

Constructing Partnership:

A Delphi Study of Shared Resource Management in the North Yukon



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Abstract

Shared resource management (SRM) offers an important approach for future stewardship of resources and is intended to blend Aboriginal and government management approaches, gain greater community support, and enhance the effectiveness of numerous resource management functions. Innovative methods are needed to achieve and advance the ambitious goals of power-sharing, equity, and the integration of knowledge inherent to SRM. The goals of the present study were to develop and test a method for First Nation people and government resource managers to explore the characteristics of effective SRM and to identify its essential elements for the north Yukon. A standard Delphi method was modified to specifically accommodate communication among Vuntut Gwitchin experts, Yukon government experts, and federal government experts. This dissertation examines the effectiveness of the modified Delphi method, its impacts on participants, and the key characteristics that contributed to its success.

The modified Delphi method succeeded in engendering participation, in facilitating cross-cultural communication among diverse experts in remote locations, and in generating critical, structured thinking about a complex, common problem. Characteristics of the approach that contributed to these accomplishments included expert selection and motivation, communication adaptations, conflict management, and maintenance of a positive group climate. Participating experts experienced social learning, empowerment, and personal and professional change. Eleven essential elements of north Yukon SRM were identified, namely: a strong community-based approach to SRM; development of a common SRM vision and shared goals; skilled facilitation of a SRM group; partnership building efforts; elimination of cultural biases and stereotypes; effective communication among SRM partners; involvement of effective Aboriginal and government SRM representatives; collaboration among government agencies and First Nations to collect, understand, and store knowledge and information related to both science-based resource management systems and traditional environmental knowledge and management systems; using all available knowledge and information to make SRM decisions; development and use of effective SRM communication methods and mediums; and fulfilling the communication requirements of SRM. Findings in this research suggest that the modified Delphi method may have relevant application in other SRM settings and cultural contexts, as well as to broader cross-cultural issues.



Definitions

SRM: shared resource management, which is also known as joint management or co-management, involves the sharing of power, management functions, responsibilities, and benefits between at least two parties with interests and values related to joint resources.

Delphi Method: originated in the 1950's as a tool to forecast future technological events and societal trends, it has evolved into an idea generating, communication, and decision making approach for research and policy development. It involves the anonymous, independent participation of experts. It is an iterative process and provides for reflection and the feedback of results to participants.

Delphi Expert: a term used in this study to delineate research participants. Expert is a term commonly used throughout the Delphi literature and was used in the present work as a term of acknowledgement and respect. Expertise is defined broadly as the acquisition of experience, special skill in, or knowledge of north Yukon resource use and management.



Introduction

SRM regimes differing in structure, legality, and cultural diversity are being established throughout Canada for different purposes. These SRM initiatives have met with varying degrees of success, suggesting that the ambitious SRM goals of power sharing, fairness, local relevance, long term sustainability, and the integration of knowledge systems and values are difficult to achieve.

Recent work emphasises the need for innovative research methods to examine the structure, operations, and outcomes of effective SRM. To date, the examination of SRM has focused on specific SRM regimes and employed standard ethnographic techniques, including interviewing, participant observation, focus groups, and workshops. In the present research, a novel approach to explore the fundamental characteristics of effective SRM was undertaken using the Delphi method. This technique has been used in the past as an idea-generation, communication, and decision-making aid. In this study, a standard Delphi process was modified to provide a framework within which people from diverse cultural backgrounds and in remote locations could work together on common issues.

This study engaged three groups of people whose effective participation was required through the Vuntut Gwitchin First Nation Final Agreement (VGFNFA) for SRM in the north Yukon: the Vuntut Gwitchin, resource managers from Yukon government agencies, and resource managers representing federal government agencies. I aimed to develop a method for First Nation people and government managers to explore the characteristics of SRM and to generate informed, creative, and useful information about the essential elements of effective SRM in the north Yukon.



Study Methods

- This Delphi application involved six iterations and each, except the first which initiated the process, consisted of four stages: a feedback stage, a data collection stage, a content analysis phase, and a data reduction stage.
- Delphi participants were selected using a four-step process of nomination and review based on explicit criteria, including recognized authority, representative experience, sufficient expertise, willingness to contribute, and communication skills.
- Experts' responses remained anonymous. Experts had freedom to dissent with the group's view or to add new information. Experts participated independently and asynchronously within a specified time frame each round.
- A standard Delphi approach was adapted to accommodate constraints imposed by distance, cultural considerations, communication differences, cost, and convenience. Specific adaptations arose from the principal researcher, VGFN advisors, the community researcher, and local translators. The study assumed an adaptive management approach to monitor and further modify the Delphi method by conducting in-progress evaluations at the end of each round.
- Modifications to the Delphi method included: establishment of a community researcher within Old Crow; employment of local translators; the cultural translation of Delphi questions; the re-design of research workbooks; the cultural translation of Delphi feedback; the re-design of Delphi feedback workbooks; activities to build relationships among experts; different forms of remuneration; use of electronic communication; three different data collection procedures for government experts, traditional land users and First Nation employees, and Elders; intensive contact procedures; and surveys to monitor participant satisfaction.
- Both group content analysis and individual content analysis procedures were applied to transcripts, translations, and written responses to reduce the volume of Delphi input each round in a concise, understandable manner.
- The integrity of data was confirmed through a verification process and four reliability checks performed on content analysis, including analysis team checks, community researcher checks, inter-rater reliability tests, and Delphi expert checks.
- The majority judgement was used to progressively reduce data, to focus the scope of Delphi rounds, to distil experts' responses in a straightforward manner, to empower participants to complete the next Delphi round by determining the group's priorities. Although Delphi experts were asked to reconsider their judgements based on the group's input each round, the emphasis of this study was on the expression of diverse positions rather than generating consensus.

