

QFC Mission

The QFC advances fisheries management with a focus on the Great Lakes basin and issues concerning fishery-targeted, threatened, and invasive species through development and application of quantitative methods, facilitation of collaborative approaches to science-based decisions, consultation on fishery-related questions, and education of future generations of quantitative scientists.

QFC Vision

The QFC will be a leader in advancing sustainable and effective fishery management through the development, application, and teaching of innovative quantitative and decision analytic methods.

Evolve - diversity, equity, and inclusion are core for charting QFC's path forward

Background: The prior QFC strategic plan that was drafted in 2012 did not address diversity, equity, and inclusion (DEI), which was an admitted oversight that the QFC leadership was anxious to correct in the revised plan. The QFC fully supports the assertion in the Department of Fisheries and Wildlife Strategic Plan that to strengthen our resilience and relevancy we need to intentionally incorporate principles of DEI in governance and ongoing work. The QFC affirms our commitment to welcome and support a diversity of people and perspectives in equitable and inclusive ways and in forums that empower staff and partners to learn and collaborate in dignity. During interviews conducted for the external and internal scan of the QFC leading up to this strategic plan revision, current and former staff indicated that the QFC was a safe and welcoming environment for learning with compassionate leadership. However, these positive sentiments must also consider that QFC staff composition has lacked diversity. Of current and former QFC graduate students and post-doctoral research associates, approximately 71% were male (74% of post-doctoral research associates, 70% of graduate students) and 86% were Caucasian (63% of post-doctoral research associates, 95% of graduate students). Those statistics suggest that the QFC needs to broaden its recruiting efforts, particularly for graduate students, to reach a greater diversity of potential applicants. Collectively, the QFC must strive for all staff to feel welcomed, supported, included, and treated equitably.

Goal 1.1. QFC comprises a diverse staff reflecting a range of racial, ethnic, gender, sexual, and other forms of identity.

Objective 1.1.1. Increase racial, ethnic, gender, sexual, and other forms of identity diversity.

- *Strategy: Expand recruiting efforts and implement targeted internships for under-represented STEM groups. Enact policies to support, retain, and promote advancement for all QFC staff regardless of identity.*

-recruitment in general is difficult, overall action might be to establish a summer internship program, perhaps with reserved seats for underrepresented;

Objective 1.1.2. Increase visibility of efforts to enhance staff diversity.

- *Strategy: Promote efforts to hire, support, retain, and promote individuals reflecting a range of identities through social media and direct communications, (conditional on the Elevate component of the QFC Strategic Plan).*

Goal 1.2. QFC culture and environment actively support equity and inclusion.

Objective 1.2.1. Implement effective, accessible, and equitable practices for identifying and addressing behaviors that undermine equity and inclusion.

- *Strategy: Enact guidelines and practices to address inappropriate behaviors that lead to perceptions of unhealthy workspaces and individual staff feeling undervalued, unsafe, and targeted. Interface with Diversity, Equity, and Inclusion Committees in FW and elsewhere at MSU concerning development of guidelines and practices. Ensure staff are aware that a healthy working environment consistent with FW and MSU guidelines is of paramount importance to the QFC through action and communication. Enact procedures that allow staff to report (anonymously if needed) issues related to feelings of inequity or exclusion.*

Objective 1.2.2. Use inclusive approaches and content that reflect diverse resource user experiences in course offerings, research, and outreach activities.

- *Strategy: Enact procedures and take action to promote equity and inclusion across the mission of the QFC so that successes of staff and supporting partner staff are not affected by an individual's background.*

Objective 1.2.3. Foster a supportive and collaborative culture, including constructive use of power and influence, as well as feedback mechanisms to recognize positive change.

- *Strategy: Enact and value activities that foster a supportive and collaborative environment including encouraging networking, rewarding collaboration, creating alignment around unifying goals, building relationships centered on trust, communicating transparently, and seeking and accepting staff input on operational improvements that will advance equity and inclusion. Identify opportunities for staff to participate in diversity and bias training and promote staff participation in that training.*

Action: review existing guidelines and training at the university, college, and/or department and align our procedures consistent with them. Directed communication with QFC staff that these procedures are followed at the center

Goal 1.3. QFC engages with a diverse group of stakeholders and rightsholders across its mission and promotes equitable inclusion of diverse groups and viewpoints in fisheries management.

