

Saang-Yoon Hyun
CURRICULUM VITAE

Full Professor
Department of Marine Biology
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RESEARCH INTERESTS

Quantitative fisheries management: e.g., fish stock assessments; animal population/community dynamics, ecology, and mathematical statistics.

EDUCATION

Doctor of Philosophy. June 2002

University of Washington, Seattle, WA, USA
Quantitative Ecology and Resource Management
Advisors: Ray Hilborn and James J. Anderson

Practical Training. August 1997

University of Washington, Seattle, WA, USA
Probability (Mathematics), C (computer language), and
Columbia Basin Research (Aquatic and Fishery Sciences)

Master of Science. December 1996

University of Washington, Seattle, WA, USA
Aquatic and Fishery Sciences
Advisor: James J. Anderson

Bachelor. February 1993 (including mandatory military leave 1988 - 1990)

Jeju (aka Cheju) National University, Jeju, Korea
Aquaculture and fisheries management
Top grades from all quantitative courses (e.g., mathematics, physics)
Only recipient of the Dean's Prize.

Additional Education and/or Education in Progress

Imperial College London. 19 - 21 September, 2007. Professional development course on
Bayesian hierarchical models. Faculty of Medicine, Division of Epidemiology, Public
Health and Primary Care.

Oregon State University (Corvallis). 7 - 9 September, 2005. Designing Aquatic Resource
Surveys. LaSells Stewart Center

University of Washington (Seattle). July 2002 – January 2003. Post-doctoral Research Associate.
Columbia Basin Research in School of Aquatic & Fishery Sciences. Supervisor: Prof.
James J. Anderson.

EXPERIENCE

A. Teaching

(A.1) Pukyong National University (PKNU) (Korea). December 2014 – Present. Full Professor. Department of Marine Biology.

Courses of sole-teaching

- Fish stock assessments (graduate level): inference of parameters in stock assessment models (e.g., surplus production models, virtual population analysis [VPA], stochastic catch-at-age [SCAA] models), numerical optimization (e.g., least squares, likelihood, Newton-Raphson), uncertainty of estimates (e.g., delta method, Bayesian statistics), state-space models, TMB, ADMB, ADMB-RE (random effect module), and R.
- Statistics for analysis of ecological data (graduate level): linear and non-linear models, generalized linear models (GLM), mixed effect models, likelihood theory (e.g., maximum likelihood estimator, likelihood profile, Fisher information), Bayesian statistics, TMB, ADMB and R.
- Fish population dynamics and lab (undergraduate level): difference/differential equation models, stability analysis of steady states, body growth models, population growth models, age-structured models, stock-recruitment models, yield-per-recruit models, and R.
- Mathematical biology (undergraduate level): difference/differential equations for population dynamics, stability analysis of steady states, multispecies dynamics (e.g., competition, prey-predator, etc.), Leslie matrix models, eigenvalues, eigenvectors, and R.
- Biological statistics (undergraduate level): experimental design, descriptive statistics, probability, discrete/continuous probability distributions, confidence intervals, hypothesis testing, non-parametric tests, and R.
- Marine ecology (undergraduate level): plankton, nekton, benthos, photosynthesis, upwelling, surface circulation, osmosis, and tides.

Courses of co-teaching

- Biology (undergraduate level): population ecology, community ecology

(A.2) University of Massachusetts - Dartmouth (UMASSD) (Dartmouth, MA, USA). June 2010 – December 2014. Assistant Professor. Department of Fisheries Oceanography.

Note: At UMASSD, I had successfully renewed 3rd-4th and 5th-6th year contracts, and also my teaching and scholarship activities were evaluated highly.

Courses of sole-teaching

- MAR 535-01 (graduate level) Biological Statistics I: central limit theorem, hypothesis testing, power analysis, tests, ANOVA, regression, ANCOVA, qualitative variables, least squares, likelihood theory, and R.

- MAR 536-01 (graduate level) Biological Statistics II: GLM, deviance, AIC, weighted regression, likelihood theory, Fisher information, likelihood profile, optimization, delta method, Bayesian, R, and ADMB.
- MAR 599-02 (graduate level) Inferential Statistics & Estimation
- Weekly lectures (graduate level) Stock assessment theories & computation

Courses of co-teaching

- MAR 599-02 (graduate level) Advanced population modeling: surplus production models, virtual population analysis, stochastic catch-at-age models, stock-recruitment models, inference of stock compositions, R, and ADMB.

Guest lectures

- Guest lectures for MAR 622 (graduate level) Stock Identification Methods
- Guest lectures for MAR 545 (graduate level) Stock Assessment of Fishery Resources.

(A.3) Jeju (aka Cheju) National University (JNU) (Korea). April 2008 – September 2008. Full time lecturer. Ocean life sciences.

Course of sole-teaching

- Biostatistics analysis (graduate level)
- Fisheries resource management (undergraduate level)

(A.4) University of Washington (UW) (Seattle, WA, USA). September 2000 – June 2001, and September 2001 – June 2002. Teaching Associate. Quantitative Ecology & Resource Management, and Center for Quantitative Sciences.

Courses of my teaching as a Teaching Associate

- QERM 514 (graduate level) Analysis of ecological and environmental data
- QSCI 482 (undergraduate level) Statistical inference in applied research
- QSCI 477 (undergraduate level) Quantitative wildlife assessment
- QERM 550 (graduate level) Applied ecological modeling
- QSCI 291 (undergraduate level) Analysis for biologists I

B. Special teaching

Sole instructor. Lecture about stock assessment methods. Korea Fisheries Resources Agency. 7 and 18 July, 2025. Busan, Korea.

- 3 hour teaching about fish stock assessment methods each day.

Sole instructor. Workshop on TMB and the statistical inference of parameters in a body growth model. The major audience was Korea government scientists. Pukyong National University. 7 September 2022. Busan, Korea.

Co-instructor. Workshop on ADMB and TMB for numerical optimization: I. Introduction to numerical optimization theories and their application in software. Pukyong National University. 3 February 2020. Busan, Korea.

Sole instructor. 2nd Workshop on introduction to optimization and ADMB for fish stock assessments. Korea National Institute of Fisheries Sciences. 17 November 2017. Busan, Korea.

- 4 hour teaching about (i) numerical optimization methods for inferences of multiple parameters in a non-linear model and (ii) ADMB script software. The lecture material and ADMB code (TPL, DAT, PIN files) are available on request (shyunuw@gmail.com).

Sole instructor. 1st Workshop on introduction to optimization and ADMB for fish stock assessments. Korea National Institute of Fisheries Sciences. 7 September 2017. Busan, Korea.

- 4 hour teaching about (i) numerical optimization methods for inferences of multiple parameters in a non-linear model and (ii) ADMB script software. The lecture material and ADMB code (TPL, DAT, PIN files) are available on request (shyunuw@gmail.com).

