Fisheries Productivity Investment Policy: A Proponent's Guide to Offsetting

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Context

The objective of the fisheries protection regime is to maintain or enhance the ongoing productivity and sustainability of commercial, recreational and Aboriginal fisheries. This can be achieved through a number of approaches:

- Direct investments in fisheries productivity and fisheries protection;
- Ensuring that funds from penalty provisions for infractions under the fisheries protection provisions of the *Fisheries Act* are invested in fisheries productivity initiatives;
- Enabling partner organizations to contribute to fisheries productivity; and
- Ensuring that proponents of projects that cause *serious harm to fish* are required to offset that harm to maintain and enhance the productivity of the fishery.

Hundreds of thousands of Canadians are engaged in protecting Canada's fisheries and supporting their productivity. Watershed groups, recreational fisheries and angling groups, local community groups and others work on habitat restoration, fisheries enhancements and other projects to contribute this effort. Provinces and territories are taking action and making investments in fisheries protection, and Aboriginal groups are important stewards of fisheries and the habitats that support them.

The Fisheries Protection Program will collaborate with these partners and stakeholders and take action to improve fisheries productivity.

Partnerships

It is recognized that the regulatory regime alone can only address present and future threats and that additional investments are needed to enhance the productivity of fisheries that have been affected by multiple and interacting threats.

The potential to address these impacts is through restorative action and partnerships with government, Aboriginal organizations, local groups and others in the fisheries conservation field. Many groups share a common interest in the conservation and restoration of fisheries. These groups have identified the need for increased federal leadership and partnership ability to enable like-minded stakeholders to work collaboratively. Working together toward common goals, tangible progress can be made in this area.

To this end, legislative amendments to the *Fisheries Act* were put in place to strengthen partnerships with partners and stakeholders to enhance fisheries protection. These changes allow the Minister of Fisheries and Oceans to enter into agreements with third parties (Aboriginal organizations, recreational fishing and angling groups, conservation groups, provinces, industry) to undertake measures and make investments to enhance fisheries protection, with the objective of improving fisheries productivity.

Environmental Damages Fund

Amendments to the *Fisheries Act* also require that all fines collected for fisheries protection offenses are directed to the Environmental Damages Fund to be used for initiatives that advance protection of Canada's fisheries. In addition, mandatory minimum fines have been included in the amended *Fisheries Act* thus increasing the potential amount of funds available to invest in fisheries productivity enhancements.

Funds are disbursed in the geographic region (local area, region, province or territory) where the incident occurred. Priority is given to restoration projects that address the damage caused by the original incident. Eligible recipients include non-governmental organizations, universities and academic institutions, Aboriginal groups, as well as provinces, territories and municipalities.

Recreational Fisheries Conservation Partnerships Program

The Recreational Fisheries Conservation Partnerships Program (RFCPP) was developed to support projects led by recreational fishing and angling groups, as well as conservation organizations, aimed at improving the conservation of habitat for recreational fisheries.

The program supports the sustainability and ongoing productivity of Canada's recreational fisheries by bringing like-minded partners together and pooling their resources to support the common goal of conserving and protecting Canada's recreational fisheries. The partnership approach makes the most of joint resources, allowing results that would not otherwise be possible.

Fisheries and Oceans Canada is making $10 million available over two years to support conservation activities through partnerships with local groups who will undertake a variety of projects to restore and protect recreational fisheries habitat. After external leveraging is taken into account, this funding represents a potential investment of as much as $20 million in fisheries habitat restoration.

Activities that directly restore recreational fisheries habitat are eligible for RFCPP funding. For example, the program can fund projects that mitigate streamside practices to improve the quality of recreational fisheries habitat, enhance habitat, manage the areas bordering streams, lakes and wetlands, and enhance connectivity of water bodies through the removal of anthropogenic barriers to fish passage or enhancing fish-ways.

Salmon Conservation Stamp

The protection of salmon habitat is an important factor contributing to the long-term sustainability of Pacific salmon fisheries.

The Salmon Conservation Stamp is a $6.00 decal the size of a postage stamp that must be purchased annually by anglers if they wish to keep Pacific salmon caught in tidal waters along Canada's west coast. The stamp is bought in addition to the federal fishing license and is considered a special user fee.

Since 1996, the Pacific Salmon Foundation, a not-for-profit organization which helps fund community-led projects to rehabilitate streams and rivers, has received $1.00 from the sale of each stamp purchased by an adult, and $4.00 from each stamp purchased by anglers under 16 years of age. The balance was directed to consolidated federal revenue. The 2013 federal budget includes a provision that will direct 100 per cent of the user fees generated through stamp sales to the Foundation. That will mean approximately an additional $1 million per year for volunteer salmon conservation and enhancement projects funded through the Foundation's Community Salmon Program. In addition, the Foundation is able to leverage support from its partners – for each $1 raised through the Salmon Conservation Stamp, $10 is leveraged for local community projects through monetary and in-kind donations.

Proponents' Responsibilities

Each of the above-noted initiatives are tangible examples of how the legislative changes to the *Fisheries Act* have enabled the investments that both the federal government and its partners and stakeholders are making to support and enhance fisheries productivity.

In addition to this work, proponents of projects that cause *serious harm to fish* have an important role to play. This guide outlines the proponent's role in supporting and enhancing the sustainability and ongoing productivity of commercial, recreational and Aboriginal fisheries. Project proponents now have clearly defined responsibilities to make the necessary investments to protect fisheries and to offset any residual impacts that may result from their projects.