Objective 1.3.1 Increase the network of stakeholders and rightsholders with whom staff collaborate on research and outreach projects beyond the traditional state, provincial, and federal groups to garner trust for future engagement.

- *Strategy: Use inclusive approaches and work with decision makers to identify the diversity of groups that may be affected by decisions for fishery management. Extend invitations to leadership of those groups to meet and learn more about each other and explore areas we could collaborate in the future.*

Objective 1.3.2. Expand the diversity of stakeholders and rightsholders that participate in research and outreach projects led by staff and encourage expanding diversity on projects that staff participate in but are being led by others

- *Strategy: Critically evaluate new research and outreach projects that will necessitate/benefit from collaborations across the broad group of stakeholders and rightsholders that may offer perspective on the project. Extend invitations to representatives from these groups to participate in projects led by QFC staff.*

We did hear a lot about how to engage better with Native Americans. Perhaps some ground work through this. Take specific actions to develop relationships with all CLC tribal groups and other major First Nation groups (SON) – 1854 Treaty Authority.

Develop a plan with SeaGrant Extension and perhaps others to better communicate what the QFC does

Explore - generate new knowledge relevant to inclusive fishery management decision making

Background: QFC researchers lead and conduct projects broadly intended to inform fisheries management. Areas of research include the determination of underlying life history/ecological characteristics, estimation/assessment of fish population dynamics and demographics, development of new methodologies for estimating assessing fish population dynamics and demographic, application of Decision Analysis (DA) methods to evaluate outcomes of alternative management strategies (e.g., harvest or stocking strategies or habitat modifications), and further development of DA methods including ways to engage with stakeholders and rightsholders. This research is conducted on fishery targeted, threatened, and invasive fish populations and stocks. Although our primary focus is the Great Lakes basin, QFC researchers sometimes engage in projects outside the basin. The QFC has a strong record of publishing peer-reviewed manuscripts and book chapters from research projects. On average, QFC researchers have published approximately 17 journal articles/book chapters per year since 2013. QFC researchers have published articles in 46 peer-review journals, including Journal of Great Lakes Research (27 articles), Canadian Journal of Fisheries and Aquatic Sciences (26 articles), North American Journal of Fisheries Management (17 articles), Fisheries Research (11 articles), and Transactions of the American Fisheries Society (7 articles). High impact-factor (IF) journals in which QFC researchers have published articles include Ecology (IF=5.499; 3 articles), Methods in Ecology and Evolution (IF=7.47; 2 articles), BioScience (IF=8.589; 1 article), Ecology and Society (IF=4.16, 1 article), Global Change and Biology (IF=10.863; 1 article), Proceedings of the Royal Society-B (IF=5.439; 1 article), and Science of the Total Environment (IF=7.963; 1 article). The QFC's research portfolio is supported largely by funding from external granting agencies (e.g., Great Lakes Fishery Commission, Great Lakes Fishery Trust, Michigan Department of Natural Resources), although some projects are supported through QFC base funding. Since 2013, QFC researchers have been awarded on average \$1.18 million dollars per year in external research funding on projects for which they are designated as PI or co-PI, although not all of this funding was necessarily designated to the QFC.

During interviews conducted for the external and internal scan of the QFC leading up to this strategic plan revision, mixed results were received about the future research direction of the QFC. Many of those that were interviewed indicated that the traditional focus of the QFC in areas like stock assessment and decision analysis remain relevant to fisheries management agencies, although at least some of those interviewed indicated that we should broaden our research focus to consider areas such as big data, climate change, wind energy and managing shared space, ecosystem-level modeling, broader (i.e., international-scale) research questions, and habitat-related questions. The view of the QFC in how to navigate these conflicting opinions is that we should strive to maintain our focus areas of stock assessment, population modeling, and decision analysis but expand collaborations with QFC affiliates and other researchers at MSU and beyond to expand the QFC's reach into these emerging areas. The external and internal scan additionally confirmed that collaborative decision making with rightsholders and stakeholders pertaining to fisheries management problems is only going to expand and the QFC needs to strongly consider this expanded need in staff training and future recruiting efforts.