C. Supervision & advising

Graduate students who completed his/her thesis under my supervision

- Kyuhan Kim: MS, Feb of 2017 at Pukyong National University (PKNU) (Busan, Korea).
 - Thesis: A length-based, age-structured model for assessing the Pollock population in the East/Japan Sea
- Hyotae Lee: MS, Feb of 2018 at PKNU.
 - Thesis: Inference of the relative sizes of fish populations based on bottom-water trawl surveys around the Korean peninsula.
- Yuri Jung: MS, Aug of 2019 at PKNU.
 - Thesis: A Bayesian state-space production model for the Korean mackerel stock.
- Jinwoo Gim: MS, Aug of 2019 at PKNU.
 - Thesis: A size-based stock assessment model for the Korean mackerel stock.
- Jean Woody Amazon: MS, Feb of 2019 at the World Fisheries University Programme (<http://wfu.pknu.ac.kr/html/main/main.php>).
 - Thesis: A trend in catches of Haitian schoolmaster snapper (*Lutjanus apodus*)
- Min Gyou Park: MS, Feb of 2021 at PKNU
 - Thesis: A length-based assessment model for common squid (*Todarodes pacificus*) population in multiple fisheries in Korean waters.
- Dongyoung An: MS, Feb of 2021 at PKNU
 - Thesis: Multiple fisheries for the common squid (*Todarodes pacificus*) stock, and the application of a Bayesian state-space production model for its assessment
- Doyul Kim: MS, Aug of 2021 at PKNU
 - Thesis: A state-space length-based assessment model for the Korea chub mackerel (*Scomber japonicus*) stock.
- Seung Joon Lee: MS, Aug of 2021 at PKNU

- Thesis: Application of a length-based module of Stock Synthesis software for assessment of Korea chub mackerel (*Scomber japonicus*)
- Dongwon Jung: MS, Feb of 2022 at PKNU
 - Thesis: Assessment of Pacific anchovy (*Engraulis japonicus*) stock in the southeastern coastal waters of Korea, considering its immature and mature stages.
- Jinwoo Gim: Ph.D., Feb of 2023 at PKNU
 - Dissertation: Assumptions about the natural mortality for a state-space age-structured assessment model: the illustration with the chub mackerel (*Scomber japonicus*) population in the Korean waters.
- Junghyun Yoon: MS, Feb of 2024 at PKNU
 - Thesis: The influence of steepness and natural mortality rate on the MSY calculation in an age-structured model
- Dwi Ramadya Risqianan Putri: MS, Feb of 2024 at PKNU
 - Thesis: A Bayesian state-space production assessment model for 15 fish stocks in Java Sea, Indonesia
- Hangha Yu: MS, Aug of 2025 at PKNU
 - Thesis: A management strategy evaluation of the effect of hatchery releases on fish community dynamics
- Miscellaneous: Minji Park, Woonkyu Hwang, etc.

Current graduate students under my supervision

- Soyeon Nam (PhD student); Hyotae Lee (PhD student); Taeyeon Kim (MS student)

Graduate student, whom I had financially supported and supervised at UMASSD.

- Liberty L. Schilpp: MS student during 2014 when I had been at the University of Massachusetts-Dartmouth (UMASSD) (Dartmouth, MA, USA).

Students for whom I had served as a thesis committee

- About 40 graduate students at both UMASSD and PKNU.

D. Research

(D.1) Pukyong National University (PKNU) (Korea). December 2014 – Present. Full Professor.

Refer to “**Grants received**” and “**Publications**” below.

(D.2) University of Massachusetts-Dartmouth (UMASSD) (Dartmouth, MA, USA). June 2010 – December 2014. Assistant Professor. Department of Fisheries Oceanography.

Refer to “**Grants received**” and “**Publications**” below, and also see “**Software development**” below.

(D.3) Columbia River Inter-Tribal Fish Commission (CRITFC) (Portland, OR, USA).

January 2003 – March 2008; October 2008 – May 2010. Quantitative Fisheries Scientist.
Department of Fishery Science.

Refer to “**Grants received**” and “**Publications**” below.

(D.3.1). Fisheries management

My tasks were to represent CRITFC in regional meetings about forecasts of salmon returns to the Pacific Northwest, to develop external research funds, to lead research projects, to manage research programs, to provide biologists at internal and external tribal agencies with consulting services in statistics and mathematics, to participate in collaborative projects, and to interact with various stakeholders (e.g., providing scientific advice and receiving feedback) whose interests were in Columbia River salmon management.

Columbia River salmon are anadromous, and thus undergo both freshwater and marine ecosystems during their life cycle. I had to have expertise in fish biology, habitat analyses, and quantitative sciences (mathematics and statistics) to resolve Columbia River salmon issues. Also the issues are politically interwoven, and involve US Endangered Species Act (ESA) and Marine Mammal Protection Act (MMPA). More than 250 reservoirs and 150 hydropower dams were in the Columbia River basin, and Columbia River salmon included populations at extinction risk under the US ESA. Furthermore, sea lions, which used to be protected under the US MMPA, complicated the Columbia River salmon management because they were one of the major predators of adult salmon. Because of the large scale and complexity in the Columbia River salmon management, I had to interact with stakeholders ranged from high level officials at federal, state and tribal governments, professors at universities, utility (e.g., electricity) companies, environmentalists (e.g., the Humane Society of the United States) and the public.

(D.4) University of Washington (UW) (Seattle, WA, USA). July 2002 – January 2003. Post-doctoral Research Associate. School of Aquatic & Fishery Sciences.

The main tasks were to develop a statistical model for forecasting salmon returns to the Columbia River basin, and to implement the forecast algorithm into a computer program. The model was based on optimization and statistical theories in probability, likelihood functions, and Bayesian methods. The UW Columbia Basin Research still uses part of the program, and posts real-time (daily) forecasts during fish return season at the website (http://www.cbr.washington.edu/crisprt/index_adult.html).

Refer to “**Grants received**” and “**Publications**” below, and also see “**Software development**” below.

(D.5) University of Washington (UW) (Seattle, WA, USA). June 2001 – September 2001.

Research Associate 2. Assisting projects under the High Seas Salmon Program.

(D.6) University of Washington (UW) (Seattle, WA, USA). September 1997 – June 2000.

Research Associate 1. Assisting projects under the High Seas Salmon Program

(D.7) University of Washington (UW) (Seattle, WA, USA). June 1994 – December 1996.

Research Assistant. Assisting projects under the Columbia Basin Research center.

E. Consultant activity

(E.1) Reviewer for the Center for Independent Experts (CIE) in 2021. March 30 – April 1, 2021. CIE Review of “Assessments of the Pacific ocean perch (*Sebastes alutus*) and other rockfish stocks in the Gulf of Alaska”.

(E.2) Fish stock assessment for Food and Agriculture Organization (FAO) of the United Nations. 15 Aug – 15 Oct 2024. Participation in the FAO regional workshop to review the State of Stocks Methodology and Analysis for FAO Fisheries Area 61.

F. Field work

Survey of groundfish in Korean coast areas aboard the T/S *Kaya*. September 14 – 18, 2015.

