

CURRICULUM VITAE

NAME Paul R. Crone

EDUCATION B.S. University of Connecticut (1981)
M.S. Auburn University (1987)
Ph.D. Oregon State University (1995)

WORK EXPERIENCE

Retired May 2021 National Oceanic & Atmospheric Administration
National Marine Fisheries Service
Southwest Fisheries Science Center
8901 La Jolla Shores Drive
La Jolla, CA 92037-1508

1997-2021 Research Fishery Scientist
NOAA/NMFS/SWFSC
La Jolla, CA

<https://www.fisheries.noaa.gov/about/southwest-fisheries-science-center>

2012-2021 Founder/Principal Investigator
Center for the Advancement of Population Assessment Methodology
www.CAPAMresearch.org

1995-1996 Research Associate
Dept. of Fisheries and Wildlife, Hatfield Marine Science Center
Oregon State University
Newport, OR

1987-1989 Research Associate
Dept. of Fisheries and Allied Aquacultures
Auburn University
Auburn, AL

1981-1983 Aquaculture Extension Agent
U.S. Peace Corps
Jamaica, W.I.

RESEARCH INTERESTS	Fish population biology/dynamics Stock assessment modeling Biometrics Sampling theory and application
SCIENTIFIC SERVICE	Member of American Fisheries Society (AFS), Western Division of AFS (WDAFS) Reviewer for CalCOFI Reports, Canadian Journal of Fisheries and Aquatic Sciences, Fisheries Research (including assistant editor, special issues), Journal of Fish Biology, ICES Journal of Marine Science, NOAA publications (Fisheries and the Environment Proposals, Fishery Bulletin, Technical Memorandums and Administrative Reports), North American Journal of Fisheries Management, Transactions of the American Fisheries Society

STOCK ASSESSMENT AND RESEARCH RESPONSIBILITIES

- *Primary work*: principal investigator responsible for conducting stock assessments associated with the small pelagic fish assemblage of the California Current (e.g., Pacific mackerel, Pacific sardine, northern anchovy, California market squid) for purposes of producing formal stock status determinations for advising federal and state marine resource management agencies; and involved with stock assessment development for highly migratory species that inhabit the northeast Pacific Ocean, including north Pacific albacore and shark spp.
- *Southwest Fisheries Science Center (SWFSC)*: evaluating the status and dynamics of exploited marine resources using quantitative approaches, including modern age-structured stock assessment models and related statistical methods; developing/conducting research studies to better understand critical life history parameters involved in producing more robust stock assessment models (e.g., age/growth, maturity, and productivity); serving on technical workgroups and committees that are composed of research scientists, fishery managers, and representatives from fishing industries and conservation groups; and appointments to various management bodies as part of NOAA Fisheries mission and Pacific Fishery Management Council processes/recommendations.
- *Center for the Advancement of Population Assessment Methodology (CAPAM)*: conducting research studies in support of *Good practices in stock assessment modeling* research; coordinating focused workshops on influential parameters in stock assessment models (e.g., selectivity in 2013, growth in 2014, data weighting in 2015, recruitment in 2017); conducting short courses/classes for universities and national/international fishery agencies that address stock assessment models for providing management advice; and coordinating collaborative research projects with visiting scientists.