Goal 2.1. QFC offers an exemplary and unique research program that meets the needs of fisheries management agencies.

Objective 2.1.1. Continually assess current and emerging challenges and opportunities that fishery management agencies are facing across a range of geographical and temporal scales and diverse fishery interests.

- *Strategy: Regularly engage with staff from fishery agencies in the Great Lakes and beyond in formal and informal settings to identify current and emerging agency needs. Enact a staffing model that allows the QFC to quickly transition to rapidly emerging partner needs.*

Objective 2.1.2. Increase number of faculty and academic staff with research background and interests in emerging areas anticipated to be important for fishery management needs in the Great Lakes basin.

- *Strategy: Work with supporting partners to increase funding to support additional QFC faculty with research interests and background in emerging areas. Allocate base funds to use as match for funding support from partners for new faculty positions in emerging areas relevant to fisheries management needs.*

Objective 2.1.3. Expand partnerships with agency and/or university researchers to meet broad-scale research needs of management agencies on topics including climate change, declining productivity in systems leading to possible decreases in sustainable harvest for exploited species.

- *Strategy: Allocate base funds as seed or matching funding to increase competitiveness for QFC researchers and collaborators in securing grants addressing broad-scale effects of issues like climate change and oligotrophication on fisheries management. Actively pursue partnerships with potential collaborators at other institutions, such as the University of Guelph Center for Ecosystem Management, to leverage respective expertise to tackle broad-scale research questions.*

-all research staff primarily supported to some degree (>5%) by QFC base funds to help with consulting projects (at least a 0.5 FTE across everyone)

-need to hire an individual whose duties primarily (>50%) is to work on support projects

-develop a plan for graduate students to also participate in consulting projects (when will it occur, how will it be supported, who will supervise) -

Goal 2.2. QFC is a leader in use and development of approaches for collaborative decision making among stakeholders and rightsholders with a range of competing interests to promote effective fishery management.

Objective 2.2.1. Maintain and foster research partnerships with the broader decision analytic community.

- *Strategy: Collaborate with decision analysis researchers globally through co-leading research projects, synthesis projects, conference sessions, and other academic or educational pursuits.*

Objective 2.2.2. Increase capacity of QFC staff to lead structured decision making projects and facilitate meetings involving diverse stakeholder and rightsholder groups.

- *Strategy: QFC faculty that lack training in structured decision making and meeting facilitation will obtain training in these areas. Allocate QFC base funding for QFC staff with developing interests in structured decision making and meeting facilitation to also obtain training in these areas .*

Recruit 2 faculty with SDM/Adaptive Management Expertise

All QFC faculty and other appropriate staff should be trained in SDM/meeting facilitation

Goal 2.3. QFC is an innovator of methodological advances in quantitative fisheries science.

Objective 2.3.1. Provide resources for QFC staff to maintain or develop skills and competencies needed to conduct innovative research in the areas of fishery stock assessment and decision analysis.

- *Strategy: Allocate QFC base funding for staff to participate in training in quantitative fisheries methodologies, particularly in areas concerning stock assessment, management strategy evaluation, and decision analysis. Increase staff participation in national and international meetings, symposia, and workshops where methodological advances are presented and discussed.*

Objective 2.3.2. Maintain and foster research partnerships within the broader decision analytic and fisheries stock assessment communities.

- *Strategy: Increase staff participation in national and international meetings, symposia, and workshops where methodological advances are presented and discussed. Engage more broadly (e.g., outside the Great Lakes basin, with new scientists and biologists) on collaborative projects, apply for more research project funding on projects relevant beyond the Great Lakes, and recruit broadly for online courses and workshops.*

Objective 2.3.3. Improve integration of advanced computing in research projects to make methodologies and results more efficient and easily reproducible.