Study Design

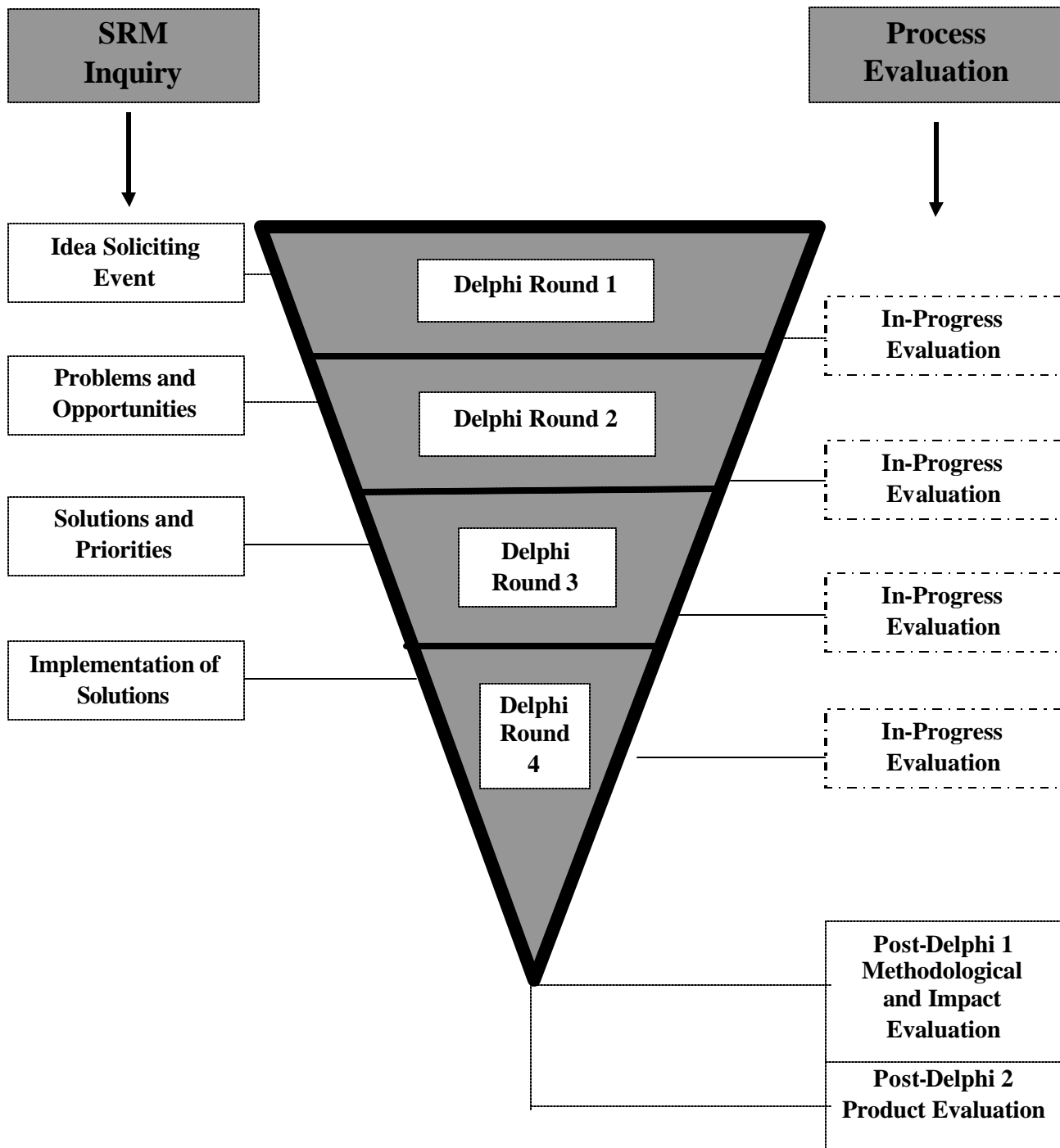


Figure 1: The Delphi process depicted as an inverted pyramid. Through each round of research, the scope of the discussion was narrowed and refined. Two rounds to evaluate the method, impact, and products of the research followed.



Overview of Findings

The following discussion focuses on two aspects of the research: 1) the modified Delphi method, including its major accomplishments, key characteristics of the process that contributed to success, and its impacts on participants; and 2) the essential elements of SRM in the north Yukon as identified by Delphi experts. Future applications and adaptations of the modified Delphi method are reviewed.

