

CHARTING OUR COURSE:
Fishery Monitoring In the Pacific Region
A Strategy for Improved Confidence and Support

FINAL Report - April 2011

Issued by:

Integrated Salmon Dialogue Forum, Pacific Fisheries Monitoring & Compliance Panel

The M&C Panel is a project initiated by the BC Integrated Salmon Dialogue Forum with funding support from the Fraser Salmon & Watersheds Program and Fisheries and Oceans Canada

Fraser Salmon & Watersheds Program



Fraser Basin Council



Fisheries and Oceans Canada



EXAMINE ENGAGE RECOMMEND

This document offers a new roadmap for the cooperative initiative that the M&C Panel and Fisheries and Oceans believe is required to produce practical and necessary changes. We explore how to define and improve objectives, principles, standards, and a more robust and inclusive vision around monitoring and compliance — in short, how we might go about “getting it right.”

Foreword

From the Pacific Fisheries Monitoring & Compliance Panel

No fishery can be properly managed without knowing, with more than a fair degree of accuracy, how many fish are being caught. Sound fisheries management is based on sound catch data. Conversely, our collective confidence in fisheries management can seriously flounder on poor or unreliable data.

BC's salmon fisheries are currently suffering from what might fairly be described as a crisis of confidence. This lack of confidence is in part rooted in concerns over the accuracy and reliability of reported catch. Managers, fishermen and the public at large often don't believe the numbers being reported by other sectors, or even by their own sectors.

Catch monitoring and compliance have arisen as topics of importance in ongoing discussions of the Integrated Salmon Dialogue Forum. Mutual trust derives from collective action. To this end, the Monitoring and Compliance (M&C) Panel, a joint initiative engaging all sectors, has focused its efforts on generating practical, effective changes that make a difference by forging collaboration and mutual trust. This independent panel, drawn from Integrated Salmon Dialogue Forum participants, has been meeting for several months to examine ways to improve catch reporting, monitoring and compliance in all salmon fisheries. The panel recognizes clearly that we have to improve the way we count catch and enforce compliance to improve both fisheries management and our collective confidence.

The M&C Panel, as it has been dubbed, is an independent collection of representatives from the aboriginal, recreational, commercial and conservation sectors. But while independent, the panel also works with Fisheries and Oceans Canada in a collaborative attempt to map a better pathway for monitoring and compliance.

This document offers a new roadmap for the cooperative initiative that the M&C Panel and Fisheries and Oceans believe is required to produce practical and necessary changes. We explore how to define and improve objectives, principles, standards, and a more robust and inclusive vision around monitoring and compliance — in short, how we might go about “getting it right.”

Not that we'll get there with this document alone. The task is no small one. But we need to start somewhere.

Peter Sakich, M&C Panel Chair

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1. Introduction

Improved Monitoring for All Recreational, Commercial and First Nations Fisheries

Calls for improvements in fishery monitoring and catch reporting (FM&CR) have been a common theme in many past and current discussions. One of the foundations for future improvements in fisheries management as well as improved relationships between competing harvesters is our collective ability to recognize shortcomings and how they can be adequately addressed. That said, it is also recognized that the basis and strategies for changes are as critical as the changes themselves. Managed well, the changes could be enthusiastically supported by managers and the public alike. Managed poorly, the changes could be circumvented and become targets for derision. Success in achieving improvements to existing fishery monitoring and catch reporting systems is dependent on clear objectives that establish a level playing field for all.

To help set the stage to achieving effective fishery monitoring and catch reporting, this paper provides a common understanding of the need for and characteristics of monitoring practices. It aims to inform and challenge the reader to understand and contribute to developing innovative ways to address current challenges in developing effective and efficient monitoring standards and practices.

The “Roadmap Strategy”:

- Provides information to build a common understanding of the need for and characteristics of such fisheries monitoring;
- Examines the current and desired state of all FM&CR for Pacific fisheries and identifies critical gaps and issues;
- Suggests strategic approaches for each harvest sector to aid in the collective shaping of practical plans; and
- Outlines specific challenges and policy constraints and fundamental steps to moving forward.

Once the stage has been set, DFO, First Nations, harvesters and others will together embark on a multi-year process to achieve the required improvements. While the details of this path are yet to be determined, specific plans will be developed both within the Department and with all key partners.

Based upon engagement that generates a sense of fairness, shared responsibility and the ability to demonstrate that real progress is being made, a growing sense of support can be expected from individual fishermen as well as the fishery managers, harvest sector organizations and the public.

