

2019 National Visiting Committee Annual Review of the Aquarium Science Program Final Report

Date of Report: February 27, 2019

Date of Visit: February 23 through 27, 2019

Committee Co-Chairs: Stuart Clausen, Pittsburgh Zoo & PPG Aquarium, Chelsea Wake, Loveland Living Planet Aquarium

Committee Members: Steve Spina (New England Aquarium); Tim Carpenter (Seattle Aquarium), Allen McDowell (North Carolina Aquariums), Roy Drinnen (Moody Gardens), Kelli Cadenas (SeaLife Michigan), Barrett Christie (Maritime Aquarium), Steve Vogel (Loveland Living Planet)

Drafted to: Oregon Coast Community College administration and staff; Larry Boles, Aquarium Science Program Manager; Aquarium Science Program Local Advisory Committee

Introduction/Overview:

The National Visiting Committee (NVC) of 2019 was comprised of 6 returning members and 3 participating for their first time. Among these 9 members, a noted geographical diversity was present, showing the universal high regard which our industry holds toward the Aquarium Science Program. It was noted, however that only public aquaria were represented in the committee, whereas in years past the presence and input of aquaculture, retail suppliers, and scientific research representatives were part of the proceedings. It was noted that budgetary constraints may have played a role in the construct of this year's committee. Committee members discussed the feasibility of a college-sponsored participant to increase diversity, but understand that that may not be an option at this time.

Program manager Larry Boles hosted the committee for the second time, and the time he has spent in Newport and his appreciation for the community and the college were evident. The NVC found the organization of pre-conference materials and planning of events to be excellent, even with inclement weather and facility availability occurring during our visit. Alyssa Squiers' continued involvement in planning was apparent and much appreciated. As with previous years, the services provided by OCC during our visit were welcomed and enjoyed.

Furthermore, Larry brought forward several new ideas regarding the future of the AQS program and its' structure of instruction and curriculum, which were exciting and the committee feels they could bear fruit in many positive ways. We encourage continued development of these ideas and discuss them further within this report.

One major item of concern on this visit was the notable absence of time spent with college administrators. This was a departure from years past, and was an interaction that was definitely missed. It is our sincere hope that in future years, time can be made available by administrators to help give the committee a more complete picture on the current state of the AQS program at an administrative level, and what the administration sees regarding the value of our industry's input in the future development of this program.

Many of the logistical suggestions regarding our visit were obviously heeded and helped to make the meetings and business of the committee run smoother. It is obvious that strides have been made in the administration of the program over the past year, and that Larry's presence and input have had a

positive effect. However, there are several items of note regarding the administration and curriculum of the program that have not been dealt with in a substantive way. Many of these items have been repeated in consecutive reports for several years. To assist in identifying repeated committee and industry suggestions, those items will be noted by **bold type**.

Preparatory Efforts:

Preparations for the NVC committee were well received. The committee was particularly impressed with the way Larry handled the weather cancellation and his efforts to relocate the group in order to proceed with the visit. From start to finish, the committee felt welcomed by program staff and students and the visit was very well organized.

The committee has a few suggestions that would help improve future visits. We suggest using a common location such as digital Drop Box for information dispersal which would allow for multiple attachments to be accessed by the committee. The delivery of course content was unorganized to the point that parts of crucial content were missed by a majority of the committee members. Having a common location would prevent this in the future and it easy for the committee facilitator to disperse information.

It is also suggested that the committee be exposed to additional instructional observation. Possibly splitting the committee in two groups and allowing individuals to survey multiple courses, and then meet back later to debrief and discuss their observations. Along those same lines, we recommend alternating the courses that are observed annually. Many of the members are returning individuals and are interested in seeing course content other than what has been previously observed.

We recommend dismissing the hypothetical job posting for the interviews and make them specific to member institutions. Many committee members abandoned this year's general job description very quickly, as it created confusion and made it difficult to provide a realistic situation.

