DRAFT 1-23-2020

The Challenge of Biodiversity
EVPP 619 001 - 3 credits
Spring, 2020 Course Syllabus

Class Meets: Mondays, from 4:30 to 7:10 pm, Innovation 328

Instructor: Prof. Thomas E. Lovejoy **tlovejoy@gmu.edu** **703 993 5179**
Office: Room 215, Research Hall
Office Hours: by appointment, normally on Mondays before class**,** but if this is not possible, other times and places can be arranged to accommodate students' schedules. In case of really urgent matters only, call **202 247 0162 (cell**).

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(Contact Carmen to schedule an appointment with Professor Lovejoy)

Teaching Assistant: Cheryl Rash Jones **crashjon@masonlive.gmu.edu**
Cell phone: 571 205 3654 (call or text, but let me know who you are)
Office hours by appointment, normally afternoons before classes; other times can be arranged.

Blackboard (Bb) Course Website:
Go to https://mymasonportal.gmu.edu/webapps/portal/frameset.jsp
Or from www.gmu.edu, click on "students" then MyMason.

Because you are registered for this class, a link to the course website will automatically appear when you log in to the Bb website. Log in using your user ID and Patriot Pass password. (This is a different password from the one you use for accessing your email account.) Click on the courses tab and select EVPP 619-001 from your list of classes. If you have trouble, you may have better success using Mozilla Firefox or Google Chrome as your internet browser. Please let your TA know if you have any problems accessing or using this site.

The Bb site is used to post all course materials except the textbooks: the syllabus, readings (found under course content), announcements (on the course homepage), student roster, assignments, and assignment grades. Assignments should be turned in through Bb as well.

Department of Environmental Science & Policy
Environmental Science & Policy Department Office telephone: 703-993-1043
Environmental Science & Policy Department website: http://esp.gmu.edu

If you are not receiving the Environmental Science & Policy Department listserve emails, contact Anne Reynolds at areyno14@gmu.edu

Objective of the Course:

The principal objective is to enrich students' understanding of solving problems in conservation and conservation biology. Such problems require sound science but also include considerations that go beyond science; so, in lectures, reading, presentations and papers the class will work with real and sometimes very current problems. This course is intended to give students the necessary background to pursue advanced studies and careers that involve both international and domestic issues in conservation and conservation biology.

Course Prerequisites:

Graduate Standing & 6 credit hours of graduate course work or permission of instructor.

Course Overview and Content:

All students will choose a topic (subject to approval of instructor) relating to the challenge of biodiversity conservation. Students will prepare a research paper (or alternative assignment) on their topic and give a presentation.

This course emphasizes effective communication, research skills, critical thinking and provides opportunities to further your skills. Active discussions, presentations, guest speakers, assignments, a field trip and your research paper (or alternative assignment) are the assessments used in this course. Assigned reading for this course includes portions of two textbooks, as well as journal and newspaper articles. One textbook for this class is available for download at no charge (see below.) The other textbook is available through Yale University Press and/or the campus bookstore. Other reading**s** will be assigned to augment class discussion; typically, pdf files will be posted on Blackboard.

Speakers and class exercises have been chosen to represent an extensive variety of challenges and activities in conservation and conservation science, and most are multi-factorial in nature. These are intended to develop the students' abilities to recognize and analyze issues, to devise solutions, and to provide a wide spectrum of perspectives of value to a conservation career.

Textbooks:

Required:

Conservation Biology for All. 2010. Sodhi, N.S. & P. R. Ehrlich, Editors. Oxford University Press 358 pp. Available at: http://www.mongabay.com/conservation-biology-for-all.html

The Future of Nature: Documents of Global Change. 2013**.** Edited by Libby Robin, Sverker Sörlin, and Paul Warde. Yale University Press, New Haven, CT. ISBN: 9780300184617. Available at: http://yalepress.yale.edu/yupbooks or http://yalepress.yale.edu/yupbooks/SearchResultsTMM.asp?selType=Title&txtCriteria=the future of nature

Strongly Recommended:

American Psychological Association. (2019). *Publication manual of the American Psychological Association* (7th ed.). Washington, DC.