PUBLICATIONS

- Kuriyama, P.T., K.P. Piner, H.-H. Lee, K.T. Hill, **P.R. Crone**, S.L.H. Teo. *In review*. Density-dependent and cohort-specific growth in Pacific sardine (*Sardinops sagax*) estimated through a stock assessment approach. *Journal of Fish Biology*.
- Crone, P.R.**, M.N. Maunder, H.-H. Lee, K.P. Piner. 2019. Good practices for including environmental data to inform spawner-recruit dynamics in integrated stock assessments: Small pelagic species case study. *Fisheries Research* 217:122-132.
<https://doi.org/10.1016/j.fishres.2018.12.026>
- Maunder, M.N., **P.R. Crone**, A.E. Punt, J.L. Valero, B.X. Semmens. 2017. Data conflict and weighting, likelihood functions, and process error (Preface). *Fisheries Research* 192:1-4.
<http://www.sciencedirect.com/science/article/pii/S0165783617300735>
- Maunder, M.N., **P.R. Crone**, A.E. Punt, J.L. Valero, B.X. Semmens. 2016. Growth: theory, estimation, and application in fishery stock assessment models. *Fisheries Research* 180:1-3.
<http://www.sciencedirect.com/science/article/pii/S0165783616300613>
- Crone, P.R.**, J.L. Valero. 2014. Evaluation of length vs. age-composition data and associated selectivity assumptions used in stock assessments based on robustness of derived management quantities. *Fisheries Research* 158:165-171.
<http://www.sciencedirect.com/science/article/pii/S0165783614000800>
- Maunder, M.N., **P.R. Crone**, J.L. Valero, B.X. Semmens. 2014. Selectivity: theory, estimation, and application in fishery stock assessment models (Editorial). *Fisheries Research* 158:1-4.
<http://www.sciencedirect.com/science/article/pii/S0165783614001106>
- Dorval, E., **P.R. Crone**, J.D. McDaniel. 2013. Variability of egg escapement, fishing mortality, and spawning population in the market squid fishery in the California Current Ecosystem. *Marine and Freshwater Research* 64:80-90.
<http://www.publish.csiro.au/MF/MF12085>
- Berkson, J., L. Barbieri, S. Cadrin, S. L. Cass-Calay, **P. Crone**, M. Dorn, C. Friess, D. Kobayashi, T. J. Miller, W. S. Patrick, S. Pautzke, S. Ralston, M. Trianni. 2011. Calculating acceptable biological catch for stocks that have reliable catch data only (Only Reliable Catch Stocks – ORCS). NOAA Technical Memorandum NMFS-SEFSC-616. 56 p.
http://safmc.net/wp-content/uploads/2016/06/A3_ORCSReport_SEFSC616.pdf
- Chen, K.-S., **P.R. Crone**, C.-C. Hsu. 2010. Reproductive biology of albacore tuna *Thunnus alalunga*. *Journal of Fish Biology* 17:119-136.
<https://doi.org/10.1111/j.1095-8649.2010.02662.x>

- Jiao, Y., L. Rogers-Bennett, I. Taniguchi, J. Butler, **P. Crone**. 2010. Incorporating temporal variation in the growth of red abalone (*Haliotis rufescens*) using hierarchical Bayesian growth models. *Canadian Journal of Fisheries and Aquatic Sciences* 67:730-742.
<https://doi.org/10.1139/F10-019>
- Chen, K.-S., **P.R. Crone**, C.-C. Hsu. 2006. Reproductive biology of female Pacific bluefin tuna *Thunnus orientalis* from south-western North Pacific Ocean. *Fisheries Science* 72:985–994.
<https://link.springer.com/article/10.1111/j.1444-2906.2006.01247.x>
- Crone, P.R.** 2001. Spatial differences in maturity schedules of female Dover sole off Oregon. *Fisheries Research* 51:393-402.
[https://doi.org/10.1016/S0165-7836\(01\)00263-6](https://doi.org/10.1016/S0165-7836(01)00263-6)
- Crone, P.R.** 2001. Albacore. Pages 317-321 in W. S. Leet et al. (Editors). California's living marine resources: A status report (albacore). California Department of Fish and Game Resources Agency/University of California, Agriculture and Natural Resources.
<https://wildlife.ca.gov/Conservation/Marine/Status/2001>
- Crone, P.R.**, D.B. Sampson. 1998. Evaluation of assumed error structure in stock assessment models that use sample estimates of age composition. Pages 355-370 in *Fishery Stock Assessment Models*. Alaska Sea Grant College Program Report No. AK-SG-98-01, University of Alaska, Fairbanks, Alaska.
https://eos.ucs.uri.edu/seagrant_Linked_Documents/aku/akuw97002/akuw97002_full.pdf
- Sampson, D.B., **P.R. Crone**, editors. 1997. Commercial fisheries data collection procedures for Pacific coast groundfish. NOAA Technical Memorandum NMFS-NWFSC-31. 189 p.
<https://www.nwfsc.noaa.gov/publications/scipubs/techmemos/tm31/tm31.html>
- Bence, J.R., **P.R. Crone**, D.B. Sampson. 1997. Comparison of the Washington, Oregon, and California groundfish data systems and discussion of potential for improvements. Pages 167-178 (Chapter 7) in *Commercial Fisheries Data Collection Procedures for Pacific Coast Groundfish* (D.B. Sampson and P.R. Crone, editors). NOAA Technical Memorandum NMFS-NWFSC-31.
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- Crone, P.R.** 1995. Sampling design and statistical considerations for the commercial groundfish fishery of Oregon. *Canadian Journal of Fisheries and Aquatic Sciences* 52:716-732.
<https://doi.org/10.1139/f95-072>
- Crone, P.R.**, S.P. Malvestuto. 1991. A comparison of five estimators of fishing success from creel survey data on three Alabama reservoirs. *American Fisheries Society Symposium* 12:61-66.