Survey of pelagic fish in the northern Pacific Ocean aboard the T/S *Oshoro Maru*. One month during the 1999 summer

Survey of pelagic fish in the northern Pacific Ocean aboard the FV *Great Pacific*. One week during the 1998 summer.

GRANTS RECEIVED

A. Individual

Hyun, S.-Y. (PI). Improvement in stock assessments. National Research Foundation (NRF) of Korea. Korea Won 417,261,000 (= about US \$ 417,260). 6/11/2019 - 5/31/2024 (**5 years**). *NRF of Korea is similar in mission and role to the US National Science Foundation. The proposal for the grant experienced nation-wide competition.*

Hyun, S.-Y. (PI). Stock assessment methods in the Korean situation and development of the assessment package (fifth year). Korea National Institute of Fisheries Science. Korea Won 59,000,000. (= about US \$59,000). 3/22/2021 - 12/15/2021.

Hyun, S.-Y. (PI). Stock assessment methods in the Korean situation and development of the assessment package (fourth year). Korea National Institute of Fisheries Science. Korea Won 59,000,000. (= about US \$59,000). 3/25/2020 - 12/15/2020.

Hyun, S.-Y. (PI). Stock assessment methods in the Korean situation and development of the assessment package (third year). Korea National Institute of Fisheries Science. Korea Won 58,573,610. (= about US \$58,573). 5/10/2019 - 12/15/2019.

Hyun, S.-Y. (PI). Stock assessment methods in the Korean situation and development of the assessment package (second year). Korea National Institute of Fisheries Science. Korea Won 57,970,000. (= about US \$57,970). 4/11/2018 - 11/30/2018.

Hyun, S.-Y. (PI). A length-based analysis of recruitment variability in the Korean pollock population under data-limited conditions. PKNU research fund. Korea Won 20,000,000 (= about US\$ 20,000). 03/01/2017 - 02/28/2019.

Hyun, S.-Y. (PI). Stock assessment methods in the Korean situation and development of the assessment package. Korea National Institute of Fisheries Science. Korea Won 47,500,000. (= about US \$47,500). 4/12/2017 - 11/30/2017.

Hyun, S.-Y. (PI). Improvement in estimation of fishery catches and deployment of the bottom trawl survey in Korean coastal waters. Korea National Institute of Fisheries Science. Korea Won 47,500,000. (= about US \$47,500). 4/29/2016 -12/15/2016.

- Hyun, S.-Y.** (PI) General production model with dependence between data from multiple surveys. PKNU research fund. Korea Won 10,000,000 (= about US \$10,000). 03/01/2015 - 02/28/2016.
- Hyun, S.-Y.** (PI) A generalized model for in-season forecast of anadromous fish return abundance. Pukyong National University (Korea). \$10,000 (= Korea Won 10,000,000). 01/01/2015 - 12/31/2015.
- Hyun, S.-Y.** (PI) Analysis of mark-recapture data for Metolius River kokanee. Columbia River Inter-Tribal Fish Commission. \$12,369. 06/15/2013 - 12/31/2013.
- Hyun, S.-Y.** (PI) Ocean forecasts and PIT Tag estimation of fall Chinook salmon. Columbia River Inter-Tribal Fish Commission. \$10,000. 10/25/2010 - 03/31/2011.
- Hyun, S.-Y.** (PI). Extension Project - Improvement in estimates of Columbia River fall Chinook salmon (*Oncorhynchus tshawytscha*) escapements. PSC - US NOAA. \$68,392. 7/1/2009 - 6/30/2010.
- Hyun, S.-Y.** (PI). New methods for in-season forecasts of ocean abundance and terminal runs of Chinook salmon stocks. PSC - US NOAA. \$62,082. 6/1/2009 - 5/31/2010.
- Hyun, S.-Y.** (PI). Improvement in estimates of Columbia River fall Chinook salmon (*Oncorhynchus tshawytscha*) escapements. PSC - US NOAA. \$65,318. 7/1/2008 - 6/30/2009.
- Hyun, S.-Y.** (PI) Ocean harvest real-time forecasts of fall Chinook salmon (*Oncorhynchus tshawytscha*) returns to the Columbia River. PSC-Southern Boundary Fund. \$49,857. 2/1/2008 - 1/31/2009.
- Hyun, S.-Y.** (PI). Statistical consultation services for the Grande Ronde/Imnaha Endemic Spring Chinook Supplementation Monitoring and Evaluation (NEOH) and Nez Perce Tribal Hatchery Monitoring and Evaluation (NPTH M&E) plans. Nez Perce Tribe. \$30,000. 12/15/2003 - 12/31/2004.
- Hyun, S.-Y.** (PI), and A. Talbot. Safety-Net Artificial Propagation Program. Intergovernmental Contract 11652-Amendment 01, Project No. 2002-004-00. \$68,349. 9/1/2003 - 3/31/2004.

B. Multiple (in collaboration)

- Hyun, S.-Y.** (co-PI), and T. Miller (co-PI). A state-space age-structure model with variation in natural mortality and heterogeneity in observation error variances. US NOAA Stock Assessment Methods Improvement. \$97,308 (= \$94,308 for Hyun + \$3,000 for Miller). 6/1/2014 - 5/30/2016. This award was based on the 'nationwide' (USA) competition.
- Kim, S. (PI), and **Hyun, S-Y.** Ecology and stock assessment of Korean Pollock population. Korea National Institute of Fisheries Science. Korea Won 41,000,000 (= about US \$41,000). 4/1/2015 - 11/30/2015.
- Hyun, S.-Y.** (PI), and R. Sharma. Incorporation of stock compositions into ocean fishery real-time forecasts of Chinook salmon runs. US NOAA LOA Fund. \$64,953. 9/1/2011 - 08/30/2012.
- Hyun, S.-Y.** (PI), and P. Roger. Watershed habitat and extinction risks to Columbia River chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*O. mykiss*). Pacific Coastal Salmon Recovery Fund. \$54,795. 10/1/2005 - 9/30/2006.

Hyun, S.-Y. (PI), S. Ellis, and P. Roger. Pre-season forecasts of ocean escapements of Columbia River Chinook salmon (*Oncorhynchus tshawytscha*) populations. PSC-Southern Boundary Fund. \$101,333. 3/1/2005 – 2/28/2006.

Hyun, S.-Y. (PI), and A. Talbot. Extinction risk analysis of wild Columbia River salmon and steelhead. Pacific Coastal Salmon Recovery Fund. \$67,868. 9/1/2004 - 8/30/2005.

Hyun, S.-Y. (PI), and A. Talbot. Extended Project - Safety-Net Artificial Propagation Program. Intergovernmental Contract 11652, Project No. 2002-004-00. \$56,598. 4/1/2003 – 8/31/2004.

PUBLICATIONS

A. Selected Peer-reviewed Journal Articles

Hyun, S.-Y., and C.J. Cunningham. 2022. A new in-season forecast density of anadromous fish return abundance. *Fisheries Research*. 256, 106467.
<https://doi.org/10.1016/j.fishres.2022.106467>.