Findings About the Modified Delphi Method

Major Accomplishments

- The modified Delphi method was successful in bringing experts with diverse backgrounds together to work on a complex, common problem when it was not practical or desirable for them to do so in person. Both qualitative and quantitative findings in this study indicated that the modified Delphi method succeeded in *engendering participation, facilitating cross-cultural communication, and generating critical ideas and structured thinking.*
- This study succeeded in securing and sustaining the commitment of experts. Approximately two-thirds of potential panelists consented to serve in this Delphi study, an acceptance rate commensurate with the literature. A total of 15 Vuntut Gwitchin experts and 14 territorial and federal government experts participated. Experts comprised a diverse group with respect to culture, language, education (formal/traditional), power base (professionals/land users; centralised authority/customary authority; bureaucracy/community), knowledge base (literate/oral; scientific/traditional), gender, age, and location. One government expert withdrew in Delphi round 2; one Vuntut Gwitchin expert withdrew in Delphi round 3; and, sadly, an Elder participant passed away. The overall expert attrition rate of 10% in the present study was well below the general reported range; one-third to one-half of individuals are expected to quit a Delphi project. Follow-up with non-respondents in the present study indicated they dropped out of the project for personal reasons related to family, work, and educational commitments, not because of lack of interest in the topic nor because of dissatisfaction with the study design or its implementation.

- High response rates indicate that participants believe a Delphi study is worthwhile, well designed, and effective. In this research, the average response rate each round of 98% was well above that published in the literature, which ranges from a high of 86% to a low of 27.4%. The high response rate in the present study was especially extraordinary because experts reported their participation was time consuming and the study lasted for six rounds (i.e., a standard Delphi inquiry extends for two to four rounds).
- The modified Delphi method was an effective method for structuring group communication among Vuntut Gwitchin experts and government experts. Participants explained that they were able to express themselves *honestly, openly, sincerely, thoughtfully, and actively*. The process allowed them to bring their values, knowledge, concerns, and experiences into the Delphi discussion. However, communication is not merely presenting information to others but includes responding to information in action, word, or thought. This dynamic process was realised using the modified Delphi method; information generated by the group in one round was considered, then refined and elaborated upon in the next. Feedback clearly influenced experts' opinions and understanding. Experts reflected on and revised their views, voiced concerns, and reacted to differing viewpoints as the project progressed. Delphi experts focused on issues of mutual concern and most felt a sense of belonging to the group, developed a group identity, and developed a sense of ownership of the process and outcomes. Experts were able to influence the design, content, and direction of the present Delphi process. Cross-cultural communication is a process that must overcome substantial barriers, including differing assumptions, values, backgrounds, experiences, and areas of expertise. When Delphi participants disclose the 'how and why' of their views, in-depth communication is occurring. Communication in the present study went beyond the exchange of opinions and biases to reveal the conceptual basis of beliefs (i.e., the reasons, assumptions, and rationale underlying experts' thinking). Experts indicated that the modified Delphi process helped them to understand and assess other's perspectives and improved upon many experts' experiences in face-to-face groups.
- The modified Delphi method allowed experts to deal systematically with a complex task and represented a novel, interesting way of analyzing and discussing SRM issues. It improved both the generation of critical ideas and the structured collection and processing of information from experts. Results of the present study indicated that no single person possessed the scope or detail of understanding about SRM that

emerged from the project. Experts believed that the quantity and quality of ideas produced in this Delphi study were superior to those developed in most face-to-face communication exercises. It was the researcher's opinion, supported by various people who studied the results, including the analysis team, translators, and the community researcher, that the results were surprisingly fruitful in terms of their detail, direction, and level of disclosure. On the basis of both the large quantity of materials produced by participants (e.g., an average of 21 pages of transcript per person during each Delphi round) and the quality of their input, the modified Delphi method fostered focused idea generation.

Key Characteristics

- Numerous characteristics of the modified Delphi method contributed to its accomplishments. These characteristics can be divided into two broad categories relating to *expert selection and motivation*, and *managing group interaction*.

Expert Selection and Motivation

- This Delphi application was effective because it identified genuine experts and sustained their participation. The expert selection process succeeded because it expanded the standard concept of expert and used effective expert selection procedures and expert selection criteria. Expert characteristics were also basic determinants of success. The Delphi panel included a representative range of the views and expertise involved in north Yukon SRM and experts were highly motivated to participate in the project.
- Structured communication using the Delphi method is possible only when success is achieved in motivating experts' participation. If experts are unmotivated, they are likely to abandon the research. Ten major motivational factors were identified in this project. Awareness of these factors may aid researchers in assessing whether or not to use the modified Delphi method and may provide ways to ensure long-term commitment and in-depth contributions. Motivational factors included: personal and professional relevance of the study; dissatisfaction with the current state of SRM; a project well-timed to initiate change; potential to learn and grow personally and/or professionally; respect for and trust in the membership of the Delphi group; confidence in the Delphi approach; concern for personal performance; participation

incentives; a sense of responsibility to members of the Delphi group; and, the potential for useful outcomes.