Through amendments to the *Fisheries Act*, a regulatory regime is now in place to clearly articulate proponent's responsibilities to avoid, mitigate and offset threats to commercial, recreational and Aboriginal fisheries. This document focusses on the regulatory decision-making process under Section 35 of the *Fisheries Act*. Proponents are responsible for making the necessary investments to protect fisheries and to offset any residual impacts that may result.

Purpose of the Policy

The Fisheries Productivity Investment Policy provides guidance on undertaking effective measures to offset *serious harm to fish* that are part of or that support a commercial, recreational or Aboriginal fishery, consistent with the fisheries protection provisions of Canada's *Fisheries Act*.

The Policy was prepared by Fisheries and Oceans Canada (DFO) to assist proponents of existing or proposed works, undertakings or activities (hereafter referred to as projects) that could result in *serious harm to fish*. It will also be of interest to other governments and organizations working in partnership with DFO in support of fisheries protection.

The Policy is part of a set of guidance documents prepared by DFO in support of recent amendments to the *Fisheries Act*. It builds on the general policy guidance provided in the Fisheries Protection Policy Statement.[1]

The Policy is organized into the following parts:

Part 1 provides background information on the *fisheries protection provisions* of the *Fisheries Act*;

Part 2 provides an *overview of applying offsetting measures* for fisheries protection, including objectives, guiding principles and types of measures;

Part 3 describes *step-by-step procedures* for developing a plan to apply offsetting measures under the fisheries protection provisions of the *Fisheries Act*, including selecting the appropriate measures, determining the extent of measures needed, and ensuring monitoring and reporting; and

Part 4 provides contact information and links for more information on key topics.

The Fisheries Productivity Investment Policy is for information purposes only. It is not a substitute for the *Fisheries Act* or its Regulations. In the event of an inconsistency between this document and the *Fisheries Act* or its Regulations, the legislation will prevail.

Approval Authority, Effective Date and Review Date

This Fisheries Productivity Investment Policy was approved by the Minister of Fisheries and Oceans and it is effective as of November 25, 2013. It will be reviewed at least every five years.

1 DFO guidance documents and the Fisheries Protection Policy Statement are available at www.dfo-mpo.gc.ca/habitat/habitat-eng.htm.

Part 1: The Fisheries Protection Provisions of the *Fisheries Act*

1.1 Prohibition Against Causing *Serious Harm to Fish*

In 2012, the fisheries protection provisions of the *Fisheries Act* were amended to strengthen the ability of DFO to manage threats to the sustainability and productivity of Canada's commercial, recreational and Aboriginal fisheries. A key change included a new prohibition against causing *serious harm to fish*:

> *35. (1) No person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery.*

"*Serious harm to fish*" is defined in section 2 of the *Fisheries Act* as the death of fish, or permanent alteration to or destruction of fish habitat.

1.2 *Fisheries Act* Authorization

Proponents are responsible for avoiding and mitigating the *serious harm to fish* that could result from their projects. When proponents are unable to completely avoid *serious harm to fish* such that some residual *serious harm to fish* remains, they must seek an authorization under paragraph 35(2)(*b*) of the *Fisheries Act* to carry on a work, undertaking or activity.

The information requirements and documentation that proponents must submit in order to obtain an authorization is set out in the ***Applications for Authorization under Paragraph 35(2)(b) of the*** **Fisheries Act** ***Regulations***.[2] Specific to offsetting, these regulations require that proponents develop offsetting plans (see Part 3 of this guide).

Under Section 6 of the *Fisheries Act*, the Minister of Fisheries and Oceans must take into account the following factors in reviewing the application for an authorization:

- the contribution of the relevant fish to the ongoing productivity of commercial, recreational or Aboriginal fisheries;
- fisheries management objectives;
- whether there are measures and standards to avoid, mitigate or offset *serious harm to fish* that are part of a commercial, recreational or Aboriginal fishery, or that support such a fishery; and
- the public interest.

Additional information on the interpretation and application of the new fisheries protection provisions may be found in the Fisheries Protection Policy Statement.

1.3 Hierarchy of Measures for Fisheries Protection

When considering an application for an authorization, the Minister must consider whether there are measures and standards to avoid, mitigate or offset *serious harm to fish* that are part of or that support a commercial, recreational or Aboriginal fishery. These three factors establish a hierarchy of measures where efforts should be made to avoid impacts first. When avoidance is not possible, then efforts should be made to mitigate impacts caused by the project in question. After these actions, any residual impacts would normally require authorization and should then be addressed by offsetting. An overview of the linkages between avoidance, mitigation and offsetting measures and fisheries productivity is provided in Figure 1.

2 Additional guidance on these regulations may be found in ***An Applicant's Guide to Submitting an Application for Authorization under Paragraph 35(2)(b) of the*** **Fisheries Act**.

Avoidance Measures

Proponents should ensure, first of all, that all efforts have been made to design projects and activities or adopt standards to prevent impacts from occurring. With appropriate design and planning, projects may be implemented in ways to avoid *serious harm to fish* during all phases of the project including construction, operation, maintenance, and decommissioning.

Avoidance measures may include:

- locating the project infrastructure in areas where no harm will occur;
- designing a project and employing measures so that no harm occurs; and
- timing certain activities to prevent interactions with fish at key life stages such as spawning or migration.

Mitigation Measures

When avoidance of *serious harm to fish* is not possible, then proponents must mitigate possible impacts through best available practices to reduce the extent, intensity and duration of impacts on fish. Mitigation measures should be implemented during all phases of the project.

Mitigation measures include:

- locating project infrastructure and other physical disturbances where impacts are minimized;
- employing best practices that minimize harm when carrying out projects;
- undertaking measures to stabilize disturbed sites to minimize ongoing or downstream impacts; and
- timing certain activities to minimize interactions with fish and fish habitat.