Gim, J., and **S.-Y. Hyun**. 2022. Application of a Length-Based Stock Assessment Model for the Chub Mackerel (*Scomber japonicus*) in Korean Waters. *Ocean Science Journal*. 57, 287-294. DOI: 10.1007/s12601-022-00067-x.

Cai, L., J.D. Yoon, S.-U. Hwang, J. Lee, E. Kim, M. Kim, **S.-Y. Hyun**, H. Choi, D. Oh, Y. J. and S.-H. Hyun. 2022. Exploring the mechanism of trehalose: dual functions of PI3K/Akt and VPS34/mTOR pathways in porcine oocytes and cumulus cells. *Biology of Reproduction*, 107 (2): 432-445.

Jung, Y., Y.I. Seo, and **S.-Y. Hyun**. 2021. A Bayesian state-space production model for Korean chub mackerel (*Scomber japonicus*) stock. *Fisheries and Aquatic Sciences* 24(4): 139-152. DOI: <https://doi.org/10.47853/FAS.2021.e14>

Hyun, S.-Y. 2018. A general production model with dependence between data from multiple surveys. *Journal of Applied Ichthyology*: 1-9. DOI: 10.1111/jai.13622

Hyun, S.-Y., and Y. I. Seo. 2018. The systematic sampling for inferring the survey indices of Korean groundfish stocks. *Fisheries and Aquatic Sciences* 21.

Kim, K., and **S.-Y. Hyun**. 2018. A length-based analysis of recruitment variability in the Korean pollock population under data-limited conditions. *Ocean Science Journal* 53:535-555.

Miller, T. J., and **S.-Y. Hyun**. 2017. Evaluating evidence for alternative natural mortality and process error assumptions using a state-space, age-structured assessment model. *Canadian Journal of Fisheries and Aquatic Sciences* 75:691-703.

Hyun, S.-Y., Maunder, M. N., and Rothschild, B. J. 2015. Importance of modelling heteroscedasticity of survey index data in fishery stock assessments. *ICES Journal of Marine Science: Journal du Conseil*, 72: 130-136.

Hyun, S.-Y., Cadrian, S. X., and Roman, S. 2014. Fixed and mixed effect models for fishery data on depth distribution of Georges Bank yellowtail flounder. *Fisheries Research*, 157: 180-186.

Sharma, R., A. Langley, M. Herrera, J. Geehan, and **S.-Y. Hyun**. 2014. Investigating the influence of length-frequency data on the stock assessment of Indian Ocean Bigeye Tuna. *Fisheries Research* 158: 50-62.

- O'Connell, C.P., S.-Y. Hyun, S.H. Gruber, T.J. O'Connell, G. Johnson, K. Grudecki, and P. He. 2014. The Use of Permanent Magnets to Reduce Elasmobranch Encounter with a Simulated Beach Net. 1. The Bull Shark (*Carcharhinus leucas*). *Ocean & Coastal Management*, 97: 12-19.
- Hyun, S.-Y.**, M.L. Keefer, M.A. Jepson, C.C. Caudill, J.K. Fryer, R. Sharma, J.M. Whiteaker, and G.P. Naughton. 2012. Population-specific escapement of Columbia River fall Chinook salmon: tradeoffs among estimation techniques. *Fisheries Research*. 129-130: 82-93.
- Hyun, S.-Y.**, R. Sharma, J.K. Carlile, J.G. Norris, G. Brown, R.J. Briscoe, and D. Dobson. 2012. Integrated forecasts of fall Chinook salmon returns to the Pacific Northwest. *Fisheries Research* 125-126: 306-317.
- Rothschild, B.J., Y. Jiao, and S.-Y. Hyun. 2012. Simulation study of biological reference points for the summer flounder. *Transactions of the American Fisheries Society* 141: 426-436.
- Hyun, S.-Y.**, J.H. Reynolds, and P.F. Galbreath. 2012. Accounting for tag loss and its uncertainty in a mark-recapture study with a mixture of single- and double tags. *Transactions of the American Fisheries Society* 141: 11-25.
- Hyun, S.-Y.**, and R. Sharma. 2007. Bayesian decision analysis for status of Snake River spring-summer Chinook salmon *Oncorhynchus tshawytscha* populations at extinction risk. *Fisheries Science* 73: 808-816.
- Hyun, S.-Y.**, K.W. Myers, and A. Talbot. 2007. Year-to-year variability in ocean recovery rate of Columbia River Upriver Bright fall Chinook salmon (*Oncorhynchus tshawytscha*). *Fisheries Oceanography* 16:4, 350-362.
- Hyun, S.-Y.**, R. Hilborn, J.J. Anderson, and B. Ernst. 2005. A statistical model for in-season forecasts of sockeye salmon (*Oncorhynchus nerka*) returns to the Bristol Bay districts of Alaska. *Canadian Journal of Fisheries and Aquatic Sciences* 62: 1665-1680.

B. Special publication (UN FAO)

- Hyun, Saang-Yoon, Yong Chen, Toshi Kitakado, Igor Chernienko, Jia Wo, Ming Sun, and Rishi Sharma. 2025. "Northwest Pacific FAO Major Fishing Area 61." In *Review of the state of world marine fishery resources – 2025*, edited by R. Sharma, M. Barange, V. Agostini, P. Barros, N.L. Gutierrez, M. Vasconcellos, D. Fernandez Reguera and C. Tiffay, & Levontin, P., 484. Rome: FAO. DOI: <https://doi.org/10.4060/cd5538en>

C. Other Peer-reviewed Journal Articles

- Yoon, J.H., J. Gim, H. Kang, and S.-Y. Hyun. 2024. The influence of steepness and natural mortality rate on the MSY calculation in an age-structured model. *Korean J. Fish. Aquat. Sci.* 57(3): 292-301.
- Hyun, S.-Y.** 2023. An overview of the total allowable catch policy and fish stock assessments in Korea. *Korean Journal of Fisheries and Aquatic Sciences*, 56(1): 1-6 (in Korean).
- Kim, D., Y.I. Seo, and S.-Y. Hyun. 2022. A management strategy evaluation of the current TAC (total allowable catch) regulation in Korea: the case of chub mackerel, *Scomber japonicus* fisheries. *Korean Journal of Fisheries and Aquatic Sciences*, 55 (6): 946-953 (in Korean).
- Gim, J., S.-Y. Hyun, and S.C. Yoon. 2022. A state-space production assessment model with a joint prior based on population resilience: illustration with the common squid, *Todarodes*