- *Strategy: Develop a data management plan and approach for staff to follow so that data, code, and results are preserved and easily reproducible. Allocate base funding and encourage staff to obtain training in high end computing skills (use of high-performance computing and software carpentry).*

Set aside x amount of dollars each year for students/staff to travel to professional meetings/training in quantitative methods
QFC faculty make an effort to participate in national/international meetings

Educate - develop the next generation of quantitative fishery scientists

Background: There is a broad need for additional quantitative and decision analysis training for professional fishery scientists and managers. Cutting edge stock assessment and decision support require specialized statistical, modeling, simulation, and facilitation skills not provided in many fisheries undergraduate or even graduate programs. The QFC's education program addresses this need, with a primary emphasis of providing education to working fishery professionals and MSU graduate students and post-doctoral research associates. The QFC currently offers seven online non-credit courses (Programming Fundamentals Using R, Resampling Approaches to Data Analysis, Graphing with GGplot, Maximum Likelihood Estimation Software, Introductory Bayesian Analysis for Natural Resource Management, Simulation Modeling, Structured Decision Making). Two additional courses are planned for a 2022 launch (Introduction to Statistical Inference Approaches, Advanced R). Existing courses support two certificates (R programming and Statistical Inference), and there were 71 enrollments in these courses during calendar year 2021. The QFC has provided mentoring for 15 PhD students, 13 MS students, and 16 post-doctoral research associates since 2013. Some graduate students and post-doctoral research associates have benefited by enrolling in online courses, and online course material has been used as content supporting some graduate courses. Traditionally, the QFC has had limited engagement with undergraduates, with just a handful of undergraduate students employed or engaged in research projects or taking courses offered by the QFC.

During interviews conducted for the external and internal scan of the QFC leading up to this strategic plan revision, current graduate students and post-doctoral research associates indicated that there could be benefits from greater interactions with undergraduate students by involving them in research and other activities; similar thoughts have been expressed by other stakeholders and it has been suggested that MSU undergraduate students could be a largely untapped pool of potential graduate students. QFC graduate students also noted that the MSU Department of Fisheries and Wildlife lacks a coherent set of graduate courses supporting their programs. There were not consistent opinions as to the desired format for continuing education with some emphasizing the need for asynchronous modules and others the need for in-person workshops. Several comments were received about the need for more basic training opportunities for agency staff, and that for many agency staff our offerings may be too advanced.

Goal 3.1. QFC is a premier, nationally/internationally recognized educational hub for working professionals in quantitative fisheries and decision support techniques.

Objective 3.1.1. Maintain relevance of current course offerings by frequently updating courses with new content, regularly offering courses, and revising courses based on feedback received from students that have completed the courses.

- *Strategy: Consider online teaching needs when defining and filling new positions. Develop a long-term plan for offering courses and sustaining the online system in the context of potential staff turnover.*

Objective 3.1.2. Enhance the offerings of online courses to provide training in relevant topics consistent with the QFC's mission.

- *Strategy: Review existing course offerings, identify important gaps, and allocate or obtain funding to develop courses to fill gaps. Consider online teaching needs when defining and recruiting new positions. Allocate base funding to support development of course content materials by experts external to the QFC or MSU.*

Objective 3.1.3. Maintain regular offerings of in-person workshops and short-courses on emerging topics consistent with the stated mission.

- *Strategy: Obtain input from partners on courses that would be beneficial from an agency perspective. Use this information to develop and maintain an ongoing medium-term plan (1-2 years) of future course offerings.*

Goal 3.2. QFC provides rigorous, state-of-the-art, educational training to QFC and university students in quantitative and decision support methods in support of fisheries management.

Objective 3.2.1. Increase for-credit opportunities for graduate students at Michigan State University and other institutions using content developed for online courses.

- *Strategy: Work with FW/CANR/MSU administration to identify ways to recover costs through for-credit course offerings. Work to make current courses available to students outside MSU. When developing new courses, consider cost-effective means to deliver online courses as for-credit classes. For implementation – not a priority at this point unless someone gets interested or it becomes clear that the paywall hurdle is easier to deal with*

Objective 3.2.2. Increase involvement of graduate students on consulting and outreach projects to foster development of state-of-the-art skills in quantitative decision and analytic skills.

