

Shellfish Aquaculture Brainstorming Workshop

June 25 & 26th 2002

WORKSHOP PROCEEDINGS & SUMMARY

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CSR

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WORKSHOP PROCEEDINGS & SUMMARY

Introduction

This report describes the process, results and recommended next steps of the *Shellfish Aquaculture Brainstorming Workshop*, organized and hosted by the Centre for Shellfish Research at Malaspina University-College, held in Nanaimo June 25 and 26, 2002.

How do we build a world-class shellfish aquaculture industry in British Columbia?

The goal of the workshop was to address the question: *How do we build a world-class shellfish aquaculture industry in British Columbia?*

What would be an appropriate and attainable growth vision for the shellfish aquaculture industry over the next five years?

The 2-day workshop began with several keynote presentations, which served as useful background information and “food for thought” in preparation for the first plenary discussion. The objective of the first plenary discussion was to arrive at a consensus for a 5-year vision for the shellfish aquaculture industry in BC. The following question was posed to the group:

What would be an appropriate and attainable growth vision for the shellfish aquaculture industry over the next five years?

A broad group of industry stakeholders met to discuss ways to build a world class shellfish aquaculture industry

A diverse and comprehensive mix of over 50 participants were involved in the workshop. Those attending included industry players in the traditional culture species of Pacific oysters and Manila clams (BCSGA members and other key industry producers alike), processors, marketers, new species proponents, First Nations representatives, coastal community representatives, academic institution representatives, seafood industry associations, consultants and representatives from a wide variety of federal and provincial government agencies.

Never before has such a unique and broad group of shellfish aquaculture stakeholders gathered to discuss industry development issues and the key components of the development of a world-class industry. Strong leadership has been the result of this collaborative (industry/government/academic) approach to industry development. The brainstorming workshop served as a mechanism for key collaborative industry planning, while the Steering Committee, named at the end of the workshop, will form a leadership group that will assist in implementation of the Vision and Action Plan. (See Participant List – Appendix 1)

Acknowledgements

The workshop and proceedings was made possible with the financial support of:

- BCMAFF Seafood and Aquaculture Development Branches
- AquaNet

This report was prepared by: Ruth Salmon and Brian Kingzett, Kingzett Professional Services Ltd. and Don Tillapaugh, Centre for Shellfish Research with input from the Steering Committee.

The authors wish to recognize and thank all of the participants for their valued contributions that formed the basis for this report.

Workshop Summary

SHARED VISION

All of the participants discussed and agreed on a shared 5-year vision for the industry. This was the first-time that a shared vision had been developed by industry and government working together. When evaluating other successful and effective jurisdictions, one of the factors that played a key role in industry success (i.e. New Zealand Shellfish industry, Norway Finfish industry), was an industry/government partnership in the planning process.

The 5-year time horizon was established because it was within the working future of most/many of the individuals participating in the discussion and as such, had a significant buy-in/ownership component.

Considering only the currently predominant species of Pacific oysters and Manila clams, the group agreed that a reasonable goal for industry growth was \$50,000,000 in wholesale value in five years, or as the group coined the phrase “\$50 million in 5”. The assumptions that led the group to agree on this growth projection were as follows:

- Growth rate is projected at 18% per year
- There is an approximate increase by 20% in tenure base to 2500 ha total

'50 in 5' is a realistic industry growth goal, considering only Pacific oysters & Manila clams

When the group evaluated the existing plans for new species the conservative industry growth projection was raised to \$70,000,000 in wholesale value in 5 years

- Productivity is doubled across the industry to approximately \$20,000 per hectare (wholesale value). For example this is the wholesale revenue capable of being generated from 2 oyster rafts (deep-water), or 6,000 lbs of Manila clams or 7500 dozen oysters (beach culture) per hectare.
- There is only a minor increase in the total number of companies, although some consolidation or restructuring may be anticipated given natural market forces.

When the group evaluated the existing plans for new species to be added to the product mix (mussels, geoduck, varnish clam, scallop) as well as the increased production of oysters and clams through First Nation tenures, the conservative industry growth projection was raised by \$20,000,000 for a total shared vision of **\$70,000,000 in wholesale value in 5 years.**

NEED ANALYSIS

A key finding of the workshop was the importance placed on several over-arching industry issues

The workshop organizers predetermined 6 broad industry “needs” which were later supported by the whole group – the 6 needs were felt to be critical building blocks to support the vision of “\$70 million in 5”. After the plenary 5-year vision exercise was complete, the organizers divided the participants into 6 groups. Each group was led by a facilitator and supported with a recorder. The participants in each group were then tasked with conducting a thorough “needs analysis” by identifying all of the issues, contributing factors and needs that would have to be addressed to achieve the broad category need.

Following the breakout session, each facilitator reported their group’s findings in plenary.

A key finding of the process was that while the 6 broad industry “needs” were all different, many of the issues and contributing factors required to achieve those “needs” were repeatedly identified across a number of groups. The results of the “needs analysis” exercise are included as Appendix 2.