2. Background

The Pacific fishery has changed and will continue to evolve in response to current and future circumstances. Demands on the resource have increased at a time when many stocks are declining, thereby heightening the potential for conflict between harvesters. Other voices are demanding that managers take a broader view of the place of aquatic species in the ecosystem. The demands for sustainably managed fisheries have never been more challenging.

For example, the current situation in our Pacific salmon fisheries has precipitated a new examination of what aquatic resources mean to society and how they can be sustained. All levels of government including First Nations, as well as resource users, conservation groups, consumers and concerned individuals have had unprecedented conversations, all leading to the inescapable conclusion that we need to work collectively toward successful fisheries management.

Shared fishery information of defined and rigorous quality is the foundation for that dialogue and collaborative action.

a. Management Context

Pacific fisheries management can never be precisely scripted; however, there are clear durable factors that will continue to influence public policy and fisheries management for the foreseeable future. Collectively, the following factors demand innovative approaches to increase the effectiveness of monitoring:

Conservation and Precautionary Management

A public expectation of healthy, productive ecosystems populated with abundant fish stocks has produced the overarching principle that fisheries will be managed more cautiously, especially in the absence of rigorously collected data and information.

Treaties and other Agreements

A broad range of international and domestic agreements require that fisheries be monitored at specified levels. The Pacific Salmon Treaty (PST) and existing/future First Nations treaties are particularly relevant examples where commitments at the federal, provincial and First Nations government levels call for higher standards of fishery monitoring and catch reporting.

Evolving Aboriginal Rights

The present First Nation fishery is evolving through a complex combination of legislation, jurisprudence and negotiation, and calls for accurate and comprehensive monitoring to ensure all interests are respected.

Economic Prosperity and Social Benefits

Fierce global competition and increasing operational costs have motivated fisheries to develop more innovative and efficient ways to harvest and market. Commercial fishermen and recreational fisheries, service providers (guides and charter boat operators) have begun to experiment with alternative fishery management practices to retain their business opportunities. One immediate consequence of these innovative practices is the need for increased accuracy and timeliness in fishery monitoring and catch reporting practices.

Economic Prosperity and Social Benefits cont'd:

Defined Shares and Quota Fisheries

An increasing number of fisheries within the Pacific region and around the globe are being managed by established quotas and/or defined shares. Success in this management approach, which can only be derived from a level of precision and timeliness in catch reporting, assures everyone that the “system” is indeed working.

Selective marked-fish only fisheries: Timely and credible fishery monitoring programs are essential to provide the information necessary to allow fishing opportunities for hatchery-raised salmon when a fishery might otherwise be closed to protect wild salmon. The resultant social and economic benefits are significant.

Highly selective fisheries: To minimize adverse impacts on stocks and species of concern, managers and harvesters are adopting highly selective fishing techniques. The success of these techniques in protecting scarce species, while harvesting the more abundant species, depends on effective monitoring practices.

Comprehensive reporting of all species: The Integrated Groundfish Fishery carefully monitors the incidental catch of non-target and rare species. While this comprehensive monitoring and the use of individual transferrable quotas for all species has been costly for fishermen, it has enabled sustainable harvest opportunities.

Integrated/Ecosystem-based Fisheries Management

Integrated/ecosystem-based management extends the range and complexity of monitoring systems. In addition to basic catch information on the target stock, this approach can include:

Catch Sampling: This can involve sampling for a wide variety of characteristics such as marks/tags, age, length/weight, sex, etc.

By-catch: This can include a wide variety of species, including non-targeted fish, marine mammals and birds.

Releases: The requirement to release some of the catch varies. Required releases may be non-target or target species, differentiated by criteria such as size, sex or a mark. Information may also be required on the measures taken to minimize harm and an assessment of their condition at release.

Encounters: Species encountered, but not captured, during the fishing operation may be impacted. Information on these encounters may be required.

Habitat Impacts

Evaluation of the impact of a fishing operation on critical habitat is required. Avoiding sponge reefs by the trawl sector, as well as minimizing the impacts of net fishing in sensitive estuary areas are well known examples (also lost fishing nets and traps).

Certification of Fisheries

Increased global requirements for eco-certification (e.g., Marine Stewardship Certification) and traceability have placed additional requirements on catch monitoring/reporting systems.

b. Methods of Fishery Monitoring and Catch Reporting (FM&CR)

The design and implementation of all monitoring programs has and must continue to involve consultation with all harvesters.

