13140/RG.2.2.22285.15849)
 - ⊗ 2007-2008 PRINCIPAL INVESTIGATOR – Lead-210 dating of Gulf of Alaska deep-sea corals.
Partnership: NOAA Fisheries, Auke Bay Lab (**Published**)
 - ⊗ 2007-2008 PRINCIPAL INVESTIGATOR – Lead-radium dating of golden tilefish.
Partnership: NOAA Fisheries, SEFSC (**Student M.S. thesis & Published**)
 - ⊗ 2006-2009 PRINCIPAL INVESTIGATOR – Bomb radiocarbon and lead-210 dating of red and white abalone.
Partnership: California Sea Grant (**Published & ongoing research**)
 - ⊗ 2004-2009 CO-PRINCIPAL INVESTIGATOR – Radiocarbon in sharks: Age and growth of sandbar shark.
Partnership: University of Florida (**Published**)
 - ⊗ 2004-2006 CO-PRINCIPAL INVESTIGATOR – Bamboo coral of New Zealand: Age and growth investigations.
Partnership: NIWA (**Published**)
 - ⊗ 2003-2008 CO-PRINCIPAL INVESTIGATOR – Radiometric age validation of Patagonian and Antarctic toothfishes.
Partnership: National Science Foundation (**My Ph.D. dissertation, a Student M.S. thesis, & Published 2x**)
 - ⊗ 2002-2009 PRINCIPAL and CO-PRINCIPAL INVESTIGATOR – Deep-water fishes of New Zealand using lead-radium dating.
Partnership: NIWA, New Zealand (**Published 2x & 3 Technical Reports**)
 - ⊗ 2002-2004 CO-PRINCIPAL INVESTIGATOR – Bomb carbon in the yelloweye rockfish as a chronological benchmark.
Partnership: California Sea Grant, LLNL (**Student M.S. thesis & Published**)
 - ⊗ 2002-2003 CO-PRINCIPAL INVESTIGATOR – Age and growth of deep-sea corals at Davidson Seamount.
Partnership: Monterey Bay National Marine Sanctuary (**Published**)
 - ⊗ 2001-2003 CO-PRINCIPAL INVESTIGATOR – Radiometric age validation and demographics of long-lived rockfishes.
Partnership: California Sea Grant (**Student M.S. thesis & Published**)
 - ⊗ 2000-2001 CO-PRINCIPAL INVESTIGATOR – Radiometric age validation of yelloweye and blackgill rockfishes.
Partnership: California Sea Grant and AK Department of Fish and Game (**Student M.S. thesis & Published 2x**)
 - ⊗ 1999-2001 CO-PRINCIPAL INVESTIGATOR – Age and growth of two deep-sea, habitat-forming octocorallian corals.
Partnership: Department of Commerce through University of Alaska, Fairbanks (**Published**)
 - ⊗ 1999-2000 CO-INVESTGATOR – Feasibility of age validation of coelacanth using lead-radium dating.

- Partnership: Max Planck Institute, GEOMAR, University of Guelph (not feasible due to radiometric limitations)
- ⊗ 1998-1999 CO-INVESTIGATOR - Radiometric age determination to the bocaccio rockfish (*Sebastes paucispinis*)
Partnership: California Sea Grant, CA Department of Fish and Game, NOAA Fisheries - Santa Cruz (**Published**)
 - ⊗ 1997-1998 CO-INVESTIGATOR - Reliability assessment of season-of-capture determination for archaeological otoliths.
Partnership: Sonoma State, California Polytechnic State University, CSU Bakersfield (**Published**)
- 1992-1996 Position:** GRADUATE STUDENT INTERN - Moss Landing Marine Laboratories, California State University - Contribute to research opportunities for educational purposes. Produce written proposals, final reports, and publications.
- ⊗ 1996 STUDENT RESEARCHER - Feasibility of radiometric age determination of Atlantic sturgeon.
Partnership: Hudson River Foundation, Old Dominion University. (**Published**)
 - ⊗ 1994-1996 STUDENT RESEARCHER - Radiometric age determination to the Atlantic tarpon.
Partnership: Florida Department of Environmental Protection (**Published**)
 - ⊗ 1994-1996 STUDENT RESEARCHER - Age, growth, and age validation of the spotted sand bass in Baja, Mexico.
Partnership: Classmates in Ichthyology at MLML (**Published**)
 - ⊗ 1994-1995 STUDENT RESEARCHER - Application of radiometric age determination to yelloweye rockfish.
Partnership: AK Department of Fish and Game (**Published**)
 - ⊗ 1992-1995 GRADUATE STUDENT TRAINEE - Radiometric age verification of commercially important deep-sea fishes.
Partnership: California Sea Grant and CA Department of Fish and Game (**My M.S. thesis & Published 2x**)
 - ⊗ 1992-1993 STUDENT RESEARCHER - Deep-sea fauna off Farallon Islands, Pioneer Seamount, and Monterey Bay Canyon.
Partnership: United States Navy on R/V Point Sur and R/V Wecoma (**Published**)
 - ⊗ 1990-1991 STUDENT RESEARCHER - Glacial and non-glacial fjord faunal survey in Southeastern Alaska (R/V Alpha Helix)

1991-2007 Position: LABORATORY TECHNICIAN/TEACHING ASSISTANT - Monterey Peninsula College, Physical Sciences - Teaching and teaching assistance in *Astronomy and Physics*. Managed astronomy laboratory and field trip logistics, including several hands-on overnight observational field-trips each semester for >120 students. Managed student aide workforce for classroom assistance in astronomy labs. Maintained astronomy equipment and a functional physics shop. Design and execution of new lab material with student lab book composition.

Note: Very few university astronomy programs are a 4-unit field laboratory with hands-on student training and use of telescopes in the field with active first-hand observations of celestial objects – this class was extremely popular during my 16 years of service and is a highlight in my career as a teacher of science.

Ph.D. Dissertation (Rhodes University)

Andrews, A.H. 2009. Lead-radium dating of two deep-water fishes from the southern hemisphere, Patagonian toothfish (*Dissostichus eleginoides*) and orange roughy (*Hoplostethus atlanticus*). Ph.D. Dissertation, Department of Ichthyology and Fisheries Science, Rhodes University, Grahamstown, South Africa. (**Published 2x**)

M.S. Thesis (Moss Landing Marine Laboratories)

Andrews, A.H. 1997. Age and growth of the Pacific grenadier (family Macrouridae, *Coryphaenoides acrolepis*) with age estimate validation using an improved radiometric ageing technique. M.S. Thesis, Moss Landing Marine Laboratories, California State University, San Jose. (**Published 2x**)

Publications - Journal Articles (h-index = 33, i10-index = 64)

- Reis-Santos, P., B.M. Gillanders, A.M. Sturrock, C. Izzo, D.S. Oxman, J.A. Lueders-Dumont, K. Hüsey, S.E. Tanner, T. Rogers, Z.A. Doubleday, **A.H. Andrews**, C. Trueman, D. Brophy, J.D. Thiem, L.J. Baumgartner, M. Wilmes, M.-T. Chung, R.C. Johnson, Y. Heimbrand, K.E. Limburg, and B.D. Walther. 2022. Reading the biomineralized book of life: Expanding otolith biogeochemical research and applications for fisheries and ecosystem-based management. *Reviews in Fish Biology and Fisheries* XX: xxx-xxx (dx.doi.org/10.1007/s11160-022-09720-z)
- Waterhouse, L., L. Ailloud, R. Austin, W.J. Golet, A. Pacicco, **A.H. Andrews**, K. Diouf, Y. Ndiour, K. Krusic-Golub, G. da Silva, and J.M. Hoenig. 2022. Updated integrated growth model for bigeye tuna (*Thunnus obesus*) in the Atlantic Ocean. *Fisheries Research* XX: xxx-xxx (dx.doi.org/10.1016/j.fishres.2022.106317)

- Andrews, A.H.**, N.G. Prouty, and O.M. Cheriton. 2021. Bomb-produced radiocarbon across the South Pacific Gyre – a new record from American Samoa with utility for fisheries science. *Radiocarbon* 63: 1591–1605 (dx.doi.org/10.1017/RDC.2021.51)
- Lackmann, A.R., B.J. Kratz, E.S. Bielak-Lackmann, R.I. Jacobson, D.J. Sauer, **A.H. Andrews**, M.G. Butler, and M.E. Clark. 2021. Long-lived population demographics for a declining, vulnerable fishery - bigmouth buffalo (*Ictiobus cyprinellus*) of Jamestown Reservoir, North Dakota. *Canadian Journal of Fisheries and Aquatic Sciences* 78: xxx-xxx (dx.doi.org/10.1139/cjfas-2020-0485)
- Andrews, A.H.** and T.R. Scofield. 2021. Early overcounting in otoliths – a case study of age and growth for gindai (*Pristipomoides zonatus*) using bomb ¹⁴C dating. *Fisheries and Aquatic Sciences* 24: 53–62 (dx.doi.org/10.47853/FAS.2021.e6)
- Andrews, A.H.**, J. Brodziak, E.E. DeMartini, and E. Cruz. 2020. Long-lived life history for onaga (*Etelis coruscans*) in the Hawaiian Islands. *Marine and Freshwater Research* 72: 848–859 (dx.doi.org/10.1071/MF20243)
- Passerotti, M.S., **A.H. Andrews**, and L.J. Natanson. 2020. Inferring life history characteristics of the oceanic whitetip shark *Carcharhinus longimanus* from vertebral bomb radiocarbon. *Frontiers in Marine Science* 7: 581775 (dx.doi.org/10.3389/fmars.2020.581775)
- Andrews, A.H.**, B.K. Barnett, J.P. Chanton, L. Thornton, and R. Allman. 2020. Influences of upper Floridan Aquifer waters on radiocarbon in the otoliths of gray snapper (*Lutjanus griseus*) in the Gulf of Mexico. *Radiocarbon* 62: 1127–1146 (dx.doi.org/10.1017/RDC.2020.29) **Note:** *Accolades from Associate Editor and peer reviewers*
- Andrews, A.H.** 2020. Giant Trevally (*Caranx ignobilis*) of Hawaiian Islands can live 25 years. *Marine and Freshwater Research* 71(10):1367–1372 (dx.doi.org/10.1071/MF19385)
- Andrews, A.H.**, A. Pacicco, R. Allman, B.J. Falterman, E.T. Lang, and W. Golet. 2020. Validated longevity of yellowfin (*Thunnus albacares*) and bigeye (*Thunnus obesus*) tuna of the northwestern Atlantic Ocean. *Canadian Journal of Fisheries and Aquatic Sciences* 77: 637–643 (dx.doi.org/10.1139/cjfas-2019-0328)
- Daugherty, D.J., **A.H. Andrews**, and N.G. Smith. 2020. Otolith-based age estimates of alligator gar assessed using bomb radiocarbon dating to greater than 60 years. *North American Journal of Fisheries Management* 40: 613–621 (dx.doi.org/10.1002/nafm.10390)
- Andrews, A.H.**, C. Yeman, C. Welte, B. Hattendorf, L. Wacker, and M. Christl. 2019. Laser ablation accelerator mass spectrometry reveals complete bomb ¹⁴C signal in an otolith with confirmation of 60-year longevity for red snapper (*Lutjanus campechanus*). *Marine and Freshwater Research* 70: 1768–1780 (dx.doi.org/10.1071/MF18265)
- Lackmann, A.R., **A.H. Andrews**, M.G. Butler, E.S. Bielak-Lackmann, and M.E. Clark. 2019. Bigmouth Buffalo *Ictiobus cyprinellus* sets freshwater teleost record as improved age analysis reveals centenarian longevity. *Communications Biology* 2, Article #197 (dx.doi.org/10.1038/s42003-019-0452-0)
- Andrews, A.H.**, E.E. DeMartini, J. Brodziak, R.S. Nichols, and R.L. Humphreys. 2019. Growth, longevity, and age at first maturity and sex change of Hawaiian grouper (*Hyporthodus quernus*) – input for management and conservation of a large, slow-growing grouper. *Canadian Journal of Fisheries and Aquatic Sciences* 76: 1874–1884 (dx.doi.org/10.1139/cjfas-2018-0170)
- Lin, C.-H., B. De Gracia, M.E.R. Pierotti, **A.H. Andrews**, K. Griswold, and A. O’Dea. 2019. Otoliths in coral reef sediments can help reconstruct past reef fish communities. *PLOS ONE* 14(6): e0218413 (dx.doi.org/10.1371/journal.pone.0218413)
- Andrews, A.H.**, M.J. Smale, P.D. Cowley, and N. Chang. 2018. Fifty-five-year longevity for the largest member of the family Sparidae: the endemic red steenbras *Petrus rupestris* from South Africa. *African Journal of Marine Science* 40: 343–353 (dx.doi.org/10.2989/1814232X.2018.1520148)
- DeMartini, E.E., **A.H. Andrews**, K.G. Howard, B.M. Taylor, D.-C. Lou, and M.K. Donovan. 2018. Comparative growth, age at maturity and sex change, and longevity of Hawaiian parrotfishes, with bomb radiocarbon validation. *Canadian Journal of Fisheries and Aquatic Sciences* 75: 580–589 (dx.doi.org/10.1139/cjfas-2016-0523)
- Andrews, A.H.**, R.L. Humphreys, and J.D. Sampaga. 2018. Blue marlin (*Makaira nigricans*) longevity estimates confirmed with bomb radiocarbon dating. *Canadian Journal of Fisheries and Aquatic Sciences* 75: 17–25 (dx.doi.org/10.1139/cjfas-2017-0031)
- Gerringer, M.E., **A.H. Andrews**, G.R. Huss, K. Nagashima, N.D. Gallo, M.R. Clark, T.D. Linley, A.J. Jamieson, and J.C. Drazen. 2018. Life history of abyssal and hadal fishes from otolith growth zones and oxygen isotopes. *Deep Sea Research Part I* 132:37–50 (dx.doi.org/10.1016/j.dsr.2017.12.002)