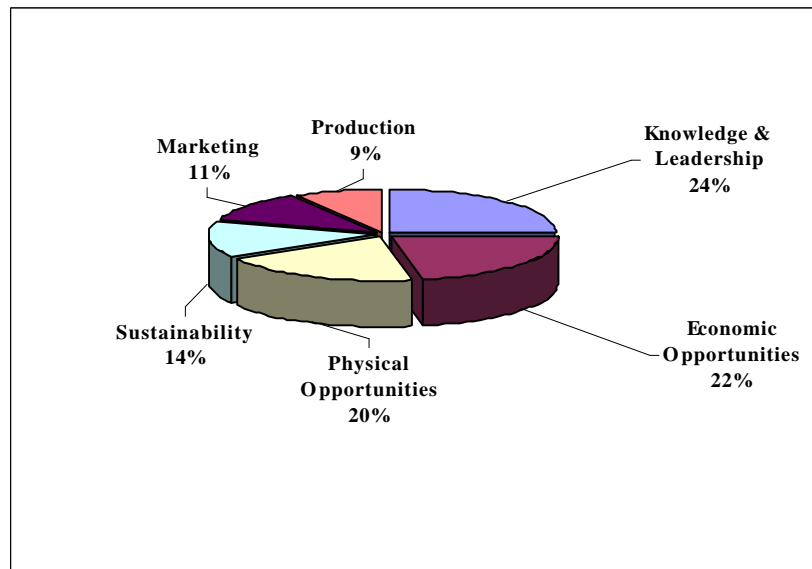
PRIORITIZATION OF KEY NEEDS

After all groups had reported, the organizers led a prioritization exercise. The workshop participants were asked to prioritize the 6 major needs in order of overall importance as key building blocks for the development of a world-class shellfish aquaculture industry. The following ranking reflects the results of that exercise:

Ranking of Industry Needs

- 1) **Knowledge and Leadership (24%)**
- 2) **Economic Opportunities (22%)**
- 3) **Physical Opportunities (20%)**
- 4) **Sustainability (14%)**
- 5) **Marketing (11%)**
- 6) **Production (9%)**

Figure 1. *Ranking of Needs*



Following the first prioritization exercise, participants were then asked to go beyond the broad categories and attach a priority red sticker (10 per person) to any of the issues, or contributing factors to those issues, that would have to be addressed in order to support the 6 broad needs listed above. The placement of the red stickers were reflective of the important issues requiring immediate attention within the broad needs. While all issues and needs that were voiced in the workshops were recorded as

significant, the prioritization exercises were useful in determining issues of major concern, as well as providing a focus for next steps.

Industry Development Needs

LEADERSHIP

Workshop participants identified **leadership** as a critical need for building a world-class shellfish aquaculture industry in BC.

Workshop participants identified leadership as a critical need

Clearly, the key driver for this leadership must come from industry itself. A vehicle for communication, as well as a strong voice with politicians were identified as 2 important roles of industry associations.

Provincial and federal government leadership was also a significant component of the overall leadership need, with provincial playing a stronger role than federal. It was identified that the main leadership role for the lead aquaculture agency, BCMAFF, was to develop appropriate policy, regulations and legislation, in addition to playing a leadership role in coordination with other government agencies. Both levels of government were seen to have a role to play in marketing, with federal playing a larger role than provincial.

Political Leadership, or the will to make it happen, was considered to be key for industry success

However, more important than leadership in the regulatory or legislative arena, was the need for **leadership by both federal and provincial politicians to make it happen**. Workshop participants identified this repeatedly as a critical need.

There was also emphasis placed on the need for leadership to create economic opportunity for **First Nations peoples**.

KNOWLEDGE

Significant emphasis was placed on the various aspects of 'Knowledge' in the shellfish aquaculture industry. The **Centre for Shellfish Research** (CSR) was identified as the lead organization for knowledge creation in the shellfish aquaculture industry. However, to successfully achieve the knowledge component, it was identified that **financial resources** from the

CSR is considered as being the lead for knowledge creation in shellfish aquaculture industry

shellfish aquaculture industry

provincial and federal governments were also a critical need. In addition to knowledge creation, the **dissemination of knowledge** was raised as an important component of the knowledge arena. While a list of dissemination techniques was brought forward, **networking, technology transfer and publications** were given emphasis.

ECONOMIC OPPORTUNITIES

While Economic Opportunity ranked second behind Knowledge & Leadership in the overall positioning of importance, there was more emphasis paid to the supporting issues around economic opportunities than any of the five other needs. Clearly, the need for *clear government policies that provide industry with a climate of certainty and support* was by far the most important issue within the framework of economic opportunity. While there were a number of factors that, if government could put in place, would provide the sense of economic certainty and support (i.e. financial support, R&D, facilitation of international trade, environmental protection) the **need for new tenures** was the most significant factor. In addition, a **streamlined licensing process** (one stop shopping) and **access to new species broodstock** were identified as additional needs that related to secure economic opportunities.

Clear government policies that provide industry with a climate of certainty and support are critical

The importance of developing an effective **Public Awareness & Education Campaign** was identified as a key need in the development of an economically vibrant shellfish aquaculture industry. A **strong industry association** was identified as the appropriate group to take the lead on such an initiative - once again, raising the importance of having such an organization during the early stages of an industry's development.

Public Awareness & Education is critical for creating economic opportunities

Human Health and Stock Health Management issues were acknowledged as critical to the long-term growth of this industry. Included in this category was the importance of having consistent, widespread **biotoxin and growing water quality monitoring** available on the BC coast, along with an appropriate **Code of Practice, farm based HACCP** system and **stock health certification**.

Access to **New Species** was identified as another key issue in the development of a world-class shellfish aquaculture industry. Resolution of this issue was found to involve **risk management**

Access to New Species is key in the development of a world-class shellfish aquaculture industry

The shellfish aquaculture industry must shift from being production driven to being market driven

Enabling and appropriate federal government policy is critical to achieve physical requirements necessary for industry growth

and financing, access to broodstock and seed, a licensing process that would enable rather than prohibit access, as well as **access to pilot areas** for new species experimentation. Other workshop groups also identified the need for new species as an important issue.