Fishery monitoring and catch reporting can be divided into two broad categories: ***fisherman dependent*** and ***fisherman independent***. These two approaches are not mutually exclusive and can be combined in a variety of ways to provide the necessary level of monitoring and harvesting information.

Fisherman Dependent

Fisherman-dependent fishery monitoring and catch and effort reporting relies on individuals or groups of harvesters to monitor and report on their own catch. This method has many positive aspects. In reality, no one is in a better position to monitor the fishery and associated catches than the participating harvesters. Given positive engagement, adequate training and the appropriate reporting technologies, this type of monitoring can be very cost effective.

Examples of fisherman-dependent monitoring currently include: logbooks (paper and electronic), commercial sales slips, on-water hail, interview-based creel surveys, and hail-in/hail out effort reporting.

As with any sampling program, it is widely recognized that fisherman-dependent monitoring has limitations. Independent verification can remove or reduce many sources of limitations. The recently published Revisions to Official Commercial Pacific Salmon Catch Estimates for 1996-2004 provides several examples of techniques that improve fishery-dependent monitoring.

Fisherman Independent

There are many situations where the conservation risk, certainty of catch sharing and a variety of other factors require the use of fisher-independent methods. There is a wide and evolving range of techniques used to provide the precision and statistical rigour required.

Examples of programs currently available or in practice in the Pacific Region include: over-flight or vessel-based effort surveys, mandatory or designated landing sites, dockside monitoring, on-board independent observers and electronic (video/camera) monitoring.

These types of monitoring programs also have limitations creating inherent biases and issues that need to be considered. Primarily, these programs are often expensive, and extrapolating the data to the rest of the fishery can be problematic.

3. Setting the Stage

a. FM&CR Goal and Guiding Principles

Goal: “There is improved confidence in Fishery Monitoring and Catch Reporting in all Pacific fisheries.”

The above statement describes the desired situation in its simplest form. The vision is embedded in the more comprehensive goal for catch monitoring/reporting in the Pacific Region:

“To have accessible, accurate, and timely fisheries information, such that there is sufficient information and public confidence for fisheries to be managed sustainably and to meet other reporting obligations and objectives.”

All decisions and activities required to achieve this goal are guided by the following four principles:

Principle 1: Information necessary to sustain and conserve fisheries resources and their habitat is the first priority

For many fisheries, this includes accessing the information required to manage to identified limits. For others it may include the information required to satisfactorily assess the success of the identified management strategy.

Principle 2: Use Consistent Monitoring Standards

Information standards to determine the content, resolution and statistical accuracy of monitoring requirements will depend on: degree of conservation risk, extent of potential ecosystem and habitat impacts and specifically defined information needs for sustainable use such as sharing arrangements.

This principle recognizes that different levels of information are required in different situations and that a consistent approach is needed to determine what level of information is required for each fishery. While most fisheries are likely to require a moderate level of monitoring, some fisheries may require an enhanced level and a few may only require a low or basic level.

In the simplest terms, the key considerations in examining conservation risk include:

- Single species or stock vs. multi-species or multi-stock
- Abundant/healthy target stock vs. stock/species of concern
- Relative fishing capacity e.g., number of harvesters, vessels and/or gear type, single test vessel vs. seine fleet, individual angler vs. groups of guided fishing clients.

The variation in information requirements addresses the need for more rigorous (accurate, detailed and precise) information to effectively manage increased conservation risks and to meet requirements associated with specific allocations or shares. Certain management approaches may allow the level of required information to change over time while maintaining an acceptable conservation risk (for example, by changing harvest area or gear after monitoring programs identify high risk factors). Standards must also incorporate different requirements associated with increased risk to ecosystem integrity and to other species.

Principle 3: Accessible, Accurate and Timely Fisheries Data

Fisheries information (monitoring and catch data) must be of defined quality and available/accessible to meet fisheries management and integrated data requirements as and when needed.

