Stewarding Agricultural Watercourses

What We Heard – Engagement Summary Report

upland agricultural consulting

2022

CANADIAN AGRICULTURAL PARTNERSHIP

BRITISH COLUMBIA

Canada

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Acronyms

AF	Ministry of Agriculture and Food
ALC	Agricultural Land Commission
ALR	Agricultural Land Reserve
BC	British Columbia
BMP	Beneficial Management Practices
EFP	Environmental Farm Plan
LWRS	Ministry of Land, Water and Resource Stewardship
TRAN	Ministry of Transportation and Infrastructure
NGO	Non-Governmental Organization
PAg	Professional Agrologist
RPBio	Registered Professional Biologist
SAR	Species at Risk
WSA	Water Sustainability Act

1.0 Introduction

Over a period of decades, the Ministry of Agriculture and Food (AF) has worked with producers, Non-Governmental Organization (NGOs), industry organizations and agencies to enhance stewardship of riparian areas threaded throughout agriculture production lands. The Environmental Farm Plan (EFP) and Beneficial Management Practices (BMP) programs support producers in maintaining and enhancing riparian areas through improved stream crossings, alternative watering sources, exclusion fencing, and re-vegetation. Despite the ongoing riparian stewardship work undertaken by AF and the farming community there still a perception that agriculture is not effectively managing riparian areas.

The Stewarding Agricultural Watercourses project aims to uncover key issues and opportunities that will allow AF to build on the programs currently in place and take the next steps towards water resource stewardship on agricultural lands. This *What We Heard* document provides a summary of engagement results from an online survey and interviews conducted by phone and zoom.

2.0 Engagement Objectives

There were five key objectives associated with the engagement activities:

1. Learn about barriers and challenges experienced by agricultural landowners and leaseholders in stewarding watercourses and riparian areas on farmland.
2. Identify opportunities to address some of the concerns raised by agricultural landowners and leaseholders.
3. Address the barriers to watercourse stewardship on agricultural land, laying out steps to short, medium and long-term implementation.
4. Enhance collaboration between Indigenous communities, agricultural groups, and various levels of government.
5. Enhance understanding of current stewardship of watercourses on agricultural land and ensure farmers and ranchers have a better comprehension of expectations around watercourses.

3.0 Engagement Results

3.1 Survey

3.1.1 Survey Process

A survey was launched online to gather insights and experiences from producers on watercourse management. The survey was advertised through existing networks, including industry associations, and was open from May 24 to July 4, 2022, online through Survey Monkey. A total of 235 responses were received.

3.1.2 Survey Results

Regional Representation

Responses were received from 235 individuals from all regions of BC, with a large proportion from the South Coast/Lower Mainland, Vancouver Island, and Okanagan regions (Figure 1).

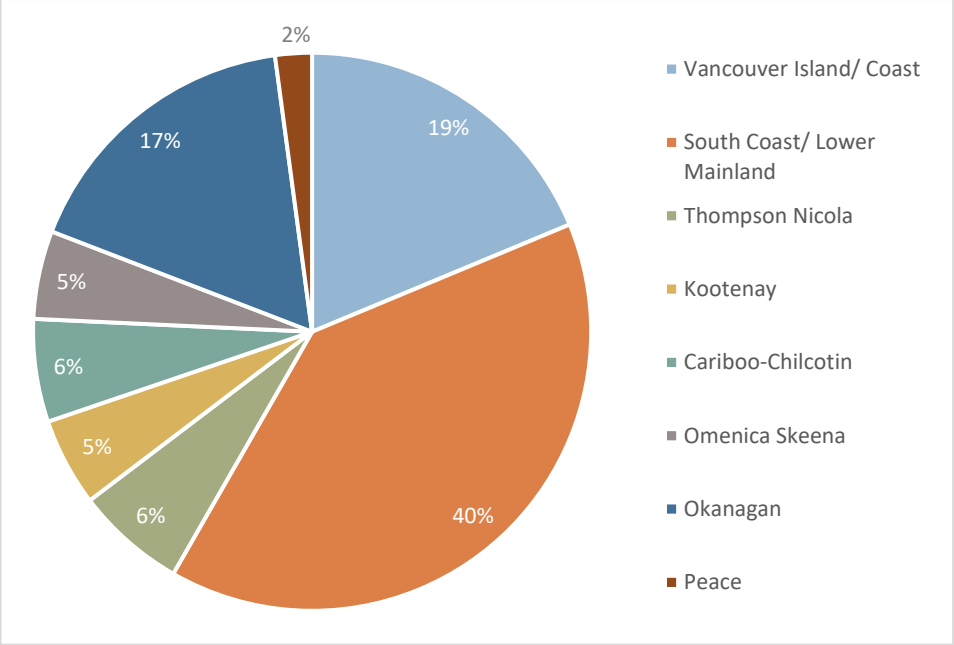

Figure 1. British Columbia regional representation of survey respondents.