General Policies

Attendance: You are expected to attend every class session and to be there on time. If you must miss a class please let the instructor and teaching assistant know ahead of time, if possible. Absences may affect your participation grade. **One session will be at the National Museum of Natural History in DC (This may be a logistical challenge if you have a 7:20 class - please consult with instructor/TA if that is the case).**

Email: GMU requires students to utilize the GMU email system. You can set up this email to forward to a different email address. Your GMU email address will be used for all contact regarding this course. See http://masonlive.gmu.edu for more information.

Academic Integrity: GMU is an Honor Code university; please see the University Catalog for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification.

University Policies
The University Catalog, http://catalog.gmu.edu, is the central resource for university policies affecting student, faculty, and staff conduct in university academic affairs. Other policies are available at http://universitypolicy.gmu.edu/. All members of the university community are responsible for knowing and following established policies

Office of Disability Services
If you are a student with a disability and you need academic accommodations, please contact the Office of Disability Services (ODS) at 993-2474. All academic accommodations must be arranged through the ODS. http://ods.gmu.edu

Other Useful Campus Resources:
Writing Center: Robinson Hall B 213; (703) 993-1200; http://writingcenter.gmu.edu
University Libraries "Ask a Librarian"
http://library.gmu.edu/mudge/IM/IMRef.html

Counseling And Psychological Services (CAPS): (703) 993-2380; http://caps.gmu.edu

Cell phones:
As a courtesy to your classmates, professor and guest speakers, please turn your cell phone ringer off during class. If you are experiencing a medical or family situation where you need to receive an incoming call, please let us know, and feel free to exit the class to receive your call.

Inclement Weather and Class Cancelation:
GMU posts closings on its website (www.gmu.edu.)
You can receive notification from Mason Alerts via email or text to a cell phone.
However, please use your common sense about weather conditions in your area. If you do not feel safe traveling to class please let us know, and do not attempt the journey.

In case of cancelation, we may be able to have class online through Blackboard. You will receive instructions via email should this occur.

Grading Scale

A+	98 - 100	B+	88 – 89	C+	78 - 79	D	65 - 69
A	93 – 97	B	83 – 87	C	73 - 77	F	<65
A-	90 – 92	B-	80 - 82	C-	70 - 72		

BASIS OF GRADING - OVERVIEW (100 POINTS POSSIBLE)

Class participation		**16**
Class discussion of readings & discussion leading	10	
Student presentation evaluations	6	
Assignments		**27**
Experience Reflections (6 @ 2 points each)	12	
Solutions article discussion leading (10 min) and reflection	5	
Team project presentation (Buffett Awards – 30 minutes/team)	10	
Midterm Exam		**15**
Case Study or Alternative Assignment		**35**
Case Study/Alt Assignment title, description/abstract, outline, & preliminary references	5	
Case Study or Alternative Assignment Presentation (includes handout)	10	
Case Study or Alternative Assignment Paper	20	
Final quiz/last questions		**7**
TOTAL POSSIBLE COURSE POINTS		**100**

BASIS OF GRADING - DETAILS

Following directions for all graded materials is expected. If in doubt, please consult the syllabus. If you are still unclear about something, please ask your instructors.

Clear communication, including correct spelling, grammar, and punctuation, is also expected in all written assignments.

Class participation
Students are expected to attend class and to engage in and lead class discussions, and participate fully and meaningfully in the group project. Emphasis is placed on effective communication; class discussions and question/answer sessions after presentations provide avenues to demonstrate and develop your critical thinking and communication skills.

Assignments
Assignments include discussion leading, presentations, research, team project, and written reflections. Assessment of assignments is based on content, adherence to parameters of assignment (following instructions, completeness, observance of deadline etc.) grammar, and punctuation. All reflections are due by 11:59 pm on the Friday following the related class.