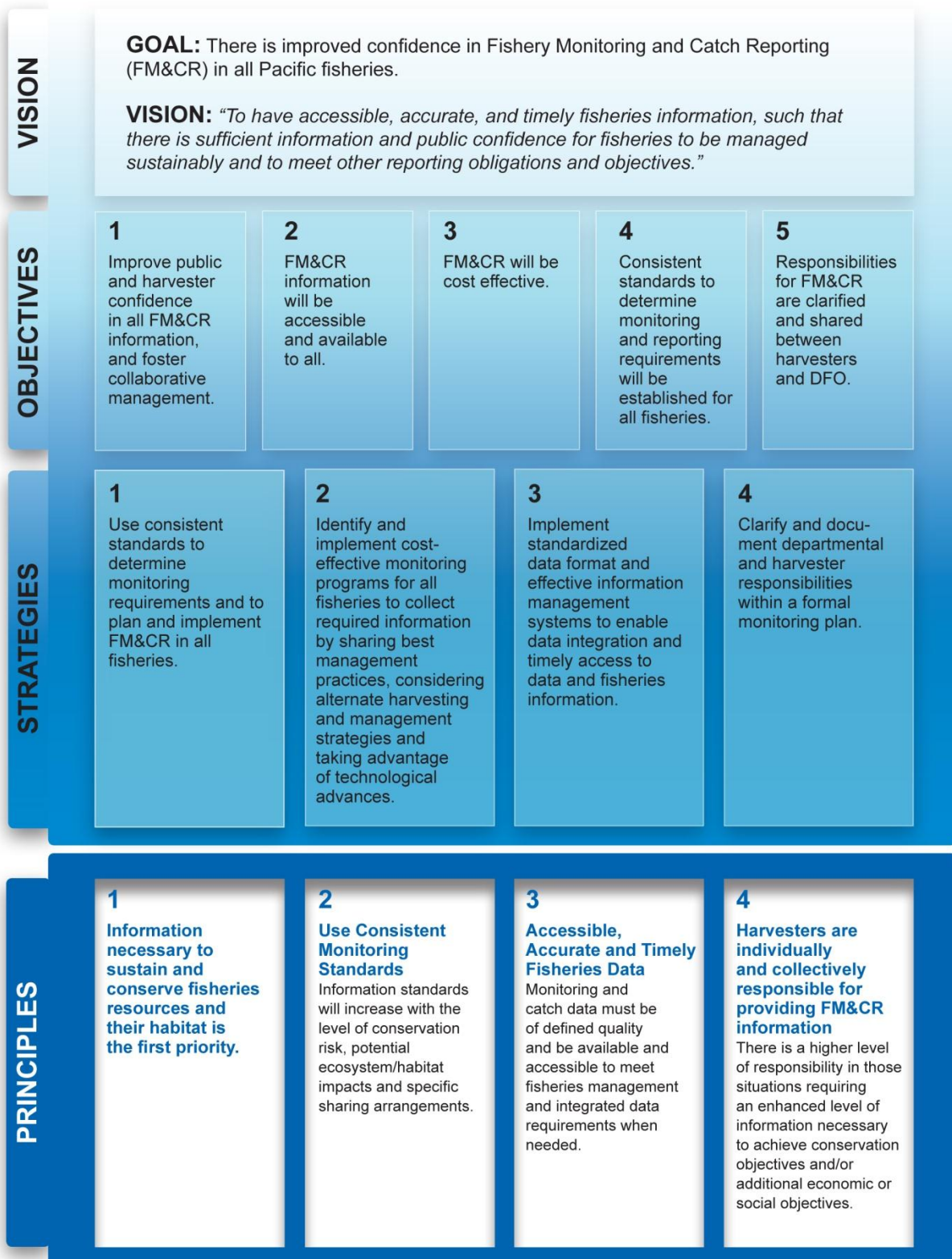
This principle recognizes that there are invariably several uses for FM&CR data, and to enable the integration of different data (for example catch and effort or catch from different fisheries in the same area) and/or its repeated use, the data must be of consistent format, and stored in established and consolidated data systems. An information management framework must provide timely access to specified information to enable resource management decisions and to support public confidence in them.

Principle 4: Harvesters are individually and collectively responsible for providing FM&CR information

There is a higher level of responsibility in those situations requiring an enhanced level of information necessary to achieve conservation objectives and/or additional economic or social objectives.

This principle underlies the necessity of a collaborative approach to FM&CR. Harvesters may experience greater access and additional resource benefits where arrangements can be made to ensure the information is available to effectively address any risk to achieving conservation objectives. Discussions on the extent of information requirements, the associated monitoring program options and costs and the relationship to sustainable resource management are reflected in this principle.

Figure 1: Fisheries Monitoring and Catch Reporting Framework



b. FM&CR Objectives

Improve public and harvester confidence in all FM&CR information, and foster collaborative management

This objective requires the collection of and access to FM&CR data of known and appropriate quality. To enable management regimes involving the collaboration between resource managers and single and/or multiple harvesters and other stakeholders, a common understanding and acceptance of FM&CR information is essential. Too often constructive dialogue on harvest management is not possible as the parties cannot agree on the underlying harvest information.