Market Development and R&D were raised as important issues in the Economic Opportunities group, as well as in many of the other workshop groups. Once again it was felt that a **strong industry association** should play a key role in the area of market development as well as directing and recommending appropriate and necessary R&D projects.

In addition, it was noted that the shellfish aquaculture industry must shift from being production driven to being market driven. In this regard, the maintenance of a **supply/demand balance** was also identified as a vital component for industry health. To assist in maintaining this subtle supply/demand balance it was suggested that an **integrated production and marketing plan** would be beneficial, rather than simply producing without a future plan for processing or marketing.

The need for **capital** was identified as another significant component in the development of an industry. To attract capital it was noted that investor confidence remains critical, and in part, this may be assisted by **longer-term tenures** and the **availability of crop insurance**.

PHYSICAL OPPORTUNITY

This category placed third in overall importance behind economic opportunities, and it received significant emphasis during the process of prioritization.

Again, the key to allowing the physical opportunities in the industry to be realized would be in **enabling and appropriate federal government policy**. This would require a shift in attitude and the development of an enabling culture, rather than the current restrictive approach to industry development. To a large extent DFO was specifically identified, especially in terms of **the** Canadian Environmental Assessment Agency (CEAA). Enabling policy also included a streamlined and **reasonable site application process**.

Infrastructure development is key to success

Ability to **access new sites** was acknowledged as another critical need in realizing the physical opportunities in this industry.

Many of the issues behind this need involved social considerations, such as the need for **community support** as well as appropriate and secure **regional zoning**. Public education and an industry **Code of Practice** were identified as contributing factors to this issue as well.

It was recognized that access to sites and site flexibility were also contingent on the **planning process**, with a strong recommendation that industry needs to be involved. The confirmation and possible strengthening of the **Right to Farm legislation** was identified as another need to assist with site flexibility.

The need for sufficient **infrastructure** remains critical to ensuring the development of a strong and successful industry. This ranges from the need for enough **hatcheries; access to upland tenures, docks and wharves, well-trained labour, suitable equipment**, as well as sufficient **value added processing**. **Water quality monitoring** was also identified as a key component when the necessary infrastructure was assessed.

ENVIRONMENTAL SUSTAINABILITY

The most critical requirement under the sustainability theme was **appropriate governance and leadership** - at the local, industry, provincial and international level. Appropriate governance was defined by the group and included the following elements: fair, efficient, supportive, predictable, responsive, accountable and well coordinated.

Economic Sustainability was a significant aspect of the overall sustainability theme. To create economic sustainability, a **joint industry/government vision** was agreed to be necessary, similar to the kind of vision that was agreed upon on the first day of this visioning workshop. In addition to a joint vision, the creation of a **positive investment climate** would be critical to achieving economic sustainability.

It was thought that a more **balanced industry structure** and the necessary **infrastructure/ economies of scale** would contribute to

a more positive investment climate, and therefore economic sustainability. The availability of a **wide diversity of products**, each with their own **quality standards** was thought to be an important underpinning of an economically sustainable industry. The importance of **communicating industry benefits** as well as **marketing** was also raised as a need under the economic sustainability banner.

Environmental Sustainability was another significant aspect of the overall sustainability need. Here again, a **balanced industry structure** was identified as a key aspect of environmental sustainability. Also, both **environmental and water quality monitoring** were identified as a critical need to ensure environmental sustainability for the shellfish aquaculture industry in BC. Related to monitoring, the need for **quality standards** and the implementation of a **food safety program** were found to be aspects of overall economic sustainability of the industry.

A critical aspect of environmental sustainability is the **initiation of necessary R&D projects that examine interactions between industry methods and the environment**, as well as **new and emerging environmental issues**. **Environmental Code of Practice implementation** and the **identification, protection and allocation of capable land** were identified as key components of environmental sustainability for the industry.

Ecological interaction studies are required to ensure environmental sustainability and gain public confidence

Another important aspect of sustainability is **Social Sustainability**. Here, **land use planning** through an **open consultation process with stakeholders** was identified as the most important part of obtaining social sustainability for the industry. **Implementation of the Environmental Code of Practice** was again raised as a key component of achieving a “social license” to operate or social sustainability.

MARKETING

Industry Leadership was repeated again as a key need in the marketing session. While this workshop group did not identify an existing group that should take the lead, it was felt that whatever the organizational structure was that led the initiative, that structure would require **appropriate funding, government support and First Nations involvement** to be effective. The role of such a group would include **communications, partnering with research providers** as well as **business planning**.

Consistent product quality and supply are key to marketing

A market driven approach to production can be achieved through grower training and education

Efficient and flexible site utilization and management will lead to increased and sustainable production

Product Development was identified as a critical component of a successful marketing campaign or initiative. To support product development, **technical and market research** would need to be ongoing. In addition, **adequate processing capacity, access to new species, sufficient capital and government support** were key components identified as part of a successful product development program.

Quality and Safety Standards were felt to be a key aspect of successfully marketing BC shellfish aquaculture products. After necessary **research** is complete, any marketing initiative must be based upon quality products that are consistent and safe. Verification of a quality/food safety program was raised as important, however, it was strongly felt that **industry should take the audit role**, not government.