Reflections on a presentation or activity are intended to engage students in higher order thinking skills by analyzing, reconsidering, questioning and relating the content within a broader context of student knowledge and experience… "…in reflection, all the learned material can be gathered about, sorted and resorted, and searched through for greater understanding and inspiration." – Sean Michael Morris, *Reflection as Learning and Teaching*

Midterm Exam
An essay format, take-home midterm exam will be distributed during the class immediately prior to Spring Break. It will be due one week later to the Assignments tab on Blackboard. Your responses will be graded on factual content and understanding expressed, depth of personal reflection, following directions, and quality of writing.

Case study or Alternative Assignment

Case study (CS): Each student will identify a challenge in conservation biology and research the factors and drivers creating the problem, strategies and actions taken to address the problem, key players, and potential solutions for the problem.

Alternative assignment (AA): There is an option to complete an alternative assignment to fulfill this requirement. This option offers you an opportunity to be creative and design/implement a project that relates to biodiversity conservation, as you apply your course learning to a project related to your interests. The time, effort, and rigor put in should be comparable to a standard case study assignment. You should discuss your ideas with your instructors and seek approval for your project design. The opportunity to complete an alternative assignment project will be discussed further during the first class.

Regardless of the option chosen, there are incremental assignments, and 2 end products for this semester-long assignment: a presentation, and a paper.

Presentations

All students will give a 15-minute presentation on their case study (or AA), followed by a class discussion and question/answer period. The presentations should be of the type and quality for submission at a professional, scientific, or academic conference or symposium. All presenters should **prepare a handout with an abstract, outline, and references for distribution to your classmates, the instructor, and teaching assistant.** (A typical number of references is 10 for MS, 20 for PhD with at least ½ from peer-reviewed journals. If needed, you can find help at the library or online at the GMU library webpage to learn how to search the GMU online library & identify which sources are peer-reviewed.)

If you are using PowerPoint or other presentation software, an **additional handout** (3 slides per page, portrait orientation) will be submitted, one copy each **to the instructor and teaching assistant** at the beginning of the class when you are presenting. If you do not use presentation software, then the required handout for your classmates and instructors (see above) is all that is required. If you are using an electronic file, please bring it on a thumbdrive. You can email your presentation to yourself as a backup. (Powerpoint is recommended for compatibility with the GMU system software). Alternatively, you could save your file as a pdf. Please note that it is not a requirement to use presentation software. **All handouts of more than one page should be printed double-sided, and stapled together (presentation stapled separately from outline).**

Criteria for grading the presentations include content, research, organization, analysis, visual clarity, and presentation style. Correct spelling and grammar usage **do** count.

Critique of presentations

Using a basic form (provided on Blackboard for you to print and bring), students will critique presentations. These critiques will be collected and reviewed by the instructor. Names will be removed and the critiques forwarded to the presenters for constructive feedback.

Paper:

All students will prepare a research paper on their topic. Formatting and citation style should follow the American Psychological Association (APA) Style, 6th edition, the standard/dominant professional style for the biological sciences. Generally, APA formatting specifies Times New Roman 12-point font, 1-inch margins, double-spaced throughout, including abstract and references. Reference formatting varies by source type. **Zotero** citation software (free) recommended.

A **Running head** should be included in the header on each page per APA guidelines.

Each paper should include an **Abstract**, on a separate page after the Title Page but before the body. The Abstract should summarize and preview the problem, methodology, and conclusions of the paper. The Abstract should be a maximum of 200 words.

The **Body** of your paper should be complete, clear, and logically organized to lead a reader through an understanding of your topic. Case study papers should be a minimum of 10 pages, maximum 12. References, images, and tables are not included in the page count. Alternative assignment papers **may or may not** be shorter (check with your instructors for your specific situation), but should follow all other formatting criteria, including references.