Offsetting Measures

If there is likely to be *serious harm to fish* after the application of avoidance and mitigation measures, then the proponent must develop a plan to undertake offsetting measures to counterbalance the unavoidable residual *serious harm to fish*. Offsetting measures, also known as offsets, are measures that are undertaken to counterbalance unavoidable *serious harm to fish* resulting from a project, with the goal of maintaining or improving the productivity of the commercial, recreational or Aboriginal fishery.

There is flexibility in the selection of offsetting measures provided they are focused on improving fisheries productivity. Offsets are most likely to balance losses when they benefit the specific fish populations and areas that are affected by a development project. When determining the location for offsetting, offsets that occur within the vicinity of the project or within the same watershed are preferable. Offsetting measures should not be applied outside of provincial or territorial boundaries. Offsetting measures could be undertaken in water bodies or for fish species other than those affected by the project, provided the measures are supported by clear fisheries management objectives or regional restoration priorities

Offsetting plans are negotiated on a case-by-case basis and may require consultation with Aboriginal groups. Where offsetting measures are proposed on provincial or territorial lands, consultation may also be required with the province or territory.

Some projects are large, complex or otherwise likely to cause large and lasting changes to habitat or the death of many fish. In those cases, substantial expert planning will be needed to identify appropriate measures for avoidance, mitigation and offsetting of the residual *serious harm to fish* to ensure the sustainability and ongoing productivity of commercial, recreational or Aboriginal fisheries.

Figure 1. Overview of avoidance, mitigation and offsetting[3]

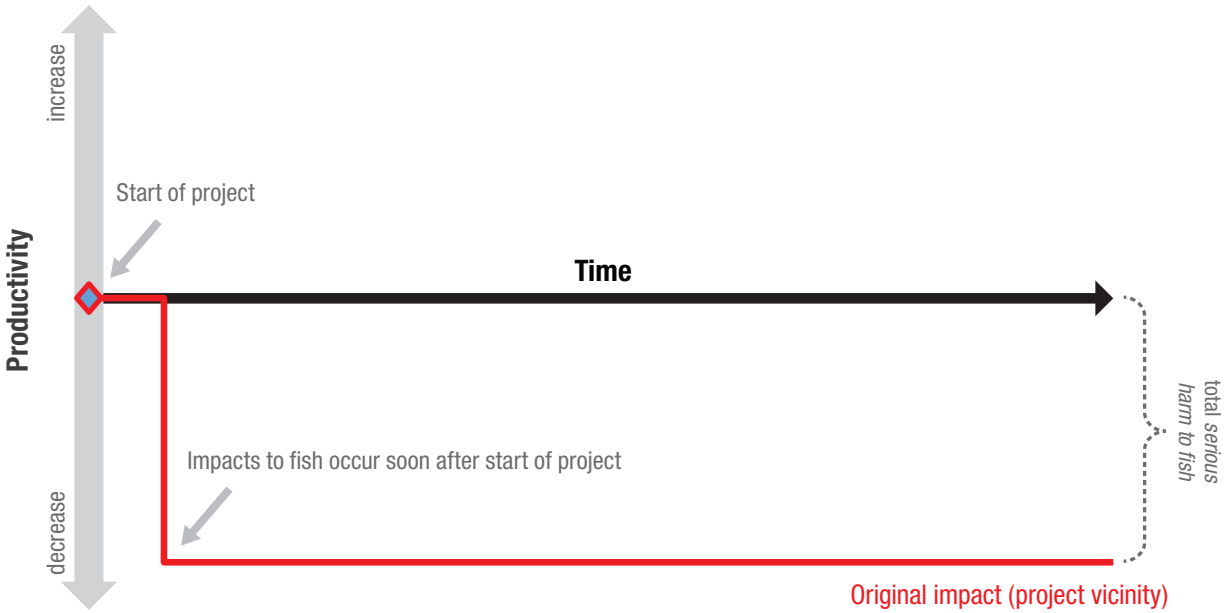

Figure 1a. The amount of serious harm to fish *is determined after all measures to avoid have been taken into consideration. In (a), this is represented by the distance between the red line (the impact) and the black line representing no change in fisheries productivity. Impacts to fisheries productivity depend both on the amount of* serious harm to fish *and on the length of time that the impacts are in place prior to any offsetting.*

Figure 1b. Applying mitigation can reduce the amount of serious harm to fish. *In (b), mitigation is the orange dotted line. The distance between the orange mitigation line and the red impact line represents the mitigable effects. The distance between the orange mitigation line and the black line represents the residual effects (i.e., the impacts that cannot be avoided or mitigated). The amount of offsetting required is equal to amount of residual effects.*

3 Figure 1 is adapted from: ICMM IUCN (2012) Independent report on biodiversity offsets. Prepared by The Biodiversity Consultancy.