- Newman, S.J., C.B. Wakefield, A.J. Williams, J.M. O'Malley, B.M. Taylor, S.J. Nicol, R.S. Nichols, S.A. Hespa, N.G. Halla, N. Hill, J.J.L. Ong, **A.H. Andrews**, C.M. Wellington, E.S. Harvey, P. Mous, Z.S. Oyafuso, C. Pardee, M. Bunce, J.D. DiBattista, and B.R. Moore. 2017. International workshop on advancing methods to overcome challenges associated with life history and stock assessments of data-poor deep-water snappers and groupers. *Marine Policy* 79: 78-83 (dx.doi.org/10.1016/j.marpol.2017.02.009)
- Tracey, D.M., **A.H. Andrews**, P.L. Horn, and H.L. Neil. 2017. Another New Zealand centenarian – Age validation of black cardinalfish (*Epigonus telescopus*) using lead-radium and bomb radiocarbon dating. *Marine and Freshwater Research* 68: 352-360 (dx.doi.org/10.1071/MF15267)
- Andrews, A.H.**, R. Asami, Y. Iryu, D.R. Kobayashi, and F. Camacho. 2016. Bomb-produced radiocarbon in the western tropical Pacific Ocean—Guam coral reveals operation-specific signals from the Pacific Proving Grounds. *Journal of Geophysical Research – Oceans* 121: 6351-6366 (dx.doi.org/10.1002/2016JC012043) **Note:** *Highlighted by the Journal Editor with AGU Publications with accolades from peer reviewers*
- Andrews, A.H.**, E.E. DeMartini, J.A. Eble, B.M. Taylor, D.C. Lou, and R.L. Humphreys. 2016. Age and growth of bluespine unicornfish (*Naso unicornis*): a half-century life-span for a keystone browser, with a novel approach to bomb radiocarbon dating in the Hawaiian Islands. *Canadian Journal of Fisheries and Aquatic Sciences* 73: 1575-1586 (dx.doi.org/10.1139/cjfas-2016-0019)
- Welte, C., L. Wacker, B. Hattendorf, M. Christl, J. Fohlmeister, S.F.M. Breitenbach, L.F. Robinson, **A.H. Andrews**, A. Freiwald, J.R. Farmer, C. Yeman, H.-A. Synal, and D. Günther. 2016. Laser Ablation – Accelerator Mass Spectrometry: a novel approach for rapid radiocarbon analyses of carbonate archives at high spatial resolution. *Analytical Chemistry* 88: 8570-8576 (dx.doi.org/10.1021/acs.analchem.6b01659)
- Andrews, A.H.**, D. Siciliano, D.C. Potts, E.E. DeMartini, and S. Covarrubias. 2016. Bomb radiocarbon and the Hawaiian Archipelago: Coral, otoliths and seawater. *Radiocarbon* 58(3): 531-548 (dx.doi.org/10.1017/RDC.2016.32)
- Vitale S., **A.H. Andrews**, P. Rizzo, S. Gancitano, and F. Fiorentino. 2016. 25-year longevity for European hake (*Merluccius merluccius*) from novel use of bomb radiocarbon dating in the Mediterranean Sea. *Marine and Freshwater Research* 67: 1077-1080. Proceedings of the 5th International Otolith Symposium (dx.doi.org/10.1071/MF15376)
- Van Houtan, K.S., **A.H. Andrews**, T.T. Jones, S.K.K. Murakawa, and M.E. Hagemann. 2016. Time in tortoiseshell: a bomb radiocarbon-validated chronology in sea turtle scutes. *Proceedings of the Royal Society B* 283(1822): 2015.2220 (dx.doi.org/10.1098/rspb.2015.2220)
- Andrews, A.H.** 2016. Lead-radium dating of Pacific cod (*Gadus macrocephalus*) – validation of the young-fish scenario. *Marine and Freshwater Research* 67: 1982-1986 (dx.doi.org/10.1071/MF15228) **Note:** *I provided journal volume cover image*
- Lombardi-Carlson, L.A., and **A.H. Andrews**. 2015. Age estimation and lead-radium dating of golden tilefish, *Lopholatilus chamaeleonticeps*. *Environmental Biology of Fishes* 98(7): 1787-1801 (dx.doi.org/10.1007/s10641-015-0398-0)
- Newman, S.J., C.B. Wakefield, A.J. Williams, J.M. O'Malley, S.J. Nicol, E.E. DeMartini, T. Halafihi, J. Kaltavara, R.L. Humphreys, B.M. Taylor, **A.H. Andrews**, and R.S. Nichols. 2015. International workshop on methodological evolution to improve estimates of life history parameters and fisheries management of data-poor deep-water snappers and groupers. *Marine Policy* 60: 182-185 (dx.doi.org/10.1016/j.marpol.2015.06.020)
- Andrews, A.H.**, J.H. Choat, R.J. Hamilton, and E.E. DeMartini. 2015. Refined bomb radiocarbon dating of two iconic fishes of the Great Barrier Reef. *Marine and Freshwater Research* 66: 305-316 (dx.doi.org/10.1071/MF14086)
- Andrews, A.H.**, and L.A. Kerr. 2015. Estimates of maximum age for white sharks of the northeastern Pacific Ocean: altered perceptions of vertebral growth shed light on complicated bomb $\Delta^{14}\text{C}$ results. *Environmental Biology of Fishes* 98(3): 971-978 (dx.doi.org/10.1007/s10641-014-0326-8)
- Passerotti, M.S., **A.H. Andrews**, J.K. Carlson, S.P. Wintner, K.J. Goldman, and L.J. Natanson. 2014. Maximum age and missing time in the vertebrae of sand tiger shark (*Carcharias taurus*): validated lifespan from bomb radiocarbon dating in the western North Atlantic and southwestern Indian Oceans. *Marine and Freshwater Research* 65: 1131-1140 (dx.doi.org/10.1071/MF13214) **Note:** *I conceived and designed journal volume cover image*
- Cotton, C.F., **A.H. Andrews**, G.M. Cailliet, R. Dean Grubbs, S.B. Irvine, and J.A. Musick. 2014. Assessment of radiometric dating for age validation of deep-water dogfish (Order: Squaliformes) finspines. *Fisheries Research* 151: 107-113 (dx.doi.org/10.1016/j.fishres.2013.10.014)
- Andrews, A.H.**, R.T. Leaf, L. Rogers-Bennett, M. Neuman, H. Hawk, and G.M. Cailliet. 2013. Bomb radiocarbon dating of the endangered white abalone (*Haliotis sorenseni*): investigations of age, growth and lifespan. *Marine and Freshwater Research* 64: 1029-1039 (dx.doi.org/10.1071/MF13007)

