Appendix 8

Outcome Assessment

Annual Report (Summer 2009 – Summer 2010)

Graduate Program Marine Science and Limnology (GPMSL)

Fairbanks, November 12, 2010

Outcome Assessment Committee:

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This is the annual outcome assessment report of the GPMSL program covering the time period Summer 2009 - Summer 2010. Our last comprehensive 5-year evaluation was competed in Spring 2007.

Abbreviated, GPMSL outcome goals are the following:

Students will have

1. high-demand, state-of-the-art research skills,

2. in-depth knowledge of history and current paradigms within their specialty,

3. excellent communication skills,

4. skill in communicating scientific information (e.g., by teaching),

5. satisfaction with their education.

Methods to evaluate the accomplishment of these goals include

1. successful completion of coursework and passing of the comprehensive/qualifying exam,

2. problem solving and data analysis in thesis

3. completion of a thesis or dissertation,

4. evaluation of the oral thesis defense, written thesis, presentations and peer-reviewed publications resulting from thesis and other research, and

5. evaluation of student survey forms.

Goals and assessment methods are in essence the same for all degree programs offered through GPMSL (MS and PhD in both Marine Biology and Oceanography). No distinctions were made for this annual review.

Comprehensive/qualifying exams

During the evaluation period (Summer 09 to Summer 10), nine students took comprehensive exams for their MS degree in Marine Biology. The exam consists of questions in Marine Biology, Marine Physiology, and Biological Oceanography. Only three students passed all portions of the exam in their first attempt, while most others were successful in passing the exam the second time. One student completed his comprehensive exam by submitting his/herself to an oral examination. Through Summer 2010 all students passed the comprehensive exams. One student took the Oceanography comprehensive exam in Spring 2010 and passed and one student took the Oceanography exam in Fall 2010; results are still pending

Four PhD Marine Biology and one PhD Oceanography students took and passed their qualifying exams.

It is noticeable that MS students in Marine Biology are having more difficulty in passing the comprehensive exam than in past years. This could be for several reasons. They do not adequately prepare themselves for the task, they are not adequately trained as part of their course work, or they do not fully understand how to prepare for these exams. The “Comprehensive Exam” committee believes that the students have the knowledge in place to answer comprehensive questions, but do not think outside their comfort zone and have a hard time putting learned material into a different context. The Outcome Assessment committee recommends that GPMSL conduct small workshops for incoming MS students (perhaps as part of the “new student orientation” or after their first semester into the program) to introduce them to questions typically asked in these exams and how to best answer them.

Oral thesis defense evaluations

A total of nine oral MS thesis defenses were on record for the evaluation period. All students passed. Evaluation sheets were completed for all of these by students, faculty, and staff attending the seminar presentation. Between one and 18 evaluations per defense were completed with an average of 11 evaluations per student. This is approximately two evaluations less per student than last year. The student with only one evaluation did her defense in Seward. It seems that it is not uncommon for video-conferenced defenses to have a poor show at the remote sites, particularly when the main campus (UAF) is the remote site. We understand the shortcomings of video-conferencing but hope that the GPMSL staff and administration will continue to try to perfect this mode of communication.

Only one PhD oral dissertation defense seminar was on record for the evaluation period. This student was in Oceanography. Twenty-three evaluation sheets were completed by attending students, faculty, and staff.

Presentation quality varied with student, but usually ranked between 1 and 3 (with the occasional 4 and 5) on a scale from 1 (excellent) to 5 (poor). Faculty evaluators typically scored more rigorously than student or staff evaluators. Typically PhD students do better than MS students in these evaluations. Interestingly, this year, the MS students did just as well as the one PhD student. This might be because many MS students take the IMS seminar as a course and as such are required to critique seminar speakers. By critiquing other speakers, students learn what works and what does not in oral presentations. The improvement seen in MS presentations may also partly be because MS students have started taking the Professional Development course offered through GPMSL. In general, the committee would like to commend the MSL faculty (in particular the IMS seminar coordinator) for motivating these students and teaching them the importance of good communication skills.

While areas of high and low scores varied among students, the scores this year were equal to or slightly higher than last year. The score for the scientific quality of the presentations (e.g., compared to a presentation at a national meeting) overall was considered good (1.9 for PhD and 1.8 for MS). This compares to last years scores of 1.2 and 1.9 for PhD and MS, respectively. The presentation quality and organization was also considered good with 1.8 for PhD and 1.7 for MS. These are higher than the scores of last year with 1.4 and 1.7 for PhD and MS, respectively. How students handled questions varied but scores for this year were also good (1.8 for PhD and 1.7 for MS). This compares to 1.1 and 1.7 for PhD

and MS, respectively. Lastly, we would like to point out that the use of visual aids also was relatively high with ranks of 1.7 for PhD and 1.7 for MS compared to 1.4 and 1.8 for PhD and MS, respectively.

Although we think that these scores are good news for our program, there is always room for improvement. Three years ago, the IMS seminar started to involve more student presentations as a venue for students to practice giving presentations. The committee would like to continue to see this type of participation. More and more classes are also requiring an oral presentation and we believe that this also aids students in perfecting this skill. Also, many professors require their students to prepare for their defense seminar presentation by practicing multiple times to diverse audiences of fellow students. This practice has proven successful and is encouraged. GPMSL also offers a Professional Development Course (started fall 2008) to assist students in putting together oral presentations and posters. It is hoped that this course will allow students to give more proficient presentations. This is a very important skill for students to master.