- pacificus* stock. Korean Journal of Fisheries and Aquatic Sciences, 55 (2): 183-188 (in Korean).
- An, D., K. Kim, H. Kang, and **S.-Y. Hyun**. 2021. A Bayesian state-space production assessment model for common squid *Todarodes pacificus* stock caught by multiple fisheries in Korea waters. Korean Journal of Fisheries and Aquatic Sciences, 54 (5): 769-781(in Korean).
- Park, M.G., and **S.-Y. Hyun**. 2021. How should we randomly sample marine fish landed at Korea ports to represent a length frequency distribution of those fish? Korean Journal of Fisheries and Aquatic Sciences, 54 (1): 80-89 (in Korean).
- Gim, J., **S.-Y. Hyun**, and J.B. Lee. 2020. Management reference points for Korea chub mackerel (*Scomber japonicus*) stock. Korean Journal of Fisheries and Aquatic Sciences, 53 (6): 942-953 (in Korean).
- Gim, J. and **S.-Y. Hyun**. 2019. Importance of considering year-to-year variability in length-weight relationship in a size-based fish stock assessment. Korean Journal of Fisheries and Aquatic Sciences, 52 (6): 719-724 (in Korean).
- Kim, K., **S.-Y. Hyun**, and Y. I. Seo. 2018. Inference of age compositions in a sample of fish from fish length data. Korean Journal of Fisheries and Aquatic Sciences, 51 (1): 79-90 (in Korean).
- Lee, H., and **S.-Y. Hyun**. 2017. Application of sampling theories to data from bottom trawl surveys along the Korean coastal areas for inferring the relative size of a fish population. Korean Journal of Fisheries and Aquatic Sciences, 50(5): 594-604 (in Korean)
- Kim, K., Sohn, M.H. and **S.-Y. Hyun**. 2017. A life stage-based model for assessing the walleye pollock *Gadus chalcogrammus* population in the East Sea. Korean Journal of Fisheries and Aquatic Sciences, 50: 65-76. (in Korean)
- O'Connell, C.P., **S.-Y. Hyun**, C.B. Rillahan, and P. He. 2014. Bull shark (*Carcharhinus leucas*) exclusion properties of the sharksafe barrier and behavioral validation using the ARIS technology. Global Ecology and Conservation 2: 300-314.
- Kim, S.-H., C.-H. Lee, Y.-B. Song, B.-Y. Kim, **S.-Y. Hyun**, and Y.-D. Lee. 2012. Reproductive Cycle of Small Abalone, *Haliotis diversicolor aquatilis* in Jeju Coastal Waters. Dev. Reprod. 16: 145-153. (in Korean)
- Hyun, S.-Y.** 2002. Inseason forecast of sockeye salmon return timing to Bristol Bay, Alaska. Journal Korean Soc. Fish. Res. 5: 41-51.
- Norris, J.G., **S.-Y. Hyun**, and J.J. Anderson. 2000. Ocean distribution of Columbia River Upriver Bright Fall Chinook salmon stock. North Pacific Anadromous Fish Commission Bulletin 2: 221-232.

D. Thesis and dissertation

- Hyun, S.-Y.** 2002. In-season forecasts of sockeye salmon returns to the Bristol Bay districts of Alaska. Ph.D. dissertation, University of Washington, Seattle, Wash.
- Hyun, S.-Y.** 1996. Ocean distributions of the Columbia River Hanford Reach and Snake River fall chinook salmon (*Oncorhynchus tshawytscha*) stocks and the effect of interannual ocean conditions on their survival. M.S. thesis, University of Washington, Seattle, Wash.

E. Technical Publications/Reports (selected)

ICES 2024. Joint ICES-PICES Working Group on Impacts of Warming on Growth Rates and Fisheries Yields (WGGRAY; outputs from 2023 meeting). ICES Scientific Reports 6: 70. 48 pp. <https://doi.org/10.17895/ices.pub.26356351>. Authors: Anderson, S., D. Atkinson, A. Audzijonyte, A. Baudron, J. Bigman, **S.-Y. Hyun**, S. Ito, Z. Lin, M. Lindmark, S. Ma, J. Morrongiello, P. Spencer, C. Stawitz, and Y. Tian.

Hyun, S.-Y. and T. J. Miller. 2016. A state-space age-structured model with variation in natural mortality. Report to the NOAA NMFS Stock Assessment Methods via the University of Massachusetts-Dartmouth.

Hyun, S.-Y., R. Sharma, B.D. Templin, and S.E. Gilk-Baumer. 2013. Incorporation of genetic stock identification data into ocean fishery real-time forecasts of Chinook salmon (*Oncorhynchus tshawytscha*) runs. Report to the NOAA NMFS Pacific Salmon – Treaty Chinook Letter Of Agreement funding.

Galbreath, P.F. and **S.-Y. Hyun**. 2013. Analyses for effect of survey week and reach in mark-recapture studies of Metolius River kokanee *Oncorhynchus nerka*. Columbia River Inter-Tribal Fish Commission. Technical Report 13-07.

Sharma, R., Rahman, A., Alam, A., Mome, M.A., Hossain, M.K., Pande, D., Suresh, V.R., and **S.-Y. Hyun**. 2012. Simple approaches to complex problems: the case of Hilsa (*Tenualoa ilisha*) in the Bay of Bengal. Bay of Bengal LME. FAO.

Hyun, S.-Y. 2011. The general surplus production model under the non-equilibrium condition with multiple data sources being combined: application to assessment of Georges Bank yellowtail flounder. ICES CM 2011/O: 02.

Hyun, S.-Y. and R. Sharma. 2010. Ocean real-time forecasts of Chinook salmon ocean abundance (AI) and terminal runs. Joint Technical Report 2010 to NOAA PSC LOA.

Hyun, S.-Y., S.X. Cadrin, and S. Roman. 2010. Exploratory analysis of fishery data for Georges Bank yellowtail flounder. Transboundary Resources Assessment Committee (TRAC) report.

Hyun, S.-Y., M. Keefer, J. Fryer, C. Peery, J. Whiteaker, M. Jepson, R. Sharma, C. Caudill, G. Naughton and J. Graham. 2010. Improvements in Columbia River fall Chinook salmon (*Oncorhynchus tshawytscha*) escapement estimates. Joint Technical Report 2010 to the Pacific Salmon Commission's Chinook Technical Committee.

Galbreath, P.F., C.R. Frederiksen, P.E. Barber, and **S.-Y. Hyun**. 2010. 2009 Spring Chinook escapement to the upper basin of the Klickitat River based on DIDSON Sonar counts. CRITFC Technical report 10-01.

Hyun, S.-Y., M. Keefer, J. Fryer, C. Peery, J. Whiteaker, M. Jepson, R. Sharma, C. Caudill, G. Naughton and J. Graham. 2009. Improvements in Columbia River fall Chinook salmon (*Oncorhynchus tshawytscha*) escapement estimates. Joint Technical Report 2009 to the Pacific Salmon Commission's Chinook Technical Committee.

Hyun, S.-Y. and R. Sharma. 2009. Ocean harvest real-time forecasts of fall Chinook salmon (*Oncorhynchus tshawytscha*) returns to the Columbia River. Pacific Salmon Commission Southern Fund Project 2008/09 Final Report.