Fisheries monitoring and catch information will be accessible and available to all to:

- Manage fisheries to achieve conservation, ecosystem and management objectives, including meeting the needs of First Nations, and to contribute to the current and future prosperity of all Canadians
- Meet a range of domestic and international reporting obligations (treaties, etc.), and
- Meet evolving market and certification requirements.

The Pacific Region has initiated a multi-year project to develop an information management framework (referred to as “PacFish”), specifically to:

Provide users of fisheries data easy and secure access to consistent, complete and timely data of defined quality

Ensure that data collected serves both local and broader (integrated) needs

Ensure that the management of data and technology has clear accountabilities, is cost efficient and is capable of providing good service to users, and

Create a framework to guide the future evolution of Pacific fisheries data and systems.

Fishery monitoring and catch reporting will be cost effective

The clear identification of information requirements enables harvesters to work with resource managers to plan and implement appropriate monitoring programs. Various methods and techniques are available, each with their own costs, implications and benefits. The challenge for resource managers and harvesters is to agree on a monitoring plan that blends affordability and effectiveness with the ability to collectively implement.

In those situations where an enhanced monitoring program is not affordable, a more conservative harvest regime (typically manipulating area, gear selectivity, time and effort) may be required to adequately manage the conservation risk.

Consistent standards to determine monitoring and reporting requirements will be established for all fisheries

Specific catch monitoring and reporting programs will be developed collaboratively by resource managers and harvesters. These will be guided by the standards to produce the required information, at the desired format, levels of detail, precision and timeliness.

While standards will vary with each fishery, it is important that they are based on a consistent set of criteria. The criteria will consider the level of conservation risk associated with the fishery, the management actions taken in response and the various other factors (e.g., a quota vs. an open fishery).

In general, fisheries are categorized as requiring basic (i.e., low), moderate or enhanced levels of monitoring and reporting. The starting point or default is the moderate category, with some fisheries dropped to basic. However, changing circumstances more often will raise information requirements to the enhanced level.

Table 1 provides an overview of the type of information needed in each of the three categories of fishery monitoring and reporting, and illustrates the general character of the information required in each category.

Responsibilities for fisheries monitoring and catch reporting are clarified and shared between harvesters and DFO

This objective requires the clarification of responsibilities and associated accountabilities for specific functions associated with FM&CR. In addition, the extent and nature of harvesters' responsibilities for providing FM&CR information and for supporting program implementation must be clear.

Table 1: Overview of Categorizing Fisheries

Monitoring Standards and Information Requirements

Starting Point = Moderate Level.

Move to Basic or Enhanced Level based on abundance levels, conservation risks and specific fishery characteristic

← **MONITORING LEVEL** →

		BASIC	MODERATE	ENHANCED
INFORMATION CATEGORY	CONSERVATION RISK	<ul style="list-style-type: none"> Low - e.g. v. low effort & high abundance (green zone) No by-catch issues Low relative fishing capacity Single stock/species 	<ul style="list-style-type: none"> Moderate - e.g. Target and/or by-catch spp in yellow zone Moderate effort Moderate abundance 	<ul style="list-style-type: none"> High - abundance of target spp may be trending to red zone. Non-target (by-catch) impacts on CUs of concern High relative fishing capacity High value fishery (incentive to under-report)
	FISHERY OPERATIONS	<ul style="list-style-type: none"> Ability to determine the key characteristics of the fishery 	<ul style="list-style-type: none"> Ability to quantify effort levels. High consistency across years to establish reliable trends of catch per unit effort (CPUE) 	<ul style="list-style-type: none"> Accurate and timely records of operational details required (e.g. effort/ location/ gear details. Managed by defined share(s) /allocation.
	CATCH	<ul style="list-style-type: none"> Ability to determine magnitude of catch and catch-related mortality relative to other fisheries 	<ul style="list-style-type: none"> Ability to quantify annual catch and catch-related mortality. High consistency across years to establish reliable trends 	<ul style="list-style-type: none"> Accurate and timely records of catch and catch-related mortality
	ECOSYSTEM/HABITAT	<ul style="list-style-type: none"> Ability to qualitatively identify any potential impacts. However none are anticipated 	<ul style="list-style-type: none"> Ability to quantify the magnitude of impacts (for any species/habitats that apply). Some limited impacts are possible 	<ul style="list-style-type: none"> Accurate and timely records of any impacts (e.g. incident reports for marine mammal / bird / reptile encounters and mortalities; other ecosystem or habitat effects)
	STATISTICAL QUALITY	LOW	MODERATE	ENHANCED
	<p>Low: +/- 50%, little if any independent verification</p>	<p>Moderate: +/- 20%, < 20% independent verification</p>	<p>Enhanced: +/- 5%, >20% independent verification</p>	