- Andrews, A.H.**, B.K. Barnett, R.J. Allman, R.P. Moyer, H.D. Trowbridge. 2013. Great longevity of speckled hind (*Epinephelus drummondhayi*), a deep-water grouper, with novel use of postbomb radiocarbon dating in the Gulf of Mexico. *Canadian Journal of Fisheries and Aquatic Sciences* 70(8): 1131-1140 (dx.doi.org/10.1139/cjfas-2012-0537)
- Andrews, A.H.**, E.E. DeMartini, J. Brodziak, R.S. Nichols, and R.L. Humphreys. 2012. A long-lived life history for a tropical, deep-water snapper (*Pristipomoides filamentosus*): bomb radiocarbon and lead-radium dating as extensions of daily increment analyses in otoliths. *Canadian Journal of Fisheries and Aquatic Sciences* 69: 1850-1869 (dx.doi.org/10.1139/f2012-109)
- Allen, L.G., and **A.H. Andrews**. 2012. Bomb radiocarbon dating and estimated longevity of Giant Sea Bass (*Stereolepis gigas*). *Bulletin of Southern California Academy of Sciences* 111(1): 1-14
- Ashford, J., M. Dinniman, C. Brooks, **A.H. Andrews**, E. Hofmann, G. Cailliet, C. Jones, and N Ramanna. 2012. Does large-scale ocean circulation structure life history connectivity in Antarctic toothfish (*Dissostichus mawsoni*)? *Canadian Journal of Fisheries and Aquatic Sciences* 69(12): 1903-1919 (dx.doi.org/10.1139/f2012-111)
- Carreiro-Silva, M., **A.H. Andrews**, A. Braga-Henriques, V. de Matos, F.M. Porteiro, and R.S. Santos. 2012. Variability in growth rates of long-lived black coral *Leiopathes* sp. from the Azores (Northeast Atlantic). *Marine Ecological Progress Series* 473: 189-199 (dx.doi.org/10.3354/meps10052)
- Andrews, A.H.**, J.R. Ashford, C.M. Brooks, K. Krusic-Golub, G. Duhamel, M. Belchier, C.C. Lundstrom, and G.M. Cailliet. 2011. Lead-radium dating provides a framework for coordinating age estimation of Patagonian toothfish (*Dissostichus eleginoides*) between fishing areas. *Marine and Freshwater Research* 62: 781-789 (dx.doi.org/10.1071/MF10225)
- Andrews, A.H.**, J.M. Kalish, S.J. Newman, and J.M. Johnston. 2011. Bomb radiocarbon dating of three important reef-fish species using Indo-Pacific $\Delta^{14}\text{C}$ chronologies. *Marine and Freshwater Research* 62(11): 1259-1269 (dx.doi.org/10.1071/MF11080) **Note:** I conceived and designed journal volume cover image
- Andrews, A.H.**, L.J. Natanson, L.A. Kerr, G.H. Burgess, and G.M. Cailliet. 2011. Bomb radiocarbon and tag-recapture dating of sandbar shark (*Carcharhinus plumbeus*). *Fishery Bulletin* 109: 454-465
- Brooks C.M., **A.H. Andrews**, J.R. Ashford, N. Ramanna, C.D. Jones, C.C. Lundstrom, G.M. Cailliet. 2011. Age estimation and lead-radium dating of Antarctic toothfish (*Dissostichus mawsoni*) in the Ross Sea. *Polar Biology* 34:329-338 (dx.doi.org/10.1007/s00300-010-0883-z)
- Andrews, A.H.**, R.P. Stone, C.C. Lundstrom, and A.P. DeVogelaere. 2009. Growth rate and age determination of bamboo corals from the northeastern Pacific Ocean using refined ^{210}Pb dating. *Marine Ecological Progress Series* 397: 173-185. (dx.doi.org/10.3354/meps08193)
- Andrews, A.H.**, D.M. Tracey, and M.R. Dunn. 2009. Lead-radium dating of orange roughy (*Hoplostethus atlanticus*): validation of a centenarian life span. *Canadian Journal of Fisheries and Aquatic Sciences* 66(7): 1130-1140 (dx.doi.org/10.1139/F09-059)
- Kneebone, J., L.J. Natanson, **A.H. Andrews**, and H. Howell. 2008. Using bomb radiocarbon analyses to validate age and growth estimates for the tiger shark, *Galeocerdo cuvier*, in the western North Atlantic. *Marine Biology* 154: 423-434 (dx.doi.org/10.1007/s00227-008-0934-y)
- Leaf, R.T., **A.H. Andrews**, G.M. Cailliet, and T.A. Brown. 2008. The feasibility of bomb radiocarbon analysis to support an age-at-length relationship for red abalone, *Haliotis rufescens* Swainson in northern California. *Journal of Shellfish Research* 27(5): 1177-1182
- Sanders, R.D., K.H. Coale, G.A. Gill, **A.H. Andrews**, and M. Stephenson. 2008. Recent increase in atmospheric deposition of mercury to California aquatic systems inferred from a 300-year geochronological assessment of lake sediments. *Applied Geochemistry* 23: 399-407
- Andrews, A.H.**, L.A. Kerr, G.M. Cailliet, T.A. Brown, C.C. Lundstrom, and R.D. Stanley. 2007. Age validation of canary rockfish (*Sebastes pinniger*) using two independent otolith techniques: lead-radium and bomb radiocarbon dating. *Marine and Freshwater Research* 58: 531-541
- Love, M.S., M.M. Yoklavich, B.A. Black, and **A.H. Andrews**. 2007. Age of black coral (*Antipathes dendrochristos*) colonies, with notes on associated invertebrate species. *Bulletin of Marine Science* 80(2): 391-400
- Tracey, D.M., H. Neil, P. Marriot, **A.H. Andrews**, G.M. Cailliet, J.A. Sanchez. 2007. Age and growth of two genera of deep-sea bamboo corals (family Isididae) in New Zealand waters. Proceedings of the 3rd International Symposium on Deep-Sea Corals. *Bulletin of Marine Science* 81(3): 393-408

- Ardizzone, D.A., G.M. Cailliet, L.J. Natanson, **A.H. Andrews**, L.A. Kerr and T.A. Brown. 2006. Application of bomb radiocarbon chronologies to shortfin mako (*Isurus oxyrinchus*) age validation. *Environmental Biology of Fishes* 77: 355-366
- Kerr, L.A., **A.H. Andrews**, G.M. Cailliet, T.A. Brown, and K.H. Coale. 2006. Investigations of $\Delta^{14}\text{C}$, $\delta^{15}\text{N}$, and $\delta^{13}\text{C}$ in vertebrae of white shark (*Carcharodon carcharias*) from the eastern Pacific Ocean. *Environmental Biology of Fishes* 77: 337-353
- Andrews, A.H.**, E.J. Burton, L.A. Kerr, G.M. Cailliet, K.H. Coale, C.C. Lundstrom and T.A. Brown. 2005. Bomb radiocarbon and lead-radium disequilibria in otoliths of bocaccio rockfish (*Sebastes paucispinis*): a determination of age and longevity for a difficult-to-age fish. Proceedings of the 3rd International Symposium on Otolith Research and Application. *Marine and Freshwater Research* 56: 517-528
- Andrews, A.H.**, Laman, E.A., Bennett, T., Jones, E. and Cailliet, G.M. 2005. Age and growth of the spotted sand bass, *Paralabrax maculatofasciatus*, in Bahia de Los Angeles, Baja Norte, Mexico with age validation using otolith edge analysis. *Bulletin of Southern California Academy of Sciences* 104(1): 14-25
- Kerr, L.A., **A.H. Andrews**, B.R. Frantz, K.H. Coale, T.A. Brown, K. Munk, and G.M. Cailliet. 2005. Age validation of quillback rockfish (*Sebastes maliger*) using bomb radiocarbon. *Fishery Bulletin* 103(1): 97-107
- Kerr, L.A., **A.H. Andrews**, B.R. Frantz, K.H. Coale, T.A. Brown, and G.M. Cailliet. 2004. Radiocarbon in otoliths of yelloweye rockfish (*Sebastes ruberrimus*): a reference time series for the coastal waters of southeast Alaska. *Canadian Journal of Fisheries and Aquatic Sciences* 61: 443-451
- Stevens, M.M., **A.H. Andrews**, G.M. Cailliet, K.H. Coale, C.C. Lundstrom. 2004. Radiometric validation of age, growth, and longevity for the blackgill rockfish, *Sebastes melanostomus*. *Fishery Bulletin* 102: 711-722
- Andrews, A.H.**, K.W. Gobalet, and T.L. Jones. 2003. Reliability assessment of season-of-capture determination from archaeological otoliths. *Bulletin of Southern California Academy of Sciences* 102(2): 66-78
- Andrews, A.H.**, G.M. Cailliet, K.H. Coale, K.M. Munk, M.M. Mahoney, and V.M. O'Connell. 2002. Radiometric age validation of the yelloweye rockfish (*Sebastes ruberrimus*) from southeastern Alaska. *Marine and Freshwater Research* 53: 139-146
- Andrews, A.H.**, E. Cordes, M.M. Mahoney, K. Munk, K.H. Coale, G.M. Cailliet, and J. Heifetz. 2002. Age and growth and radiometric age validation of a deep-sea, habitat-forming gorgonian (*Primnoa resedaeformis*) from the Gulf of Alaska. In: *Biology of cold water corals*. Eds: L. Watling and M. Risk. *Hydrobiologia* 471: 101-110
- Wilson, M.T., **A.H. Andrews**, A.L. Brown, and E.E. Cordes. 2002. Axial rod growth and age estimation of the sea pen, *Halipteris willemoesi* K lliker. In: *Biology of cold water corals*. Eds: L. Watling and M. Risk. *Hydrobiologia* 471: 133-142
- Andrews, A.H.**, E.J. Burton, K.H. Coale, G.M. Cailliet, and R.E. Crabtree. 2001. Application of radiometric age determination to the Atlantic tarpon, *Megalops atlanticus*. *Fishery Bulletin* 99: 389-398
- Cailliet, G.M., **A.H. Andrews**, E.J. Burton, D.L. Watters, D.E. Kline, and L.A. Ferry-Graham. 2001. Age determination and validation studies of marine fishes: do deep-dwellers live longer? *Experimental Gerontology* 36: 739-764
- Andrews, A.H.**, G.M. Cailliet, K.H. Coale. 1999. Age and growth of the Pacific grenadier (*Coryphaenoides acrolepis*) with age estimate validation using an improved radiometric ageing technique. *Canadian Journal of Fisheries and Aquatic Sciences* 56: 1339-1350 (dx.doi.org/10.1139/f99-054)
- Andrews, A.H.**, K.H. Coale, J.L. Nowicki, C. Lundstrom, Z. Palacz, E.J. Burton, and G.M. Cailliet. 1999. Application of an ion-exchange separation technique and thermal ionization mass spectrometry to ^{226}Ra determination in otoliths for radiometric age determination of long-lived fishes. *Canadian Journal of Fisheries and Aquatic Sciences* 56: 1329-1338 (dx.doi.org/10.1139/f99-053)
- Cailliet, G.M., **A.H. Andrews**, W.W. Wakefield, G. Moreno, and K.L. Rhodes 1999. Fish faunal and habitat analyses using trawls, camera sleds and submersibles in benthic deep-sea habitats off central California. *Oceanologica Acta* 22: 579-592

Publications – Books

- Natanson, L.J., **A.H. Andrews**, M.S. Passerotti, and S.P. Wintner. 2019. The history and mystery of age and growth studies in elasmobranchs: Common methods and room for improvement. In: Shark Research: Emerging Technologies and Applications for the Field and Laboratory. 1st Edition. Eds: J.C. Carrier, M.R. Heithaus, and C.A. Simphendorfer. CRC Marine Biology Series. CRC Press. New York. pp. 177-199

- Goldman, K.J., G.M. Cailliet, **A.H. Andrews**, and L.J. Natanson. 2012. Assessing the age and growth of chondrichthyan fishes. *In: Biology of sharks and their relatives*. 2nd Edition. Eds: J.C. Carrier, J.A. Musick, and M.R. Heithaus. CRC Marine Biology Series. CRC Press. New York. pp. 423-451
- Cailliet, G.M., and **A.H. Andrews**. 2008. Age-validated longevity of fishes: Its importance for sustainable fisheries. *In: Fisheries for global welfare and environment*. Eds: K. Tsukamoto, T. Kawamura, T. Takeuchi, T.D. Beard, Jr., and M.J. Kaiser. 5th World Fisheries Congress 2008, TERRAPUB, Tokyo, Japan. pp. 103-120
- Paul, L., D. Tracey, H. Neil, **A.H. Andrews**, and R. Sparks. 2006. How old are these deep-sea species: Applying improved techniques to validate longevity. *In: Deep Sea 2003: Conference on the governance and management of deep-sea fisheries*. Ed: R. Sotton. FAO Fisheries Proceedings 3/2: 94-96
- Andrews, A.H.**, G.M. Cailliet, L.A. Kerr, K.H. Coale, C. Lundstrom, and A. DeVogleare. 2005. Investigations of age and growth for three species of deep-sea coral from the Davidson Seamount off central California. *In: Cold-water Corals and Ecosystems*. Eds: A. Freiwald and J.M. Roberts. Proceedings of the Second International Symposium on Deep Sea Corals. Erlangen, Germany. September 8-13, 2003. Springer Berlin Heidelberg New York. pp. 965-982
- Burton, E.J., **A.H. Andrews**, K.H. Coale, and G.M. Cailliet. 1999. Application of radiometric age determination to three long-lived fishes using ²¹⁰Pb:²²⁶Ra disequilibria in calcified structures: A review. *In: Life in the Slow Lane: Ecology and Conservation of Long-lived Marine Animals*. Ed: J.A. Musick. American Fisheries Society Symposium 23, Bethesda, Maryland. pp. 77-87