- *Strategy: Develop and implement a policy for QFC graduate student and post-doctoral research associate involvement in consultation projects with agency partners consistent with the idea that all will have the opportunity to consult on projects with appropriate mentoring and guidance.*

Implementation – see implementation plans under Objective 2.1.3. Low hanging fruit but need to revise offer letter to be clear that this is an expectation and what it will involve.

Objective 3.2.3. Increase student participation in non-credit educational opportunities to foster development of state-of-the-art skills in quantitative decision and analytic skills.

- *Strategy: Identify (and where needed create) workshops and short courses, both within and outside of MSU, that QFC staff can take to develop analytic skills. Allocate resources equitably so that staff and students can participate in training.*

Implementation – similar to travel set aside x amount of dollars for students/post-docs to tap into as needed for travel and teaching. Identify courses that students can actually take. Encourage staff to share courses they find that might be of broad interest for professional development

Objective 3.2.4. Increase opportunities for undergraduates to learn about and get involved in quantitative and decision-analytic research.

- *Strategy: Encourage staff to give guest lectures for senior undergraduate courses and give presentations to the MSU Fisheries and Wildlife Club. Develop projects appropriate for undergraduate students that could serve as research projects for undergraduate honor's students or hourly pay with developing interests in quantitative fisheries applications.*

Implementation – see the objective and reword to specific tasks. Broaden advertisement for positions to outside FW

Implementation - Develop and implement a long-term plan for offering courses and sustaining the online system in the context of potential staff turnover and questions about best forms for delivery. There is an interaction between long-term plan and the question about courses and formats. Long-term plan needs to be flexible as we learn new things. Consider staffing. See strategy for objective 3.1.3

Set annual plan for courses to be offered in a year and communicate to partners

Start experimenting with courses and formats that may serve the needs of partners better

Engage - extend the value of our work beyond the academy; listen, learn, collaborate, and empower all

Background: A primary motivator that led to establishment of the QFC was the need on the part of supporting partner staff to seek out short-term assistance on quantitative and decision analysis subjects in support of Great Lakes fishery management. The QFC provides this support and has been highly sought out by supporting partner staff. During interviews conducted for the external and internal scan of the QFC leading up to this strategic plan revision, the continuing need for this support was widely identified by representatives from supporting partners. Representatives also expressed the importance of the QFC being recognized as an unbiased resource for partners in quantitative fisheries applications and facilitation for management decisions, as this has resulted in a high degree of trust among our partners and external rightsholders and stakeholders. These discussions also indicated that while QFC staff are engaging partners and related stakeholders and rightsholders, capacity to continue to provide a high level of support can at times be strained and should be increased, funding sources should be considered into the future, and staff should work to potentially form new collaborations with agencies

and university researchers within and outside of the region. Finally, although QFC has garnered a high level of support and trust from current agency staff and leaders, the QFC needs to expand our efforts to communicate our expertise and achievements to partner agencies to ensure that new and upcoming leaders and staff continue to see the value in our work and engage with us.

Goal 4.1. QFC provides an unbiased and independent voice for facilitating interjurisdictional cooperation among management agencies, stakeholders, and rightsholders in the Great Lakes region.

Objective 4.1.1. Maintain the capacity for QFC staff to provide technical information and assist in decision-making processes, while avoiding advocating for particular decisions.

- *Strategy: Develop a set of policies, procedures, or principles for staff to understand the importance of being able to provide unbiased/independent advice on fisheries related issues. Seek out training for staff about the role of scientists and advocates.*

We are recognized as independent but never had a formal policy. Seems we want to maintain but do we need a formal policy to ensure this? Should this be part of a once-year staff discussion/TIQS regarding who we are and what we do. Urge caution on social media and how that it is perceived. There may be wording in the faculty handbook that could be borrowed from. Main point to get across to new staff is that it is important for us to continue to be recognized as independent and able to work with a variety of groups and that should not be jeopardized.