Galbreath, P.F., and **S.-Y. Hyun**. 2008. Procedures for estimating tag loss rate and spawning escapement in a mark-recapture study of Metolius River kokanee *Oncorhynchus nerka*. Columbia River Inter-Tribal Fish Commission Technical Report 08-06, Portland, Oregon. (<http://www.critfc.org/tech/08-07report.html>)

- Branstetter, R., J. Stephenson, D.R. Hatch, J. Whiteaker, and **S.-Y. Hyun**. 2007. Steelhead kelt reconditioning and reproductive success. U.S. Department of Energy Bonneville Power Administration Fund Project 2007-401-00.
- Hyun, S.-Y.**, S. Ellis, and P. Roger. 2006. Preseason forecasts of ocean escapements of Columbia River Chinook salmon (*Oncorhynchus tshawytscha*) populations. Pacific Salmon Commission Southern Fund Project.
- Galbreath, P. F., P. E. Barber, S. R. Narum, D. Evenson and **S.-Y. Hyun**. 2006. Summer Chinook Juvenile Sampling and Adult Monitoring in the Mid-Columbia. Southeast Sustainable Salmon Fund Project Numbers: 45060 and 45289, Columbia River Inter-Tribal Fish Commission Technical Report 06-4, Portland, Oregon (http://www.critfc.org/tech/tech_rep.html).
- Hyun, S.-Y.** 2005. Extinction risk analysis for Columbia River Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*O. mykiss*) populations: run trends, depensatory mortality, and meta-analysis. Pacific Coastal Salmon Recovery Project.
- Hyun, S.-Y.**, and A. Talbot. 2004. Prioritization of naturally produced Snake River spring/summer Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*O. mykiss*) populations based on population trends. United States Department of Energy, Bonneville Power Administration, Division of Fish and Wildlife. Project number: 2002-004-00. Contract number: 00011652.
- Myers, K.W, R.V. Walker, N.D. Davis, K.Y. Aydin, **S.-Y. Hyun**, R.W. Hilborn, and R.L. Burgner. 2000. Migrations and abundance of salmonids in the North Pacific, 2000. Annual report to ABL, NMFS, High Seas Salmon Research Project. Fish Res. Inst. Univ. Wash., Seattle (SAFS-UW-0009). 93 p.
- Myers, K.W, R.V. Walker, N.D. Davis, K.Y. Aydin, **S.-Y. Hyun**, R.W. Hilborn, and R.L. Burgner. 1999. Migrations, abundance, and origins of salmonids in offshore waters of the North Pacific, 1999. Annual report to ABL, NMFS, High Seas Salmon Research Project. Fish Res. Inst. Univ. Wash., Seattle (FRI-UW-9909). 125 p.
- Hyun, S.-Y.**, K.W. Myers, and J.G. Sneva. 1998. The time of annulus formation in chinook salmon caught in Washington coastal waters. (NPAFC Doc. 352.) FRI-UW-9808. Fisheries Research Institute, University of Washington, Seattle, WA.
- Myers, K.W, R.V. Walker, N.D. Davis, K.Y. Aydin, **S.-Y. Hyun**, R.W. Hilborn, and R.L. Burgner. 1998. Migrations, abundance, and origins of salmonids in offshore waters of the North Pacific, 1998. Annual report to ABL, NMFS, High Seas Salmon Research Project. Fish Res. Inst. Univ. Wash., Seattle (FRI-UW-9810). 72 p.
- Myers, K.W., and **S.-Y. Hyun**. 1998. U.S. Research results, 1997-1998: abstracts for the NPAFC science plan review. (NPAFC Doc. 322) Fisheries Research Institute, University of Washington, Seattle, WA. 16 p.

SOFTWARE DEVELOPMENT

Estimation of parameters in a mark-recapture experiment: With Dr. Peter Gallbreath at CRITFC, I made a computation program (ad hoc name: *MRmix*) applied to a mark-recapture analysis with a variety of scenarios (e.g., single- or double tagged experiments, and a mixture of single- and double- tags). The objectives of the program were to estimate tag loss rate,

capture probabilities, population abundance, and their respective uncertainty. The new features in the *Mix* model were two folds. First, the new methods allowed a double-tagged animal to lose both tags as well as either. The previous studies (e.g., Gulland 1963; Seber 1982; Seber and Felton 1981) assumed that a double-tagged animal lost only either tag not both. Second, the new methods were also used for data on a mixture of single- and double tags. The major points were published to a peer-review journal (i.e., **Hyun et al.** 2012), and our paper (**Hyun et al.** 2012) has been continuously cited and acknowledged by not only fisheries scientists but also statisticians (e.g., Y. Xu, L.L.E. Cowen, and C. Gardner. 2014. Group heterogeneity in the Jolly–Seber-Tag-Loss model. *Statistical Methodology*; J.L. Laake, D.S. Johnson, D.R. Diefenbach, M. A. Ternent. 2014. Hidden Markov Model for Dependent Mark Loss and Survival Estimation. *Journal of Agricultural, Biological, and Environmental Statistics*, etc.). We have converted the program to a web-based version (<http://www.critfc.org/mrmix>).

In-season forecasts of anadromous salmon returns: With my UW advisors (Drs. Ray Hilborn, and James J. Anderson), I developed a new statistical model for making in-season forecasts of anadromous salmon returns, and implemented the methods in ADMB and Splus. Part of the model components is used by the UW Columbia Basin Research (http://www.cbr.washington.edu/crisprt/index_adult.html).

CONSULTING SERVICES (MAJOR)

Fisheries and Aquaculture Division, Food and Agriculture Organization of the United Nations. 15 Aug - 15 Oct 2024, including the workshop at FAO headquarters in Rome, Italy. Stock assessment analyses for fish populations in Fisheries Area 61 (northwest Pacific Ocean) and writing a report.

Center for Independent Experts. 30 March - 24 April 2021, including the virtual meeting (because of the Covid 19). Review of “Assessment of the Pacific ocean perch (*Sebastes alutus*) and other rockfish stocks in the Gulf of Alaska”. My report is available at <https://www.st.nmfs.noaa.gov/science-quality-assurance/cie-peer-reviews/cie-review-2021>

CONFERENCE (INCLUDING SEMINARS) PRESENTATIONS

A. Seminars

Hyun, S.-Y. *Invited seminar.* Fish stock assessments and fishery management: issues on artificial release of fish populations. Korea Fisheries Resources Agency. 29 November, 2023. Daejon. Korea.

Hyun, S.-Y. *Invited seminar.* Introduction to the modern fisheries management and the state-space stock assessment models. Inha University. 23 August, 2022. Incheon. Korea.

Hyun, S.-Y. *Invited seminar.* Bottom-trawl survey sampling. Korea National Institute of Fisheries Science. 8 October 2021. Tongyoung, Gyeongsangnam-Do, Korea.

Hyun, S.-Y. *Invited (funded) seminar.* A recent trend in fish stock assessments: two examples. International Scientific Committee for Tuna and Tuna-like species in the North Pacific Ocean. 13 July, 2018. Yeosu, Korea.

