

SIO 139. Current Research in Marine Biology (2)

Provides an introduction to current research topics and developments in marine biology and biological oceanography. Faculty members and graduate students from Scripps Institution of Oceanography will offer perspectives in these areas. Practice in scientific research and communication skills. P/NP grades only. **Prerequisites:** upper-division standing or consent of instructor.

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Office hours by arrangement.

Writing Center: The Teaching and Learning Commons provides writing support for students. Since this class includes frequent writing assignments consider getting their support for your work. <https://commons.ucsd.edu/academic-support/writing/for-undergraduates.html>

Cheating: The University imposes strict guidelines on academic integrity (<https://senate.ucsd.edu/Operating-Procedures/Senate-Manual/Appendices/2>) and these will be enforced. Anyone caught plagiarizing will receive an 0 for the assignment and will be reported to the Academic Integrity coordinator. Plagiarism includes using work for other courses and resubmitting some or all for this course.

Schedule

1. W Jan 8: Types of Writing: lab notebooks, lab reports, scientific papers, white papers, reviews. Why do we write? Discussion of abstracts and paper summaries.
2. W Jan 15 : Peer review of paper summary. Discussion of Figures, Figure legends.
3. W Jan 22. SIO Collections tour. Meet at Collections location in lobby of Vaughn Hall. Note if you have already visited the collections you can alternatively watch a new video about the collections: Oddities: Scripps' Fascinating Collection of Ocean Life <https://ucsd.tv/search-details.aspx?showID=33732>
4. W Jan 29 Posters
5. W Feb 5 What else did they write? Reference managers. Amy Butros, UCSD.
6. W Feb 12 3-4 Short graduate student talks.
7. W Feb 19 Analyzing data with R. Dr. Eric Archer, NMFS.
8. W Feb 26 Ron Burton SIO
9. W Mar 4 Brian Zgliczynski SIO
10. W Mar 11 Science Communication. Dr. Jennifer Brandon

Reading List Choices. Pick 1 for summary 1:

1. Shinzato, C., E. Shoguchi, T. Kawashima, M. Hamada, K. Hisata, M. Tanaka, M. Fujie, M. Fujiwara, R. Koyanagi, T. Ikuta, A. Fujiyama, D.J. Miller, and N. Satoh, Using the *Acropora digitifera* genome to understand coral responses to environmental change. *Nature*, 2011. 476(7360): p. 320-U82.
2. Block, B.A., H. Dewar, S.B. Blackwell, T.D. Williams, E.D. Prince, C.J. Farwell, A. Boustany, S.L.H. Teo, A. Seitz, A. Walli, and D. Fudge, *Migratory movements, depth*

- preferences, and thermal biology of Atlantic bluefin tuna. Science, 2001. 293(5533): p. 1310-1314.*
3. Davidson, E.H., J.P. Rast, P. Oliveri, A. Ransick, C. Calestani, C.H. Yuh, T. Minokawa, G. Amore, V. Hinman, C. Arenas-Mena, O. Otim, C.T. Brown, C.B. Livi, P.Y. Lee, R. Revilla, A.G. Rust, Z.J. Pan, M.J. Schilstra, P.J.C. Clarke, M.I. Arnone, L. Rowen, R.A. Cameron, D.R. McClay, L. Hood, and H. Bolouri, *A genomic regulatory network for development. Science, 2002. 295(5560): p. 1669-1678.*
 4. Halpern, B.S., S. Walbridge, K.A. Selkoe, C.V. Kappel, F. Micheli, C. D'Agrosa, J.F. Bruno, K.S. Casey, C. Ebert, H.E. Fox, R. Fujita, D. Heinemann, H.S. Lenihan, E.M.P. Madin, M.T. Perry, E.R. Selig, M. Spalding, R. Steneck, and R. Watson, *A global map of human impact on marine ecosystems. Science, 2008. 319(5865): p. 948-952.*
 5. Martin, J.H. and S.E. Fitzwater, *Iron-deficiency limits phytoplankton growth in the northeast pacific subarctic. Nature, 1988. 331(6154): p. 341-343.*
 6. Myers, R.A., J.K. Baum, T.D. Shepherd, S.P. Powers, and C.H. Peterson, *Cascading effects of the loss of apex predatory sharks from a coastal ocean. Science, 2007. 315(5820): p. 1846-1850.*
 7. Pandolfi, J.M., R.H. Bradbury, E. Sala, T.P. Hughes, K.A. Bjorndal, R.G. Cooke, D. McArdle, L. McClenachan, M.J.H. Newman, G. Paredes, R.R. Warner, and J.B.C. Jackson, *Global trajectories of the long-term decline of coral reef ecosystems. Science, 2003. 301(5635): p. 955-958.*
 8. Proctor, L.M. and J.A. Fuhrman, *Viral mortality of marine-bacteria and cyanobacteria. Nature, 1990. 343(6253): p. 60-62.*

Other papers:

Scaling from individual plankton to marine ecosystems: Phytoplankton dynamics in the Southern California Bight indicate a complex mixture of transport and biology. 2016. Bialonski, Stephan; Caron, David A.; Schloen, Julia; et al. JOURNAL OF PLANKTON RESEARCH Volume: 38 Issue: 4 Pages: 1077-1091.