Technical Publications

- Andrews, A.**, K. Okamoto, K. Satoh, F. Roupsard, and J. Farley 2021. Progress report on bomb radiocarbon age validation for bigeye and yellowfin tunas in the WCPO (Project 105). SCIENTIFIC COMMITTEE SEVENTEENTH REGULAR SESSION (Electronic Meeting 11–19 August 2021), WCPFC-SC17-2021/SA-IP-09 [<https://meetings.wcpfc.int/node/12567>]
- Reed, E.M., N.J. Brown-Peterson, E.E. DeMartini, and **A.H. Andrews**. 2021. Reproductive characteristics of longtailed red snapper (*Onaga, Etelis coruscans*) in the main Hawaiian Islands. NOAA Administrative Report H-21-02 ([dx.doi.org/10.25923/gy4t-vx60](https://doi.org/10.25923/gy4t-vx60))
- Farley, J., **A. Andrews**, N. Clear, J. Hampton, T. Ishihara, K. Krusic-Golub, J. MacDonald, K. Okamoto, K. Satoh, and A. Williams. 2020. Report on the bomb radiocarbon age validation workshop for tuna and billfish in the WCPO. SCIENTIFIC COMMITTEE SIXTEENTH REGULAR SESSION, ELECTRONIC MEETING 11-20 August 2020. WCPFC-SC16-2020/SA-IP-17
- Prouty N.G., E.B. Roark, **A.H. Andrews**, L. Robinson, T. Hill, O. Sherwood, B. Williams, T. Guilderson, and S. Fallon. 2017. Age, growth rates, and paleoclimate studies of deep sea corals. *In: The State of Deep-Sea Coral and Sponge Ecosystems of the United States*. Eds: Hourigan T.F., Etnoyer P.J., Cairns S.D. NOAA Technical Memorandum NMFS-OHC-4. Silver Spring, MD. Pp. 299-319. (https://deepseacoraldata.noaa.gov/library/2015-state-of-dsc-report-folder/NOAA_State-of-DSC-Ecosystems_2017_OHC-TM04.pdf)
- O'Malley, J.M., B.M. Taylor, and **A.H. Andrews**. 2016. Feasibility of ageing Hawaiian Archipelago uku (*Aprion virescens*). NOAA Administrative Report H-16-06.
- Brodziak, J., A. Yau, J. O'Malley, **A. Andrews**, R. Humphreys, E. DeMartini, M. Pan, M. Parke, and E. Fletcher. 2014. Stock assessment update for main Hawaiian Islands Deep7 bottomfish complex through 2013 with projected annual catch limits through 2016. NOAA Technical Memorandum NMFS-PIFSC-42
- Andrews, A.H.**, R.L. Humphreys, E.E. DeMartini, R.S. Nichols, and J. Brodziak. 2011. Bomb radiocarbon and lead-radium dating of opakapaka (*Pristipomoides filamentosus*). PIFSC, NMFS, NOAA, Honolulu, HI 96822-2396. PIFSC Admin. Rep. H-11-07, 58 p.
- Brodziak, J., D. Courtney, L. Wagatsuma, J. O'Malley, H-H. Lee, W. Walsh, **A. Andrews**, R. Humphreys, and G. DiNardo. 2011. Stock assessment of the main Hawaiian Islands Deep7 bottomfish complex through 2010. U.S. DOC, NOAA Technical Memorandum NMFS-PIFSC-29, 176 p.
- Marriott, P.M. **A.H. Andrews**, and M.J. Manning. 2010. Investigating blue mackerel (*Scomber australasicus*) age-estimation error. Objective Three: Validate blue mackerel catch-at-age. Final Research Report for Ministry of Fisheries Research Project EMA2005-02. NIWA, Wellington, New Zealand. 23 p.
- Sutton, C.P., D.M. Tracey, **A.H. Andrews**, A.C. Hart, and D.J. MacGibbon. 2010. Validated age and growth of ribaldo (*Mora moro*). New Zealand Fisheries Assessment Report 2010/24. NIWA, Wellington, New Zealand. 26 p.
- Andrews, A.H.**, C.C. Lundstrom, G.M. Cailliet, and A.P. DeVogelaere. 2007. Investigations of bamboo coral age and growth from Davidson Seamount. Monterey Bay National Marine Sanctuary Technical Report. NOAA Monterey, California. 34 p.

- Andrews, A.H.** and D.M. Tracey. 2007. Age validation of orange roughy and black cardinalfish using lead-radium dating. Final Research Report for Ministry of Fisheries Res. Project DEE2005/02. NIWA, Wellington, New Zealand. 40 p.
- Tracey, D.M., P.L. Horn, **A.H. Andrews**, P.M. Marriott, and M.R. Dunn. 2007. Age, growth, and investigations of age validation of lookdown dory (*Cyttus traversi*). Final Research Report for Ministry of Fisheries Research Project LDO2004/01. NIWA, Wellington, New Zealand. 36 p.
- Andrews, A.H.** and D.M. Tracey. 2003. Age validation of deepwater fish species, with particular reference to New Zealand orange roughy, black oreo, smooth oreo, and black cardinalfish. Final Research Report for Ministry of Fisheries Research Project DEE2000/02 Objective 1. NIWA, Wellington, New Zealand. 24 p.
- Andrews, A.H.** 2002. Reliability assessment of season-of-capture determination for archaeological otoliths. *In: Prehistory at San Simeon Reef, Archaeological data recovery at CA-SLO-179 and -267, San Luis Obispo County, California.* Eds: T.L. Jones and J.A. Ferneau. San Luis Obispo Archaeological Society, Occasional Paper No. 16. pp. 429-446
- Andrews, A.H.** 2002. Preliminary radiometric ageing of the Pacific cod (*Gadus macrocephalus*). Final report to the Alaska Department of Fish and Game, Division of Commercial Fisheries, Juneau. ADFG contract: D.O. #11-J-108-02
- Andrews, A.H.**, E.J. Burton, K.H. Coale, and G.M. Cailliet. 1997. Radiometric age determination of the Atlantic sturgeon (*Acipenser oxyrinchus*): A feasibility study using pectoral fin rays. *In: Age structure and life history attributes of Atlantic sturgeon (Acipenser oxyrinchus) in the Hudson River.* Eds: D.H. Secor, J.T. Stevenson, and E.D. Houde. HRF Grant No. 006/93A. Report of The University of Maryland System, Center for Environmental and Estuarine Studies, Chesapeake Biological Laboratory to Hudson River Foundation, New York, New York, pp. 63-80
- Nybakken, J.M., G.M. Cailliet, L. Weetman, **A.H. Andrews**, E. Cordes, M. Jacobi, M.D. White, K. Johnson, E. Burton. and N. Laman. 1996. Ocean disposal site end point monitoring. Final Report for Navy CLEAN Contract #N62474-90-C-1147, MLML Technical Report 96-3, 37 p.
- Butler, J.L., C.R. Kastle, K. Rubin, D. Kline, H. Heijis, L. Jacobson, **A.H. Andrews**, and W.W. Wakefield. 1995. Age determination of the shortspine thornyhead using otolith sections and ^{210}Pb : ^{226}Ra . SWFSC Admin. Rep. LJ-95-12, 22 p.
- Cailliet, G.M., W.W. Wakefield, G. Moreno, **A.H. Andrews**, and K. Rhodes. 1992. The deep-sea fish fauna from the proposed Navy Ocean Disposal Site, using trap, otter and beam trawl, and camera sled samples. Final Report on Navy CLEAN Contract #N62474-88-D-5086, MLML Technical Report, 69 p.

Popular Articles and Reports

- Andrews, A.H.** 2020. A 25-Year Lifespan for *Ulua Aukea*. *Lawai'a Magazine* 32: 38-41.
- Andrews, A.H.** 2020. Red fish, blue fish, old fish, new fish - Onaga can live half a century in the Hawaiian Islands. *Lawai'a Magazine* 31: 46-51.
- Andrews, A.H.** 2019. One of these fishes is not like the others - Hapu'upu'u has a long and complicated life history. *Lawai'a Magazine* 29: 36-39.
- Andrews, A.H.** 2017. Big blue was 20 years old. *Lawai'a Magazine* 25: 40-44.
- Yeman, C., **A.H. Andrews**, C. Welte, B. Hattendorf, L. Wacker, M. Christl, and H.-A. Synal. 2016. How long can red snapper live? Revealing the bomb radiocarbon pulse in an otolith with LA-AMS. Annual Report 2016, Laboratory of Ion Beam Physics. ETH Zürich, Switzerland. p. 33.
- Andrews, A.H.**, C. Welte, C. Yeman, L. Wacker, B. Hattendorf, and D. Günther. 2015. Can red snapper live for half a century? Laser-ablation AMS reveals complete bomb ^{14}C signal in an otolith. Annual Report 2015, Laboratory of Ion Beam Physics. ETH Zürich, Switzerland. p. 39.
- Welte, C., L. Wacker, B. Hattendorf, M. Christl, **A.H. Andrews**, C. Yeman, H.-A. Synal, D. Günther. 2015. Indirect radiocarbon dating of a pearl oyster: Rapid analysis of a marine carbonate sample by laser ablation AMS. Annual Report 2015, Laboratory of Ion Beam Physics. ETH Zürich, Switzerland. p. 38.
- Andrews, A.H.** 2013. Nuclear bombs and how long opakapaka can live. *Bottomfish News*. DAR Volume 15, March 2015. p. 5.

Grants and Contracts

- 2022-2023 **Cooperative Research Program** (NOAA Fisheries) - Validate life histories of Atlantic pelagic fishes - Bomb radiocarbon dating of swordfish, blue marlin, and albacore tuna.
- 2022-2023 **Saltonstall-Kennedy Grant Program** - Novel application of eye lens cores to document natal origins, exchange, and population structure of reef fishes between major regions of southeastern U.S. and U.S. Caribbean.
- 2022 **Iowa Department of Natural Resources** - Age estimation and validation of shovelnose sturgeon.
- 2021-2022 **Norwegian Institute of Marine Research (IMR)** - Study on use of bomb radiocarbon on fishes of Norway.

2021-2022 **Commonwealth Scientific and Industrial Research Organisation (CSIRO)** – Calibration of DNA methylation on school shark.

2021-2022 **Western and Central Pacific Fisheries Commission** – Collaboration with CSIRO, SPC, National Research Institute of Far Seas Fisheries, Japan, and ETH Zürich on the age validation of yellowfin and bigeye tuna in Pacific.

2020-2022 **August T. Larsson Guest Researcher Program Award** – Capacity building with bomb radiocarbon dating to validate life history of aquatic organisms

2020-2021 **Texas A&M** – Collaboration with ETH Zürich on use of LA-AMS for maximum ages of Gulf of Mexico groupers.

2018-2019 **Naturhistoriska riksmuseet (Swedish Museum of Natural History)** – Collaboration with Swedish University of Agricultural Sciences, Department of Aquatic Resources (SLU Aqua) to use NordSIM-Vegacenter instrumentation. Could true winter zones in temperate eels (*Anguilla anguilla*) be distinguished from false annuli using oxygen-18?