STOCK ASSESSMENT REPORTS

- Crone, P.R.**, et al. 1997-2020. Various stock assessment reports applicable to coastal pelagic, highly migratory, and groundfish species of the North Pacific Ocean. Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 101, Portland, OR 97220.
- Kuriyama, P.T., J.P. Zwolinski, K.T. Hill, **P.R. Crone**. 2020. Assessment of the Pacific sardine resource in 2020 for U.S. management in 2020-2021. US Department of Commerce. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-628. 171 p.
<https://www.fisheries.noaa.gov/resource/document/assessment-pacific-sardine-resource-2020-us-management-2020-2021>
- Crone, P. R.**, K.T. Hill, J.P. Zwolinski, M.J. Kinney. 2019. Pacific mackerel (*Scomber japonicus*) stock assessment for U.S. management in the 2019-20 and 2020-21 fishing years. Pacific Fishery Management Council, Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 101, Portland, OR 97220. 112 p.
<https://www.pcouncil.org/documents/2019/06/appendix-b-pacific-mackerel-stock-assessment-june-2019.pdf/>
- Hill, K.T., **P.R. Crone**, J.P. Zwolinski. 2019. Assessment of the Pacific sardine resource in 2019 for U.S. management in 2019-20. US Department of Commerce. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-615.
- Hill, K.T., **P.R. Crone**, J.P. Zwolinski. 2018. Assessment of the Pacific sardine resource in 2018 for U.S. management in 2018-19. US Department of Commerce. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-600. 125 p.
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- Crone, P.R.**, K.T. Hill. 2017. Pacific mackerel biomass projection estimate for USA management in 2017-18 and 2018-19. Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 101, Portland, Oregon 97220, USA. 13 p.
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- Hill, K.T., **P.R. Crone**, J.P. Zwolinski. 2017. Assessment of the Pacific sardine resource in 2017 for U.S. management in 2017-18. US Department of Commerce. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-576. 146 p.
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- Hill, K.T., **P.R. Crone**, E. Dorval, B.J. Macewicz. 2016. Assessment of the Pacific sardine resource in 2016 for U.S.A. management in 2016-17. US Department of Commerce. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-562, 172 p.
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- Crone, P. R.,** K.T. Hill. 2015. Pacific mackerel (*Scomber japonicus*) stock assessment for USA management in the 2015-16 fishing year. Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 101, Portland, Oregon 97220, USA. 131 p.
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- Hill, K.T., **P.R. Crone,** E. Dorval, B.J. Macewicz. 2015. Assessment of the Pacific sardine resource in 2015 for U.S.A. management in 2015-16. US Department of Commerce. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-546, 168 p.
<https://www.pcouncil.org/stock-assessments-and-fishery-evaluation-safe-documents/>
- Crone, P.R.,** K.T. Hill. 2014. Pacific mackerel biomass projection estimate for USA management (2014-15). Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 101, Portland, Oregon 97220, USA. 3 p.
<https://www.pcouncil.org/stock-assessments-and-fishery-evaluation-safe-documents/>
- Hill, K.T., **P.R. Crone,** D.A. Demer, J.P. Zwolinski, E. Dorval, B.J. Macewicz. 2014. Assessment of the Pacific sardine resource in 2014 for U.S.A. management in 2014-15. US Department of Commerce. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-531, 305 p.
<https://www.pcouncil.org/stock-assessments-and-fishery-evaluation-safe-documents/>
- Crone, P.R.** 2013. Pacific mackerel biomass projection estimate for USA management (2013-14). Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 101, Portland, Oregon 97220, USA. 3 p.
<https://www.pcouncil.org/stock-assessments-and-fishery-evaluation-safe-documents/>
- Hill, K.T., **P.R. Crone,** N.C.H. Lo, D.A. Demer, J.P. Zwolinski, B.J. Macewicz, B.J. 2012. Assessment of the Pacific sardine resource in 2012 for U.S. management in 2013. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-501.
<https://www.pcouncil.org/stock-assessments-and-fishery-evaluation-safe-documents/>
- Hill, K.T., **P.R. Crone,** N.C.H. Lo, D.A. Demer, J.P. Zwolinski, B.J. Macewicz, B.J. 2012. Assessment of the Pacific sardine resource in 2012 for U.S. management in 2013. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-501.
<https://www.pcouncil.org/stock-assessments-and-fishery-evaluation-safe-documents/>
- Crone, P.R.,** K.T. Hill, J.D. McDaniel, K. Lynn. 2011. Pacific mackerel (*Scomber japonicus*) stock assessment for USA management in the 2011-12 fishing year. Pacific Fishery Management Council, Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 101, Portland, Oregon 97220, USA. 100 p.
<https://www.pcouncil.org/stock-assessments-and-fishery-evaluation-safe-documents/>
- Hill, K. T., **P.R. Crone,** N.C.H. Lo, B.J. Macewicz, E. Dorval, J.D. McDaniel, Y. Gu. 2011. Assessment of the Pacific sardine resource in 2011 for U.S. management in 2012. U.S. Dep. Commer., NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-487. 260 p.
<https://www.pcouncil.org/stock-assessments-and-fishery-evaluation-safe-documents/>