In addition to quality and safety, **consistent supply** of product is critical to maintain long-term relationships with buyers. Consistent supply is based on providing the necessary **education to new growers** as well as **appropriate government policies and regulations** (e.g. sanitary surveys and biotoxin monitoring). These services are critical to consistent supply and to minimize harvesting interruptions. In addition, critical to consistent supply was thought to be a **positive partnership and dialogue between producers and processors**.

Another theme of the marketing group was the need for research information to be disseminated to industry – including **market and trade information**.

When exploring the appropriate quality and safety standards and programs, the group felt that **certification strategies** should also be considered in the mix, which could include **branding** the product to enhance consumer identification and loyalty. Certification strategies would require **research and government support** to move forward.

PRODUCTION

There were many aspects of the production theme that were examined. Efficient **site utilization** was identified as a key aspect of production. This would require the ability to work within a

Grower training in production, business and marketing is essential to long term business viability

Investment attraction requires certainty, assured opportunity, market access and comparative production cost information

Government support to build research capacity is vital

flexible management plan, the ability to **modify the site** as required, as well as implementing production **research** that would ultimately lead to **appropriate policies**. This flexibility would require that there was an **element of experimentation** allowed on sites, as well as the ability to farm **multiple species**. Incorporating these changes would mean that an **administrative change** to how sites are managed by government would need to be implemented.

Training for growers was a key need identified to achieve significant production. This would involve **course development** with the **cooperation and assistance of industry** members. In addition to training in the area of production methods and techniques, training in the areas of **business** and **marketing** was identified as a significant need.

To attract **investment**, which would then drive production, there were a number of needs raised. **Market access and certainty** would need to be in place – if so, **contract rearing** could be a component in achieving consistent supply for the market. In addition to contract rearing, other **non-traditional approaches** to production and servicing the market should be explored.

Benchmarking the cost of production is something the industry needs to allow growers and potential investors to understand the parameters around production and industry growth. This information would also be helpful in assisting growers and processors in the development of sound **business plans**.

Research and Technology transfer was a significant component of the production theme. Research is needed in the areas of **predator control, genetics, new species, production costs & production benchmarking**. Government support to develop the research capacity remains critical.

In order to achieve the level of production that BC requires to be a world-class industry, **seed availability** is critical. **Cost** of seed must not be prohibitive and the **quality** of that seed must be high. **Better hatchery technology** and **genetic research** were raised as a need to ensure quality, low cost seed in BC.

Improved productivity in the shellfish aquaculture industry requires **mechanization**. To move the industry forward from a technological perspective, the necessary **economies of scale** needs to be in place, as well as **access to capital**. Specifically, the need for **intertidal mechanization** was raised as a key

requirement. **Training/technology transfer** is important for growers to move ahead in this area.

In addition to mechanization on the production site, **secondary infrastructure** is also necessary to move production ahead. This involves the processing sector and includes such things as **refrigeration** and **depuration facilities**. In addition to processing, **transportation** must be adequate including road, dock and wharf infrastructure.

To allow new production techniques and information to be **transferred to business**, there needs to be a number of things in place to help **reduce risk**. **Enabling programs**, increased **education** and **cooperative marketing** were three needs identified. A collaborative industry organization would assist in this regard as well.

Strategic Growing was a key need identified to achieve increased production. This term means “growing for the market”, rather than just simply growing product. It could involve **contract rearing**, but would always require a **strong relationship between the producer/processor and market**. Strategic growing also requires **grading standards** to improve consistency and quality, as well as the ability to obtain **market intelligence**. The ability to continually **transfer this information to industry** remains important as well.

“Strategic growing” or growing for the market is critical for success

Conclusions

The most significant finding of the brainstorming process was the consistency in key issues and contributing factors that were identified. While each of the 6 groups focused on a different “need” critical to building a world-class shellfish aquaculture industry, there was considerable repetition between the issues and contributing factors required to support the “need”. Several key issues were raised repeatedly, and their significance and importance to industry development were highlighted in the prioritization exercise.

The following is a list of those significant issues, in general order of importance or priority:

The Need for:

- 1) Strong Industry Leadership & a Strong Industry Association
- 2) Government Support, Certainty and Leadership
- 3) Academic Leadership and Vision
- 4) Public Education & Communication
- 5) Site Access & Site Flexibility - clear rules & enabling policy
- 6) Streamlined Application Process
- 7) Research & Tech Transfer
- 8) Training
- 9) Food Safety and Quality
- 10) Infrastructure & Mechanization
- 11) New Product and Market Development
- 12) New Species/Seed Availability
- 13) Investment Attraction
- 14) Environmental Sustainability
- 15) Social Sustainability

A significant finding is that several over-arching issues are fundamental for industry success

Next Steps

At the conclusion of the workshop, the group arrived at a consensus as to how it would proceed. The following outlines the agreed upon next steps:

Steering Committee Established, led by Don Tillapaugh, CSR

- ❑ Andrew Morgan, DFO
 - ❑ Lorne Clayton, IEC
 - ❑ Al Martin, BCMAFF
 - ❑ Blair Salter, VIEDA
 - ❑ Tim DeJager, Desolation Sound Oysters
 - ❑ John Willow, Land and Water BC
 - ❑ Pat Bugera, BCSGA
 - ❑ Bill Pennell, Malaspina University-College
1. Steering Committee to oversee the development of an Action Plan, to be based on output from the workshop. Once approved, Action Plan and Workshop Proceedings to be made available to all workshop participants (through email or website)
 2. Committee to develop alliances and extend communication to other seafood organizations (BCSFA, BC Seafood Alliance)
 3. Development of a Communications Strategy & Action Plan
 4. Next Meeting of all Workshop Participants to review Action Plan & Communications Strategy – October 2, 2002 at the Pacific Aquaculture Exchange in Campbell River
 5. Action Plan & Communications Strategy to tie in with visioning work being done by the Office of the Commissioner for Aquaculture Development (OCAD). Communication to next meeting of Council of Fisheries and Aquaculture Ministers was recommended (meeting mid-October)