Managing Group Interaction

- Basic features of the Delphi method combined with methodological adaptations undertaken in the present study overcame numerous cultural, psychological, and professional communication barriers. These included: cultural differences, interpersonal differences, the impacts of non-verbal communication, the influence of environmental factors, and logistical barriers. The present research provided opportunities for clear delineation and equitable consideration of differing views in a non-threatening environment. It overcame many of the communication problems arising from face-to-face group dynamics.
- Differences in understanding, perceptions, attitudes, values, and preferred actions are at the root of most conflict. Although conflict can be valuable in making groups evaluate ideas and seek alternative solutions, it can also be detrimental by interfering with communication and productivity. Poorly managed conflict is common in SRM and acts as a major drain on resources and effort, damages relationships, and restricts information flow. It results in poor decisions, low commitment to implementation, and fosters future tension and mistrust. The present Delphi research properly managed conflict. It maintained task focus and avoided negative conflict, while still allowing for divergence of opinion and the generation of alternatives.
- Delphi co-ordinators must pay attention not only to accomplishing Delphi tasks, but to building relationships among group members. The Delphi approach used in this study aimed to remove barriers between experts that may have inhibited the development of open and in-depth communication. Biographies reduced feelings of disconnection, gave experts a better understanding of their Delphi audience, and increased confidence in the Delphi group. Background reports also reduced isolation, provided experts with common ground, focused attention on SRM issues, and set the tone for the level of disclosure and structured thinking required. The bilingual glossary provided a common working language and emphasised the need for explicit Delphi contributions. The project logo and slogan increased participants' enthusiasm for the project and engendered a feeling of teamwork.

- Although the interpretation and analysis of qualitative data was complex and time consuming, it was warranted. Qualitative feedback helped experts to understand one another's similarities and differences, and enhanced the group's potential for creativity and insight. The use of code names and participant quotes injected experts' voices, characters, and styles into the discussion. Experts could follow others' thinking from round to round, respond specifically to others' contributions, recognise their own input, and feel their contributions were valuable.
- Avenues for experts to exchange ideas inside and outside the process reduced participants' isolation and increased their commitment level. In-progress evaluation provided participants with an opportunity to present concerns, ask questions about the group's task, suggest improvements, and explain what they liked about the process. By listening and responding to these evaluations, researchers let experts know their involvement was important enough to influence the design of the study. Regular contact with experts improved group climate.
- The Delphi method reduced the level of risk involved in trusting other experts. Anonymity overcame mistrust and protected experts from future harm; it allowed experts to share their perspectives honestly and openly. Self-disclosure is an important element in establishing and maintaining trust. The Delphi method allowed experts to deliberately communicate personal and private information about themselves to others much earlier than would be expected in face-to-face groups. Self-disclosure passes through five predictable levels, including cliché communication, facts and bibliographical information, personal attitudes and ideas, personal feelings, and peak communication. Based on researcher's observations, the Delphi group quickly reached level four self-disclosure and certain experts ascended to peak communication when they shared personal insights that could have resulted in rejection (e.g., divergent attitudes, spiritual beliefs, intimate feelings).
- Based on experts' evaluation, several researcher qualities and skills emerged as important in this Delphi application. Delphi researchers should possess the qualities and skills outlined in the following table.

Delphi Researcher Qualities and Skills	
Qualities	• Credible or trustworthy
	• Congruence between words and actions
	• Open
	• Authentic
	• Sense of humour
	• Expressive and emotive
	• Empathetic
	• Democratic leadership style
	• Flexible
	• Homogeneity with experts
Skills	• Observational skills
	• Written and oral communication skills
	• Listening skills
	• Teaching skills
	• Co-ordination skills

Impacts on Participants

- Participation in the present Delphi study had a number of positive impacts on experts. These impacts were categorised into three themes including social learning, empowerment, and action. Social learning encompassed cognitive enhancement (i.e., the acquisition of knowledge such as gaining technical competence or learning about the values, preferences, impressions, and feelings of others) and moral development (i.e., an ability to make judgements about right and wrong and to put aside egoistic demands for the greater good). Empowerment involved connecting with self, and enhancing people's ability to assert themselves and to take initiative. Action involved personal and professional change; the modified Delphi was an animating process and stimulated experts to assess their competencies as communicators, problem-solvers, and decision-makers. The long-term benefits of this single experience can only be speculated upon, but it is reasonable to expect improvement in future cross-cultural communication experiences based on the learning and personal development experts initiated in this study.

Limitations of the Delphi Method

- Limitations of the modified Delphi method relate to feelings of isolation and loneliness resulting from low personal contact, restricted continuity and synergy, limited relationship building potential, and the vulnerability of a participant-centred process. In addition, the findings of a Delphi study may be difficult to implement if powerful individuals outside the process (e.g., decision-makers) fail to buy-in.