Find some literature about their on advocacy. Look at professional societies and some of their advocacy standpoints. Trace back to some of the references included in the policy statements.

Objective 4.1.2. Increase capacity of faculty, academic staff, and students to facilitate meetings involving diverse stakeholder and rightsholder groups.

- *Strategy: QFC faculty that lack training in structured decision making and meeting facilitation will obtain training in these areas. Allocate QFC base funding for QFC staff with developing interests in structured decision making and meeting facilitation to also obtain training in these areas. When creating and filling new positions, consider facilitation interests and skills as important qualifications for the position.*

Covered under earlier objective.

Goal 4.2. QFC is sought by supporting partners to provide expertise on quantitative and decision support subjects in support of fishery management activities and delivers timely and high-quality products and outreach to partners.

Objective 4.2.1. Increase faculty and academic staff capacity to participate in consulting/outreach projects for supporting partner agencies.

- *Strategy: Allocate more post-doctoral staff time for participation on consulting projects. Develop a staffing plan to include staff that will focus the majority of their efforts on consulting projects. Formalize procedures where a certain percentage of effort of all post-doctoral staff is devoted to working on consulting projects for partners.*

Covered under earlier objective as far as post-doc staff time. Continue to try to hire an additional staff researcher that will be focused on consulting. Continue to assess staff ability to work on short-term consulting projects that arise unexpectedly.

Objective 4.2.2. Improve tracking of consulting/outreach projects and keep requestors of projects informed as to status of requests.

- *Strategy: Implement a ticket-based system for tracking consulting projects modeled after other ticket-based systems used at MSU (e.g., HPCC). Develop policies and procedures for staff working on consulting projects that specify frequency of communicating with requesters on project status.*

Action is the strategy. Not necessarily sure it is a ticket-based system but new process is needed. Once the process is decided on the policies and procedures to be worked on. Maybe the reliance is on Michelle to solicit input weekly and update some tracking system.

Objective 4.2.3. Better inform QFC partners as to the capabilities and capacity of staff to aid in quantitative and decision analytic methods to support fishery management

- *Strategy: Develop a communication plan that reaches multiple levels within partner agencies as to the QFC's ability to provide assistance. Develop a plan among QFC leadership and senior staff for regular attendance at Lake Technical Committee meetings and Lake Meetings. Periodically at these meetings provide updates as to the capacity of the QFC to take on new projects.*

Action – Enact a policy and schedule that at least one QFC representative will attend a Lake Technical Committee meeting at least once a year and report on items being worked and ability to take on new projects. Seems we want to be sure to cover the Lake Technical and Lake Committees. Also identify two key people at an agency to communicate capacity (may or may not overlap with membership on the Lake Committees and Lake Technical Committees).

Goal 4.3. QFC has diverse and stable partnerships that provide sustained funding or support to achieve its full mission.

Objective 4.3.1. Expand partnerships in the Great Lakes basin to include all Council of Lake Committee agencies as well as other signatories to the Joint Strategic Plan for Great Lakes Fisheries Management.

- *Strategy: Engage in conversations with leaders/representatives of agencies that are not presently supporting partners as to potential avenues for those agencies to provide funding support.*

Not much to add other than it should be done when an opportunity arises. Not a high priority. Probably little traction if we initiate but receptive to others mentioning it.

Objective 4.3.2. Expand partner funding streams to include more stable and consistent sources to reduce annual variability in partner support.

- *Strategy: Engage in conversations with leaders/representatives of agencies that are supporting partners as to potential avenues for funding support to become more stable and provide more opportunity for expansion.*

Not a high priority. Was successful when IFA became a problem. Address if needed when money is a limitation.

Objective 4.3.3. Expand partnerships to include fishery agencies beyond the Great Lakes basin that have needs consistent with the QFC mission.

- *Strategy: Engage with partner agencies outside the Great Lakes basin as to their quantitative and decision analysis needs and how those needs might be filled by QFC staff. Explore mechanisms at MSU as to how funding from agencies outside the basin could be provided at low F&A rates.*

Same as above. Not a high priority. Be receptive.