2018-2019 **NOSAMS Graduate Student Research Initiative (WHOI)** – Fostering graduate student at North Dakota State University. Can Bigmouth Buffalo Live 100 years? Age Validation by bomb radiocarbon dating.

2017-2019 **NOSAMS Graduate Student Internship Program (WHOI)** – Fostering graduate student at University of South Carolina. Age and longevity of oceanic whitetip shark, *Carcharhinus longimanus*, with bomb radiocarbon analysis.

2017-2019 **CRP - NOAA Funding Opportunity Number: NOAA-NMFS-SE-2017-2004940** – Evaluating Age Structure and Foraging Ecology of Yellowfin and Bigeye Tuna in the Northwest Atlantic.

2016-2017 **BBVA Foundation - Spain** – Conservation of gorgonian *Ellisella paraplexauroides* in Mediterranean.

2014-2016 **Saltonstall-Kennedy Grant Program** – Age-validated life history using bomb radiocarbon dating in support of Territorial Science and Bio-sampling of fisheries in Guam and the Commonwealth of the Northern Mariana Islands.

2014-2016 **Information to Support and Conduct Stock Assessments –Science and Technology** – Small-vessel survey and auction sampling to estimate growth and maturity of eteline snappers and improve data-limited stock assessments.

2014-2016 **Marine Fisheries Initiative - MARFIN** – Age validation for red snapper (*Lutjanus campechanus*) and gray snapper (*L. griseus*) using bomb radiocarbon dating.

2014 **Travel funding award** – Developed request with Richard McBride (NEFSC) to gain NOAA Science & Technology support for 5th International Otolith Symposium. (One representative per NOAA Center)

2011-2013 **Species of Concern Program – Office of Protected Resources** – Bomb radiocarbon dating to validate ages of humphead wrasse (*Cheilinus undulatus*) and bumphead parrotfish (*Bolbometopon muricatum*); Age validation and maximum age of sand tiger shark (*Carcharias taurus*) by bomb radiocarbon analysis; Age validation of Warsaw grouper (*Hyporthodus nigritus*) and speckled hind (*Epinephelus drummondhayi*) using bomb radiocarbon dating.

2010-2011 **California Sea Grant via Moss Landing Marine Laboratories** – Project Completion: Bomb radiocarbon dating of white abalone (*Haliotis sorenseni*) using a Southern California Bright reference curve.

2008-2009 **National Museum of Marine Biology and Aquarium, Taiwan** – Lead-radium dating of blue roughy (*Gephyroberyx japonicus*).

2008 **4th International Deep Sea Coral Symposium, New Zealand** – Two travel grants to attend the meeting.

2008 **National Institute of Water and Atmospheric Research, New Zealand** – Validation of age and growth of ribaldo (*Mora moro*).

2008 **American Institute of Fisheries Research Biologists** – Travel grant to Rhodes University, South Africa.

2007-2008 **National Institute of Water and Atmospheric Research, New Zealand** – Feasibility of lead-radium dating giant stargazer (*Kathetostoma giganteum*).

2007-2008 **NOAA Fisheries, Auke Bay Laboratory** – Lead-210 dating of Gulf of Alaska deep-sea corals.

2007-2008 **NOAA Fisheries, Southeast Fisheries Science Center, Panama City Lab** – Lead-radium dating of golden tilefish (*Lopholatilus chamaeleonticeps*).

2007-2008 **National Institute of Water and Atmospheric Research, New Zealand** – Testing the feasibility of lead-radium dating on otoliths of lookdown dory (*Cyttus traversi*).

2006-2008 **California Sea Grant R/F-202** – Red (*Haliotis rufescens*) and white abalone (*H. sorenseni*) age and growth using the bomb radiocarbon & lead-210 dating.

2006-2007 **National Institute of Water and Atmospheric Research, New Zealand** – Lead-radium dating of blue mackerel.

2006 **Tetra Tech, Inc., Lafayette, California** – Thailand tropical fishes: Age and growth investigations.

- 2005-2007 **National Institute of Water and Atmospheric Research, New Zealand** – Age validation of New Zealand deepwater fishes.
- 2005-2007 **Department of Commerce: Office of Ocean Exploration** – Bamboo coral of Davidson Seamount: Age and growth investigations.
- 2005 **California Sea Grant R/F-110PD** – Age validation of the cowcod (*Sebastes levis*): Completion of R/F-190.
- 2004-2005 **National Institute of Water and Atmospheric Research, New Zealand** – Bamboo coral of New Zealand: Age and growth investigations.
- 2004 **California Sea Grant R/F-100PD** – Travel support to attend 3rd International Otolith Symposium. Presentation and publication of Sea Grant Research. Travel and conference expenses for two people (myself and Gregor Cailliet).
- 2003-2006 **National Science Foundation** – Radiometric age validation studies of the Patagonian and Antarctic toothfishes (*Dissostichus eleginoides* and *D. mawsoni*).
- 2002-2004 **California Sea Grant R/F-190 and Lawrence Livermore National Laboratory** – Bomb carbon in the yelloweye rockfish, *Sebastes ruberrimus*, as a chronological benchmark for age validation of commercially important fishes.
- 2002-2003 **National Institute of Water and Atmospheric Research, New Zealand** – Feasibility study to obtain radiometric age estimates of deepwater fishes.
- 2002-2003 **Monterey Bay National Marine Sanctuary** – Age and growth determination of deep-sea corals from the Davidson Seamount.
- 2002 **National Science Foundation** – Acquisition of a high-resolution inductively coupled plasma mass spectrometer.
- 2002 **Alaska Department of Fish and Game** – Preliminary radiometric ageing of the Pacific cod (*Gadus macrocephalus*).
- 2001-2003 **California Sea Grant R/F-182** – Radiometric age validation and demographic analysis of commercially important, long-lived rockfishes.
- 2001 **California Sea Grant R/F-66PD** – Travel support for the 6th Indo-Pacific Fish Conference: Presentation and Publication of Sea Grant Research. Travel and conference expenses for two people (myself and Gregor Cailliet).
- 2000-2001 **California Sea Grant R/F-176** – Radiometric age validation of two deep-water fishes: the yelloweye (*Sebastes ruberrimus*) and blackgill (*S. melanostomus*) rockfishes. (included traineeship)
- 1999-2001 **North Pacific Marine Research Initiative: USGS via University of Alaska, Fairbanks** – Age and growth of two deep-sea, habitat-forming octocorallian corals of the Gulf of Alaska and Bering Sea, with radiometric age validation and climate correlation. (included traineeship)
- 1998-1999 **California Sea Grant R/F-174** – Application of radiometric age determination to the bocaccio rockfish, *Sebastes paucispinis*. (included traineeship)
- 1998 **California Department of Transportation (Caltrans)** – Archaeological investigations at CA-SLO-179 and CA-SLO-267 with California Polytechnic State University, San Luis Obispo and Caltrans
- 1994 **PADI Foundation Grant** – Age and growth of the spotted sand bass (*Paralabrax maculatofasciatus*) in Bahia de Los Angeles, Mexico
- 1994 **Dr. Earl H. and Ethyl M. Myers Oceanographic and Marine Biology Trust** – Age and growth of the spotted sand bass (*Paralabrax maculatofasciatus*) in Bahia de Los Angeles, Mexico
- 1993 **Travel grant from Dr. J.H. Martin (MLML)** – First International Otolith Symposium, Hilton Head, South Carolina

Leadership, Consultancy and Recognition

- 2020 VIRTUAL LECTURER – Scripps Institute of Oceanography – Current Research in Marine Biology (SIO139)
- 2019 CORRESPONDENT – Minnesota Dep Natural Resources: Conference on status of bigmouth buffalo in Minnesota
- 2019 LEAD COLLABORATOR – Laser-ablation and gas-AMS in the Ion Beam Physics Lab on a 2-week site visit to ETH Zurich
- 2017-2018 SCIENTIFIC STEERING COMMITTEE & SESSION CHAIR – 6th International Otolith Symposium, Taiwan
- 2017 SCIENTIFIC STEERING COMMITTEE – 2nd International Radiocarbon in the Environment Conference, Hungary
- 2016 OUTSTANDING REVIEWER with *Fisheries Research* – Awarded recognition for top 10th percentile of last two years
- 2015-2017 DEEP SEA VIDEO and COLLECTION SCIENTIST for *Okeanos Explorer Expeditions* – Remote assistance with identification of deep-sea fishes and collection of invertebrates (deep sea corals).
- Howland and Baker of the Pacific Remote Islands Marine National Monument and the Phoenix Islands Protected Area
 - Mariana Trench and Papahānaumokuākea National Marine monuments

2015 OTOLITH AGE AND GROWTH WORKSHOPS – Provided workshops on use of otolith sectioning and age-reading techniques to build regional capacity in life history studies of regional fishes.
 – University of Guam, Guam Fishermen’s Cooperative Association & NOAA Fisheries, Guam
 – Micronesian Environmental Services & Department of Fisheries and Wildlife, Saipan

2014 OUTSTANDING REVIEWER with *Canadian Journal of Fisheries and Aquatic Sciences* – Awarded recognition for consistent and expeditious reviews.

2013-2014 SCIENTIFIC ORGANIZING COMMITTEE – 1st International Radiocarbon in the Environment Conference, Ireland
 Organized and led a special session: "Bomb Radiocarbon Dating of Marine Organisms: Research and Application"

2013-2014 WORKSHOP COMMITTEE & SESSION CHAIR – Age Validation Workshop, 5th International Otolith Symposium, Palma, Mallorca, Spain

2013 RESEARCH PROJECT ADVISOR – University of Hawaii undergraduate student: Age and reproduction of gindai

2010-*nunc* FISHBASE COLLABORATOR – Assistance with information updates and corrections (www.fishbase.com)

2010-2018 EDUCATIONAL VOLUNTEER – Hanauma Bay Educational Program under Hawaii Sea Grant

2009-2019 NORTH PACIFIC RESEARCH BOARD – Peer reviewer of research proposals to the NPRB (www.nprb.org)

2008-2009 COMMITTEE MEMBER – Trans-Atlantic Coral Ecosystem Study (TRACES Science Plan). Investigation of the biodiversity, connectivity and climate records associated with cold-water coral habitats in the North Atlantic Ocean

2007-2009 CONSULTANT – Astronomical Guide for Monterey Peninsula College with operation of 30-inch telescope (Fremont Peak Observatory)

2007 CONSULTANT – Lead-210 dating of chimney structures of deep-sea hydrothermal vents (University of Hawaii)

2006-2009 COMMITTEE MEMBER and CONFERENCE ORGANIZER – 4th International Otolith Symposium, California.