Farm Types (235 responses)

235 respondents represented production across 24 different commodity groups, but the most common farm types were hay and forage, beef cattle, dairy and field vegetables (**Error! Reference source not found.**).

Other farms included:

- Hatching eggs
- Kiwi vineyard
- Feed mill
- Seed potatoes
- Hops
- Holly
- Seed company
- Ground cover

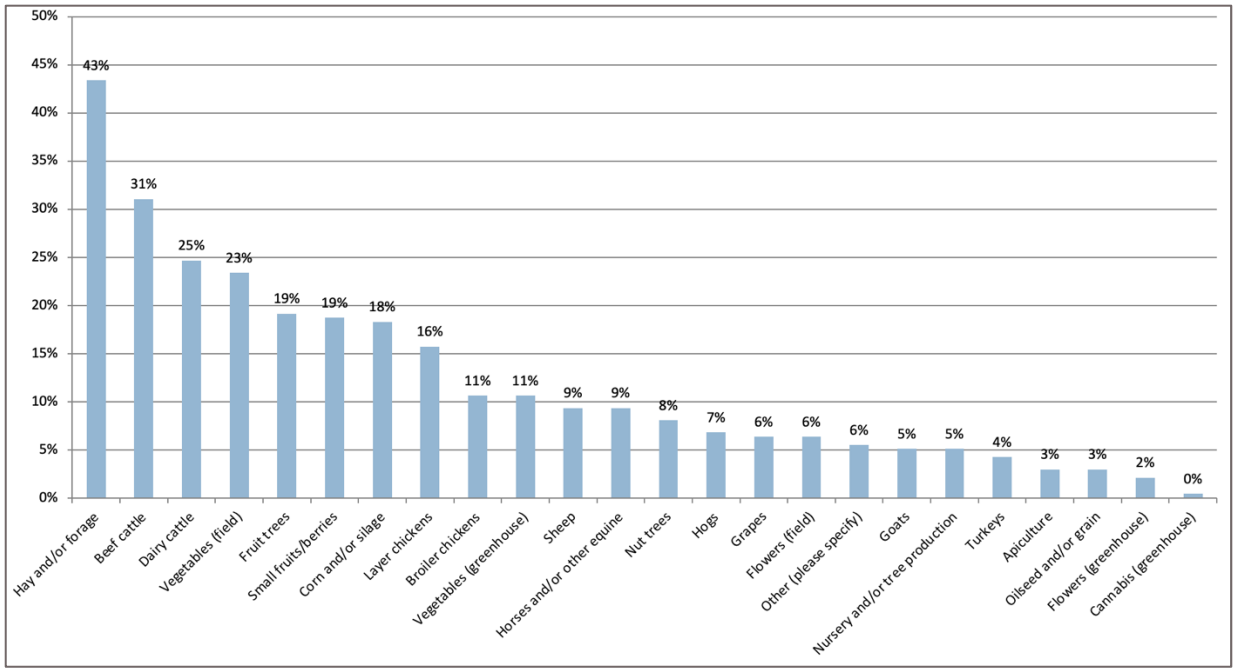

Figure 2. Types of agricultural production on survey respondents' farms.

Land Management Activities on Farms (228 responses)

The most common land management activities included application of manure, use of cover crops, providing outdoor pasture for livestock or poultry, and application of commercial fertilizers (Figure 5).