Committee Sessions:

Student Interviews:

The general feedback regarding student interview sessions is that overall, students performed well. Multiple committee members stated that it seemed answers were strictly prepared and students needed prompting from the interviewer to recall applicable experiences and knowledge. We also recommend considering eliminating interviews for 1st year students in favor of longer sessions with advanced students. The certificate and 2nd year students were far more prepared for interview content and would have benefited from having more time with the committee members. The committee was also highly concerned with the notable lack of chemistry knowledge during discussions with student interviewees. It was also noted that in the past, committee members were introduced and given a few minutes to discuss their facility and answer questions upon their arrival. We recommend reinstating this, or having the committee sit as a panel and answer questions about their institutions and the industry. This would allow them to receive more insight into the committee members and prompt rapport during interviews.

Current/Future Planning Session:

As will be discussed in depth in the Curriculum and Courses section of this report, much of the planning session revolved around future curricular planning and the structure of the program as a whole. The committee appreciates Larry's efforts and communication from Western Oregon University's representative regarding the initiation of an Applied Baccalaureate (AB) program for future Aquarium Science students. In addition to the AB program, an alternate course track utilizing the

nursing program model already in place to provide a pre-requisite year before starting AQS courses is an intriguing possibility. The absence of college administration was conspicuous and their information and feedback would have been appreciated by the committee. Overall, we support the efforts and initiative to expand program options and look forward to updates on progress as events warrant.

The ongoing independent accreditation process was discussed as a topic with both positive and negative potential effects. Administrative costs and budget cuts were points of apprehension, however the committee looks forward to more autonomy to increase responsiveness. Larry was also confident in his ability to shift costs and streamline the budget in order to account for future financial adjustments.

Expanding the program to include aquaculture was highlighted, but not discussed in much detail. The committee reflected on the possibility of including aquaculture to increase exposure for the program, but this would influence the program to take a step in a significantly new direction (away from public aquariums). We suggested this be considered as a parallel track program that will be discussed in the curriculum section. The committee's lack of experience in aquaculture does not allow for much insight on the topic.

Staff Feedback Session:

Feedback from Aquarium Science staff members reflected the positive influence and impact that Larry has had on the program. They were all very supportive of him and his leadership. **The committee once again strongly recommends the addition of a full time curatorial position. This would help align Larry's time and efforts in a more beneficial direction, and relieve him from curatorial tasks such as purchasing supplies and equipment. The staff was also in favor of adding additional chemistry courses to the curriculum and communicated the need for an adjunct chemistry position.**

The committee requested feedback from the staff regarding building access concerns. It was communicated that to date, the staff has had adequate access to the building, and that the limitations have not negatively impacted animal care. This is still a topic of concern for the committee, as staff need to have the ability to access animals daily and respond to potential emergencies at any time.

The staff members were very positive about the changes that have been made to allow for increased team numbers. The staffing is much improved with three aquarists and a life support specialist (50 total hours). They also support the recommendation of a full-time curatorial position.

The committee discussed with staff the addition of record keeping software for the staff and students. Many programs including: ZIMS, TRACKS, and ORCA are available to help streamline records and are an industry standard. Staff members were very receptive to this idea, although the additional cost of the software would need to be accounted for.

Many of the concerns and feedback mentioned above were reiterated in multiple committee discussions. As stated, staff having limited access due to security concerns and environmental issues is a topic that needs further discussion. It is recommended that value of assets amongst the animal collection be calculated and examined when considering limiting access to the facility. The committee suggests that AQS staff develop and submit an emergency response plan with input from the facilities department before the end of this academic year. The need for a preparatory chemistry course was discussed in great length during multiple committee sessions. Larry also discussed the implementation of a Biology 200 series and the committee strongly supports this addition. One additional concern that was voiced during meetings is an absence in planning for Alyssa's upcoming leave. We highly recommend an instructor is brought in who can fulfill the program needs for that time period.

Program Administration and Leadership:

Once again, Larry's support and leadership is recognized and he has proven to be a huge asset to the Aquarium Science Program. Larry's lack of classroom time was a surprise to the committee members. He is identified in the industry as a valuable resource on many fronts and could be utilized in a better way. Students noticed this as well and voiced concern regarding lack of access to his valuable mentorship.