Suggested Adaptations of the Modified Delphi Method

Suggested modifications for future applications of the modified Delphi method include:

- Additional opportunities for social Delphi group interactions
- Side conversations
- Conversation histories
- Improving the timing of feedback materials
- Securing organisational commitments
- Increased task leadership from researchers
- Combining the Delphi method with face-to-face group work.



Findings About Shared Resource Management

The second major outcome of the modified Delphi method relates to the essential elements of SRM identified by Delphi experts. In the following discussion, these essential elements are subdivided into five areas related to SRM participants, SRM partnerships, SRM communication, SRM knowledge, and SRM negotiation.

SRM Participants

SRM Representatives

- SRM depends heavily on the character and talents of the individuals involved. Representatives are important agents of communication, decision-making, and achievement in SRM.
- Careful representative selection improves the chances that the SRM vision and goals will be realised. Each SRM partner should come to internal consensus on the main selection criteria to be used. Several criteria were advanced to aid in the selection of SRM representatives.
- People should be chosen for their knowledge, skills, interest, and positive personal characteristics. Effective representatives have extensive knowledge of the environmental, cultural, and social aspects of SRM. SRM representatives are reflective people who readily grasp problems and solutions and are inclined to action. They are capable of fairly representing the needs and interests of their constituents. They also listen to and respect the ideas and knowledge of their counterparts. They are accountable for their words, decisions, and actions. Effective representatives are committed to co-operation and long-term solutions, which entails evaluation and learning, high performance expectations, and well-developed communication and co-ordination skills.
- First Nation and government agency representatives have distinctive requirements. Aboriginal participants should be traditionalists, active on the land and in community life, and understand technical, scientific issues as well as government policies and processes. An ability to stimulate community involvement in SRM is another essential prerequisite. Government agency representatives must combine cultural awareness

and sensitivity with advanced listening and communication skills. They must be open to change, power-sharing, and extensive professional re-orientation.

- Systems of SRM representation face several challenges. Representative selection must be open and free from coercion, nepotism, or corruption. Community heterogeneity makes representation challenging at the local level. Communities and organisations must design internal accountability systems, although these may be costly to develop and enforce. SRM groups require internal continuity and stability in membership.
- Responsibility for successful systems of representation does not fall only to individual members but also to their constituent organisations. Contributions of supplementary technical, financial, and personal support, as well as organisational capacity and information resources can improve representatives' performance.

SRM Facilitators

- SRM aims to develop effective and balanced partnerships among diverse people. Professional facilitation to support relationship building, SRM process construction, negotiation, and conflict mediation is often necessary to meet these core goals. A facilitator can be pivotal to the success of SRM regimes.
- Facilitators must bring a combination of knowledge, perspectives, and skills to bear on the practice of SRM. In this study, experts advanced five key characteristics of an effective facilitator: independence and neutrality; knowledge developed through training; ability to relate to representatives on their own terms; good communication and listening skills; and strong consensus building skills.
- Delphi experts identified the key roles of the facilitator as: team building and motivation; enforcement of group principles and rules; organisation; communications, information synthesis, and media relations; process planning and observation; group management; mediation; process monitoring, evaluation and adaptation; and, counselling.
- The present study identified the need to recruit and train new SRM facilitators, as well as providing institutional assistance and peer support for existing facilitators.

SRM Administrative Support

- An SRM regime requires administrative support staff to sustain group performance, create process credibility, and maintain a prominent SRM profile. Delphi experts described administrative support as *the cornerstone of any effective board*. In their view, administrative support staff have proven themselves invaluable in terms of facilitating the work of partner organisations, promoting overall cohesiveness of the SRM group, and sustaining strong communication and community linkages.

SRM Funders

- Effective SRM requires continuing commitments to funding for operations, community participation, communication, research, and program delivery. The present study found that SRM is likely to be most successful when resource users, governments, and other SRM actors contribute financially to management functions or recruit other types of support for the SRM process.
- This study found that over the long term, the majority of SRM funding should not originate from federal or territorial government sources. Financial dependency can undermine the autonomy and authority of a SRM body, affecting its ability to make politically sensitive management decisions. In the experience of Delphi experts, sustainable SRM regimes are those supported by partner contributions and involve co-operative budget preparation and formally detailed financial contributions and disbursement schedules. This could promote greater respect for, and acceptance of, SRM by all stakeholders.

Community Participants

- Delphi experts recommended expanding the concept of community employed in SRM to include regional, territorial, national, and international interests, while recognising that local resource users have a primary stake in SRM management decisions. Although the concept of community was particularly powerful for Vuntut Gwitchin experts, Old Crow encompasses significant diversity.
- Three types of community participation in SRM were identified, including non-local government control, community control, and participatory SRM. Experts favoured the latter approach and provided four reasons that participatory SRM is desirable: it

promotes equity and empowerment, utilizes existing cultural capital, increases management efficiency and effectiveness, and promotes stability and commitment to SRM.

- The involvement of recognized local experts, Elders, and young people in north Yukon SRM are critical to effective community participation.
- Three key community linkages were outlined, including those with local SRM representatives, with the SRM group, and with external experts and third-party interests.