Other land management activities included:

- Rotational grazing
- Parasite control (sheep)
- Bale grazing
- Use of liquid fish fertilizer
- Organic practices
- Use of poly tunnels
- Application of compost
- Regenerative practices

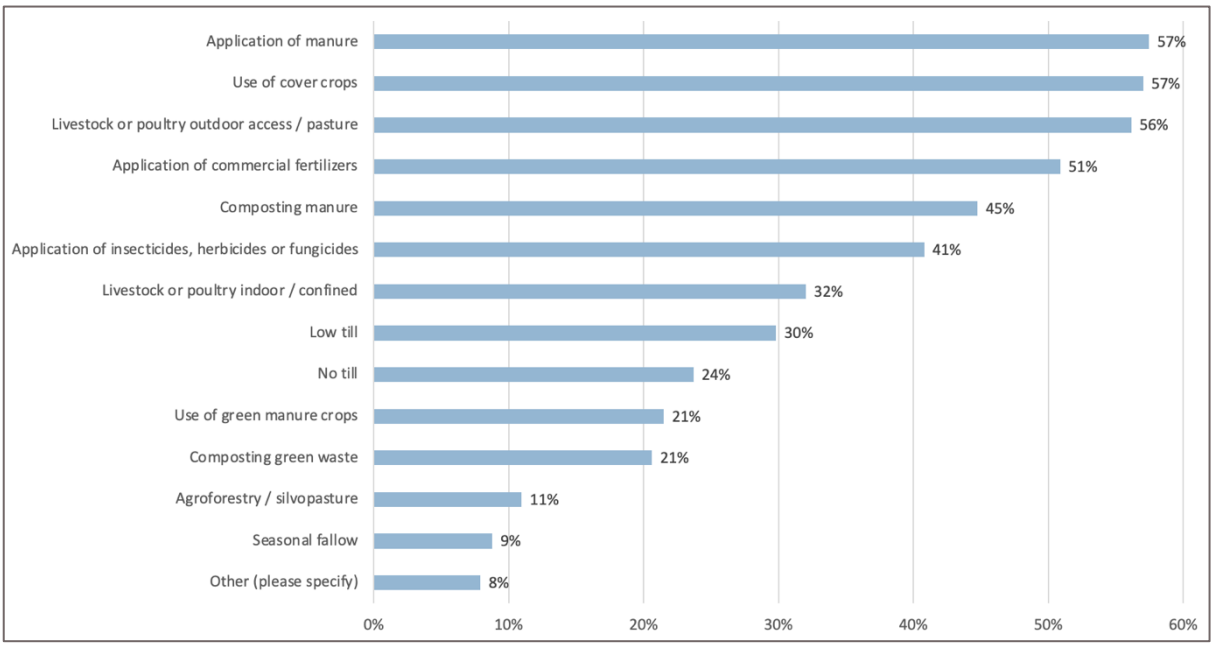

Figure 3. Land management activities used on farm.

Land Tenure (231 responses)

Most respondents (80%) own the land that they farm (Figure 4).

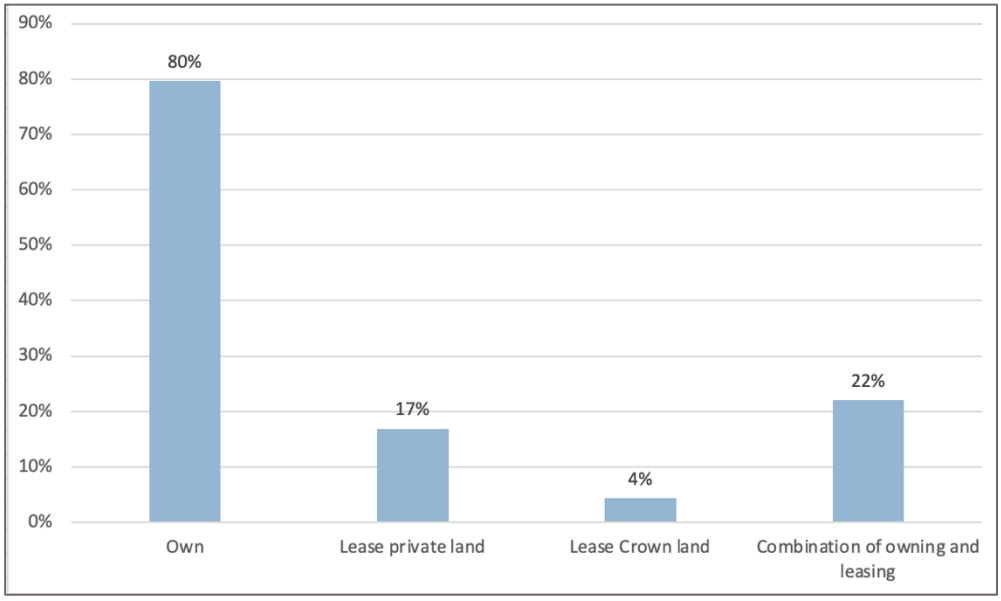

Figure 4 Land tenure on survey respondents' farms.