Each fishery will be evaluated to determine the level of information required. The factors used in this evaluation will vary depending on the specifics of each fishery, but the goal is to provide consistent monitoring programs across fisheries.

4. Constraints and Challenges

DFO and harvesters are both challenged in meeting their respective share of fisheries monitoring and catch reporting costs. This necessitates the ongoing need for careful planning of all FM&CR programs and their support process.

The explicit clarification of harvester roles and responsibilities for fisheries monitoring and catch reporting should achieve a fair and consistent approach to associated cost-sharing. Confirmation of co-management principles for Canadian fisheries may be required in that regard. Alternative management approaches and other options to ensure acceptable conservation risks may be required where the reduced economic viability of a fishery may limit harvester contribution.

It is recognized that a workable mechanism for the recreational sector to collect and contribute resources to support FM&CR and other co-management activities is required.

5. Strategic Approach

As a result of growing concerns with fisheries monitoring and catch reporting in the Pacific Region, Fisheries and Oceans Canada released a FM&CR Policy Framework in 2002. The Framework initiated preliminary work on which a broad strategy was subsequently developed to address the fundamental requirements for effective management of fisheries information, development of monitoring standards and for clearly established accountabilities. Since 2007 the Enhanced Accountability component of the Pacific Integrated Commercial Fisheries Initiative (PICFI) has incorporated this strategy. The current PICFI workplan and the proposed strategy for moving forward are therefore consistent and provide a coordinated approach to achieve the objectives and goal outlined in Figure 1.

Strategy 1: Use consistent standards to determine monitoring requirements and to plan and implement FM&CR in all fisheries.

As previously noted in Table 1, consistent criteria have been identified for determining the level of information required to monitor fisheries and to report catch. While generic standards have been developed, specific standards for the content, format and resolution of monitoring programs must be developed for all fisheries, based on these levels of information requirements.

Strategy 2: Identify and implement cost-effective monitoring programs for all fisheries to collect required information by sharing best management practices, considering alternate harvesting and management strategies and taking advantage of technological advances.

A collaborative approach is required whereby harvesters and the Department [DFO] together plan for affordable monitoring programs sufficient to meet the agreed outcomes. Opportunities to coordinate and share monitoring programs between different fisheries to gain efficiencies must be explored. Coordinated collection of biological data and the use of dockside monitoring programs for multiple fisheries are potential examples of such efficiencies.

Strategy 3: Implement standardized data format and effective information management systems to enable data integration and timely access to data and fisheries information.

The Department [DFO] has initiated the development of PacFish as the framework for achieving the specific information management objectives. This framework must be applied across all fisheries to avoid data becoming marginalized and inaccessible. PacFish must be completed and maintained so that data can be easily integrated and accessed by all who need it.

Strategy 4: Clarify and document departmental and harvester responsibilities within a formal monitoring plan

Internal roles, responsibilities and accountabilities must be clearly established and support the evolving the Department [DFO] departmental fisheries management business model and collaborative/advisory processes. An internal working group established to address these issues must continue to ensure key and supporting roles are identified and the associated accountabilities are clarified.

The support and direct participation of harvesters in providing fisheries information is essential to effective FM&CR. The Department's [DFO's] established advisory processes are the primary venue for discussing information requirements and the development of acceptable monitoring plans. Emerging inter-sectoral processes such as the Monitoring and Compliance (M&C) Panel may also play a role in highlighting monitoring improvement requirements, best management practices and opportunities for efficiencies through coordinated and/or integrated programs.

If harvesters are unable to afford the costs for enhanced monitoring, and other sources of required data are unavailable, then alternate approaches should be examined to manage the conservation risk and meet other objectives. This might involve a reduction in harvest capacity, avoidance of critical times and areas, more selective fishing or other approaches.