Goal 4.4. QFC facilitates/promotes collaborative projects and products addressing complicated fishery management issues.

Objective 4.4.1. Improve interactions with QFC affiliates and actively pursue collaborations with affiliates that leverage respective expertise to address important fishery management topics.

- *Strategy: Meet annually with QFC affiliates and affiliate groups to update what faculty and staff have been working on and discuss future collaborative opportunities on projects and products.*

Action – strategy is the action. Be cautious about overselling what we can do without funding.

Objective 4.4.2. Increase participation with university and agency researchers and biologists on synthesis projects addressing large-scale fishery management questions.

- *Strategy: Increase active participation and engagement by QFC leadership in international meetings (e.g., World Fisheries Congress, American Fisheries Society). Brainstorm synthesis projects that could benefit Great Lakes fishery agencies and convene working panels to discuss how such a project could be completed.*

Strategy is the action in terms of participation at international meetings. When attending the meetings, QFC staff should actively participate (i.e., leave the hotel room), be receptive to synthesis projects. Proposing synthesis projects not a high priority. Higher priority is meeting the needs of current projects. Consider using CEM symposium or revive Ricker visiting scholar as a means to initialize synthesis projects. Consider piggybacking something on AFS Grand Rapids meeting. Arrange symposium, provide funding to bring influential people, and do something else with us.

Elevate – bring awareness and understanding of our work to all

Background: Traditionally, QFC staff have focused their efforts on communications to academic peers through publication of articles and chapters in peer-reviewed journals and books and technical reports, as well as presentations at scientific meetings. The QFC leadership acknowledges that this is a very myopic view of communication and that staff need to do a better job of communicating to a wider audience, including to the general public, administrators at Michigan State University and partner agencies, and the international scientific community. Further, the information that we communicate should not be limited to our research work, but who is doing it, how it is being done, the potential and realized benefits of our work to fisheries management, and who we are doing it with. During interviews conducted for the external and internal scan of the QFC leading up to this strategic plan revision, several comments were received regarding awareness of the QFC within MSU at higher administration levels and within the fishery science community at national/international levels beyond the Great Lakes basin. Further, given the QFC's unique position as a university-affiliated resource center for state, provincial, and tribal fishery agencies across a large geographic area, it is important for communication efforts to highlight the QFC's capacity to provide assistance to management agencies and its overall significance to Great Lakes fishery management. Since the QFC was first created, there have been attempts at establishing a social media presence through the use of newsletters, blogs, and tweets, but these efforts have been inconsistent and not sustained.

Goal 5.1. QFC effectively communicates its contributions and capabilities to Michigan State University, signatory agencies of A Joint Strategic Plan for Management of Great Lakes Fisheries, and to national/international fishery agencies, organizations, and institutions.

Objective 5.1.1. Better inform academics and the general public as to QFC activities and the products that result from these activities.

- *Strategy: Work with FW communications director to develop regular social media procedures. Work with groups such as Michigan SeaGrant to more widely communicate QFC activities and the products that result from these activities.*

Objective 5.1.2. Improve communications with administrators and staff of fishery agencies in the Great Lakes basin to increase awareness of QFC accomplishments as well as future capabilities.

- *Strategy: Increase attendance at Council of Lake Committee and Council of Great Lakes Fishery agencies and similar meetings. Develop a plan among QFC leadership and senior staff for regular attendance at Lake Technical Committee meetings and Lake Meetings, and other meetings in the Great Lakes basin regularly attended by partner agencies. Make efforts to establish regular contact with key leadership of partner agencies.*

Objective 5.1.3. Improve communications with national/international fishery agencies and organizations to help in broadcasting accomplishments and capabilities.

- *Strategy: Expand the Visiting Scientist program and make a concerted effort to host at least one visiting scientist annually. Increase active participation and engagement by QFC leadership in international meetings (e.g., World Fisheries Congress, American Fisheries Society). Work with alumni to identify additional opportunities for communication. Explore opportunities for collaborative work on common issues with national/international collaborators.*