References should start a new page at the end of the body of the paper, and follow APA formatting. Generally, references should be listed in alphabetical order by first author's last name. Date (generally, year) of the publication should follow the authors' names. Please format to leave the first line hanging for each reference. Master's students are expected to have a minimum of 10 references, and PhD students a minimum of 20. Most references should be from peer-reviewed journals (please underline these sources). Please refer to the APA 6th edition style guide (in print or online) for specifics. Zotero reference software is recommended to organize your sources; it was developed here at GMU and is available as a free download (zotero.com). The library offers Zotero workshops; your TA can also help you get started.

Additional guidelines:

- References, images, and tables are not included in the page count, but may be put in an appendix (not required).
- Please number the pages and put your name on each page.
- Submit both a paper copy (stapled) AND an electronic file. The electronic file is submitted to GMU plagiarism software and should be in a .doc .docx or .pdf format.

Criteria for grading the papers include content, research, analysis, organization, and writing style, including spelling, punctuation, and grammar usage. Students are expected to produce a paper suitable for publication in a peer-reviewed journal, which includes references and proper citations.

Final Quiz/Last Questions

Similar to the Midterm Exam, but shorter and lighter. This essay format, take-home quiz will be distributed during the next-to-last class, and be due by 11:59 pm on the following Saturday. It should be submitted to the Assignments tab on Blackboard. Your responses will be graded on factual content and understanding expressed, depth of personal reflection, following directions, and quality of writing.

NOTE: All writings should adhere to the basics of APA writing style. This includes proper citation format, as well as 1" margins, 12-point Times New Roman font, and professional writing style, including correct use of spelling and grammar. See the Grammar Tips document under the Syllabus tab on Blackboard for more information.

Late submissions may not be accepted; if accepted the grade will be reduced.
The professor reserves the right to modify the course content or syllabus

Course Schedule EVPP 619 Spring 2020
Blue numbers followed by a "D" indicate student-led discussions of articles-not updated for 2020

WEEK 1: January 27: Overview, syllabus, solutions & presentation/discussion
Speaker: Professor Thomas Lovejoy: 500 Years of Science & Exploration in the Amazon

Class discussions: Course overview; Review Syllabus; Readings; Solution article discussion
Introduce Buffett Award assignment

Course Overview:
Introductions and class discussion:
Syllabus: objective, class discussion, reading for discussion, case study or alternative assignment, assignments, Buffet Award Teams, teamwork expectations and responsibilities, honor code & plagiarism
Science, policy, and critical thinking; scientific journals, scientific research, trends, research skills, professional organizations, science & advocacy

Read for today's discussion: (23 pages + syllabus)
1. This syllabus
2. Watch the short video on APA style at: https://www.youtube.com/watch?v=_fVv2Jt0o18
3. (**1-D**) Lovejoy, Conservation Biology 1989 (2 pp)
4. (**2-D**) Smithsonian Magazine about Wegner 2012 (4 pp)
5. (**3-D**) Barash article: Life is Good 2014 (5 pp)
6. Ruth Patrick obituaries in NYT and WaPo (6 pp)
7. **Solution article 1: (Hertsgaard, 2012): A quiet desert storm (6 pp)**

ASSIGNMENT: Reflection 1: Why are you taking this class and what do you hope to get out of it? (Due Friday January 31st, by 11:59 pm – 250 words maximum)

WEEK 2: February 3: Conservation Biology & Biodiversity
Class discussion: Readings; Case Study/Alternative Assignment;
Assign Buffett Teams; Organizational Team meetings

Read for today's discussion (52 pages + 29 conditionally optional)
1. *Conservation Biology for All*:
   a. Introduction (6 pp)
   b. Chapter 1: Conservation biology: past and present (15 pp)
   c. Chapter 2: Biodiversity (14 pp)
2. *The Future of Nature*:
   a. What is Conservation Biology: Michael Soulè and commentary by Libby Robin (pp. 391-408) (14 pp)
   b. (**4-D**) Council on Environmental Quality and commentary (**5-D**) by M. V. Barrow Jr. (page 381-390) (10 pp)
3. (**6-D**) Kareiva & Marvier, Bioscience, 2012. What is conservation science? (7 pp)
4. (**7-D**) Soulè, Conservation Biology, 2013. The "new conservation". (2 pp)
5. Hutchinson, G. E. (1959). Homage to Santa Rosalia or why are there so many kinds of animals? *The American Naturalist*, *93*(870), 145–159. https://doi.org/10.1086/282070 (13 pp)

CBA Ch. 1 & 2 (only) are optional for those with background in conservation biology and biodiversity

ASSIGNMENT: Think about your case study topic or alternative assignment.
Sign up for a Buffett Award Team. Plan to read Buffet Award Biographies for your team.