6. Summary and Next Steps

- Improvements in FM&CR are required by all harvest sectors in many fisheries.
- While immediate short-term improvements are often possible for specific monitoring programs, substantive and fundamental changes are required over the long-term.
- It is important to continue to address fundamental regional monitoring issues through development of PacFish, clarification of key FM&CR roles/accountabilities and completion of monitoring standards for all fisheries.
- Immediate improvements are required in the verification of by-catch impacts in many fisheries.
- Existing harvester advisory processes are to include catch monitoring in their planning agenda.
- Using the consistent criteria provided, review and confirm the specific information requirements. Assess current monitoring programs to determine their sufficiency and/or to identify any required improvements
- If changes are required, consider options, develop, document and implement a monitoring plan.
- Monitoring requirements and plans should be summarized in Integrated Fisheries Management Plans (IFMPs)
- Review all regional monitoring requirements and programs to identify any opportunities for efficiencies through coordinated/integrated approaches, and/or use of new and emerging technologies. .
- Use the consistent evaluation framework to conduct regular reviews of monitoring programs and to specifically track and communicate improvements and future priorities.

Appendix 1: Criteria for Rating the Level of FM&CR

Criteria for a BASIC LEVEL MONITORING regime: Conservation risks are low

- The abundance level of the target stock is stable and abundant, with no recent indications of a significant downward trend. (green zone)
- Management plans (IFMPs) anticipate no known jeopardy to conservation objectives
- Conservation goals are expected to be achieved (the calculated uncertainty associated with fishery impacts pose negligible levels of risks to management objectives)
- Fisheries take place in areas and times where there is confidence that harvestable surpluses exist and anticipated by-catch impacts are negligible
- Appropriate biological sampling enables basic stock assessment capabilities to evaluate the health of the stocks. (No requirement for additional biological sampling)
- No ecosystem or habitat impacts are anticipated
- Catch, effort and overall harvesting capacity is known to be reliable

A BASIC Standard of FM&CR monitoring program will provide information that is limited to determining the magnitude of catch relative to other fisheries, to qualitatively identifying any impacts, and to understanding the key characteristics of the fishery

Criteria for a MODERATE LEVEL MONITORING regime: Conservation risks are moderate

- The abundance level of the target stock is reasonably stable but with some recent indications of a downward trend. (yellow zone)
- There is an incidental or by-catch impact on a species that is demonstrating some recent downward trends.
- Management plans as developed could pose a moderate but clearly manageable risk to conservation objectives for either the target species or the incidental harvest or by-catch species.
- There is an adaptive management plan comparing the in-season fishery performance to pre-season model of expected catches as the basis for management decisions.
- Fishery impacts are relatively predictable in terms of known effort and potential harvest
- Reasonably reliable catch/effort reporting has been demonstrated in recent years.
- Catch data is used to achieve specific management and economic objectives that have been established by resource users. These objectives could be reflected in quota based fisheries or defined share fisheries, selective marked only retention fisheries etc, where stakeholders do not require accurate and precise data.

A MODERATE Standard of FM&CR monitoring program will be able to quantify catch and related mortality, effort and/or impacts with high consistency across years and to establish reliable trends. Typically this provides precision of +/- 20%, supported by up to 20% independent verification (could vary with species grouping).

Criteria for an ENHANCED LEVEL MONITORING regime: Conservation risks are high

- The target stock has demonstrated recent trends approaching or below minimum conservation objectives (target reference point) (red zone)
- There is a likelihood of an incidental or by-catch impact on a species that is in the red zone.
- Management plans as developed could pose a significant risk to conservation objectives for either the target species or the incidental harvest or by-catch species.
- Harvest opportunities and subsequent fisheries need to be based on high quality effort and catch data.
- Target stock identified as “threatened” or “endangered”.
- Target stock is used as indicator or index stock.
- Fishery requires accurate tracking of quota and/or defined shares or specific effort levels.
- Quality data required to satisfy traceability and eco-certification objectives.
- Mark-retention fishery.

An ENHANCED Standard of FM&CR monitoring will provide timely and accurate catch and related mortality, effort and/or impacts. Typically this provides precision of +/- 5 % and independent verification of greater than 50% (could vary with species grouping).

Appendix 2: Monitoring & Compliance Panel Overview

M&C Panel Purpose and Rationale

The Panel aspires to promote the fair, practical, and effective monitoring and compliance practices and policies critical to realize the level of collaborative management required to sustain salmon and a salmon fishery. Without a widespread confidence among all sectors and within the public that best practices of monitoring and compliance are being engaged, there can never be sustainable outcomes. Credibility of our monitoring and compliance activities is the vehicle that will drive us to mutual accountability.