The committee would like to recommend that advisors get copies of all of the thesis defense evaluations for their students. This information may assist advisors to better counsel their students in their defenses. The committee would also like to recommend that students receive copies of their evaluations. This will help students identify their oral presentation strengths and weaknesses. Often, it is hard to judge how others perceive presentations. This would be extremely helpful.

Research competence evaluation

Research competence evaluation is based on an evaluation sheet completed by the student and the Program Head upon the student's graduation. This form includes a summary of student publications and presentations, as well as evaluations of the research and written communication skills by the GPMSL head based on the thesis.

Fourteen students graduated during the reporting period of Summer 2009 to Fall 2010. Twelve of these were MS (ten in Marine Biology and two in Oceanography) and two were PhD (one in Marine Biology and one in Oceanography). Note: Only 10 of 14 evaluation forms were available at the time of this assessment, because they were not filled out/evaluated by this time. The following descriptions are based on these ten evaluations.

MS: Three MS students had publications at the time of graduation (as opposed to none last year). All except one also listed titles for manuscripts “in preparation”. This shows a positive trend that our students are increasingly cognizant of the value of publishing their research. We were also pleased to see that all MS students are presenting their research at various meetings, averaging four presentations per student. This is also an encouraging trend. The GPMSL Program head should be congratulated for effectively communicating the need to share research findings. We think requiring one manuscript submission to a peer-reviewed journal for each completed MS thesis would further encourage this. If this is to become a requirement, committees should be instructed to facilitate such a publication during the thesis research and review process.

The GPMSL Program head review of MS student competence of research is ranked as outstanding (1), excellent (2) and adequate (3). Only outstanding and excellent were marked this year with an average ranking of 1.8. This score is lower (better) than last year (1.8) and the year before (2.2). The level of written communication skills (based on the same scale) ranged from outstanding to excellent as well, with an average ranking of 1.7. This score was also better than it was last year (2.1) and the year before (2.2). The Outcome Assessment Committee would like to commend the GPMSL head, GPMSL advisors and committee members for their more rigorous review of student research and writing, which probably resulted in improved research and writing competence.

PhD: The only evaluation available was for the Oceanography PhD student. This student had three papers accepted into excellent peer-reviewed journals at the time of graduation and a fourth to be submitted soon thereafter. This student also listed participation in eight conferences (six oral and two posters). This is excellent and comparable to the excellent work of last year’s Marine Biology PhD graduate. It suggests that our PhD students recognize the importance of publications and conference presentations to their overall scientific maturation.

The GPMSL Program head review of PhD student research competence and written communication skills displayed in the thesis were both excellent.

On the recommendation of this committee two years ago, the GPMSL Program head now provides each graduating student and advisor with scores from the research competence evaluation. The GPMSL head should be commended for instituting this line of feedback to advisors and students. It appears to be influencing better quality work.

Student satisfaction

Student satisfaction with regard to the education they received was evaluated based on surveys completed one year after graduation. Ten surveys were sent out during the evaluation period (Spring 09 to Spring 10), four for Oceanography and three for Marine Biology. Unfortunately, it remains difficult to get these surveys returned from our students and only six graduates responded, three from Oceanography (MS degree) and three from Marine Biology (MS degree). However, since summer 2010, exit interview questionnaires are given to the student when their thesis/dissertation is returned by the department head rather than mailed. The return of these forms has since been 100%. The Oceanography graduates were "very satisfied" with their education, while the Marine Biology graduate were "very satisfied" (1x) and "mostly satisfied" (2x) with their research experience and training at UAF. As far as satisfaction with GPMSL classes, two students were "very satisfied", three student were "mostly satisfied", and one "Marine Biology" student was "not satisfied". The unsatisfied student felt that we should offer more three credit courses and have a wider variety of courses available to graduate students. One student commented on the need to have a "statistics - bring your own data" class after the "required" statistics class. All students completing the form after Summer 2010 commented on the need for an applied statistics class that would focus on "real life" biological data and analysis, in particular during the time of thesis/dissertation writing. The students felt that Stats 401 does not adequately prepare them for their own data analysis. One student commented and passed along his appreciation for useful, practical courses, such as "Proposal Writing". One student found it difficult to coordinate classes from other departments with the GPMSL schedule. One student felt that he missed out on the new faculty influx into the department and the refreshed course offerings this brought along with it. Similarly, one student was disappointed by the mismatch between the list of courses on the books and the list of courses that are actually taught. New faculty influx should alleviate this problem.

The committee thinks that with the hire of new faculty and development of new courses the student satisfaction with regard to GPMSL coursework should be improving. Faculty should make an effort to offer classes that are of interest to GPMSL students in general and are not only focused on specialty courses. However, some new course offerings are being cancelled due to low enrollment and interest. Faculty advisors should therefore recommend classes to their students that are not actually in their field to broaden their horizon. The committee recommends that GPMSl conduct a survey for incoming and/or first-year students on their class priorities and interests. This survey would help shape development of coursework in GPMSL.

Three of the six students returning the survey have found employment related to their degree or are continuing their graduate education. The graduates not currently employed are either interested in pursuing graduate school or applying for a state or federal jobs. One student is a stay-at-home-mother.

Student advisors, GPMSL faculty, and support staff should be encouraged to make a greater effort to get students to complete and return these surveys. The employment metric in particular is very important

to assess the success of our program. A google map with locations of our employed graduates all around the world on our webpage would go a long way to recruit new students to the program. The committee recommends starting exit interviews with recent graduates and ask student advisors (they generally are still in touch with their advisees) to impress the importance of these surveys on them and improve responsiveness.

The committee would like to thank the GPMSL staff for assisting in gathering all the information needed for this report. As always, they were most helpful.

Approval of this report:

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Submission to Dr. Susan Henrichs, Provost