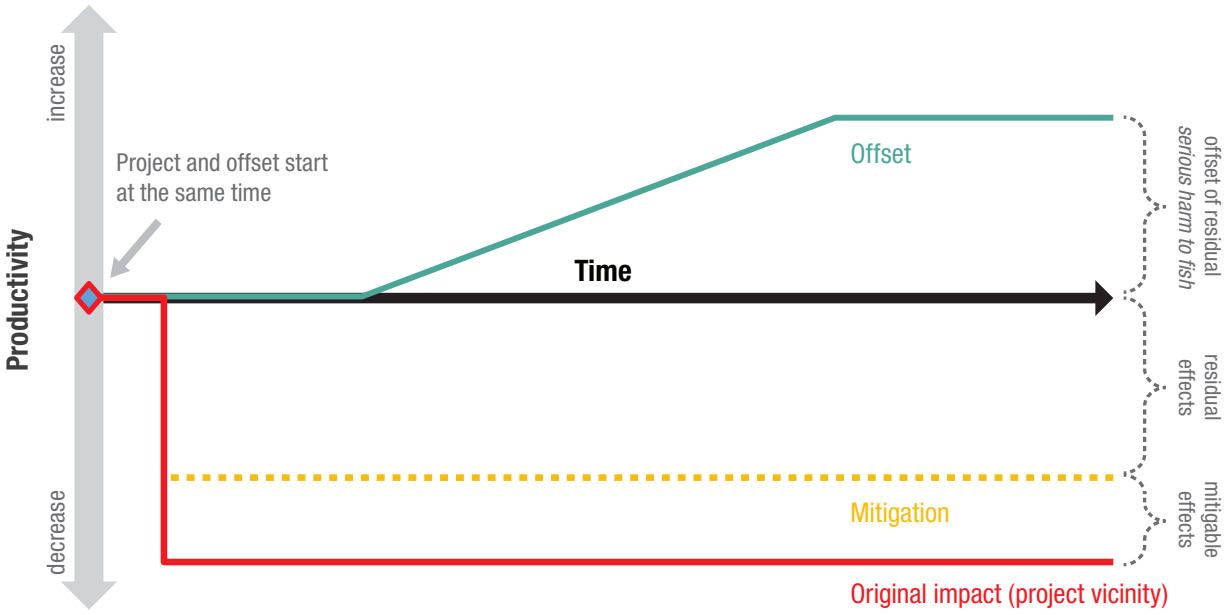

Figure 1c. Starting the offset as soon as possible will help to reduce overall impacts to fisheries productivity. In (c), the project and the offset start at the same time. The benefits from the offset are shown by the green line but there is a time lag between when the offset starts and the benefits begin to accrue. The distance between the green offset line and the black line represents the benefits of the offset.

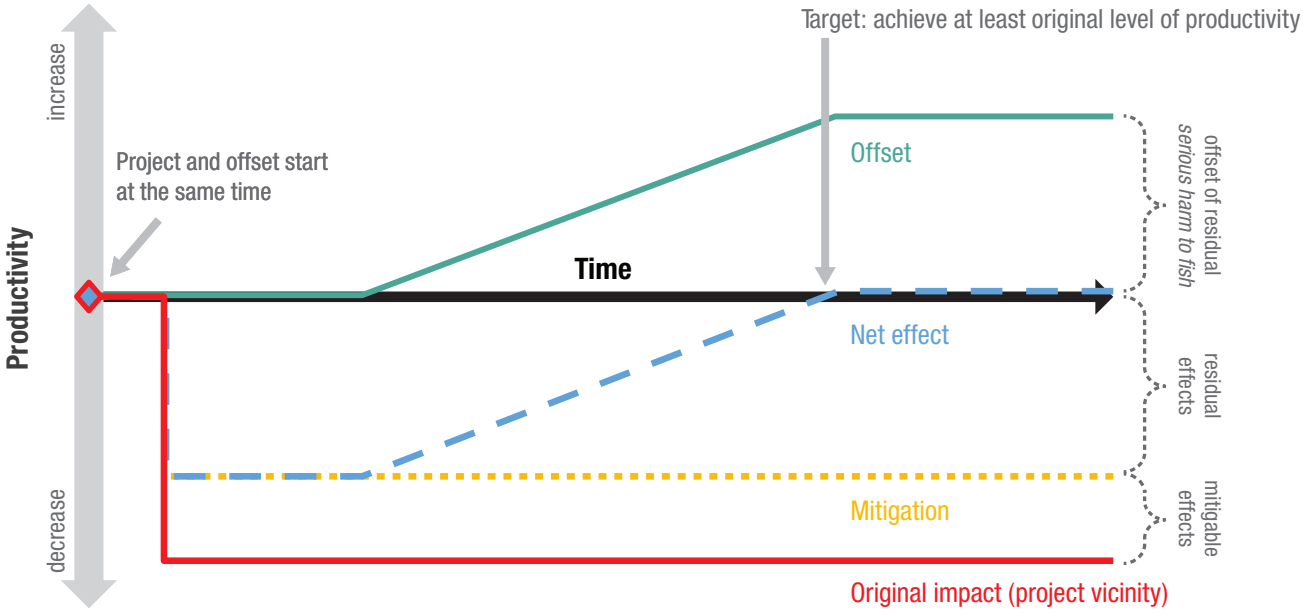

Figure 1d. The overall goal of offsetting is to balance the impacts to fisheries. In (d), this is shown by the blue line (net effect). There is a time lag before the balance between the impact and the offset is achieved, because it takes time for the offset to become effective.

Part 2: Offsetting Measures for Fisheries Protection

2.1 Objectives

The objective of offsetting is to counterbalance unavoidable *serious harm to fish* and the loss of fisheries productivity resulting from a project. Offsetting measures can support and enhance the sustainability and ongoing productivity of fish that are part of or support a commercial, recreational or Aboriginal fishery.

Offsetting measures may take a variety of forms, ranging from localized improvements to fish habitat to more complex measures to address factors limiting fish production. The choice of appropriate offsetting measures will vary based on the state, resiliency and natural biodiversity of the ecosystem, the limiting factors affecting the fisheries, and the extent, duration and intensity of the impact. In some instances, the most desirable offsetting measure may be a replacement of the same type of habitat that is affected by the project. In other situations, offsetting measures should address threats to fisheries productivity other than those caused by the project.