The committee was also surprised with previously unknown bureaucratic layers at OCCC. It was noted that minor changes to curriculum or staffing issues can no longer be handled within the department and are influenced by the governing university. While oversight by outside academic committees is appreciated, it should be noted that efforts are needed to provide flexibility when it is required. For this reason, the committee strongly supports OCCC proceeding with accreditation as this unique academic program exceeds current limitations in comparison to a standardized academic certificate.

In 2018, it was noted that SeaFans was a positive influence and administrative support was requested to continue this. However, student feedback stated that was not happening again this year. The committee was excited to hear feedback regarding the outcome of this program based on 2018's meeting. Unfortunately, based off of student feedback, we feel this resources is underutilized and encourage exploration into to how improvements to the SeaFans program can be implemented.

Student recruitment continues to be a concern. The 2018 report detailed these concerns and no action was taken on the recommendations provided. Suggestions were made during informal discussions on ways the industry can support recruitment efforts, including access to professional networks and personal contact with committee members. However, there was no college administrative engagement on this subject during the 2019 committee session. This is coupled with proposed budget cuts to staff travel that will likely handicap recruitment efforts in the near future. We would recommend a discussion including participation by OCCC administrators be included in the schedule for the 2020 NVC visit for industry representatives to provide feedback and ideas on increasing program visibility and outreach.

The committee also made note, as in previous years, that the practicum course as designed presents the biggest hurdle to increasing potential enrollment numbers. Program enrollment, while small compared to others, is working against an upper limit set by this course which appears to have been reached. Working within the structure of voluntary, goodwill-based practicum instruction with professionals not beholden to the college by contract or other means results in a delicate situation to maintain. These relationships, vital to the success of this course and the program as a whole, are recognized for their value and the committee thanks the practicum instructors for their efforts and support.

Program Curriculum and Courses:

Industry Input and Communication

Within the 2018 NVC Committee report, a recommendation was made to start a curricular re-evaluation to ensure the Aquarium Science Program was presenting current industry-standard practices and information to students. We were very pleased to see that this process has been started, and that a survey of industry partners and institutions is expected to be conducted in the near future. The committee would suggest and appreciate that the results of this survey be made known to current and future NVC participants before the committee meets in session following the administration of the survey. At that meeting, it is strongly suggested that the committee, in partnership and conversation

with college and AQS administration, dedicate a special session within their schedule to discuss the survey results and have input in the process of designing a curricular plan to reflect industry input as was done with the founding survey of the AQS program.

Chemistry Curriculum

During 2019 committee sessions, the reoccurring topic of a dedicated chemistry course related to captive systems was discussed in-depth. This topic and the need for the addition of this subject to the curriculum with all available speed was punctuated by observations made within the student interview process, as most students had only a cursory, by-rote understanding of the topic. Several committee members reported that students in their interviews could not extrapolate from a “flash-card definition” of basic chemistry cycles to a potential real-world application.

Further discussion with Larry, Alyssa, and amongst committee members yielded several suggestions for adjustments to the curriculum that could be implemented to address this issue as the AQS program and the college as a whole work through their accreditation process. Among the suggestions was the idea that in the short term, a potential credit-for-credit replacement be made between the Exhibits and Design course and a “Chemistry in Captive Systems” course. The committee feels that this substitution would benefit the students as they join the industry on an entry-level basis. Most of the large scale exhibit design discussions which the E&D course mimics are held at curatorial levels and happen only sporadically. This is in contrast to system chemistry, which is of great import to the daily duties of every future aquarist.

It is noted that many challenges exist to the implementation of a higher-level chemistry course as part of the AQS program, most notably the diversity in exposure to chemistry as part of the academic background of students. Many students enter the AQS program with a considerable lack of instruction in even basic chemistry, and are playing catch-up even in introductory courses. Other students enroll with a considerable background in the sciences through their Bachelor’s degree programs. Addressing this difference will be a major part of the coalescence between industry needs and student success.