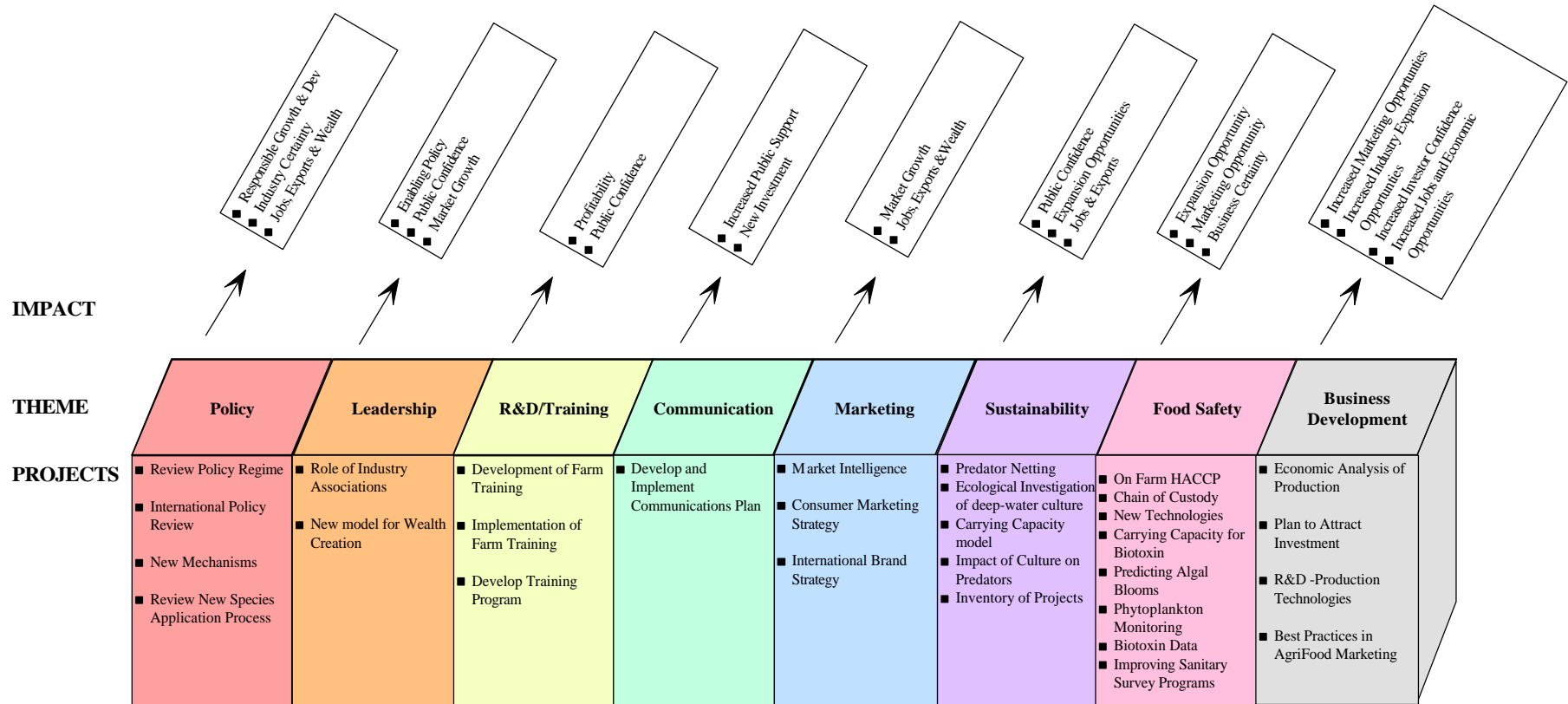
Recommendations for Action

Because of the over-arching consistency of certain key issues, and the high priority attached to them, it became apparent these would form the strategic issues for an Industry Development Strategy or “Action Plan”. Further analysis of the results indicated that a series of targeted research themes would provide the necessary “building blocks” that are critical for long-term industry growth and development. Specific research projects are associated with each building block, providing the critical information needed to systematically solve industry issues, providing key outputs for industry growth and sustainability, and ensuring a solid foundation for long-term success.

The following section outlines the eight key themes, which are necessary to build a world-class industry in BC.

- A. Policy & Regulatory Development**
- B. Leadership**
- C. R&D/Training**
- D. Communication**
- E. Marketing**
- F. Environmental Sustainability**
- G. Food Safety**
- H. Business Development**

In the following section, the research “Theme” is linked with the “Needs” identified in the brainstorming workshop. In addition, one or more key projects have been identified, that if undertaken, will measurably increase the chances of reaching the goal of “\$70 million in 5” and building a world-class shellfish aquaculture industry in BC. More detail on each project, along with suggested lead and support agencies and organizations, can be found in Appendix III.