2.2 Guiding Principles

In applying offsetting measures for fisheries protection, the proponent should select measures that meet the following principles:

Principle 1: Offsetting measures must support fisheries management objectives or local restoration priorities.

Offsets should be designed so they contribute to the objectives identified in fisheries management plans, where such plans exist. Where such objectives do not exist or where they do not describe restoration priorities, fisheries managers, Aboriginal groups, local organizations and stakeholders may help to identify areas that require restoration or improvement.

In situations where offsets are realized away from the project site, a robust rationale is required and should be communicated to potentially affected parties.

Principle 2: Benefits from offsetting measures must balance project impacts.

Offsets should be scaled such that they are proportional to the impacts caused by the project. Offsets are more likely to successfully balance losses when they benefit the specific fish populations in the geographic areas that are affected by a proposed development project or activity.

With an "in-kind" approach to offsetting, the habitat that is destroyed or permanently altered is replaced by the same quantity and quality of the same type of habitat, with additional habitat offsetting required to account for uncertainty and time lags. With this approach, balancing the losses to fish and fish habitat caused by a project with the benefits that result from offsetting measures is a straight-forward calculation.

With an "out-of-kind" approach to offsetting, offsetting measures target the factors limiting productivity in a given area by means other than replacing what has been lost. It can be more complicated to measure and compare losses caused by the project with offsetting gains when an out-of-kind approach is adopted, but in some cases greater productivity gains may be achieved through this approach. More information on calculating losses and gains is provided in Part 3 of this guide.

Proponents should make all reasonable efforts to avoid time delays between the impacts and the functioning of the offsetting measures. When a time delay is unavoidable, the offset must make up for fisheries productivity that has been lost because of the delay. For example, measures may include building more habitat than is lost so that once the habitat becomes functional it will produce enough fish to make up for the productivity lost during the time lag.

Where the residual harm to fish cannot be adequately offset because of the irreplaceability or vulnerability of the fish or fish habitat, an authorization may not be acceptable and may be refused.

Principle 3: Offsetting measures must provide additional benefits to the fishery.

Proposed offsets should provide additional benefits to fisheries productivity. This means that benefits to the fishery are caused by offset actions and not by other factors. Fisheries benefits that are being or will be provided by other programs or activities should not be considered offsets.

Proposed offsets should not address environmental damage for which another person or organization is clearly responsible. The restoration of *orphaned sites* – those with no known responsible party or owner or with no possibility of restoration due to company closure, bankruptcy or other similar circumstance – could be considered an appropriate offsetting measure. However, restoration of other sites that are *not* orphaned would not be considered an appropriate offset because such sites should be cleaned up by the responsible party.

Principle 4: Offsetting measures must generate self-sustaining benefits over the long term.

Offsets should strive to generate self-sustaining benefits to fisheries productivity. The offset benefits to the fisheries should last at least as long as the impacts from the development project.

2.3 Types of Offsetting Measures

Offsetting measures may be grouped into three general categories. The proponent's selection of one or more measures should respect the guiding principles and reflect the specific circumstances of the project for which the offset is required.

Habitat Restoration and Enhancement

Habitat restoration and enhancement includes physical manipulation of existing habitat to improve habitat function and productivity.

Examples of habitat restoration and enhancement offsetting measures include:

- increasing structure through the placement of coarse material or large woody debris to improve habitat structures such as spawning beds, reefs, etc.;
- increasing shoreline complexity;
- river bank stabilization and re-vegetation of riparian areas;
- improving access to off-channel habitats;
- removal of anthropogenic barriers to fish migration;
- enhancement of vegetated areas in lakes, estuaries and coastal areas; and
- increasing the availability of preferred hydraulic habitats in rivers with regulated water flows.

This group is generally focused in areas where habitat conditions are considered poor or degraded as such areas provide opportunity for the most benefit.

Habitat Creation

Habitat creation is the development or expansion of aquatic habitat into a terrestrial area. These offsetting measures are generally used when productivity that was destroyed or degraded by a project cannot be restored by manipulation of the original or surrounding aquatic habitat.

When habitat creation is proposed to offset habitat losses, it must be reasonably expected that replacing the destroyed habitat with the same kind of habitat in the project area will maintain current productivity. Changing one habitat feature for another should be considered only when there is sufficient knowledge to be reasonably confident that the change in habitat will improve productivity.

Examples of habitat creation offsetting measures include the creation or expansion of natural stream channels, lakes, side channel habitats, wetlands, bays or marshes.

Chemical or Biological Manipulations

This group of offsetting measures includes chemical manipulation of water bodies, stocking of fish or shellfish, and management or control of aquatic invasive species. These measures should be used only when the other groups of offsetting measures are not available, and only under specific circumstances, such as where the site-specific issues are well understood, the limitations to fisheries productivity are known, and fisheries management plans contain clear objectives for the fishery. Such methods may be considered where they conform to the guiding principles outlined in section 2.2 of this guide.

When chemical or biological manipulations are proposed as potential offsets, the proponent must provide a sound rationale to demonstrate how the measure will benefit fisheries productivity. The rationale should also provide scientifically defensible evidence of the successful application of the measure under similar conditions (e.g., similar aquatic ecosystems).

Complementary Measures

Complementary measures are investments in data collection and scientific research related to maintaining or enhancing the productivity of commercial, recreational or Aboriginal fisheries. In areas where there are limited opportunities for measures to offset fisheries productivity losses and where there is limited understanding or data on fisheries populations, complementary measures may be considered in addition to other offsetting measures. Complementary measures may comprise up to 10% of the required amount of offsetting; the remaining 90% of the offset amount must consist of habitat enhancement, restoration or creation offsetting measures. Complementary measures are not regarded as offsetting measures on their own because they generally do not give rise to measurable, on-the-ground, fisheries conservation outcomes. However, they may indirectly support meeting these outcomes.