SCUBA Training

The need and requirements for SCUBA certification were another topic of discussion in 2019, as in years past. The committee reiterates the importance of SCUBA training as a qualifier for incoming employees, and feels as though students did not fully recognize the importance of these skills as part of their competitiveness as candidates for employment. It was noted that during the student feedback session many students were not aware of the SCUBA certification course that was made available to them this year. The committee suggests that as part of future admission processes, the availability and importance of this training be made abundantly clear.

Pre-Requisite Training

Students expressed the desire for a list of texts or resources that they can utilize to familiarize themselves with subjects and information related to the Aquarium Science profession prior to the start of classes. This idea has been brought up before in NVC reports, and 2019’s committee supports this idea. If such a list exists, students are not aware of it and feel it should be presented as part of an incoming student’s acceptance packet.

In previous committee reports, the request that pre-requisite training be a part of student enrollment was brought up; as of the 2019 meeting, there was confusion regarding the implementation of that training and its’ scope. The committee feels as though newly-enrolled students would be well served with an orientation period before the start of classes each fall, to familiarize themselves with the program facilities and procedures. This would assist students both in and out of the classroom, giving time to secure housing, identify student and residential services, as

well as opportunity to create social connections before the stress of courses begins. It is suggested that during this orientation that safety and proper facility use be discussed, along with an introduction to members of campus staff including (but not limited to) security and instructional support. Additionally, returning students could be utilized to assist with this training, helping to build a rapport with their peers that will benefit the student cohort as a whole during the coming year.

Instructional Resources

It has been identified by many committees in the past and by program instructors and administrators that a significant difference exists in the academic backgrounds of students that are enrolled together in each cohort. By the very design of the multi-track program, each cohort is made up of students with a wide variety of backgrounds. This issue has proven difficult to address, given the issue of application rates and the need for the program to be sufficient enough in revenue to sustain its' programs.

An idea that the committee feels should be implemented to help alleviate the effects of this difference is the use of video recording class sessions for the purpose of student reference. The technology already exists in most classrooms at the college, and could be utilized on a more consistent basis to assist students that either miss class due to illness or other interruptions, or simply need to revisit the presented information on any given day. This would also assist local and national committee members and administrators in the evaluative process of instructors and materials being presented to the students.

A point of interest in our final full day of meetings was the revelation that Larry has been told that the manager's position does not include any instructional time with students. Given Larry's excellent reputation amongst his industry peers and his experience as a collegiate-level instructor, it seems a disservice to students enrolled in the program to have such a resource present and not utilized where it could have the most direct positive impact on their learning. While we understand and recognize that Larry's efforts as an administrator are bearing much fruit, we strongly encourage the college administration to reevaluate Larry's assigned duties to include at least team-teaching courses much in the same way as previous program director/manager positions did.

Future Curricular Planning

Much of the time at 2019's meeting was spent in discussion with Larry and others regarding the future of the AQS program's curricular structure. There was a great deal of excitement amongst committee members regarding with the ideas that Larry is working on, and the options that may be available to students in the future. It was in these meetings specifically that the absence of college administration was notable given that their input would have been valuable to provide perspective on these efforts.

We urge OCCC administrators to give strong consideration and support to Larry as he pursues the projects outlined below, and reiterate our willingness to provide what support the industry can to further these discussions.

A multi-disciplinary curriculum plan was approached as one of the future design options during meetings. Students expressed the desire for elective courses related to the different facets/career options of aquarium sciences (i.e. aquaculture, exhibit design, business, scientific research, and record keeping), where subjects not considered "core" to the functions of a beginning aquarist could be discussed more in-depth. The committee recognizes that this would constitute a large scale reconstruction of the program and may not be feasible at this time or in the near future, but we feel this is an idea that warrants further discussion and developmental efforts.

In line with the multi-disciplinary approach, the thought of adding a "pre-requisite year" for AAS degree-seeking students was discussed. The committee feels that this idea, modeled after the current

OCCC nursing program curriculum, would serve degree-track students very well. Providing an additional year to lay a foundation of instruction in basic scientific academics and professional maturity would help to bridge differences in understanding between the degree and certificate programs that currently exist in the program, and would allow time and space within the credit structure for students to focus on a desired career course upon graduation. Furthermore, the presence of a pre-requisite curriculum would help to stabilize enrollment in the Aquarium Science program, an issue that had been brought up several times in years past. It would allow program administrators to identify students in need of remedial assistance well before enrolling in the fast-paced and high-level instruction that the AQS program presents, thereby increasing overall student success.