Note: *I designed the 4th IOS Logo*

2006 PROJECT RADIOCHEMIST – Davidson Seamount: Exploring Ancient Coral Gardens (DOC: Office of Ocean Exp)

2006 CONSULTANT –NOAA Technical Memorandum CRCP-3, The State of Deep Coral Ecosystems of the United States

2006 CONSULTANT – Thailand tropical fishes: Age and growth investigations. (Tetra Tech, Inc., Lafayette, CA)

2002-2006 CONSULTANT – Lead-radium dating Pacific cod & bomb ¹⁴C dating of shortspine thornyhead (ADFG)

2002-2004 INTERNATIONAL COMMITTEE MEMBER and CONFERENCE ORGANIZER - Third International Otolith Symposium, Townsville, Queensland, Australia. Member of the International Scientific Organizing Committee.
 Session Chair - Age and Growth Estimation and Validation, selected for committee of 2009 meeting (Monterey, CA)

1999-2000 CONSULTANT – Southern Cross: Monterey Bay Fiber Optic Cable Project (ABA Consultants for MCI Worldcom)

1999-2000 CONSULTANT –Diablo Canyon Power Plant 316(b) Report (Tenera Environmental Services for PG&E)

1998-1999 CONSULTANT – Sharing details of improved radiometric ageing technique (NOAA Fisheries, AFSC)

Public presentations and meetings

2022

24th Radiocarbon Conference, Zürich, Switzerland – “Lifespan of fishes and LA-AMS – Investigations of maximum age for grouper and alligator gar” (https://youtu.be/2CKYD1IH0_U)

WGEEL – Joint EIFAAC/ICES/GFCM Working Group on Eels – Provided slides for colleague on eel bomb ¹⁴C results

2021

Session on Age Estimation and Validation – Virtual International Symposium on Baltic pike, Linnaeus Univ. (November)

ICCAT Billfish Workshop on Age Reading – Invited Expert for virtual meeting hosted by IPMA, Madrid, Spain (October)
 “Bombs and Fish - Extending the utility of bomb radiocarbon dating to recently collected pelagic fishes”

Seminar – Natural Resources and Sustainable Development at Uppsala University (Virtual meeting due to Covid-19)
 “Bombs and Fish - How nuclear bombs can tell us about the age of fishes and other aquatic organisms”

71st Tuna Conference – Lake Arrowhead, California (Virtual meeting due to Covid-19)
 “Bombs and Fish - Extending the utility of bomb radiocarbon dating to recently collected pelagic fishes”

2020

SLU Aqua Workshop – Ecosystem-based fisheries management (Virtual meeting due to Covid-19)
 “Bomb Radiocarbon and Ecosystem Based Management” (AT Larsson Guest Researcher 2021 at SLU Aqua)

CSIRO/SPC - Bomb radiocarbon age validation workshop for tuna and billfish in the WCPO (July)
 “Introduction to bomb radiocarbon age validation and available ¹⁴C records in the Pacific”
 “Pacific blue marlin (*Makaira nigricans*) longevity estimates confirmed with bomb radiocarbon dating”

"Age validation of yellowfin (*Thunnus albacares*) and bigeye (*T. obesus*) tuna of the northwestern Atlantic Ocean"
Swedish University of Agricultural Sciences (Sveriges lantbruksuniversitet) - Guest speaker seminar

"The latest in bomb radiocarbon dating and its potential applications in fisheries of Sweden"
(<https://youtu.be/u0TWN6NIDYk>)

135th Scientific and Statistical Committee meeting - Honolulu, Hawaii

"Validated age and growth of yellowfin (*Thunnus albacares*) and bigeye (*T. obesus*) tuna of the NW Atlantic Ocean"

2019

ICCAT Yellowfin Tuna Preparatory Meeting (Madrid, Spain) - Provided data and presentational slide information

ICCAT Yellowfin Stock Assessment Meeting (July 2019 Grand-Bassan) - Provided data and slide information

WCPFC 15th Regular Session of the Scientific Committee (August Micronesia) - Provided data and slide information

70th Tuna Conference - Lake Arrowhead, California

"Validated longevity of yellowfin (*Thunnus albacares*) and bigeye (*T. obesus*) tuna"

Fishers Forum, Honolulu, Hawaii - Guest speaker "Bombs and fish"

Woods Hole Oceanographic Institution - Seminar "Bombs and blue marlin - Coral, otoliths, seawater, future directions"

2018

Havsfiskelaboratoriet, Sveriges lantbruksuniversitet (Institute of Marine Research), Lysekil, Sweden - Guest speaker

"Bombs and blue marlin (*Makaira nigricans*) - confirmation of rapid growth and longevity" &

"Laser ablation AMS reveals complete bomb ¹⁴C record in otolith w confirmation of 60-year lifespan for red snapper"

6th International Otolith Symposium - Taiwan

"Laser ablation AMS reveals complete bomb ¹⁴C record in otolith w confirmation of 60-year lifespan for red snapper"

Moss Landing Marine Laboratories - Seminar Series

"Bombs and blue marlin (*Makaira nigricans*) - confirmation of rapid growth and longevity"

(YouTube: <https://youtu.be/Jf0iAYPcx9g>)

2017

CalCOFI Conference 2017

"Bombs and blue marlin (*Makaira nigricans*) - Confirmation of very rapid growth"

"Can red snapper live for half a century? Laser-ablation AMS reveals complete bomb radiocarbon signal in otolith"

University of Hawaii, Manoa - Seminar

"Bombs and blue marlin (*Makaira nigricans*) - Confirmation of very rapid growth"

Hawaii Pacific University Marine Science Seminar

"Bombs and blue marlin (*Makaira nigricans*) - Confirmation of very rapid growth"

14th International AMS Conference - Ottawa, Canada

"Can red snapper live for half a century? Laser-ablation AMS reveals complete bomb radiocarbon signal in an otolith"
(Senior authored paper presented by ETH Zurich student)

Theater Thursday - Hanauma Bay Seminar Series

"Bombs and blue marlin - Confirmation of rapid growth" (Online: <https://youtu.be/F7pc0YLh7p8>)

2nd International Radiocarbon in the Environment Conference - Debrecen, Hungary

"Can red snapper live for half a century? Laser-ablation AMS reveals complete bomb ¹⁴C signal in an otolith"

"Black coral age and growth validation using ¹⁴C dating in the central Mediterranean Sea" (poster)

Seminar for Inouye Regional Center Seminar Series at IRC, Honolulu, Hawaii

"Bombs and blue marlin (*Makaira nigricans*) - Confirmation of longevity estimates using bomb radiocarbon dating"

68th Tuna Conference - Lake Arrowhead, California

"Bombs and blue marlin (*Makaira nigricans*) - confirmation of rapid growth"

Seminar for Scientific Committee on Research meeting (SCoR) - PIFSC, Honolulu, Hawaii

"Can red snapper & Hawaiian grouper live more than half a century? Laser-ablation AMS reveals complete bomb radiocarbon signal in an otolith"

Deutsche Physikalische Gesellschaft (German Physical Society) - Hanover, Germany

"Improvements of the Laser Ablation Interface for Direct ¹⁴C - AMS analysis of carbonates" (coauthor)

Big Bend Science Symposium - University of Florida, Cedar Key, Florida

"Otolith radiocarbon verifies age estimates in long-lived reef fishes along the west Florida shelf" (coauthor)

Seminar at Southwest Fisheries Science Center, Santa Cruz Lab - Santa Cruz, California

"Bombs and blue marlin (*Makaira nigricans*) - confirmation of rapid growth"

2016

AGU Fall Meeting - San Francisco, California

"Nuclear bombs and coral: Guam coral core reveals operation-specific radiocarbon signals from Pacific Proving Grounds" (poster)

North Pacific Marine Science Organization 2016 Annual Meeting (25 years of PICES) – San Diego, California
"Nuclear bombs and coral: Guam coral core reveals operation-specific radiocarbon signals from the Pacific Proving Grounds" at MEQ Workshop (W10): Distribution and risk analysis of radionuclides in the North Pacific (Invited speaker & regular meeting poster)

Marine Biology Graduate Program Seminar Series – University of Hawaii, Manoa

"Nuclear bombs and coral: Guam coral core reveals operation-specific ^{14}C signals from the Pacific Proving Grounds"

ICES Annual Science Conference – Riga, Latvia

"Reconstructing environmental history off Sicily with bomb ^{14}C validated trace element analysis in Dentex otoliths"

4th International Sclerochronology Conference – Portland, Maine

"Continuous ^{14}C analysis of marine carbonates by laser ablation coupled with AMS"

13th International Coral Reef Symposium – Honolulu, Hawaii

"Nuclear bombs and coral: Guam coral core reveals operation-specific ^{14}C signals from the Pacific Proving Grounds"

12th European Conference on Accelerators in Applied Research and Technology Conference

"Laser Ablation – AMS: Rapid and spatially resolved radiocarbon analyses of carbonate archives"

2015

Radiocarbon 2015 – Dakar, Senegal

"Rapid high resolution ^{14}C -analysis of carbonate records by laser ablation"

Otolith Age Estimation and Validation Workshops (1 week each) with Seminars

Saipan workshop – Micronesian Environmental Services (host) and Department of Fish and Wildlife

Public Seminar at Joeten-Kiyu Public Library

Guam workshop – University of Guam (host), PIFSC-Guam, Guam Fishermen's Cooperative, DAWR, WPRFMC

Technical Seminar at University of Guam & Public Seminar at Guam Fishermen's Cooperative

Guest Speaker at Swedish University of Agricultural Sciences, Department of Aquatic Resources, Sweden.

"Bomb radiocarbon dating of fishes"

National Concilium of Research, Mazara del Vallo, Sicily, Italy (1-week collaboration visit)

Public seminar – "Bombs and Fish- How nuclear explosions can tell us about the age of fishes"

Technical seminar – "Bomb radiocarbon dating of European hake (*Merluccius merluccius*)"

ETH University, Zurich, Switzerland (1-week collaboration visit)

Technical seminar – "Bombs and Fish - How nuclear explosions can tell us about the age of fishes"

Joint Meeting of Ichthyologists and Herpetologists – Reno, Nevada

"Maximum age and missing time in shark vertebrae: limits and validity of age estimates using bomb ^{14}C dating"

Hanauma Bay Education Program: Sundays at the Bay - Science and the Open Ocean - Outreach Talk #2

"Bombs and fish – How nuclear explosions can tell us about the age of fishes"

Note: Presentation was broadcast on YouTube: <https://youtu.be/IZ9VzB0lw3Y>

CNMI Research Workshop on Reef Fish and Bottomfish & Guam Insular Fish Research Workshop

"Age Validation of Bottom and Reef Fishes - Hawaii & Western Central Pacific" (2x oral presented by colleague)

Class presentation – Marine Biology 691 Graduate seminar – "Meet the professors"

Marine Biology 404 – Seminar for Advanced Topics in Marine Biology

"Bombs and fish – How nuclear explosions can tell us about the age of fishes"

Hawaii State Science and Engineering Fair - Hawaii Convention Center

NOAA Careers – Short introductions about science and my career path to 6-8 groups of high school kids

2014

Seminar at Hawaii Institute of Marine Biology – Kaneohe Bay, Oahu

"Maximum age and missing time in shark vertebrae: limits and validity of age estimates using bomb ^{14}C dating"

Center for Independent Experts panel review – Stock Assessment Update for the Main Hawaiian Islands Deep7

Bottomfish Complex Through 2013 With Projected Annual Catch Limits Through 2016

"Age and Growth of Bottomfishes – Hawaii & Western Central Pacific"

NMFS Science & Technology Board – Program Review (One of four PIFSC presenters selected for this forum)

"Age, growth and longevity of managed marine species"

SEFSC-Panama City Lab – Orientation seminar

"Bomb radiocarbon dating of marine organisms – Research and application"

Inouye Regional Center Science Seminar – Honolulu, Hawaii

"Maximum age and missing time in shark vertebrae: the limits and validity of bomb radiocarbon dating"

5th International Otolith Symposium – Mallorca, Spain

Workshop Organizer/Convener – Workshop on Age Validation

"Refined bomb radiocarbon dating of two iconic fishes of the Great Barrier Reef"