No matter what issue was being discussed, the need for enabling policy development was fundamental and essential for resolution of the issue

Theme A – Policy & Regulatory Development

Needs Raised in Workshop - Addressed through Policy & Regulatory Development Theme

1. Need for government to exhibit the “Will to Make it Happen” (Leadership)
2. Need for strong government policies, certainty and support (Economic Opportunities, Physical Opportunities)
3. Need for fair, efficient, supportive, predictable, responsive and accountable governance (Sustainability)
4. Need for new species, access to broodstock and seed, enabling licensing, access to pilot areas (Economic Opportunities, Physical Opportunities, Sustainability, Marketing, Production)

Project 1: Development of policies to enable shellfish aquaculture diversification in BC

To evaluate the opportunity cost of the current policy regime affecting shellfish aquaculture diversification in British Columbia. This project will involve a review of a number of policies from both the Provincial and Federal government.

Project 2 : An International comparative policy investigation

To conduct a comparative investigation of the shift from fisheries to aquaculture in other countries where fisheries are managed under an ITQ (individual transferable quota) system, including lessons learned and application to BC.

Project 3: New Mechanisms for Policy Development in BC

To explore new mechanisms for improved capacity, breadth and depth of public policy development in BC to support sustainable shellfish aquaculture development.

Project 4 : Review of New Species Application Review Process

To document the current application process for new aquaculture species and make recommendations for improvements to the process and the information/application package.

OUTCOME

A clearly articulated, enabling policy framework facilitating shellfish aquaculture development of new species in BC in a timely, transparent, efficient and cost-effective manner.

IMPACTS

- Enables Responsible and Sustainable Growth and Development of Industry
- Creates Industry Certainty, resulting in investor confidence and positive investment climate
- Provides for Species Diversification opportunities
- Optimum utilization of leases for all potential species
- Increased jobs, exports and wealth creation

Theme B – Leadership

Needs Raised in Workshop - Addressed through Leadership Theme

1. Need for Strong Industry Leadership (Leadership, Economic Opportunities, Marketing, Production)
2. Need for Strong Government & Academic Leadership (Leadership, Knowledge, Economic Opportunities, Marketing, Production)

Project 1: The Role of an Industry Association in Industry Development & Innovation

To initiate a comparative examination of national and international agri/aqua food industry organizations to determine what kind of role industry organizations play in all aspects of industry development (i.e. knowledge creation and dissemination, policy development, marketing, human resource training etc.) as well as what mechanisms are in place to assist them in contributing to industry innovation and success. The New Zealand Mussel Council, the Norwegian Fish Farmers Association, as well as other agri-food sector organizations such as the BC Wine Institute would be included in this review.

From this review, provide recommendations for creative governance approaches that are not currently being considered within the BC shellfish aquaculture industry. Recommendations for appropriate funding mechanisms should form a key section within this project.

Project 2: A New Model for Wealth Creation in the Knowledge Based Economy

To identify, examine and compare the development of aquaculture industrial clusters in Canada. This will be followed by recommendations for opportunities and approaches for targeted support to create new aquaculture clusters or grow existing ones. Through aquaculture innovation, wealth and job creation potential will be realized.

OUTCOME

- 1. An inclusive, professional, industry driven organization supported by a secure funding base, delivering key services and programs and facilitating the development of an enabling policy and regulatory framework.*
- 2. The establishment of a BC shellfish aquaculture industrial cluster to facilitate wealth creation from knowledge.*

IMPACTS

Development of a collaborative, enabling regional shellfish regulatory framework that supports and facilitates the development and diversification of a world-class industry

- Increased public confidence and acceptance
- Significant market growth while maintaining profit margins

Theme C- R&D/Training

Needs Raised in Workshop - Addressed through R&D/Training/Production Theme:

1. Need for Industry Training & Technology Transfer (Knowledge, Leadership, Production)
2. Need for R&D specific to BC (Leadership, Economic Opportunities, Sustainability, Production)
 - Intensive pilot work on new production techniques, species and technologies

Project 1 Phase 1: Development of Shellfish Aquaculture Training Farm

To resolve the developmental issues around accessing and managing a shellfish aquaculture training farm.

Project 1 Phase 2: Implementation of Shellfish Aquaculture Training Farm

To complete the necessary steps to make the training farm operational. Some of those steps will include: acquisition of site, purchase of technology, construction of facilities and development of training infrastructure.

Project 2: Development of provincial training program for new entrants and existing industry members

To develop an accredited multi-level, articulated provincial training program that reflects industry's current and future needs. Training programs are required for both new entrants and existing industry members.

OUTCOME

Increased productivity from a highly skilled and educated workforce operating in an environmentally and socially sustainable manner while remaining globally competitive.

IMPACTS

- Increased profitability leading to re-investment and job creation and an improved climate for outside investors
- Increased public education and public confidence
- Stronger industry buy-in with local R&D/training site

Theme D- Communications

Needs Raised in Workshop - Addressed through Communications Theme

1. Need to attract new investment opportunities to BC coastal communities (Physical Opportunities, Sustainability)
2. Need to garner community support & consensus around shellfish aquaculture (Physical opportunities, Sustainability)
3. Need to include First Nations in mix of industry players (Sustainability)
4. Need for Public Awareness & Education (Economic Opportunities, Sustainability, Marketing)
5. Need for Political & Regulatory Support (Leadership, Production)

Project 1 Phase 1: The Development of an Industry Communications Plan

To develop an effective industry communications strategy and plan that will serve to convey correct and timely industry information to a variety of key targeted audiences. This information flow will assist in building alliances in communities through increased public trust and confidence - the potential of the shellfish industry to make a significant contribution to rural prosperity must be communicated. By positioning the shellfish aquaculture industry in BC as a vibrant and internationally competitive industry, outside investment will be attracted.