Complementary measures may be considered when they take into account the guiding principles outlined in section 2.2 of this guide. For example, complementary measures such as data collection and scientific research should be designed to fill any significant knowledge gaps regarding fisheries productivity such that fisheries management objectives or local restoration priorities may be established, and provide benefits that are in addition to any existing research or data collection programs. In addition, complementary measures must be undertaken in a transparent, scientifically robust and timely manner by a qualified individual or organization approved by the Department. Complementary measures may not replace monitoring requirements related to the offsetting measures.

Complementary measures should only be considered in exceptional circumstances such as in remote, pristine areas where there is a lack of information about fisheries productivity and where offsetting opportunities are limited. The application of these measures is determined on a case-by-case basis, in consultation with DFO. A sound rationale describing why other offsetting methods are not appropriate for fulfilling the entire offset requirement, and a detailed plan outlining how the proposed complementary measure will be carried out, evaluated, and communicated, will both be required.

2.4 Options for Offsetting

Offsetting measures typically are applied by proponents in two ways:

- through project-specific measures; or
- through proponent-led habitat banks.

Project-specific offsets are carried out by the proponent in response to a particular impact from a particular project. In contrast, proponent-led habitat banks are carried out to offset multiple impacts from a single project or from multiple projects.

Habitat Banking

A proponent-led habitat bank is a formalized approach for creating offsets using aquatic areas where various offsetting methods, such as habitat creation, enhancement or restoration, are used to achieve offsetting in advance of a project's impact.

A proponent-led habitat bank is a section of lake, river, or ocean designated and managed to enhance or improve fisheries productivity. These benefits may be achieved through the creation or enhancement of aquatic areas to provide for sustainability and ongoing productivity of commercial, recreational, and Aboriginal fisheries. The benefits accumulated in the habitat bank are counted as credits, while *serious harm to fish* caused by a project or projects are considered debits. A proponent that has established the bank may "*withdraw*" credits from the habitat bank to offset the *serious harm to fish* resulting from their project. When the balance of habitat credit in the habitat bank reaches zero, the bank is closed and no more "*withdrawals*" can be made.

Proponent-led habitat banks may be useful where:

- a large number of impacts, each affecting a small geographic area, arise from a single large project; or
- *serious harm to fish* may result from a number of small projects.

An additional benefit of habitat banking is that the bank is established in advance of the impact. Consequently, there is less uncertainty related to the effectiveness of the offsetting measures or the time required for the offsetting measures to become functional. Finally, proponent-led habitat banks help reduce the time and resources required to issue *Fisheries Act* authorizations, because the value of the habitat credits within the habitat bank is known and the development of the offsetting plan is simplified.

Proponent-led habitat banks require authorization and must follow the application process established by the ***Applications for Authorization under Paragraph 35(2)(b) of the*** **Fisheries Act** ***Regulations***. The terms and conditions related to the creation, operation and maintenance of a proponent-led bank will be included as conditions of the authorization or contained in an agreement that will be referenced in the original authorization and subsequent authorizations related to the habitat bank.

The proponent is responsible for ensuring that the conditions of the authorization are met and for constructing and maintaining the habitat bank site.

A habitat bank site must be evaluated and approved by DFO prior to the proponent proceeding with the work. Therefore, the proponent should provide DFO with appropriate information describing the state of the habitat, taking into account the following considerations:

- A suitable proponent-led habitat bank must meet the offsetting principles and be demonstrated to be functional prior to use as a habitat bank.
- Issues of land ownership and access should be clear. Proponents are responsible for ensuring that all required permits are in place. The proposed habitat banking site should not be part of a previous authorization or court-ordered restoration.

- The existence of a habitat bank does not guarantee the authorization of future projects. All projects will be reviewed on their own merit and a decision to authorize a project will be made independently of the existence of a habitat bank.
- A habitat bank must be evaluated prior to each use as an offset to ensure that the habitat is functioning to provide benefits to fisheries as expected and to determine its value. This will require comparison of the current habitat with the data collected to describe the "before" conditions.
- After drawing on the bank, the proponent must document the portion of the bank that has been used. If only a portion of the bank is used for any given offset, it is important to document which part of the bank remains available for future use as offset credits. If the productivity of any part of the bank increases after it has been used as an offset, this increase will not be considered additional banked habitat.
- The proponent must maintain detailed records to track the creation and use of habitat banks to avoid double-crediting.

Part 3: Preparing an Offsetting Plan

The offsetting plan is included as part of the proponent's application for authorization under paragraph 35(2)(*b*) of the *Fisheries Act*. This part of the guide outlines the content and key steps of an offsetting measures plan.

Proponents are encouraged to review ***An Applicant's Guide to Submitting an Application for Authorization under Paragraph 35(2)(b) of the*** **Fisheries Act** for more detailed information.

3.1 Content of the Plan

The ***Applications for Authorization under Paragraph 35(2)(b) of the*** **Fisheries Act** ***Regulations*** set out the information requirements and documentation of an offsetting measures plan. These requirements include:

- a description of the measures that will be implemented to offset the *serious harm to fish*;
- an analysis of how those measures will offset the *serious harm to fish*;
- a description of the measures and standards that will be put in place during the implementation of the offsetting plan to avoid or mitigate any adverse effects on fish and fish habitat that could result from the implementation and an analysis of how those measures and standards will avoid or mitigate those adverse effects;
- a description of the monitoring measures that will be put in place to assess the effectiveness of the selected offsetting measures;
- the timeline for the implementation of the offsetting plan;
- a description of the contingency measures and associated monitoring measures that will be put into place if the measures are not successful in offsetting the *serious harm to fish*;
- an estimate of the cost of implementing each element of the offsetting plan; and
- if the implementation of the offsetting plan requires access to lands, or to water bodies via lands that are not owned by the applicant, a description of the steps that are proposed to obtain access to the lands, water sources or water bodies in question. This information is not required if the applicant is the provincial, territorial or federal government.