Building an effective regime of monitoring and compliance is not the only change required, but it is one of the essential starting points. The equation is simple: better, more timely information leads to better decisions, better decisions create more economically sound fisheries, and thereby better protect the environment, communities and fish. The Panel's sole power lies in the credibility of its members, the credibility and competence of the Panel work, and the ability of the Panel to build a consensus that translates new ideas into constructive changes.

The panel's work will be instrumental in building best practices, in promoting a widespread appreciation of the importance of M and C practices, and in addressing issues related to access, certification, traceability, and in season adjustments. Success will be realized when all sectors can "tell each other's stories" about each other's standards and practices, rather than disputing each other's numbers, and confidently share those stories with the public.

M&C Panel Scope and Objectives

The Panel will operate on a provincial level. It will work with and support local groups, as well as work co-operatively with other institutions, groups and processes to share work and avoid duplication. The primary objectives of the panel are as follows:

- Promote within all sectors and the public an understanding of, and confidence in monitoring and compliance practices;
- Promote collaborative decision making processes that generate opportunities for meaningful participation in monitoring and compliance decisions;
- Foster the use of monitoring and compliance practices that incorporate best practice standards, and involve transparent decisions that are fairly, and equally applied; and
- Identify and champion the vital changes needed to support monitoring and compliance initiatives in each sector to sustain wild salmon

The M&C Panel will be terminated after 3 years (2009-2012). This sunset provision is designed to force the Panel to prove its ability to make a difference in a timely manner. After three years a review is required to determine if sufficient support exists to carry on in the existing or an amended format, or to terminate the Panel.

Key M&C Panel Priorities

Priorities being pursued by the Panel reflect the results and insights gained through dialogue conducted by both the ISDF M&C Working Group during 2008-2009 and work completed by the Panel since being established in April 2009. The key priorities identified by the Panel include the following:

- Develop principles, standards and objectives for M&C programs
- Develop specific recommendations for improving M&C policies and practices in ways that ensure these are practical, affordable, timely and integrated across fisheries
- Identify incentives for each sector to take greater responsibility for promoting M&C Best Practices
- Establish and maintain linkage to local processes and share stories/approaches/outcomes
- Identify ways to increase sector participation in M&C decisions and improve communications
- Improve communications and public awareness regarding M&C issues, processes and outcomes

M&C Panel Composition and Leadership

The current Panel Members and Alternates identified for each sector include:

Sector	Member	Alternate
NGO	Craig Orr	Jeffery Young
First Nations	Mark Duiven Ken Malloway Tony Roberts Jr.	Les Sam Ernie Crey
Commercial	Peter Sakich	Ryan McEachern/Chris Ashton
Recreational	Chris Bos	Frank Kwak
Federal	Colin Masson	Mike Jones
Provincial	Wayne Saito	Bud Graham
Public Panel Member	Potential public figures have been identified that will be approached at a later date	

The roster of Panel Chairs to date is as follows:

Member	Term
Craig Orr	April 2009 – Nov 2009
Ken Malloway	Dec 2009 – Mar 2010
Peter Sakich	April 2010 – Mar 2011

M&C Panel Projects

Four projects have been identified by the Panel to begin to address M&C Panel priorities in a strategic manner:

Project 1 - Identifying Best Practices:

Identify what is working in monitoring and compliance programs, where have we “got it right”, where there are issues we need to “get it right”, and what are the incentives and criteria to ensure economic/social/ecological viability.

Project 2 - Communications, Awareness and Recognition:

About telling good stories and rewarding good behaviour – ensuring the use of effective Communications & Public Awareness approaches as well as providing recognition for Monitoring and Compliance leadership and excellence by individuals and organizations. Project will use storytelling and rich media to better communicate what is really happening on the ground in terms of monitoring and compliance on fisheries on the Fraser and Coast wide.

Project 3 - Collaborative Management and Governance:

Find areas where we can develop and build principles and examples of good collaborative management and demonstrate a new way of working collaboratively together (i.e., as the M&C Panel is doing)

Project 4 - Achieving High Levels of Compliance:

Encourage the use of restorative justice processes by affected communities or organizations to handle violations of fisheries laws and regulations to achieve high levels of voluntary compliance, develop active collaborative partnerships between compliance agencies and affected communities, and develop widespread community and public awareness and confidence in the fairness and effectiveness of compliance policies and practices.