Another plan presented to the committee was the idea of an Applied Baccalaureate program designed in concert with Western Oregon University. It was apparent that Larry has devoted significant energy to this idea, and has already begun fostering partnerships with faculty at WOU. Those efforts were met with enthusiastic support from the committee. This program idea especially resonated as it would combine the academic and professional rigor of a Bachelor's level degree which many institutions require with the applied knowledge in Aquarium Science as a capstone program. This would give students an opportunity to bridge many of the academic gaps seen as hurdles to a cohesive, advanced curriculum that will serve program graduates and our industry abundantly. This model also has the potential to be applied with interested partner campuses nationwide, making the OCCC Aquarium Science Program even more competitive for students on a large stage and increasing the overall quality of program graduates. Several committee members expressed interest in assisting with the development of this program, and it is highly suggested that industry input be sought as this plan begins to unfold. If successful, the committee feels that this track could become the cornerstone of the AQS program in the future.

Taken together, these three goals – a program which offers a diverse set of career-learning options, a pre-requisite year which allows for recent high school graduates and students needing to build their foundational knowledge, and a bachelor's-level degree option for interested students – present an exciting future for the Aquarium Science Program and the direction it may be headed. The committee feels strongly that this project should be given administrative support by the college and we congratulate Larry on his vision and efforts thus far.

Student Evaluation and Discussion

As has come to be expected by committee members, students conducted themselves with maturity and congeniality during their time spent in formal discussion with the group. The student body as a whole seems more fragmented than in years past, acting and participating in small groups instead of as a single cohesive cohort. This observation was borne out in student feedback that the student club, the "SeaFans", has hit another ebb in participation; this usually coincides with a feeling amongst the students of fragmentation. There was also an expressed desire for a student-to-student mentoring program, which the committee suggested that the students pursue in an informal way amongst their classmates or through the SeaFan organization. Overall the committee noted that this cohort was increasingly reliant on the program and college as a whole to set guidelines and provide structure to further student success. The committee feels that while it is incumbent upon the college and the Aquarium Science Program to provide an environment and instruction conducive to successful learning, students should bear much of the responsibility for their achievement. Initiative to that affect is precisely the type of personal trait that produces excellent aquarists that further our industry.

The students expressed an eager appreciation of all staff, both faculty and non-faculty members. They are aware of and expressed their gratitude for the efforts all the staff provide to the program.

A major observation of the committee coming out of the student feedback session was that students would benefit greatly from time spent in career counseling with representatives from the various professions within the aquarium science industry. Many students were unsure of where their degree would be taking them, and what career options were available to them other than a track leading to public aquaria. Additionally, degree-seeking students expressed a desire (and the committee recognized a need) for a unit of instruction on career-readiness and professionalism, such as a “Communication in the Workplace” course or similar. It is good to remember that so much of an individual’s success in our field is based on their ability to work and perform professionally as part of a team, and that the “fit” of a candidate is a major consideration for employment. One possible venue that could be utilized in the short-term would be an adjustment of the NVC visit schedule revising interviews for interested students to include a session with committee members focusing on career advisement.

Another observation made by students is that a single instructor is responsible for a large majority of the instruction within the program. This has been a model previously employed by the program, though not encouraged by this committee. While current instructors are almost universally supported and acclaimed by students, we feel that a diversity of instructors will provide students with a well-rounded base that will more closely mimic the diversity of skill applications represented in our industry. Furthermore, a diverse set of instructors encourages differing learning styles and personalities to be supported, and helps ensure the needs of the program can be met should a single instructor be unable to teach for any given length of time.

Within the student feedback session, certain courses were brought forward as areas of concern. The Practicum and Nutrition and Reproduction courses were specifically mentioned as courses in need of examination.