SRM Partnerships

Cross-Cultural Understanding

- Current failures of SRM, in part, are founded on limited cross-cultural understanding and a system maladapted to accommodate diverse cultural characteristics.
- Stereotypes, racism, and pre-determined views about how and what other people think based on racial or cultural characteristics prevent relationship building. Assumptions of superiority and dismissiveness related to the validity of alternate knowledge and belief systems impede SRM efforts. Limited cross-cultural exposure is a key barrier and results in conflicts between the meaning of terms, concepts, observations, explanations, and behaviours. Mistrust, cynicism, and narrow-mindedness resulting from a long history of conflict, competition, and abuse of power prevent the development of new, positive connections between Aboriginal and non-Aboriginal people. External constraints such as time pressures, budget restrictions, distance barriers, workloads, inadequate communication infrastructure, and bureaucratic inertia prevent the advancement of cross-cultural understanding.
- Developing cross-cultural understanding is critical to successful SRM. It requires significant time and resources because it involves basic changes in people's attitude and outlook, as well as the acquisition of new skills and knowledge. A five-part process of awareness raising was recommended to develop SRM members' understanding of self, their sponsoring organisations, and others, and to transmit that learning to communities and agencies. Bringing Aboriginal and western cultures together is a difficult process that requires cultural translators - accomplished

facilitators and representatives with special skills. People need to freely communicate their cultural perspectives and value systems and listen to those of others. Establishing trust, learning through direct experience, training, and collaborative educational activities are also important tools to transfer cross-cultural skills.

Guiding Principles for SRM

- Delphi experts recognised the need to develop guiding principles for SRM partnerships. These must be broad enough to encompass both Aboriginal and western components.
- Guiding principles provide a relatively non-controversial starting point for partnership and should be developed by consensus. Clearly articulating and formalising them in a memorandum of understanding or other culturally appropriate instrument will promote their acceptance and application.
- Ten principles that underlie successful SRM were identified in the present study and include: a group culture of co-operation; respect that occurs in three dimensions related to self, the SRM community, and the land; inclusion of diversity; sharing the benefits and responsibilities of SRM; equity in the SRM process; provision of meaningful communication opportunities; accountability to the resources and people involved in SRM; trust among SRM partners; listening actively, reflectively, and empathetically; and mutual support in making and upholding SRM decisions.

Operating Procedures and Ground Rules

- Operating procedures and ground rules were considered necessary to direct the operation of an SRM group. The procedures and ground rules are critical in determining how participants interact, exchange information, solve problems, and make decisions. They should be designed with an awareness of cultural and individual needs and parties should reserve the right to alter working relations as partnership progresses and new needs arise. Such participant control over SRM operations keeps parties engaged.
- A useful construct for organising thinking about SRM procedures and ground rules is the Medicine Wheel in terms of the four aspects of the self (mental, emotional,

physical, and spiritual). The general procedures and ground rules proposed by Delphi experts reflect needs in these four dimensions including a mentally engaging process (one that stimulates creativity, involvement, and interest), an emotionally supportive environment, a physically affirming context, and a spiritually involving atmosphere.

Aspect of Self	Operating Procedure
Mentally Engaging	• Be prepared
	• Attend faithfully
	• Distribute an agenda
	• Engage in critical reflection
	• Use culturally appropriate communication tools
	• Ensure use of Aboriginal languages
	• Solicit involvement of outside experts
Emotionally Supportive	• Take time to conduct SRM
	• Have fun together
	• Be yourself
	• Be sensitive to the implications of words and actions
Physically Affirming	• Consider meeting location
	• Schedule action to ensure equity
	• Consider seating arrangements
	• Establish a visitor policy
Spiritually Involving	• Incorporate ritual and spirituality
	• Celebrate accomplishments

SRM Communication

- SRM communication initiatives should generate internal and external flows of information. Communication should occur within each party, among SRM partners, and between the SRM group, outside institutions, communities, and stakeholders. This can foster broad discussion of natural resource management issues, which in turn can enhance common knowledge, awareness, and skills.
- SRM groups should use a broad array of communication media to involve the widest possible audience. This includes traditional (i.e., spoken word), modern (i.e., electronic

or printed media), and local media (i.e., how local people communicate with each other), which can be traditional or modern in form.

- SRM communication efforts must address cultural differences in communication including linguistic barriers, ideological differences underlying language, Elders' communication needs, and differences in communication styles.