3.2 Key Steps

Offsetting plans should be developed by proponents on a case-by-case basis. Figure 2 summarizes the key steps in preparing an offsetting plan.

Figure 2. Key Steps in Preparing the Offsetting Plan

Steps	Considerations
Step 1: **Characterize the residual *serious harm to fish***	• Quantify project impacts
Step 2: **Select offsetting measures**	• Follow guiding principles for offsetting measures
Step 3: **Determine the amount of offsetting required**	• Quantify offset benefits • Balance offset benefits with project impacts • Account for uncertainty • Address implementation time lags
Step 4: **Establish the monitoring and reporting of conditions**	• Assess offset effectiveness • Describe contingency measures
Step 5: **Submit plan to DFO**	• Letter of credit • Estimate offset implementation costs • Secure access to lands and water bodies

Step 1: Characterize the residual serious harm to fish

After applying all appropriate avoidance and mitigation measures, the proponent should determine and quantify the *serious harm to fish* that remains.[4] This is called the residual *serious harm to fish*.

Pathways of Effects diagrams are tools developed by DFO that may help to identify the types of effects on fish and fish habitat that may remain after the application of certain avoidance and mitigation measures.

By understanding the nature of the residual *serious harm to fish*, it is possible to estimate the consequences on fisheries productivity and, in turn, to characterize the contribution of relevant fish to the ongoing productivity of commercial, recreational or Aboriginal fisheries (Paragraph 6(a) of the *Fisheries Act*).

4 *"Serious harm to fish"* is defined in the *Fisheries Act* (Section 2) as "the death of fish, or any permanent alteration to, or destruction of, fish habitat."

The residual *serious harm to fish* should be determined and quantified for each impact type in relation to each phase of a proposed work, undertaking and activity. This may include determining the extent, duration and magnitude of the impacts on fish and fish habitat in terms of the number of fish killed, area of habitat destroyed, area of habitat permanently altered and degree of alteration.

It is important to carefully describe and quantify the residual *serious harm to fish* because this is the loss that must be counterbalanced by the proposed offsetting measures.

Step 2: Select offsetting measures

The offsetting plan should include information about the objective of the proposed offsetting measures and details about the measures that are proposed.[5]

The objective of the offsetting measures is guided by the extent, duration and magnitude of the residual *serious harm to fish*. Offsetting measures may be "in-kind" where the same kind of habitat and fisheries that are lost are replaced. In this case, the offsetting measures aim to replace the fish that have been killed, or the habitat that has been permanently altered or destroyed, by the proposed project through habitat restoration or creation. Alternatively, offsetting measures may be "out-of-kind" where offset measures target the limiting factors of productivity in a given area rather than replacing exactly what was lost. Out-of-kind offsetting measures may include the restoration or creation of habitat types that are different from the habitat type that was lost or chemical or biological manipulations.

Regardless of whether an in-kind or out-of-kind approach is undertaken, the proposed offsetting measures must meet the guiding principles for offsetting measures described in Part 2 of this document.

The offsetting plan should also include clearly articulated measures of success that are linked to the objective of the offsets and that provide benchmarks for measuring progress, as well as a schedule that reflects the timeline, start and end dates for implementing the offsetting measures.

Step 3: Determine the amount of offsetting required

To determine the amount of offsetting required to counterbalance the effects of a proposed project or activity, the proponent should take into account that offsetting measures:

a) should provide benefits that are proportional to the loss caused by the project;

b) may need to be increased in order to manage uncertainty associated with the proposed offset; and

c) may need to be increased when there is a time lag between the impact and the time it takes for the offsetting measure to become functional.

Figure 1 provides an overview of the linkages between offsetting measures and fisheries productivity as well as consideration of uncertainty and time lags.

5 For more information on the types of offsetting measures and the conditions likely to influence their success or failure, see reports available from DFO's Canadian Scientific Advisory Secretariat.

a) Quantifying losses and gains

Offsetting equivalency is a term used to describe the comparison between impacts of a project and the benefits of an offsetting activity. In its simplest form, balancing losses and gains for in-kind offsets require that the same amount of habitat that is lost be restored or created as well as additional habitat to address uncertainty and time lags.

Out-of-kind offsetting measures require more complex analyses to ensure that the offsetting measures balance losses. A variety of equivalency analyses exist; generally, they require the calculation of a common currency that may be used to compare losses and gains across fish life stages, species and habitat types. These methods may be data intensive and require specific expertise. An overview of equivalency analyses is provided in publications by DFO's Canadian Science Advisory Secretariat. Quantifying equivalency opens the door to more flexible approaches to offsetting. However, in the absence of data to support the calculation of equivalency, fisheries productivity may be better served by in-kind offsetting measures.

b) Accounting for uncertainty

There are many sources of uncertainty when developing and implementing offsetting measures. For example, uncertainty may arise in the initial prediction of residual *serious harm to fish*, in the offsetting measures themselves through design or implementation failure, or from the overestimation of the benefits of a particular offsetting measure. In addition to the variability associated with the offsetting measures themselves, uncertainty may also arise from the natural variability of fish populations and ecosystem dynamics, a changing climate and invasive species.[6]

For in-kind offsetting, the approach to addressing the general uncertainty associated with working in natural environments is to create or restore additional habitat. When untested offsetting methods are proposed, even higher amounts of offsetting and more rigorous monitoring may be required to address the uncertainty.