Discussing the Practicum course, students expressed particular concern in the practicum site selection process. The process described seemed more opaque and removed from student input than in past sessions. While we recognize the significant challenges associated with assigning students to their practicum sessions, we note that this course within the Aquarium Science program has a potentially oversized impact on the experience of students within the program as they progress to becoming young professionals. We would suggest that a review of this process be conducted for future sessions of this course. Students were decidedly mixed in their evaluation of the instruction associated with the Practicum course, with several noting the instruction was difficult for many students to process, and that they felt in-class evaluations did not represent the material presented during class sessions. This was balanced with a group of students who expressed that the class sessions were relatable and while challenging at times, not overly so. The committee feels that while a review of evaluative strategies may be warranted, an informal process will likely solve these issues.

The concerns expressed by students regarding the Nutrition and Reproduction course revolved around the practicality of the materials presented as they relate to the entry-level employment goals of the program. Students stated that while the instruction and materials were of high caliber, they questioned where they would be applying this knowledge within their early careers. The committee

suggests that this course be brought forward as a specific point of examination by 2020's NVC session, so that industry input can be applied to future curriculum development.

Facilities

The 2018 report caused no observable action. Expired reagents, first aid kits, and other infractions were not addressed. This further lends credence to the need of a curatorial staff member providing oversight. Correctable items are detailed in the 2018 report and should be revisited with a plan of action put into place that will promptly rectify infractions.

As stated, the committee continues to recommend a full time curatorial position. It is also recommended that the staff utilize down time in the summer to replenish supplies and make facility improvements. The committee was impressed with the status of animal and system designations. These were all up to date and easily identifiable. It also recommended that system SOP's be updated and evaluated regularly to preserve institutional knowledge.

The committee suggests that students maintain more consistent records between digital, paper and personal formats. Implementation of record keeping software (ZIMS, TRACKS, ORCA) would be a great tool for streamlining this process.

In the same vein of the discussion regarding increasing visibility, revenues, and efficiencies, it was brought to the committee's attention that the summer sessions leave the building and Aquarium Sciences facilities unused. Considering that maintaining a facility including life support systems and animals is a year-round effort and expense, the committee strongly supports the option of summer sessions for professionals seeking continuing education options. We believe this is an opportunity that many in our industry would happily seek out to help educate aquarists and keepers that have not previously had the benefit of a focused education in captive animal husbandry or exhibit care. We further suggest that this be included in the upcoming industry survey as a way to gauge potential industry support for these programs.

Overall, the committee was impressed with the appearance and upkeep of the facility. The improvements in the quarantine area were noted and appreciated again this year.

Summary/Conclusion:

To summarize, the 2019 National Visiting Committee enjoyed yet another productive and insightful visit to OCCC and the Aquarium Science Program. While areas of concern persist, 2019 saw large improvements in morale amongst both staff and students, a budding vision for the future of the program, and other very positive signs. Much of this improvement from 2018 we feel can be attributed to the current leadership of the program itself, and we congratulate Larry on his progress and the college as whole on securing such a great resource for the future of our industry.

A point of concern from this year was the lack of perceived support and understanding for the program from the administration of the college. It was very conspicuous to our committee that no administrative participation was part of our discussions, or that very minimal effort was made to meet with professionals who make large efforts in support of the program by their participation in the NVC. This feeling was furthered by revelations regarding the limiting of Larry's position to strictly an administrative role, and the presence of administrative-level recommendations from previous committees that had not been addressed in any substantive way, specifically recommendations regarding presented curriculum and staff positions.

With recruitment and enrollment limitations continuing to be a hurdle, we congratulate the program staff for continuing to think creatively and working to build relationships that should help address those concerns in the long term. We encourage a continuation in outreach programs to

increase the visibility of the Aquarium Science Program on a national scale, and offer our assistance wherever possible.

In conclusion, we found the Aquarium Science Program continues to be working through the process of defining itself in a dynamic period of time. With pressures of budgets, politics, industry changes and a myriad of other considerations, the committee feels the program has the personnel in place and is well positioned (with proper support from college administration) to respond to those challenges, continuing its' tradition of student success and contribution to our industry.