"How long is the lifespan of European hake in the Mediterranean?"
 1st Radiocarbon in the Environment Conference – Belfast, Ireland
 Session organizer/Convener – Bomb Radiocarbon Dating of Marine Organisms: Research and Application
 "Bomb radiocarbon dating of marine organisms: research and application" (*Keynote speaker for the session*)
 Autumn meeting of the Japanese Society of Fisheries Science – Kyushu University, Fukuoka, Japan
 "Lead-radium dating of Darwin's slimehead *Gephyroberyx darwini*"
 Tsumkwe Junior Secondary School – Tsumkwe, Namibia
 Guest speaker for Biology Classes (grades 9-12) – "Age and growth of fishes"
 Sharks International – Durban, South Africa
 "Maximum age and missing time in shark vertebrae: Limits and validity of age using bomb radiocarbon dating"
 "Validated lifespan of sand tiger shark from bomb ¹⁴C dating in the North Atlantic and SW Indian Oceans"
 Seminars to Oceanography Department (6/2014) and Graduate Marine Biology Program (9/2014) at University of Hawaii – Presentation for consideration in joining each department as an Affiliate Faculty member (accepted to each)
 "Maximum age and missing time in shark vertebrae: the limits and validity of bomb radiocarbon dating"
 National Shellfisheries Association (107th Annual Meeting) – Monterey, California
 "Bomb radiocarbon dating of the endangered white abalone: investigations of age, growth and lifespan"
 Seminar on shark age and growth – Hawaii Pacific University
 "Maximum age and missing time in shark vertebrae: the limits and validity of bomb radiocarbon dating"
 Seminar on age and growth of abalone – Hawaiian Malacological Society
 "Bomb radiocarbon dating of white abalone (*Haliotis sorenseni*): investigations of age, growth and lifespan"

2013
 American Geophysical Union – San Francisco, California
 "Concurrent Sr/Ca Ratios and bomb test ¹⁴C records from a *Porites lobata* colony on Kure Atoll: SST, climate change, ocean circulation and management applications"
 Seminar to research faculty and students – University of the Ryukyus, Okinawa, Japan
 "Red fish, blue fish – Old fish, new fish. Why do we care about how long fish live?"
 Hanauma Bay Volunteer Program Training and Staff – Hanauma Bay, Oahu (April and October 2013)
 "Life Histories of the fishes of Hanauma Bay"
 157th Council Meeting – Western Pacific Regional Fishery Management Council – Honolulu, Hawaii
 "Age-Validated Life Histories of Bottom and Reef fishes: Hawaii and the Western Pacific"
 113th Meeting of the Scientific and Statistical Committee – Honolulu, Hawaii
 "Age-Validated Life Histories of Bottomfish: Hawaii and the Western Pacific"
 Bottomfish Research Coordination Workshop – Honolulu, Hawaii
 "Life History Program Studies of Deep-slope Bottomfish Species"

2012
 Special Committee on Research (SCOR) meeting
 "Age and ecological data from hawksbill sea turtle shell"
 El Encuentro Colombiano sobre Condriactios (Colombian Meeting on Chondrichthyans)
 "Age-validated longevity of deep-sea and chondrichthyan fishes: Its importance for sustainable fisheries"
 Hanauma Bay Seminar
 "Red fish, blue fish - Old fish, new fish. How old fish get and why you should care"
 American Elasmobranch Society – Minneapolis, Minnesota
 "Age validation in sand tiger shark, *Carcharias taurus*, using bomb radiocarbon analysis"
 Hawaiian Islands Symposium
 "Bomb radiocarbon dating of opakapaka (*Pristipomoides filamentosus*) and a long-lived life history"
 SEFSC-Panama City Lab: Orientation seminar
 "The Latest on Fish and Bombs"
 Scientific Committee on Antarctic Research meeting – Portland, Oregon
 "Does large-scale circulation structure life history connectivity in Antarctic toothfish (*Dissostichus mawsoni*)?"

2011
 American Fisheries Society – Seattle, Washington
 "Bomb radiocarbon dating of opakapaka (*Pristipomoides filamentosus*) and a long-lived life history"
 152nd Meeting of the Western Pacific Regional Fishery Management Council
 "Bomb radiocarbon dating of opakapaka (*Pristipomoides filamentosus*) and a long-lived life history"
 SEFSC-Panama City Lab: Orientation Seminar
 "Lead-radium and bomb ¹⁴C dating: Determination of age, growth and lifespan of marine fishes and invertebrates"

Hawaii Institute of Marine Biology Seminar

"Bomb radiocarbon dating of fish: How long fish live and why you should care"

2010

Hanauma Bay Education Program Seminar

"Fishes and their living habitat: How the "garden" grows and why you should care"

Hawaii Pacific University Seminar

"Bomb radiocarbon dating of fish: How long fish live and why you should care"

American Society of Ichthyologist and Herpetologists - Providence, Rhode Island

"A long-lived life history for opakapaka based on lead-radium and bomb radiocarbon dating"

Special Committee on Research (SCOR) meeting - PIFSC

"Application of radioisotope-based methods to age long-lived fishes: Opakapaka as a case study for Hawaii"

2009

Species of Concern Workshop (Department of Protected Resources) - Seattle, Washington

1) "Bomb radiocarbon dating of white abalone (*Haliotis sorenseni*): investigations of age, growth and lifespan"

2) "Lead-radium dating of marine fishes: Preliminary findings for Pacific cod"

4th International Otolith Symposium - Monterey, California

1) "A long-lived life history for opakapaka based on lead-radium and bomb radiocarbon dating" (Keynote Speaker)

2) "Bomb radiocarbon dating of white abalone (*Haliotis sorenseni*): investigations of age, growth and lifespan"

3) "Validation of growth zones in the golden tilefish (*Lopholatilus chamaeleonticeps*) using lead-radium dating"

American Cetacean Society Seminar - Hopkins Marine Station

"Fishes and their living habitat: How the garden grows"

ICES Deep Sea Symposium - Azores, Portugal

"Lead-radium and bomb radiocarbon dating: Age validation of Patagonian toothfish (*Dissostichus eleginoides*), orange roughy (*Hoplostethus atlanticus*), and cowcod (*Sebastes levis*)"

Department of Oceans, University of Azores, Portugal. Seminar

"Age, growth and lifespan of fishes and their living habitat"

Radiocarbon 2009 - Kona, Hawaii

"Bomb radiocarbon dating of white abalone (*Haliotis sorenseni*): investigations of age, growth and lifespan"

Monterey Bay Aquarium Research Institute - Moss Landing, California

"Lead-radium and bomb ¹⁴C dating: Determination of age, growth & lifespan of marine fishes & invertebrates"

Pacific Grove Museum. Deep Sea Lecture Series: An In-Depth Look at Ocean Exploration - Pacific Grove, California

"Fishes and their living habitat: How the garden grows and why you should care"

Sanctuary Currents - Monterey, California

"Age and Growth of Three Bamboo Coral Species from the Northeastern Pacific Ocean"

2008

4th International Deep Sea Coral Symposium - Wellington, New Zealand

"Age and growth of three bamboo coral species from the northeastern Pacific Ocean"

Western Groundfish Conference - Santa Cruz, California

"Lead-radium dating of two deep-water fishes from the southern hemisphere, Patagonian toothfish (*Dissostichus eleginoides*) and orange roughy (*Hoplostethus atlanticus*)"

California State University, Monterey Bay. Seminar

"Fishes and their living habitat: How the garden grows and why you should care"

Monterey Peninsula College - Gentrain Society Seminar

"Fishes and their living habitat: How the garden grows and why you should care"

World Fisheries Congress - Yokahama, Japan

"Age-validated longevity of fishes: Its importance for sustainable fisheries"

Symposium on Chondrichthyans (& Deep-sea) Fishes - National Kaohsiung Marine University, Taiwan

"Advances in Age Validation for Understanding the Life Histories of Chondrichthyan & Deep-sea Fishes"

2007

National Institute of Water and Atmospheric Research - Wellington, New Zealand

Invited speaker on radiometric age validation of orange roughy and black cardinalfish

American Fisheries Society - San Francisco, California

"Age estimation and lead-radium dating of Antarctic toothfish"

Turning Point Educational Program (2 seminars) - Salinas, California

Guest speaker for teenage kids on probation

Santa Catalina School - Monterey, California

Guest speaker for elementary and middle school classes (3-4th grade and 5-6th grade science)

2006

Graduate Seminar Week at Rhodes University - Grahamstown, South Africa.

"Lead-radium dating of the Patagonian toothfish (*Dissostichus eleginoides*)"

Best Ph.D. Student Paper Award

American Society of Limnology and Oceanography Conference - Victoria, British Columbia, Canada

"Historic atmospheric Hg deposition in California: An assessment of pre-anthropogenic flux"

Moss Landing Marine Labs Open House - Guest speaker seminar

Kiwanis Club - Monterey, California - Guest speaker luncheon

2005

3rd International Symposium on Deep-Sea Corals: Science and Management - Miami, Florida

"Lead-210 dating bamboo coral (family *Isididae*) of New Zealand and California"

"Age and growth, and age validation of deep-sea coral family *Isididae*"

"Preliminary evidence of oceanic climate change around New Zealand over last century: the pole-equator seesaw"

Rhodes University, Department of Ichthyology and Fisheries Science - Grahamstown, South Africa

Guest Lecture. "Fishes and their living habitat: how the garden grows"

American Society of Ichthyologists and Herpetologists - Tampa Bay, Florida

1) "Application of bomb radiocarbon chronologies to shortfin mako (*Isurus oxyrinchus*) age validation"

2) "Investigations of $\Delta^{14}\text{C}$, $\delta^{15}\text{n}$, and $\delta^{13}\text{c}$ in vertebrae of white shark (*Carcharodon carcharias*) from the eastern Pacific"

American Fisheries Society. Biology, Assessment, and Management of Pacific Rockfishes - Anchorage, Alaska

"Validation of cowcod rockfish age using the bomb radiocarbon signal"

13th Western Groundfish Conference - Victoria, British Columbia, Canada

"Age validation of the canary rockfish from the northeastern Pacific using ^{210}Pb : ^{226}Ra disequilibria and bomb ^{14}C "

2004

3rd International Symposium on Fish Otolith Research and Application - Townsville, Queensland, Australia.

"Age validation of the canary and bocaccio rockfishes from the NE Pacific Ocean using bomb ^{14}C "

"Investigations of $\Delta^{14}\text{C}$, $\delta^{15}\text{n}$, and $\delta^{13}\text{c}$ in the white shark (*Carcharodon carcharias*) from the eastern Pacific Ocean"

"Age determination and validation: application, structures, methods, and analyses"

13th Western Groundfish Conference - Victoria, British Columbia, Canada

"Age validation of the canary rockfish from the northeastern Pacific using ^{210}Pb : ^{226}Ra disequilibria and bomb ^{14}C "

2003

Deep Sea 2003 Conference and Pre-conference Workshop - Dunedin and Queenstown, New Zealand

"Radiometric age validation of long-lived fishes"

"How old are these deep-sea species?"