SRM Knowledge

- In this study, experts postulated that, given their pluralism and interdependency, contemporary policy requirements, legal developments, land claims, and human rights mandates, both Traditional Environmental Knowledge and Management Systems (TEKMSs) and Science-based Resource Management Systems (SBRMSs) must be utilised in the practice of SRM.
- Although research participants recognise the inherent and practical value of accepting and incorporating both systems into SRM, integration is challenging for several reasons including problems of acceptance, understanding, and implementation.
- Problems of acceptance stem from a belief that TEKMSs are irreversibly eroding, while romantic and uncritical claims concerning TEKMSs create a backlash against them as anecdotal and unreliable. TEKMSs do not correspond well with the fundamental tenets of western science and, as a result, the attitude of many resource managers is dismissive. Likewise, many Aboriginal people view the scientific approach with scepticism.
- Problems of misunderstanding arise from inconsistent descriptions of the component parts of TEKMSs as well as a proliferation of terminology used to describe them. Linguistic and cultural barriers also impede understanding. Experts in this research revealed that the different roles resource managers and TEKMS holders assume in their respective cultures prevent appreciation of each other's knowledge, practices, and beliefs. Next, these two knowledge systems differ according to their transmission modes, defining characteristics, speed of data creation, and as systems of prediction, explanation, and classification. The socio-cultural contexts of SBRMSs and TEKMSs distinguish them further and result in reluctance to share the full extent of knowledge. Chauvinism about knowledge and failure to recognise the role of values in decision-making leads to further misunderstanding.

- Problems of implementation are numerous, including concerns about the negative consequences of disclosing a TEKMS and the peripheral status of TEKMSs in decision-making and problem solving. Incorporation of knowledge into SRM is linked to questions of power; a reticence to change the status quo on the part of resource managers; and using knowledge as a political or negotiating tool on the part of First Nations. Policy makers and resource managers lack guidelines to help them understand the implications and practicalities of implementing a TEKMS. Funding constraints, external research agendas, lack of local research capacity, and limited time frames confound the documentation of TEKMSs.
- Aside from identifying problems, Delphi participants also imparted numerous solutions to including TEKMSs and SBRMSs in SRM. Problems of acceptance can be addressed by slowing the loss of TEKMSs through promoting their oral transmission. Aboriginal people and resource managers alike must come to appreciate that both systems can make legitimate and valuable contributions to SRM. To prevent arrogance and overblown claims, the limitations of both systems need to be acknowledged. Knowledge from both systems should be documented in an organised and systematic fashion and be subjected to validation and testing. However, many Vuntut Gwitchin experts worried about external verification of their TEKMS and a failure to recognise internal systems of validation.
- To address problems associated with a failure to understand, managers should abandon their focus on defining TEKMSs in favour of direct interactions with the Aboriginal people who embody them. SRM practitioners must realise that TEKMS and SBRMS are not opposed to each other, but can contribute in a complementary fashion to management. Creating learning opportunities on the land, in the classroom, and in the work place can develop mutual understanding. Practitioners need to recognise that SRM is value driven. Each SRM party must identify and communicate their own value systems and attempt to understand that of their partners.
- The benefits of amalgamating a TEKMS and a SBRMS can be realised by overcoming problems of implementation. This can be achieved by developing guidelines for the use of a TEKMS, the use of participatory or community-based research approaches, the recognition of intellectual property rights, the direct involvement of Aboriginal people in SRM, the development of a common system to store and access information, and the maintenance of equity and openness in management partnerships.

SRM Negotiation

- Delphi experts suggested that consensus decision-making to produce informed decisions based on as complete a representation of information as possible within reasonable timeframes and budgets is crucial to SRM success.
- Community participation in SRM decision-making must address several factors including community readiness, the timing and location of participation, learned dependency, community power dynamics, parochialism, and who can speak for the community.
- In this study, experts recommended that negotiations begin with a clear definition of the common vision on which to base the shared management system. The process of developing a common vision consists of four basic steps: the communication initiatives aimed at awareness raising and social learning; the identification and involvement of key participants; the application of participatory techniques; and the enshrining of the common vision. This study determined that experimentation with communication and decision-making techniques is required to improve the quality of SRM and enhance learning by individuals and institutions.
- Next, experts indicated that the SRM group should define a strategy to accomplish their common vision, which entails describing current issues and trends and comparing them to the desired future to reveal core SRM issues, developing short- and medium-term shared goals, defining actions to achieve these desired results, and creating work plans and schedules to delegate responsibilities and to ensure follow through.
- Community participation in SRM implementation requires transferring benefits to local people, strengthening and creating new community institutions, and ensuring equity in the distribution of SRM costs and benefits.
- Participants in the present research determined that periodic monitoring, evaluation, and transformation of the SRM vision, shared goals, and action plans were important. The best approach to SRM partnerships is a flexible and adaptive one since resource conditions and their social, economic, political, and legal context change over time. SRM should be viewed as a learning journey subject to intense review and modification based on the effectiveness of management outcomes.