WEEK 3: February 10: Ecosystem Services

Dr. Thomas Lovejoy Remarks; *Class discussion: Readings, Solution article; Buffett Team meetings*

Read for todays discussion (42 pages + 22 optional)

1. *Conservation Biology for All*: Chapter 3: Ecosystem functions and services (22 pp) (optional)
2. *The Future of Nature*:
   a. (**8-D**) The Invaders: Charles S. Elton and commentary (**9-D**) by Libby Robin (13 pp)
   b. Nature's Services: Societal dependence on natural Ecosystems: (**10-D**) Gretchen Daily and commentary (**11-D**) by Richard B.Norgaard (11 pp)
3. (**12-D**) Who Is Conservation For? By: Paul Voosen (11 pp)
4. Millennium Ecosystem Assessment framework (1 p)
5. Bacteria Could Help Fight Zika, Study Finds (3 pp)
6. Risks of *Wolbachia* mosquito control (1 p)

- **Solution article 2: Striking a Deal with the Weed from Hell (4 pp)**

ASSIGNMENT: Case study/AA topic due by class time next week.

WEEK 4: February 17: Preventing Extinctions

Invited Guest Speaker: Dr. Stuart Pimm, Doris Duke Professor of Conservation Ecology, Duke University

Class discussion: Case Study/AA topics & research strategies, Readings, Solution article; Buffett Team meetings

Read for today's speaker & discussion (70 pages)

1. Pimm, S. L., Jenkins, C. N., Abell, R., Brooks, T. M., Gittleman, J. L., Joppa, L. N., Raven, P. H., Roberts, C. M., & Sexton, J. O. (2014). The biodiversity of species and their rates of extinction, distribution, and protection. *Science 344*(6187), 987-997. (9 pp)
2. Jenkins, C.N., K.S. van Houtan, S. L. Pimm, and J. O. Sexton, 2015. U.S. Protected Lands Mismatch Biodiversity Priorities. Proceedings of the National Academy of Sciences (U.S.A.) 112: 5081-5086. (5 pp)
3. Li, B. V. and S. L. Pimm, 2015. China's endemic vertebrates sheltering under the protective umbrella of the giant panda. Conservation Biology 30: 329-339. (10 pp)
4. Ocampo-Peñuela, N., C. N. Jenkins, V. Vijay, B. V. Li and S. L. Pimm (2016). Incorporating explicit geospatial data shows more species at risk of extinction than the current Red List. Science Advances 2: e1601367. (8 pp)
5. Newmark, W. D, C. N. Jenkins, S. L. Pimm, P. B. McNeally, and J. M. Halley (2017). Targeted habitat restoration can reduce extinction rates in fragmented forests . Proceedings of the National Academy of Sciences: 114: 9635–9640. (5 pp)
6. Montoya, J.M., Donohue, I. and Pimm, S.L., (2018). Planetary Boundaries for Biodiversity: Implausible Science, Pernicious Policies. Trends in Ecology & Evolution 33: 71-73. (3 pp)
7. Pimm, S. L., Jenkins, C. N. and Li, B.V. (2018). How to protect half of Earth to ensure it protects sufficient biodiversity. Science Advances, 4. eaat2616. (6 pp)
8. Pimm SL, Jenkins CN. (2019) Connecting Habitats to Prevent Species Extinctions. American Scientist. 107(3):162-9. (8 pp)
9. Brooks TM, Pimm SL, Akçakaya HR, Buchanan GM, Butchart SH, Foden W, Hilton-Taylor C, Hoffmann M, Jenkins CN, Joppa L, Li BV. (2019) Measuring Terrestrial Area of Habitat (AOH) and Its Utility for the IUCN Red List. Trends in Ecology & Evolution. Jul 16. (8 pp)