Natural Watercourses Found on Farms (226 responses)

Respondents' farms most often contained or bordered natural creeks (60%), ponds (23%), wetlands (21%), or rivers (21%) (Figure 5). 13% of respondents selected "none of the above" and 8% selected "other".

Other watercourses included:

- Slough
- Seasonal drainage
- Seasonal/ephemeral pond/lake
- Ditch
- Constructed dugouts
- Ocean
- River channel

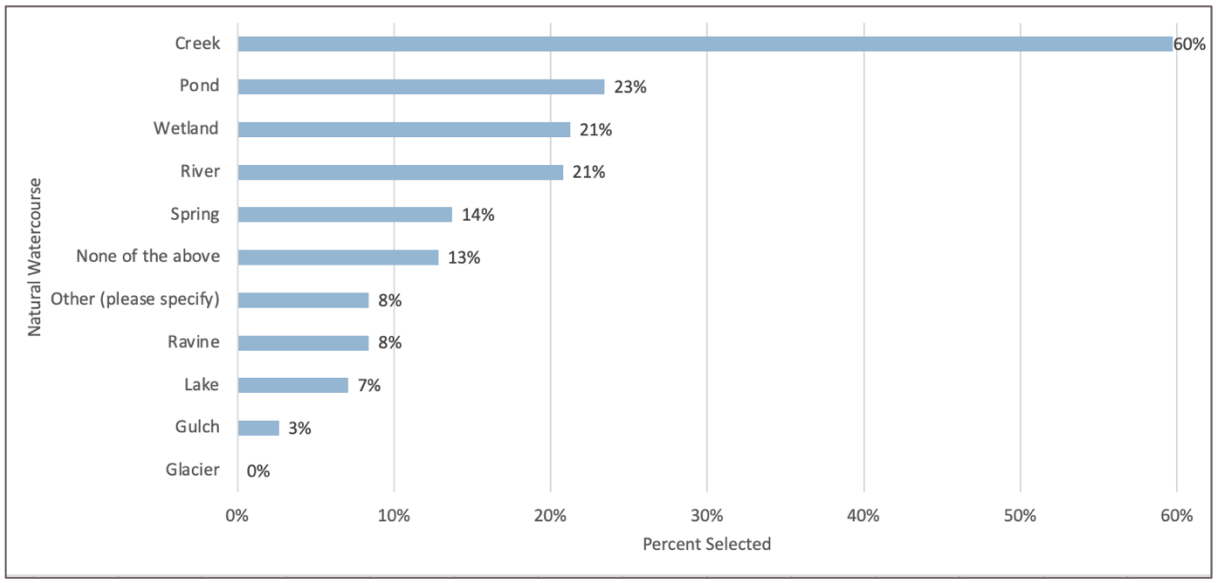

Figure 5 Types of natural waterways that are along or within respondent's farms.

Human-made Watercourses Found on Farms (221 responses)

Constructed ditches were the most common human-made watercourses within or bordering farms (45%) (Figure 6). Those who selected "other" specified seasonal run-off streams or ponds, drainage ditches, a human-made berm and a reservoir with dam.