Attendance is taken in class using a sign up sheet during the first part of class. Attendance is used as 10 pts toward a final grade.

1. Assigned January 8. Read one paper from reading list. Write a summary of the paper as discussed in class. See resources below. Show word count on summary.

Due Jan 15, hard copy in class AND **ONLINE (5pts)**.

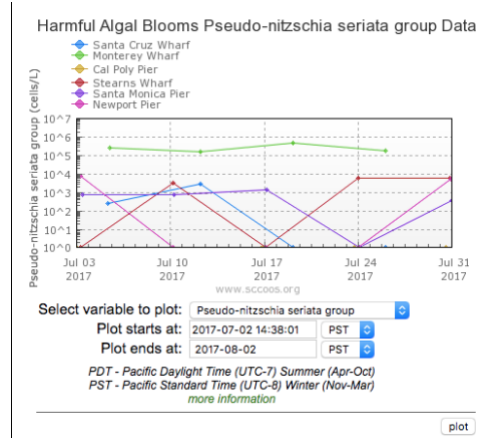
2. Assigned Jan 15.

Revise paper summary based on peer feedback and instructions in class. Due Jan 22.

ONLINE(5pts).

3. Assigned Jan. 22. Obtain data for chlorophyll or a harmful alga from SIO pier at <http://sccoos.org/data/habs/index.php>. Go to the bottom of the page, pick an alga, pick a data range, and take a screen shot of the resulting plot. Try different starting dates to get enough data.

Read paper by Bialonski et al (“Scaling from individual plankton to marine ecosystems: Phytoplankton dynamics in the Southern California Bight indicate a complex mixture of transport and biology”)for context. Write an imaginary abstract about your data from the SCCOOS website. Due Jan 29. **ONLINE (10pts)**.



4. Assigned Jan 29. Prepare a poster from the paper you choose to write a summary about or another paper from the reading list. Further guidance provided in class. Due Feb. 5. **ONLINE (10pts)**.

5. Assigned Feb 5. Homework: Use 1 reference from the reading list, either the paper you chose to summarize or another paper. Find 9 more related references that cited them or each other and create a reference library in Endnote online. Keep the papers relatively similar in theme as you will write a literature summary next week. Submit a page with the references formatted as in Author-Date AND in Numbered styles. Due Feb 12. **ONLINE (10pts)**.

6. Assigned Feb 12. TWO PARTS

Download R and RStudio. R: <https://www.r-project.org>

RStudio: <https://www.rstudio.com>

View introduction to R online <http://www.cyclismo.org/tutorial/R/index.html>.

Using your 10 papers above, begin a literature summary with references. READ/SKIM ALL 10 PAPERS. Create a list of all major methods used. Write a paragraph or two summarizing the

methods. Create a reference list using your reference manager at the bottom of your methods summary and have citations in the paragraphs of your methods summary. Format in Author-Date style. Due Feb 19. **ONLINE (10pts)**.

7. Assigned Feb. 19. Create a graph using R. Write a figure legend for the graph. Due Feb 26. **ONLINE (10pts)**

8. Assigned Feb 26. For each of your ten papers write out a sentence or two about the key conclusions of the paper in your own words. Order the key conclusions either chronologically or in a way that links the ideas. Put a citation at the end of each key conclusion. Due March 4. **ONLINE (10pts)**.

9. Assigned March 4. After reading your ten papers, what experiments or studies would you suggest being done next. Write a paragraph with your ideas. Then complete the writing of a literature summary by combining your list of key questions, methods used, key conclusions and ideas for future work, all in your own words, into one literature review paper. Due March 11. **ONLINE (20pts)**. Show word count.

All papers should demonstrate mastery of grammar, punctuation, spelling and syntax expected of college level students. If you need writing assistance, please seek help from Student Support Services and the Writing Center. All papers are to be word-processed, proofread, and solely the work of the author.

Resources

<https://www.wikihow.com/Summarize-a-Journal-Article>

Scores for each assignment are listed. In addition, attendance is 10 points. A score below 65 will not be considered passing.