Project I Phase 2 : Implementation of the Communications Plan

To implement the communications plan, using a series of communication tools, which may include the use of websites, magazine & newspaper editorials, trade shows, tours, brochures, direct mail, newsletters and highway signage.

OUTCOME

Increased knowledge and understanding of the value of the industry - resulting in establishment of positive community alliances, increased support from politicians, regulators, media, and heightened interest from outside investors.

IMPACTS

- Increased public support
- Increased political support through communities
- Positive/balanced media reporting
- Attraction of new investment opportunities

Theme E- Marketing

Needs Raised in Workshop - Addressed through Marketing Theme

1. Need for Market Research Information (Leadership, Knowledge, Economic Opportunities, Sustainability, Marketing)
2. Need for Domestic & Export Marketing Plan Strategies (Knowledge, Economic Opportunities, Sustainability, Marketing)

Project 1: Market Intelligence/Trade Information for Shellfish Aquaculture

To undertake a global competitive analysis of the shellfish aquaculture industry. This marketing analysis would allow industry members to predict marketing trends (i.e. future supply and demand) which would increase their ability to plan and make more informed business decisions.

Project 2 Phase 1: Development of a BC Consumer Generic Marketing Strategy

To develop a generic marketing strategy that would lead to increased domestic consumption and sales. This strategy would involve targeted initiatives to increase consumer demand for BC shellfish products.

Project 2 Phase 2: Implementation of a BC Consumer Generic Marketing Strategy

Project 3: Evaluation of International Shellfish Brand Strategy

To investigate the development of a BC export brand for farmed shellfish product(s).

OUTCOME

Increased market intelligence and knowledge, along with stronger consumer demand for the product, would lead to informed business decisions and improved market share.

IMPACTS

- Greater profitability
- Increased exports and jobs
- Wealth creation

Theme F- Environmental Sustainability

Needs Raised in Workshop - Addressed through Sustainability Theme

1. Need for R&D projects that examine interactions between industry methods and the environment (Sustainability, Knowledge, Production)
2. Need for R&D projects that address emerging environmental issues (Sustainability, Knowledge)

Background

The potential of the shellfish aquaculture industry to provide jobs and economic development opportunities in BC coastal communities has been widely recognized. While filter-feeding shellfish are the “canaries” of coastal health, concerns have been raised about the “industrialization” of the industry and potential ecological and social interactions that this may cause. In addition, outstanding ecological interaction questions are seriously constraining the tenure approval process and adding measurably to the application cost and processing time.

Expansion of the BC shellfish industry will be most easily accomplished by demonstrating the environmental and social sustainability of shellfish culture operations. Implementation of a series of research projects based on sound scientific principles and providing peer-reviewed information would improve scientific understanding of both positive and potential negative effects of shellfish culture technologies. This would lead to the development of sustainable culture practices, increased public confidence and an improved regulatory framework and review process. This public confidence in sustainability would result in increased expansion opportunities, jobs and exports.

A series of research investigations on the ecological interactions of shellfish culture activities are proposed as follows.

Project 1 : The Effect of Anti-Predator Netting on Manila Clam (*Venerupis philippinarum*) Recruitment, Survival, and Growth in Baynes Sound, BC.

This M.Sc. project is underway and supported by the Centre for Aquaculture and the Environment at UBC and the Centre for Shellfish Research at Malaspina U-C.

Project 2 : An Ecological Investigation of Suspended (deepwater) Oyster Culture Operations.

The Centre for Shellfish Research (CSR) is proposing a comprehensive study to investigate the ecological interactions caused by suspended oyster culture operations (raft, long-line systems) which documents both sides of the ecological balance sheet- the positive and the negative. A multi-disciplinary team will be assembled to investigate interactions on all trophic levels and tie the results into an ecological model. This study will provide a vehicle for a variety of graduate and post-graduate investigations as well as an opportunity for undergraduate assistants.

Project 3: Development of a Carrying Capacity Model for BC Shellfish Aquaculture Operations.

This project will build on the work outlined in the recently published Gorge Harbour Study (Richardson and Newell, 2002) to develop a generic model for use in site assessments, site planning to optimize productivity, and to ensure environmentally sustainable development.

Project 4: The Impact of Shellfish Culture Activities on Natural Shellfish Predators

This study will examine the effectiveness of shellfish culture practices targeted at predator exclusion and the effects they may have on predator populations.

Project 5 : An Inventory of Relevant Science and Ongoing Projects on the Potential Ecological Interactions of Shellfish Aquaculture Activities

To document and create an inventory of all information pertaining to the potential ecological interactions of shellfish culture in BC.

OUTCOME

Increased scientific knowledge base leading to clarification of ecological interactions issues.

IMPACTS

- Streamlined, cost effective, and timely tenure application process
- Increased public confidence
- Decreased regulatory burden and costs
- Increased expansion opportunities
- Increased jobs and exports

Theme G- Food Safety

Water quality is critical to shellfish farming. Food safety is of paramount concern in the production and sale of a product that is frequently consumed fresh and/or raw. Industry requires on farm food safety systems to be developed and implemented, the assurance of growing water quality protection as well as efficiencies in management and delivery of shellfish water quality monitoring programs.