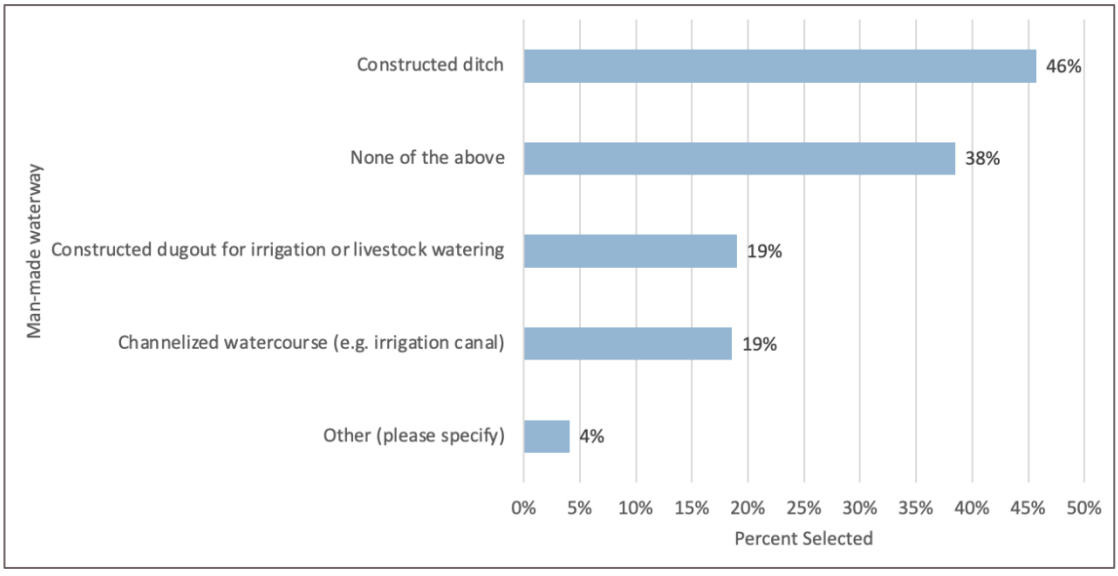

Figure 6 Human-made watercourses that are within or border respondent's farms.

Health of Watercourses (215 responses)

Respondents rated the health of the watercourses on or adjacent to their properties as an **average of 7.1 out of 10**, and a **median of 8 out of 10**, with 10 indicating excellent health and 1 indicating poor health.

Benefits of Watercourses (219 responses)

Respondents identified wildlife habitat and irrigation as the top benefits of on-farm watercourses (Figure 7). Others included: drainage, fire suppression/protection, livestock watering, erosion prevention, flood protection, pollinator habitat, and biodiversity.

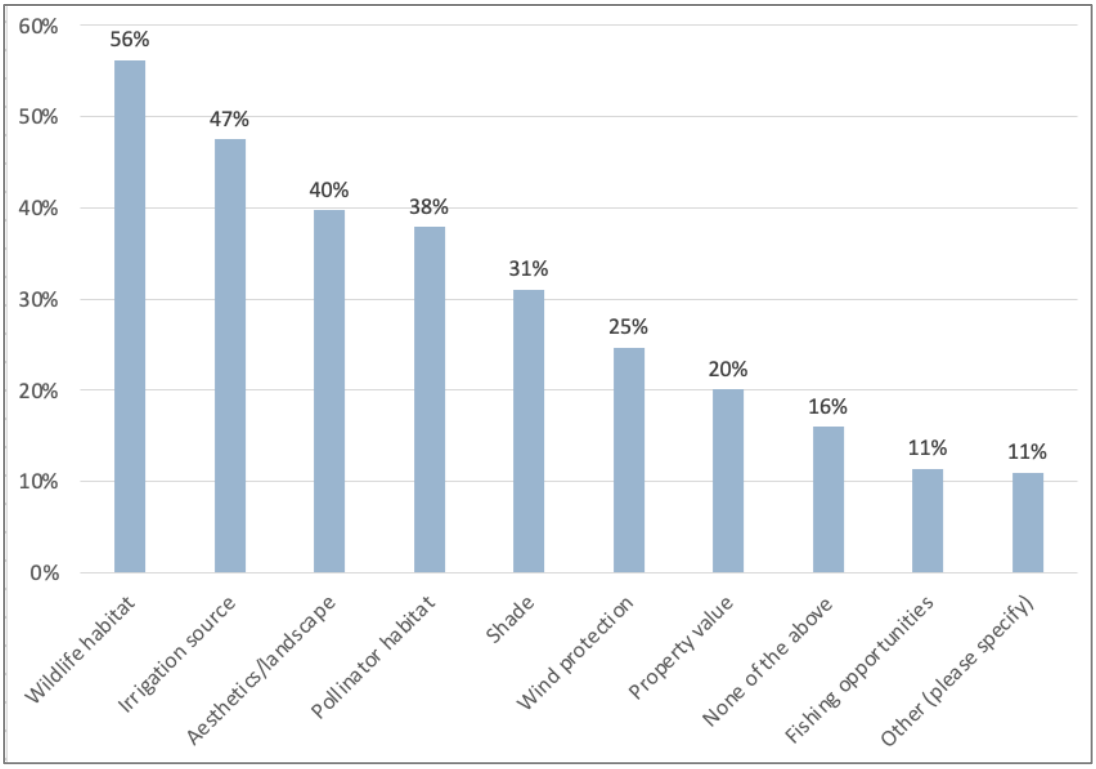

Figure 7 Benefits that respondents receive from watercourses and associated riparian areas.