- **Solution article 3: TV as Birth Control (8 pp)**

- **DUE by class: CS/AA topic. Enter into the Forum on Discussion Board; discuss ideas in class.**
- **DUE: Solutions Article by 11:59 pm by email to your TA, who will approve it and post it to Bb.**
- **ASSIGNMENT: Reflection 2: Stuart Pimm presentation/discussion (Due 11:59 pm Friday 2/14)**

WEEK 5: February 24: Forest Fragmentation.
Dr. Thomas Lovejoy Presentation: The Forest Fragments Project
Class discussion: Readings; Solution articles;
Buffett Team meetings

Read for today's discussion (43 pp + solution articles)

1. *Conservation Biology for All*:
   a. Chapter 5: Habitat fragmentation and landscape change (16 pp)
2. (**13-D**) Laurance, et al. (2018). An Amazonian rainforest and its fragments as a laboratory of global change. (19 pp)
3. Tollefson (2013). Splinters of the Amazon. Nature, (4 pp)
4. Conniff (2018). Amid the plunder of forests, a ray of hope. (1 p)
5. Lovejoy & Nobre (2018). Amazon tipping point (1 p)
6. Lovejoy & Nobre (2019) Amazon tipping point: Last chance for action (2 pp)

- Optional supplemental article: Tilman (2006). Biodiversity and ecosystem stability in a decade-long grassland experiment. (3)
- Solution article(s) assigned for today (Be prepared for the first 3)

ASSIGNMENT: Case Study/AA title, description, etc. due next week. See below.

WEEK 6: March 2: Ocean Conservation and Stories of Optimism
Invited Guest Speaker: Dr. Nancy Knowlton, Sant Chair in Marine Science, Emerita, Smithsonian National Museum of Natural History
Class discussion: Readings; Solution articles; Presentation Tips
Buffett Team meetings

Read for today's speaker & discussion (22 pages + optional website + solution articles)

1. How good science and stories can go hand in hand (Conservation Biology, 2013) (3 pp)
2. Johns & Jacquet. 2018. Doom and gloom versus optimism: an assessment of ocean-related U.S. science journalism (2001-2015). Global Environmental Change 50: 142-148. (6 pp)
3. Mazaris, A.D. *et al*. Global sea turtle conservation successes. *Science advances***3**, p.e1600730 (2017). (6 pp)
4. de los Santos et al. 2019 Recent trend reversal for declining European seagrass meadows. Nature Comm. s41467-019-11340-4.pdf (7 pp)
5. Visit and familiarize yourself with: http://ocean.si.edu/ (optional)

- Solution article(s) assigned for today (Be prepared for the next 3)

ASSIGNMENT: Reflection 3: Nancy Knowlton's presentation and class discussion (Due Friday, March 6, by 11:59 pm)

DUE by 3 pm today: Case study topic title, description, outline, and preliminary list of references or alternative assignment description with work plan

TAKE HOME MIDTERM: Due 11:59 pm Monday, March 9th

SPRING BREAK March 9: NO CLASS

WEEK 7: March 16: Climate Change
Dr. Thomas Lovejoy Presentation: Wild Solution for Climate Change; solutions
Class discussion: Midterm; Readings; Solution articles; Presentation Tips
Buffett Team meetings

Read for today's discussion (55 pages + 18 optional + solution articles)