- Hill, K.T., N.C.H. Lo, B.J. Macewicz, **P.R. Crone**, R. Felix-Uraga. 2010. Assessment of the Pacific sardine resource in 2010 for U.S. management in 2011. U.S. Dep. Commer., NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-469. 137 p.
<https://www.pcouncil.org/stock-assessments-and-fishery-evaluation-safe-documents/>
- Crone, P.R.**, K.T. Hill, J.D. McDaniel, N.C.H. Lo. 2009. Pacific mackerel (*Scomber japonicus*) stock assessment for USA management in the 2009-10 fishing year. Pacific Fishery Management Council, Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 101, Portland, Oregon 97220, USA. 197 p.
<https://www.pcouncil.org/stock-assessments-and-fishery-evaluation-safe-documents/>
- Hill, K.T., N.C.H. Lo, **P.R. Crone**, B.J. Macewicz, R. Felix-Uraga. 2009. Assessment of the Pacific sardine resource in 2009 for USA management in 2010. U.S. Dep. Commer., NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-452. 182 p.
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- International Scientific Committee Albacore Working Group (ISC-ALBWG). 2008. *Report of the ISC Albacore Working Group Meeting*. Southwest Fisheries Science Center (NMFS/NOAA), 8901 La Jolla Shores Dr., La Jolla, CA 92037, USA, February 28 – March 6, 2008. 44 p. (**P.R. Crone** et al., ISC-ALBWG papers 05 and 10, 2008).
- Stocker, M. (Ed.). 2005. *Report of the Nineteenth North Pacific Albacore Workshop*. Nineteenth North Pacific Albacore Workshop, Nanaimo, B.C., Canada, November 25-December 2, 2004. Fisheries and Oceans Canada, Pacific Biological Station, Nanaimo, B.C. 127 p. (**P.R. Crone** et al., NPALBWG papers 06 and 07, 2005).
- Crone, P.R.**, K.R. Piner, R.D. Methot, R.J. Conser, T.L. Builder. 1999. Status of the canary rockfish resource off Oregon and Washington in 1999. Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 101, Portland, OR 97220. 111 p.
http://www.pcouncil.org/wp-content/uploads/Canary_Rockfish_1999_STAT.pdf
- Methot, R.D., **P.R. Crone**, R.J. Conser, J. Brodziak, T.L. Builder, D. Kamikawa. 1998. Status of the sablefish resource off the U.S. Pacific coast in 1998. *In* Pacific Fishery Management Council. 1997. Appendix: Status of the Pacific coast groundfish fishery through 1998 and recommended biological catches for 1999 (Stock assessment and fishery evaluation). Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 101, Portland, OR 97220. 146 p.
http://www.pcouncil.org/wp-content/uploads/Sablefish_1998_Assessment.pdf
- Crone, P.R.**, R.D. Methot, R.J. Conser, R.R. Lauth, M.E. Wilkins. 1997. Status of the sablefish resource off the U.S. Pacific coast in 1997. *In* Pacific Fishery Management Council. 1997. Appendix: Status of the Pacific coast groundfish fishery through 1997 and recommended biological catches for 1998 (Stock assessment and fishery evaluation). Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 101, Portland, OR 97220. 135 p.
http://www.pcouncil.org/wp-content/uploads/2015/08/Sablefish_Oct1997_Assessment.pdf