External and Internal Threats to Watercourses (219 responses)

Respondents indicated that external threats to the watercourses on their properties are more pervasive than internal threats (Figure 8).

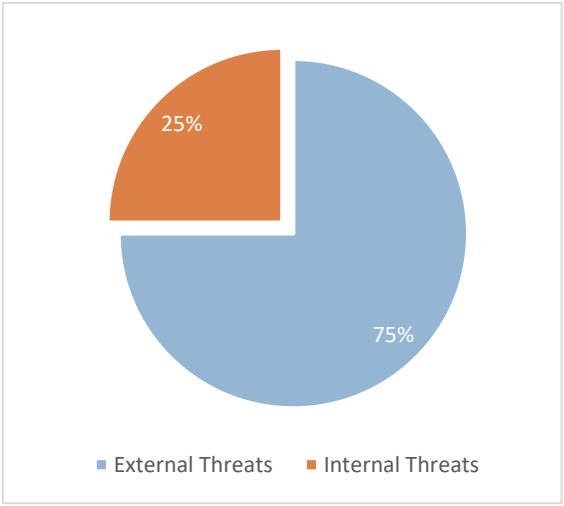

Figure 8 Types of threats respondents face on their farms.

External Threats to Watercourses (219 responses)

Most frequently indicated external threats were related to flooding, flashiness, drought, invasive plants, climate change, and upstream use (Figure 9).

Comments from the "Other" selection include:

- Logging
- Urban development
- Road work
- Upstream diversion
- Erosion
- Chemical pollution
- Erosion due to recreational watercraft
- Wildfire
- Downstream weir impacting upstream water levels
- Invasive animals (e.g. American bullfrogs, squirrels)
- Invasive plant species
- Runoff
- Water license that has not been approved after 3 years
- Impacts from utilities/infrastructure development (e.g. pipelines)
- Public trespass
- Illegal dumping
- DFO preventing remediation work
- Ditch cleaning (lack thereof)
- Irrigation restrictions from government
- Cost of maintaining irrigation system
- Soil dumping which results in ravines being filled in
- Livestock access
- Water Withdrawal

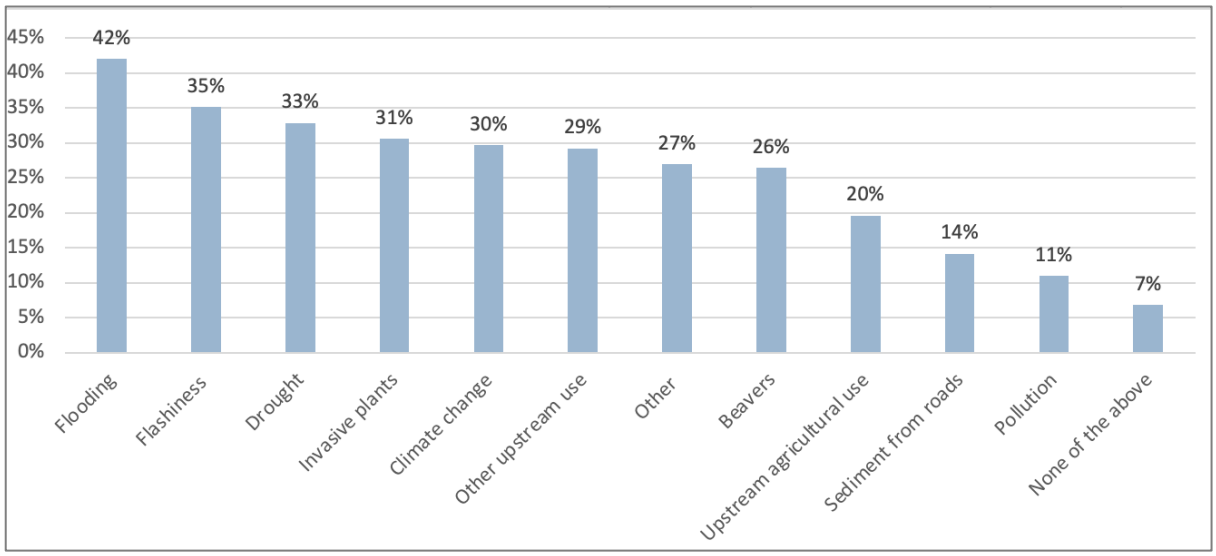

Figure 9 Biggest external threats to watercourses on respondents' farms.