Moss Landing Marine Labs Friday Seminar Series

"Fish and fisheries habitat: How the garden grows and why you should care"

2nd International Symposium on Deep Sea Corals - Erlangen, Germany

"Determining the age and growth of three species of deep-sea coral from Davidson Seamount"

American Fisheries Society - Quebec City, Quebec, Canada

"Radiometric age validation of long-lived fishes"

American Society of Ichthyologists and Herpetologists - Manaus, Brazil

"Radiometric age validation of the canary rockfish (*Sebastes pinniger*) from the northeastern Pacific Ocean using both the disequilibria of lead-210 and radium-226 and the bomb radiocarbon chronology"

National Institute of Water and Atmospheric Research - Wellington, New Zealand - Invited speaker

General presentation on radiometric age validation of deep-water fishes presented to public

Presentation of report findings to Ministry of Fisheries board of advisors

2002

12th Western Groundfish Conference - Ocean Shores, Washington

"Radiometric age validation of the yelloweye rockfish from southeastern Alaska"

"Bomb carbon in yelloweye rockfish otoliths as a chronological benchmark for age validation of rockfishes"

"Age, growth and radiometric validation of a deep-sea, habitat forming gorgonian from the Gulf of Alaska"

2001

6th Indo-Pacific Fish Conference - Durban, South Africa

"Radiometric age determination of deep-sea fishes"

"Radiometric age validation of the bocaccio rockfish, *Sebastes paucispinis*"

Sanctuary Currents, Monterey Bay National Marine Sanctuary Symposium - Monterey, California

"Radiometric age validation of the bocaccio rockfish, *Sebastes paucispinis*"

"Age and growth and radiometric validation of a deep-sea, habitat forming gorgonian from the Gulf of Alaska"

1st International Tarpon Symposium – University of Texas Marine Science Institute, Port Aransas, Texas

"Radiometric age validation of Atlantic tarpon (*Megalops atlanticus*)"

3rd Annual San Francisco Bay Area Conservation Biology Symposium – Davis, California

"Age and growth and radiometric validation of a deep-sea, habitat forming gorgonian from the Gulf of Alaska"

2000

1st International Symposium on Deep Sea Corals – Halifax, Nova Scotia

"Age and growth of a deep-sea, habitat-forming octocorallian (*Primnoa* sp.)"

American Society of Ichthyologists and Herpetologists – La Paz, Baja Sur, Mexico

"Radiometric age validation of the bocaccio rockfish, *Sebastes paucispinis*"

"Age and growth of a deep-sea, habitat-forming octocorallian (*Primnoa* sp.)"

11th Western Groundfish Conference – Sitka, Alaska

"Radiometric age validation of the bocaccio rockfish, *Sebastes paucispinis*"

1998

10th Western Groundfish Conference – Asilomar, California

"Age and growth of the Pacific grenadier with age estimate validation using radiometric ageing"

2nd International Symposium on Fish Otolith Research and Application – Bergen, Norway

"Age and growth of the Pacific grenadier with age estimate validation using radiometric ageing"

"Radiometric ageing using ²¹⁰Pb:²²⁶Ra disequilibria in calcified structures of Atlantic tarpon and Atlantic sturgeon"

1997

8th Deep Sea Biology Symposium – Monterey, California

"Radiometric age determination of the Pacific grenadier, a rapidly developing fishery in Monterey Bay"

Best Student Paper Award

American Society of Ichthyologists and Herpetologists – Seattle, Washington

"Radiometric age determination of the Pacific grenadier, a rapidly developing fishery of the Pacific Ocean"

1996

Monterey Bay Marine Biogeochemistry Meeting – University of California, Santa Cruz. "Dating fish in the 90's"

Field work highlights

2006 Davidson Seamount, California ~ Deep-sea explorations and sample collections (RV Western Flyer)

(<http://oceanexplorer.noaa.gov/explorations/06davidson/welcome.html>) (**Published**)

1993–1996 Baja California, Mexico ~ Regional fish surveys and research on age and growth of spotted sand bass (**Published**)

1991–1993 Deep-sea central California ~ Deep-sea trawling for fauna assays off Farallon Islands and Monterey Bay Canyon

2000–3000 m bottom trawling (RV Point Sur & RV Wecoma) (**Published**)

1990 Fjords of Southeast Alaska ~ Benthic fjord community research and sea otter feeding assays (RV Alpha Helix)

News and media articles

Public Service Announcement – Contributed an ulua age and growth figure for fish-tag-return video by Pacific Islands Fisheries Group (FishToday.org) - https://youtu.be/g_ApoSTLizY July 2020

Bigmouth buffalo fish age validation – Local/national media on the work published in Communications Biology (Nature.com)

Eyewitness News 5 (ABC) – "Minnesota man catches a mystery fish; Rare for its color, remarkable for its age." 11 June 2019

MPR News – "New appreciation for a Minnesota fish long considered junk" (Article and Audio Story) 10 June 2019

INFORUM – "NDSU researcher finds some Minnesota fish live more than 100 years" 29 May 2019

Prairie Public News – PODCAST "Now that's an old fish!" 29 May 2019

Blue marlin age validation – Local/national media on work published in Canadian Journal of Fisheries and Aquatic Sciences

Bluewater Magazine – Article by Julian Pepperell, Feb 2018 issue #129 (<https://bluewatermag.com.au>)

Fishing and Travel Magazine – Billfish Foundation article, Jan-Mar 2018 issue (<http://www.fishing-and-travel.com/>)

NEWSWEEK – <http://www.newsweek.com/how-nuclear-bombs-helped-scientists-find-age-gigantic-marlin-fish-754501>

PIFSC News and Highlights – https://www.pifsc.noaa.gov/news/the_grander_blue_marlin-a_young_giant.php

The Billfish Foundation – <http://www.billfish.org/news/results-grander-marlin-sample-available-years-landing/>

Civil Beat Honolulu – <http://www.civilbeat.org/2017/11/the-odd-story-of-how-a-uh-scientist-calculated-a-giant-marlins-age/>

Hanauma Bay Education Program: Theater Thursdays – Protecting Pelagic Species (Outreach Talk #3)

"Bombs and Blue Marlin- Confirmation of very rapid growth" broadcast on YouTube: <https://youtu.be/F7pc0YLh7p8>

NOAA Okeanos Explorer Program – "Discovering the Deep: Exploring Remote Pacific Marine Protected Areas"

COSEE Island Earth – 760 AM Radio Interview (Podcast 16 August 2016)

2016 Special 50th Episode interview: <http://www.cosee-ie.net/programs/allthingsmarineradioshow/>

NOAA Coral Reef Conservation Program - "A Closer Look at Guam's Coral Reefs Reveals a Nuclear Timeline" 2016
<http://coralreef.noaa.gov/aboutcrp/news/featuredstories/2016aug/welcome.html>

Phys.org - "Biological 'clock' discovered in sea turtle shells" 2016
<http://m.phys.org/news/2016-01-biological-clock-sea-turtle-shells.html>

Marianas Variety (Micronesian Newspaper) - Newspaper article "Age Matters Even for Fish" 2015

Saipan TV News (KSPN2) - Oral broadcast interview with regional reporter Tori Youngblood. 2015

Hanauma Bay Education Program: Sundays at the Bay - Science and the Open Ocean (Outreach Talk #2)
2015 "Bombs and fish - How nuclear explosions can tell us about the age of fishes" broadcast on YouTube:
<https://youtu.be/IZ9VzB0lw3Y>

Fishermen's News, Volume 70 (No. 03)
2014 Atom Bomb Tests Help Determine Age of Fish (1 March 2014)

COSEE Island Earth - 760 AM Radio Interview
2013 How long fish live and how bomb radiocarbon dating works
(Slideshow version http://www.youtube.com/watch?v=_IHxz2K8pmQ)

National and California Sea Grant
2013 White abalone recovery: New Study Adds Urgency to Abalone Recovery

American Institute of Fishery Research Biologists
2013 Member Spotlight

Bottomfish News
2013 Nuclear bombs and how long opakapaka can live: <http://hawaiiibottomfish.info/docs/2013/BFNEWSVOL15.pdf>

Report to the Western Pacific Fisheries Management Council
2013 Development of bomb radiocarbon reference chronologies
2012 Bomb radiocarbon dating improves hapu'upu'u age estimation
2010 Radioisotope methods improve reliability of opakapaka age determination

Quarterly Research Bulletin - PIFSC
2013 Development of bomb radiocarbon reference chronologies
2012 Hapu'upu'u - Hawaiian grouper (*Hyporthodus quernus*)
2012 Kala - bluespine unicornfish (*Naso unicornis*)
2010 Opakapaka - Hawaiian pink snapper (*Pristipomoides filamentosus*)

Year in Review - PIFSC
2010 Biological Studies Support Improved Bottomfish Stock Assessment

Davidson Seamount explorations.
2006 NOAA Ocean Explorer:
(http://oceanexplorer.noaa.gov/explorations/06davidson/background/explorers/explorers.html#explorer_1)
(<http://oceanexplorer.noaa.gov/explorations/06davidson/background/conservation/conservation.html>)
(<http://oceanexplorer.noaa.gov/explorations/06davidson/background/ageing/ageing.html>)
Local Network Broadcasts:
KSBW-8 (NBC, Monterey County) February 8, 2006: 5, 6 and 11pm, video footage and interview.
KION-46 (CBS, Monterey County) February 8, 2006: 6 and 11pm, video footage and interview.
2006 Science News for Kids: Coral Gardens
2006 Popular articles - February, Monterey Herald, Santa Cruz Sentinel Vancouver Aquarium Aquanews

Red tree coral age, growth, and longevity validation
National Public Radio: <http://seagrant.uaf.edu/news/01ASJ/11.02.01deepsea-coral.html>
Sitnews - Ketchikan, Alaska: http://www.sitnews.us/0305news/031105/031105_asj_coral.html
NOAA Ocean Explorer: <http://oceanexplorer.noaa.gov/explorations/02davidson/background/corals/corals.html>

Pacific grenadier age, growth, and longevity validation
Personal interview: http://sciencenotes.ucsc.edu/9701/full/features/grenadier/Grenadier_home.html
Wildlife Conservation Magazine 1998: Popular article: "Tale of Two Fishes"

Professional organizations

Hanauma Bay Education Program, 2010 - Fishbase Collaborator, 2010 - Hawaii Astronomical Society, 2009 - American Geophysical Union, 2008 - Committee of Age Reading Experts, 1998 - American Institute of Fishery Research Biologists, 1998 - American Society of Ichthyologists and Herpetologists, 1994 - American Fisheries Society, 1994 - Western Society of Naturalists, 1994 - Fremont Peak Observatory Association, 1994 - American Elasmobranch Society, 1993

Personal and Professional References

Gregor Cailliet - Moss Landing Marine Laboratories (Cailliet@mlml.calstate.edu)

Robert Humphreys - PIFSC, Life History Program (robert.leslie.humphreys.jr@gmail.com)

Jeff Drazen - University of Hawaii (jdrazen@hawaii.edu)

Di Tracey - National Institute of Water and Atmospheric Research, New Zealand (Di.Tracey@niwa.co.nz)

John Kalish - Department of Foreign Affairs and Trade, Australia (John.Kalish@dfat.gov.au)

Google Scholar - List of publications: <https://scholar.google.com/citations?hl=en&user=xALzdJUAAAAJ>

Research Gate - List of publications and projects: https://www.researchgate.net/profile/Allen_Andrews2

ORCID - <https://orcid.org/0000-0002-9001-8305>

Twitter - @BombsAndFish

Professional and Personal Website

www.astrofish.me - Synopsis of my work with fishes, various aquatic organisms, and bio-geo-radiochemistry. Reprints of publications and reports are available at this website and upon request.

www.scientificinquiriesinnovations.godaddysites.com - My operational consulting and research business.