- Hyun, S.-Y.** *Invited (funded) seminar.* Introduction to methods for fish stock assessments. Korea Maritime institute. 14 December, 2017. Busan, Korea.
- Hyun, S.-Y.** *Invited seminar.* Overview of the recent methodology for fish stock assessments with example. Korea National Institute of Fisheries Science. 17 July 2017. Busan, Korea.
- Hyun, S.-Y.** *Invited seminar.* Discussion on surplus production models. The 6th meeting of the fisheries resources and ecology division in the Korean Fisheries Society. 10 July 2015. Busan, Korea.
- Hyun, S.-Y.** *Seminar.* Incorporation of data from multiple surveys into the general surplus production model. Host: Pukyong National University. 31 July 2014. Busan, Korea.
- Hyun, S.-Y.** *Seminar.* The general surplus production model with multiple survey data and without arbitrary constraints: illustration with Georges Bank yellowtail flounder. Department seminar series at the University of Massachusetts Dartmouth, School for Marine Science & Technology. 10 April 2013. Fairhaven, MA.
- Hyun, S.-Y.** *Seminar.* New inference of parameters in the general surplus production model: illustration with Georges Bank yellowtail flounder. Host: Korea National Fisheries Research & Development Institute. 8 Jan 2013. Busan, Korea.
- Hyun, S.-Y.** *Invited (funded) seminar.* Statistical models for salmon returns and aquaculture. The Korea Advanced Institute of Sciences and Technology (KAIST)'s invited speaker. 2 September 2010. Daejon, Korea.
- Hyun, S.-Y.** *Seminar.* Inter-annual variability in cohort strength of Columbia River fall Chinook salmon. The University of Massachusetts-Dartmouth's invited speaker. 24 July 2009. New Bedford, MA.
- Hyun, S.-Y.** *Seminar.* Environmental effects on fish population dynamics, and analysis of population trend data for assessment of extinction risk. The North Carolina Division of Marine Fisheries' invited speaker. 30 January 2009. Morehead City, NC.
- Hyun, S.-Y.** *Seminar.* Analysis of population trend data with a meta-population perspective for assessment of extinction risk to salmon populations. Columbia River Inter-Tribal Fish Commission-the University of Idaho Hagerman Fish Culture Experiment Station's invited speaker. 11 April 2007. Hagerman, ID.
- Hyun, S.-Y.** and A. Talbot. *Seminar.* Extinction risk metrics to spring/summer Chinook salmon and steelhead in the Snake River Basin. Oral presentation at *Technical Workshop on Population Trends and Extinction Metrics*. NOAA Northwest Fisheries Science Center. 5 December 2003. Seattle, WA.

B. Conferences (selected)

- Hyun, S.-Y.**, H. Kang, and J.-H. Yoon 2022. A difference in body growth and maturity of Korea chub mackerel population, and the resultant management references. 19 – 22 September 2022. Virtual Oral presentation to the ICES ASC. Dublin, Ireland.
- Hyun, S.-Y.** 2020. Proposal to assess mesopelagic fishes: exploitable biomass and optimal yields. 5 - 6 November 2020. Oral presentation to the fall annual meeting of the Korean Society of Oceanography. Kyoungju, Korea.
- Park, M.G., **S.-Y. Hyun**, and Y.I. Seo. 2020. A length-based model for assessment of the common squid (*Todarodes pacificus*) stock in Korean waters. Oral presentation to the

- 150th Annual Meeting of the American Fisheries Society. 14 - 25 September 2020. Virtual meeting.
- Gim, J., **S.-Y. Hyun**, and H. Kang. 2020. Management reference points for the Korean chub mackerel (*Scomber japonicus*) population. Oral presentation to the 150th Annual Meeting of the American Fisheries Society. 14 - 25 September 2020. Virtual meeting.
- Hyun, S.-Y.**, J. Gim, and K. Kim. 2019. A size-based model for a fish stock assessment. Oral presentation to CAPAM workshop on the creation of frameworks for the next generation general stock assessment models. 4 - 8 November 2019. Wellington, New Zealand.
- Hyun, S.-Y.**, and Y.I. Seo. Application of the systematic sampling theory to Korean bottom-trawl survey data. Poster presentation to the 148th Annual Meeting of the American Fisheries Society. 18 - 23 August 2018. Atlantic City, New Jersey.
- Hyun, S.-Y.**. Fish stock assessments: e.g., a state-space age structured model. Oral presentation to the annual meeting of Korean Society for Mathematical Biology. 28 – 30 June 2018. Busan, Korea.
- Hyun, S.-Y.**, and Y. Seo. A size-based model for fish stock assessments in a Korean situation. Oral presentation to the International Society for Ecological Modelling Global Conference 2017. 17 - 21 September 2017. Jeju, Korea.
- Lee, H., Y.I. Seo, and **S.-Y. Hyun**. Analysis of data from bottom-trawl surveys in the Korean coastal water for investigation of the optimal survey design. Oral presentation to the International Society for Ecological Modelling Global Conference 2017. 17 - 21 September 2017. Jeju, Korea.
- Lee, H., J.-H. Park, D.-J. Kim, and **S.-Y. Hyun**. Analysis of data from the bottom trawl survey in the Korean coastal waters. Poster presentation to the 3rd PICES/ICES Early Career Scientist Conference. 30 May – 2 June, 2017. Busan, Korea.
- Hyun, S.-Y.**. Application of sampling theories to the bottom trawl survey along the Korean coastal areas. Oral presentation to the (Korean) National Institute of Fisheries Science. 1 Dec, 2016. Tongyoung, Kyongnam, Korea.
- Lee, H, Y. Heo, D. Kim, and **S.-Y. Hyun**. Application of sampling theories to data from the bottom trawl survey along the Korean coastal areas. Poster presentation at the Korean Federation of Fisheries Science and Technology Societies. 28 October, 2016. Busan, Korea.
- Hyun, S.-Y.** and T.J. Miller. A state-space age-structured model with time-varying natural mortality. Oral presentation at the 7th World Fisheries Congress. 23-27 May, 2016. Busan, Korea.
- Kim, K., and **S.-Y. Hyun**. Temporal variability of the walleye Pollock population in the East/Japan Sea. Oral presentation at the 7th World Fisheries Congress. 23-27 May, 2016. Busan, Korea.
- Hyun, S.-Y.** and K. Kim. Assessment of adult Pollock in the East/Japan Sea under data-limited circumstances. Poster presentation at the annual North Pacific Marine Science Organization (PICES) meeting. 14-25 October, 2015. Qingdao, China.
- Hyun, S.-Y.**. A general model for in-season forecast of anadromous fish return abundance. Poster presentation at the Joint Statistical Meeting. 8-13 August, 2015. Seattle, WA.