Recommendations

- Although any particular demonstration of Delphi efficacy cannot be taken as an indicator of the more general validity of the technique (since demonstrated effectiveness is partly dependent on factors such as the characteristics of the panel, the task, and the study design), findings from the present application and evidence from other Delphi studies, suggest that the modified Delphi method has potential utility elsewhere.
- There is an increasing commitment to the development and success of SRM. Yet, relationships and exchanges of experience and information amongst SRM partners are often far from ideal, hindering SRM effectiveness and efficiency. Opportunities for improved participation, cross-cultural communication, and critical thinking in SRM are a necessity. In response to this challenge, the modified Delphi method could be used to assist First Nations and resource managers to identify the essential elements of effective SRM in other resource settings and cultural contexts. It may also function as a mechanism for developing aspects of SRM partnerships in the north Yukon and elsewhere (e.g., making a decision on contentious or sensitive issues or developing a cross-cultural SRM communication strategy).
- Beyond the SRM arena, the modified Delphi method may find application in other areas requiring cross-cultural communication, participation, and idea generation (e.g., social services, education, health, governance). Although the basic features of the modified Delphi method will remain the same, their specific usage will vary from one circumstance to the next in response to unique local conditions (e.g., duration of the study, level of anonymity desired, number of panellists, specific expert selection criteria, manner of remuneration).
- Several recommendations for successfully implementing a modified Delphi method in a cross-cultural environment are advanced below to assist future applications.
 1. Researchers should consider employing the methodological adaptations and the data management and analysis procedures outlined in this study.
 2. Different methodological adaptations may be required based on the culture, needs, and preferences of different expert groups.

3. The definition of expert should be varied according to the context within which the Delphi is applied.
4. Systematic expert selection procedures should be used to determine the number and type of panellists. Soliciting panel nominations using progressive network referrals from non-participating experts and identified Delphi experts is recommended.
5. Explicit, formal selection criteria are required to determine individuals' expertise and ability to participate.
6. Delphi researchers should evaluate experts' motivation in order to identify mechanisms that could enhance the commitment and contributions of experts.
7. A Delphi project should employ a community researcher who is identified by the involved First Nation.
8. Delphi researchers should exhibit the qualities and skills outlined above.
9. Delphi researchers should ensure the use of Aboriginal languages and should employ qualified, experienced local translators.
10. Data collection methods should be adapted to the needs and preferences of expert groups and should allow for both oral and written communication.
11. Cultural translation of research and evaluation questions is recommended to increase understanding and the chance of meaningful responses.
12. Cultural translation of Delphi feedback is recommended to accommodate a variety of communication styles and to improve readability and comprehension.
13. Researchers should attend to the design and organisation of workbooks to increase interest, enjoyment, and appreciation of content.
14. Anonymity should be preserved to increase the level of expert equality and to decrease communication barriers.
15. The use of code names is recommended to enable experts to develop Delphi identities, to follow other's thinking from round-to-round, and to specifically address others.
16. Delphi researchers should attempt to build relationships among experts to ensure the outgrowth of open and in-depth Delphi communication.
17. Biographies, background information on expert views, and a bilingual glossary of common terms may enhance mutual understanding at the outset of a project.
18. Qualitative feedback should be emphasised and elicited to reveal the rationales behind experts' judgements and the conceptual basis of experts' thinking.
19. The use of participant quotes in Delphi feedback is recommended to enhance mutual understanding and to help experts recognise their individual contributions.
20. Avenues for experts to directly exchange ideas inside and outside the Delphi process should be provided.

21. Monitoring participant satisfaction using in-progress evaluations is recommended to adapt to the needs of different expert groups and to inspire experts' sense of responsibility for the success of the process.
22. Delphi experts should be remunerated in a manner commensurate with cultural norms and/or professional requirements (e.g., gifts, monetary incentives).
23. Communication mediums should include electronic mail, priority courier, facsimile machine, and in-person delivery of research materials to improve continuity.
24. Delphi researchers should employ contact procedures to enhance response rates, monitor participation, and make experts feel valued (e.g., personalised e-mails, house visits, telephone calls, thank you notes).
25. Methodological adaptations should also be identified on an ongoing basis in partnership with the community researcher, local translators, and pre-test subjects.

Summary of Conclusions

The modified Delphi method was successful in bringing experts with diverse backgrounds together to work on a complex, common problem when it was not practical or desirable for them to do so in person. Both qualitative and quantitative findings in this study indicated that the modified Delphi method succeeded in engendering participation, facilitating cross-cultural communication, and generating critical ideas and structured thinking. Key characteristics that contributed to these accomplishments included expert selection and motivation, communication adaptations, conflict management, and maintenance of a positive group climate. Participation in the present study positively impacted experts; it stimulated cognitive enhancement, moral development, empowerment, and personal and professional change. The modified Delphi method also succeeded in identifying essential elements of SRM in the north Yukon context. Eleven characteristics were identified by experts, including: a strong community-based approach to SRM; development of a common SRM vision and shared goals; skilled facilitation of a SRM group; partnership building efforts; elimination of cultural biases and stereotypes; effective communication among SRM partners; involvement of effective Aboriginal and government SRM representatives; collaboration among government agencies and First Nations to collect, understand, and store knowledge and information related to both SBRMSs and TEKMSs; using all available knowledge and information to make SRM decisions; development and use of effective SRM communication methods and media; and fulfilling the communication requirements of SRM.

THANK YOU for taking time to review research results from my UNBC Ph.D. dissertation, *Constructing Partnership: A Delphi Study of Shared Resource Management in the North Yukon*.

I would appreciate your feedback on this summary report. Comments and questions are welcome. For a digital or paper copy of the *complete* dissertation please contact me. I can be reached at:

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