1. *Conservation Biology for All*: Chapter 8: Climate change (8)
2. *The Future of Nature*:
   a. The Economics of Climate Change (**14-D**) Nicholas Stern and commentary by (**15-D**) Paul Warde (12 pp)
   b. Resilience and the Stability of Ecological Systems: (**16-D**) C. S. Hollings and commentary (**17-D**) by Libby Robin (14 pp)
   c. A Safe Operating Space for Humanity (**18-D**) Rockstrom et al and commentary (**19-D**) by Susan Owens (9 pp)
3. Steffen et al. 2015. Planetary boundaries: Guiding human development on a changing planet. Science Express (13 pp) This article relates to: A Safe Operating Space for Humanity: Johan in the Future of Nature. (optional)
4. Tollefson, Nature Climate Change, 2011 (2 pp)
5. Blaustein, BioScience, 2011 (7 pp)
6. Lovejoy & Hannah (2018) Avoiding the climate failsafe point (1)
7. Lovejoy, 2013 editorial The Climate Change Endgame (2 pp)
8. *Optional:*
   a. No Apologies, No Regrets: Michael Mann and the Hockey Stick Graph of Rising Global Temperatures (4 pp)
   b. Yellow fever kills 600 monkeys in Brazil's Atlantic Rainforest (1 p)

- Solution article(s) assigned for today (Be prepared for the next 3)

Buffett presentations next week

WEEK 8: March 23: Sustainable Development
Buffet presentations and discussion*;*
Readings and solutions discussions

Read for today's discussion (27 pages + 36 optional + solution articles)

1. The Future of Nature:
   a. The Limits to Growth (**20-D**) Meadows et al. and (**21-D**) commentary by Egan (15 pp)
2. Independent Advisory Group on Sustainability (IAG report) (36 pp) (optional)
3. Brundtland Huntington prize speech (11 pp)
4. (**22-D**) United Nations Sustainable Development Goals (1 p)

- Solution article(s) assigned for today (Be prepared for the next 3)

DUE: Have one member of your group upload your group's slides to Blackboard Assignments.
ASSIGNMENT: Reflection 4: Buffet Team experience & discussion (Due Friday March 27th by 11:59 pm)

WEEK 9: March 30: Conservation of Neotropical Amphibians
Invited Guest Speaker: Dr. Brian Gratwicke, Conservation Biologist, Smithsonian's National Zoo & Conservation Biology Institute
Class discussion: Readings; Solution articles

Read for today's speaker & discussion (15 pages + 15 optional + solution articles)
1. Scheele, B. C., et al. (2019). Amphibian fungal panzootic causes catastrophic and ongoing loss of biodiversity. *Science*, *363*, 1459–1463. (4 pp)
2. Lewis, C. H. R., et al. (2019). Conserving Panamanian harlequin frogs by integrating captive-breeding and research programs. *Biological Conservation*, *236*, 180–187. https://doi.org/10.1016/j.biocon.2019.05.029 (7 pp)
3. Klocke, B., et al. (2017). Batrachochytrium salamandrivorans not detected in U.S. survey of pet salamanders. *Scientific Reports*, *7*(1), 13132. https://doi.org/10.1038/s41598-017-13500-2 (4 pp)
- Solution article(s) assigned for today (Be prepared for the next 3)

Optional:
1. Amphibian Ark (Science, 2013) (1)
2. Will amphibians croak under the endangered species act? (BioScience, 2012) (4)
3. Evaluating the probability of avoiding disease-related extinctions of Panamanian amphibians through captive breeding programs (Animal Conservation 2015) (10)

ASSIGNMENT: Reflection 5: Brian Gratwicke's presentation & class discussion (Due Friday April 3rd by 11:59 pm)

WEEK 10: April 6: Science Communication
Class discussion: Readings; Solution article(s); Presentation Tips

Read for today's discussion (42 pages + 19 optional + solution articles)
1. He & Hubbel, Nature 2011. Species–area relationships always overestimate extinction rates from habitat loss (4 pp) Note writing style only.
2. (**23-D**) Intrinsic Motivation in Museums: Why Does One Want to Learn? Csikszentmihalyi and Hermanson (9 pp)
3. (**24-D**) Hein (1991) Constructivist Learning Theory (7 pp)
4. (**25-D**) Elbow, P. (2006). The Believing Game and How to Make Conflicting Opinions More Fruitful (10 pp)
5. (**26-D**) Simis, M. J., Madden, H., Cacciatore, M. A., & Yeo, S. K. (2016). The lure of rationality: Why does the deficit model persist in science communication? *Public Understanding of Science*, *25*(4), 400–414. (12 pp)
- Solution article(s) assigned for today (Be prepared for the next 3)