When addressing uncertainty, proponents should recognize that:

- habitat restoration projects may improve fish productivity but these projects may also experience structural or ecological failure due to changing environmental conditions;
- habitat creation may improve fish productivity but there may be long time lags before created habitat functions as effectively as natural habitats;
- fish stocking may increase productivity but may also result in negative impacts to the reproductive success or fitness of natural populations;
- chemical alteration may improve the productivity of a system but often requires continued maintenance; and
- untested techniques or methods may increase risks of failure of the offsetting measures.

Equivalency analyses for out-of-kind offsetting measures factor in uncertainty in a more precise and quantitative fashion; however, the analytical approach to determine that losses have been balanced depends on the type of equivalency analysis employed. Any equivalency analysis used must be accompanied by a clear rationale to demonstrate its appropriateness for the particular project.

6 For more information on the types of offsetting measures and the conditions likely to influence their success or failure, see the publications by DFO's Canadian Science Advisory Secretariat.

c) Time lags

Time lags between the damage caused by the impact and the functioning of the habitat – ranging from months to even years – may contribute to fisheries productivity losses. Time lags should be avoided where possible by building the offsetting measures prior to the project. When a time delay is unavoidable, the offset must include measures that account for the time delay to make up for the lost fisheries productivity.

With in-kind offsetting measures, the approach to addressing delays in the function of the offset is to require the creation or restoration of additional habitat. This helps to ensure that that offset replaces the fish and fish habitat that was initially destroyed as well as the productivity lost during the delay. When offsetting measures are undertaken in advance of project impacts, there is no need to account for time lags.

As with accounting for uncertainty, equivalency analyses for out-of-kind offsetting measures account for time lags in a more precise and quantitative fashion. Again, the analytical approach depends on the type of equivalency analysis employed and any equivalency analysis used must be accompanied by a clear rationale to demonstrate its appropriateness for the particular project.

Step 4: Establish the monitoring and reporting of conditions

Monitoring and reporting conditions should be described in the offsetting plan as they will be included as conditions of the authorization. Common monitoring and reporting conditions may include the provision of:

- dated photographs of works undertakings, activities or operations related to mitigation measures and photographs of completed offsetting measures;
- timelines for monitoring and reporting;
- monitoring and inspection records;
- details of any mitigation changes, corrective actions or contingency measures that were followed in the event that mitigation or offsetting measures did not function as described; and
- the methodology and criteria that will be used to evaluate the success of the offsetting measures.

Monitoring and reporting of offsetting measures must be undertaken for a period of time sufficient to allow for:

- biological or physical changes to be reflected in the data collected;
- possible adjustments to the monitoring to better estimate changes in fishery productivity; and
- the restored habitat to reach full ecological functionality (that is, supporting fish reproduction, growth, and survival).

Should an offsetting measure not be properly designed or implemented, then the proponent is responsible for the maintenance or repair of the offsetting measures, as may be set out as conditions of the *Fisheries Act* authorization. The requirement for adjustments and contingencies will be included in the terms and conditions of the authorization.

Proponents are responsible for implementing offsetting plans and monitoring their effectiveness, as well as for reporting on implementation and the results of monitoring. Monitoring must be designed to confirm that the offsetting measures have been effective in counterbalancing the *serious harm to fish* and may identify the need for contingency measures should deficiencies be found.

Step 5: Submit plan to DFO for review

The proponent should prepare an offsetting plan in accordance with the information requirements set out in the *Applications for Authorization under Paragraph 35(2)(b) of the* Fisheries Act *Regulations*. The offsetting plan is submitted as part of the proponent's application for an authorization.

When the proponent's application is complete, DFO will either issue an authorization or notify the applicant that the authorization is refused within 90 calendar days. There are several circumstances under which the time limit ceases to apply. The detailed information on the process and time limits is provided in the *Applications for Authorization under Paragraph 35(2)(b) of the* Fisheries Act *Regulations.*

Letter of credit

The proponent's plan must include a letter of credit issued by a recognized Canadian financial institution. The letter ensures that if conditions of the authorization are not completed, DFO can access funds to implement all remaining elements of the plan. The amount of the letter of credit should be sufficient to complete the offsetting plan and monitoring program.

Additional guidance on letters of credit is available in the *Treasury Board Policy on Letters of Credit (Appendix R)*.[7]

Cost of implementing offsetting plan

The monetary value of the letter of credit is determined by an estimate of the cost for implementing all elements of the offsetting plan, including elements related to monitoring, and maintenance of offsetting features. The estimate should consider any additional expenses that could be incurred by DFO to complete the offsetting plan (e.g., costs for administration, costs for mobilization, cost of external expertise, etc.), and allow for cost overruns for remobilizing machinery onto the work site.

Part 4: Additional Information

The following DFO guidance documents are available at www.dfo-mpo.gc.ca:

- *An Applicant's Guide to Submitting an Application for Authorization under Paragraph 35(2)(b) of the* Fisheries Act
- Fisheries Protection Policy Statement

The Canadian Science Advisory Secretariat has prepared detailed analyses of several key issues related to offsetting measures, including studies on measuring productivity, and the types of offsetting measures and the conditions likely to influence their success or failures. These documents are available at: www.dfo-mpo.gc.ca/csas-sccs/index-eng.htm.

7 *The Treasury Board Policy on Letters of Credit (Appendix R*) may be found at: www.tbs-sct.gc.ca/pubs_pol/dcgpubs/Contracting/contractingpol_r_e.asp