Needs Raised in Workshop - Addressed through Food Safety & Water Quality Projects

1. Need for On- Farm Food Safety Program (Marketing, Economic Opportunities, Sustainability)
2. Need to provide Legal Security for Growers and Processors (Economic Opportunities)
3. Need to examine benefits of Certification (Sustainability, Marketing, Production)
4. Need for Quantitative Product Information (Knowledge, Economic Opportunities, Marketing)
5. Need to provide assurance of “farmed” origin for fisheries regulators, resulting in future licensing opportunities for new species (Economic Opportunities, Physical Opportunities, Sustainability, Production, Marketing)
6. Need for appropriate and necessary Water Quality Monitoring Programs (Economic Opportunities, Physical Opportunities, Sustainability)
7. Need for Health and Safety of shellfish products (Economic Opportunities, Sustainability, Marketing)
8. Need for Quality Assurance (Economic Opportunities, Sustainability, Marketing)
9. Need for Improved Operational Efficiencies on the farm (Production)
10. Need for Consistent Supply of Product (Marketing)

Project 1: Development of an On -Farm Food Safety System

To implement an On- Farm Food Safety System paralleling that being developed for agriculture products through the Canadian On-Farm Food Safety System (COFFS).

Without formal quality control and verification procedures, there is potential for increased risk of shellfish safety problems. Implementation of an On-Farm Food Safety Program for shellfish aquaculture would make a positive contribution to the industry's credibility in the domestic and international markets and ultimately, would provide consumers with additional assurances about the safety and quality of BC's farmed shellfish products.

Project 2: Development of Chain -of -Custody Assessment Guidelines & Standards

To develop and implement a chain -of- custody for shellfish aquaculture products coming from BC.

Project 3: Capacity Building for Biotoxin Monitoring

To build capacity for biotoxin monitoring in BC through the transfer of the IMB technology to the Applied Environmental Research Laboratory at Malaspina University – College.

Project 4: Predictive and Real Time Monitoring of Harmful Algal Blooms in BC

To investigate and develop capacity for predictive and real time monitoring of harmful algal blooms in BC.

Project 5 : Assessment of Phytoplankton Monitoring Programs in BC

To assess the cost benefit of developing and operating phytoplankton monitoring programs in BC by examining BC capacity as well as Canadian and international examples. In addition, the project would make recommendations for format and implementation of phytoplankton monitoring programs in BC.

Project 6: Improving Analysis and Dissemination of Current and Historical Marine Biotoxin data

To work with CFIA to provide an analysis of historical BC marine biotoxin data in a format that can be readily accessible and updated regularly.

Develop mechanisms to make historical analyses and current data available to regulatory, research and industry communities through advanced information technologies.

Project 7: Improving Sanitary Survey Programs in BC/Canada

To complete a review and assessment of scientific advances in the identification of sources of faecal contamination and their potential application to water quality monitoring programs in Canada.

To investigate and develop capacity in BC for Bacterial Source Tracking methodologies (i.e. genetic fingerprinting of bacterial pollution sources).

OUTCOME

Enhanced protection of human health and safety, through verification of quality and safety and greater monitoring coverage, will result in improved business certainty and public confidence.

IMPACTS

- Increased marketing opportunities
- Increased industry expansion opportunities
- Increased investor confidence
- Increased jobs and economic opportunities

Theme H- Business Development

In order for the industry to reach its production goals of “\$70 million in 5”, individual shellfish operations need to have the tools to increase production efficiently, including access to capital, increased mechanization and adequate infrastructure.

For businesses to develop, all operators require accurate business information to plan effectively and attract investment.

In addition, new marketing alliances and partnerships must be explored to create strong marketing opportunities over the long term.

Needs Raised in Workshop - Addressed through Business Development Projects

1. Need for Private Sector Champions within Local Government (Leadership, Sustainability)
2. Need for Information Dissemination (Leadership, Knowledge, Production)
3. Need for Access to Capital (Economic Opportunities, Sustainability, Production)
4. Need for Public Awareness and Education (Economic Opportunities, Sustainability)
5. Need for Infrastructure & Mechanization (Economic Opportunities, Physical Opportunities, Production)
6. Need for Site Flexibility & Utilization & Strategic Growing (Production)

Project 1: Bench marking and Economic Analysis of Shellfish Aquaculture Production

To conduct an economic assessment of various culture methodologies in use on existing farms to determine an aggregate baseline of the costs and returns of operating various types of shellfish culture operations.

Project 2 Phase 1: Develop a Marketing Plan to Attract Outside Investment to BC shellfish industry

To market the BC Shellfish Industry to outside investors with the goal of raising capital to allow increased production, processing and marketing efforts.

Project 2 Phase 2: Implementation of the Investment Attraction Plan

To implement the marketing plan, attract investment and expand growth of the industry.

Project 3: Research and Development into Shellfish Aquaculture Production Technologies

To conduct projects which examine and develop improved culture methodologies in order to enhance the efficiency and competitiveness of the industry while maintaining goals of industry sustainability.

Project 4: Review Best Practices in Ag/Food Marketing (Domestic & International)

To recommend marketing alliances and structures that might work to advance the BC shellfish aquaculture industry, based on a review of best practices in shellfish/seafood and other food industry marketing.

OUTCOME

Enhanced business and production skills, resulting in increased production, investment attraction and industry growth and sustainability.

IMPACTS

- Increased marketing opportunities
- Increased industry expansion opportunities
- Increased investor confidence
- Increased jobs and economic opportunities

Shellfish Aquaculture Brainstorming Workshop

APPENDIX I

Participant List



CSR

Workshop Participant List

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