Optional:
1. Falk & Dierking (2002) Lifelong Learning (6 pp)
2. The missing pillar: Eudemonic values in the justification of nature conservation (Meaning making) (13 pp)

WEEK 11: April 13: Student case study/alternative assignment presentations, discussion; solutions
Download the Presentation Evaluation (on Bb), and fill it out for each presenter. Save with the specified naming format and submit to Assignments on Blackboard. Evaluating your classmates' presentations is part of your participation grade.

Read for today's discussion (solutions articles)
- Solution article(s) assigned for today (Be prepared for the next 3)

WEEK 12: April 20: Student case study/alternative assignment presentations & discussion; solutions

Download the Presentation Evaluation (on Bb), and fill it out for each presenter. Save with the specified naming format and submit to Assignments on Blackboard. Evaluating your classmates' presentations is part of your participation grade.

Read for today's discussion (solutions articles)

- Solution article(s) assigned for today (Be prepared for the next 3)

Case study papers DUE if you presented last week. Blackboard and hard copy.

WEEK 13: April 27: Student case study/alternative assignment presentations & discussion; solutions

Download the Presentation Evaluation (on Bb), and fill it out for each presenter. Save with the specified naming format and submit to Assignments on Blackboard. Evaluating your classmates' presentations is part of your participation grade.

Read for today's discussion (solutions articles)

- Solution article(s) assigned for today (Be prepared for the next 3)

Case study papers DUE if you presented last week. Blackboard and hard copy.

WEEK 14: May 4: Museums' Role in the Conservation of Biodiversity

Field trip: Smithsonian National Museum of Natural History (NMNH)

Guest Speaker: Gary Krupnik, Head of the Plant Conservation Unit, Department of Botany, NMNH

Read for today's discussion (25 pages)

1. Achieving Target 2 of the Global Strategy for Plant Conservation: Building a preliminary assessment of vascular plant species using data from herbarium specimens. (Biodiversity Conservation, 2009.) (10 pp)
2. Funk, Vicki A. 2018. "Collections-based science in the 21st Century." *Journal of Systematics and Evolution* 56 (3):175–193. https://doi.org/10.1111/jse.12315 (15 pp)

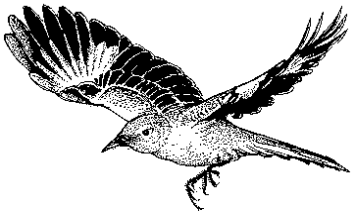
Case study papers DUE if you presented last week. Blackboard and hard copy.

ASSIGNMENT: Reflection 6: Smithsonian Museum of Natural History field trip, presentation and discussion. Due Friday May 8, by 11:59 pm

FINAL QUIZ/LAST QUESTIONS assigned: Due Saturday May 9th, by 11:59 pm.

WEEK 15: Monday, May 11th: Course wrap-up

We expect to use this final exam period for a film, if not needed for a makeup day.



Tips for understanding and succeeding in this course:

- Readings are heavier up front; understanding builds on these. Case study/Alt Assignment comes later when readings are generally lighter and you have built a foundation.
- *Future of Nature* includes classic, foundational articles + more contemporary responses. This helps you understand the development of the field.
- Read everything, but we will not necessarily discuss everything. In graduate school you are expected to know it even if we did not discuss it in class.
- Some assignments are designed for you to tailor to your own interests – specifically, the Solutions Discussion and Case Study.
- Solutions Discussions are fit in wherever there is time, to allow for flexibility with other content, which may go longer or shorter than expected. You should always be prepared to discuss the next 3.
- Spelling and grammar do matter. Please consult the Writing Center.