- Hyun, S.-Y.**, S.X. Cadrin, and S. Roman. Fixed and mixed effect models for Georges Bank yellowtail flounder catch per unit effort. Oral presentation at the 144th American Fisheries Society annual meeting. 21 August 2014. Quebec, Canada.
- Hyun, S.-Y.** *Invited (funded) presentation.* Perspective on stock assessments. The 3rd Korea-US Oceanic and Atmospheric S&T Workshop. 30 May, 2014. Vienna, VA.
- Hyun, S.-Y.**, M.N. Maunder, and B.J. Rothschild. Homo- and hetero-scedasticity on a production model. ICES Journal of Marine Science. Poster presentation at the World Conference on Stock Assessment Methods. 17-19 July 2013 Boston, MA.
- Hyun, S.-Y.** New inference of parameters in the general surplus production mode: illustration with Georges Bank yellowtail flounder. Oral presentation at Southern New England Chapter of American Fisheries Society. 16 January 2013. Groton, CT.
- Hyun, S.-Y.**, J.H. Reynolds, and P.F. Galbreath. Tag loss and its uncertainty in a mark-recapture study with a mixture of single and double tags. Oral presentation at the University of Massachusetts School of Marine Sciences symposium. 20 January 2012. Boston, MA.
- Rosellon-Druker, J. and **S.-Y. Hyun**. Effect of marine protected areas on the spatial and temporal distribution of yellowtail flounder (*Limanda ferrugineus*) on Georges Bank. Poster presentation at the University of Massachusetts School of Marine Sciences symposium. 20 January 2012. Boston, MA.
- Hyun, S.-Y.** The general surplus production model under the non-equilibrium condition with multiple data sources being combined: application to assessment of Georges Bank yellowtail flounder. Oral presentation at the annual Internal Council for the Exploration of the Sea (ICES) meeting. 19-23 September 2011. Gdansk, Poland.
- Hyun, S.-Y.**, and R. Sharma. Ocean real-time forecasts of salmon returns. Poster presentation at the annual Internal Council for the Exploration of the Sea (ICES) meeting. 20-27 September 2010. Nantes, France.
- Hyun, S.-Y.** A generalized model for in-season forecasts of anadromous returns. Oral presentation at the annual American Fisheries Society (AFS) meeting. 16 September 2010. Pittsburgh, PA.
- Hyun, S.-Y.**, S.X. Cadrin, and S. Roman. Exploratory analysis of fishery data for Georges Bank yellowtail flounder. Oral presentation at the Transboundary Resources Assessment Committee (TRAC) meeting. 19-23 July 2010. Woods Hole, MA.
- Hyun, S.-Y.**, and P. Galbreath. A mark-recapture likelihood model for inference of abundance of a closed population. Oral presentation at the annual American Fisheries Society (AFS) meeting. 3 September 2009, Nashville, Tennessee.
- Hyun, S.-Y.** Forecasts of salmon returns. Oral presentation (invited talk) at the Joint Statistical Meetings. 6 August 2006. Seattle, WA.
- Hyun, S.-Y.**, D. Salinger, and S. Ellis. New parametric and optimization (ad hoc: pattern-matching) methods for in-season forecasts of salmon runs. Oral presentation at Statistics For Aquatic Resources. Oregon State University. 7-9 September 2005. Corvallis, Oregon.
- Hyun, S.-Y.** Development of a new probability density function (ad hoc: gamma location). Oral presentation at the 12th annual Graduate Student Symposium, School of Fisheries, University of Washington. November 2001. Seattle, WA.

Hyun, S.-Y. In-season forecast of sockeye salmon (*Oncorhynchus nerka*) returns to the Bristol Bay river systems with daily updated data. Oral presentation at the 11th annual Graduate Student Symposium, School of Fisheries, University of Washington. November 2000. Seattle, WA.

Hyun, S.-Y., J. Anderson, and K. Myers. Inter-annual variability in Columbia River fall Chinook salmon. Poster presentation at the *Beyond El Niño: A Conference on Pacific Climate Variability and Marine Ecosystem Impacts, from the Tropics to the Arctic*. March 2000. La Jolla, CA.

Hyun, S.-Y. Log-linear model for analysis of coded wire tag data. Poster presentation at the NPAFC International Symposium, Recent Changes in Ocean Production of Pacific Salmon. November 1999, Juneau, AK.

ACADEMIC AND PROFESSIONAL HONORS

Invited (funded) seminar. Statistical models for salmon returns and aquaculture. The Korea Advanced Institute of Sciences and Technology (KAIST)'s invited speaker. 2 September 2010. Daejon, Korea.

Travel Fund Award for the 2010 ICES meeting, Nantes, France.

CRITFC Employee Award. 2007. Portland, Oregon.

Rotary Foundation Ambassadorial Scholarship for my M.S. work at the University of Washington (Seattle, WA, USA). US\$18,000. Fall 1993 - Spring 1994.

Dean's Prize (only recipient) from the College of Oceanic Sciences in Jeju National University (Jeju, Korea). Commencement at February of 1993.

OTHER PROFESSIONAL AND SERVICE ACTIVITIES

A. Editorial board of journals

Fisheries and Aquatic Sciences, 2015 – 2020

Korean Society of Fisheries and Aquatic Science, 2015

B. Peer reviewer for journals

Canadian Journal of Fisheries and Aquatic Sciences; Ecological Applications; Fishes; Fisheries and Aquatic Sciences; Fisheries Research; Frontiers in Marine Science; ICES Journal of Marine Science; Korean Society of Fisheries and Aquatic Sciences; North American Journal of Fisheries Management; Ocean Science Journal; and Transactions of the American Fisheries Society.

C. Grant proposal reviewer

Marine Fisheries Initiative (MARFIN) merit program, (the US) NOAA National Marine Fisheries Service.

D. Consultation

Clients:

- Ocean Outcomes in 2024
- UN FAO in 2024 (<https://doi.org/10.4060/cd5538en>)

- The Center for Independent Experts in 2021 (USA)
(<https://www.st.nmfs.noaa.gov/science-quality-assurance/cie-peer-reviews/cie-review-2021>)
- Others: Peter Galbreath and Rishi Sharma (Columbia River Inter-Tribal Fish Commission, Portland, OR, USA); David Close (University of British Columbia, Vancouver, Canada); and National Institute of Fisheries Sciences (Busan, Korea).

E. ICES/PICES Working Group

A representative of Korea for ICES/PICES Working Group on Impacts of Warming on Growth Rates and Fisheries Yields (WGGRAY)

COMPUTER SKILLS

Operating system: Windows, DOS, Unix

Script software: Automatic Differentiation Model Builder (ADMB), ADMB-RE (Random Effect Module), R (or Splus), Mathematica, Template Model Builder (TMB)

Statistical software: R (or S-Plus), Minitab

Data and graphical analysis: R, MS Access

Simulation for differential equations: STELLA II

Miscellaneous: LaTeX, Adobe illustrator/photoshop, MS Office (Access, Word, Power Point, Excel), FrameMaker

LANGUAGES

Korean (native), English (fluent), French (3 years), Japanese (1 year)

MEMBERSHIP IN PROFESSIONAL SOCIETIES (PRESENT AND PAST)

The American Fisheries Society

The American Statistical Association

Korean International Statistical Society

Korean Oceanographers Network Abroad

The Korean Society of Fisheries and Aquatic Science

The Korean Society of Oceanography

Korean Society for Mathematical Biology

HOBBIES

Reading non-fiction literature, and hiking.

REFERENCES

Available on your request