Internal Threats to Watercourses (210 responses)

Many respondents indicated they did not experience any of the internal threats listed (Figure 10). For those that did, the most common responses were invasive species, runoff, and livestock access.

Comments from the "Other" selection include:

- Costs to manage/maintain work
- Erosion
- Beavers
- Local government maintenance methods
- High water levels backing up tile drains
- Water overflowing banks/flooding

- Irrigation system maintenance
- Livestock access due to poor fencing
- Impacts from utilities/infrastructure
- Livestock access
- Lack of watercourse crossing for livestock
- Logging
- Water withdrawal

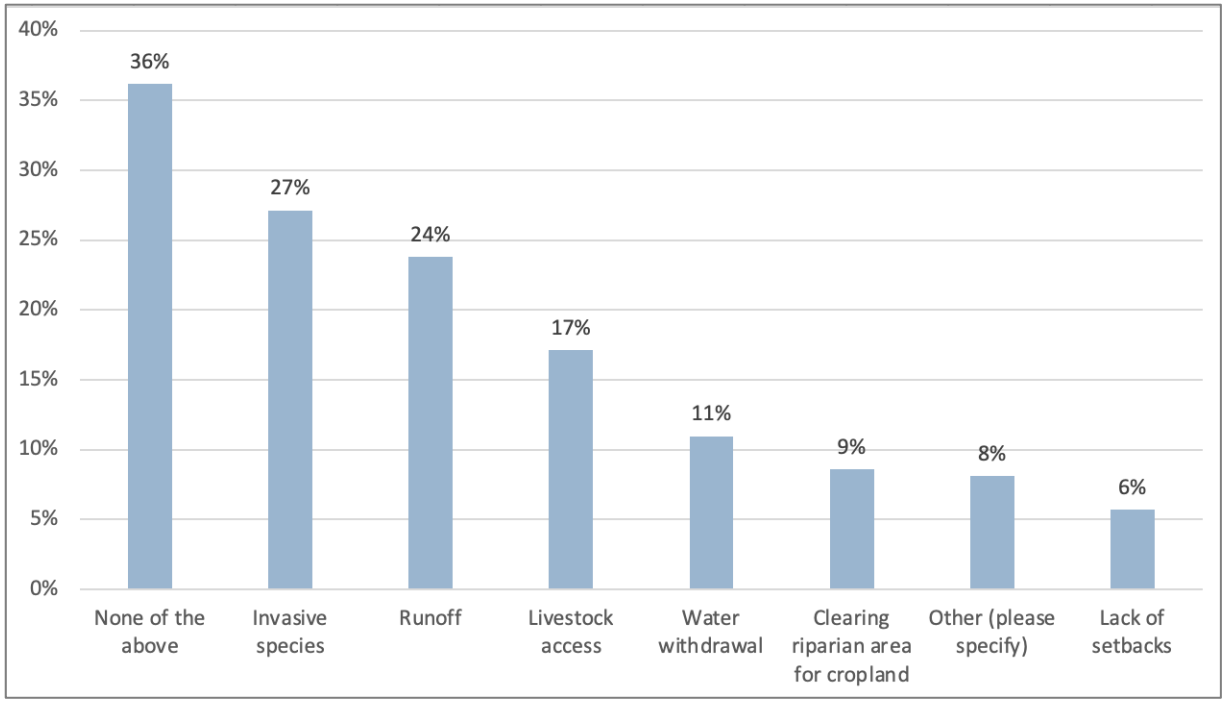

Figure 10 Types of internal threats respondents faced on their farms.

Environmental Farm Plans (218 responses)

The vast majority (91%) were familiar or somewhat familiar with the Environmental Farm Plan (EFP) program (Figure 11). 70% or 130 of the 218 respondents indicated that they have completed a EFP or have one in progress (Figure 12).

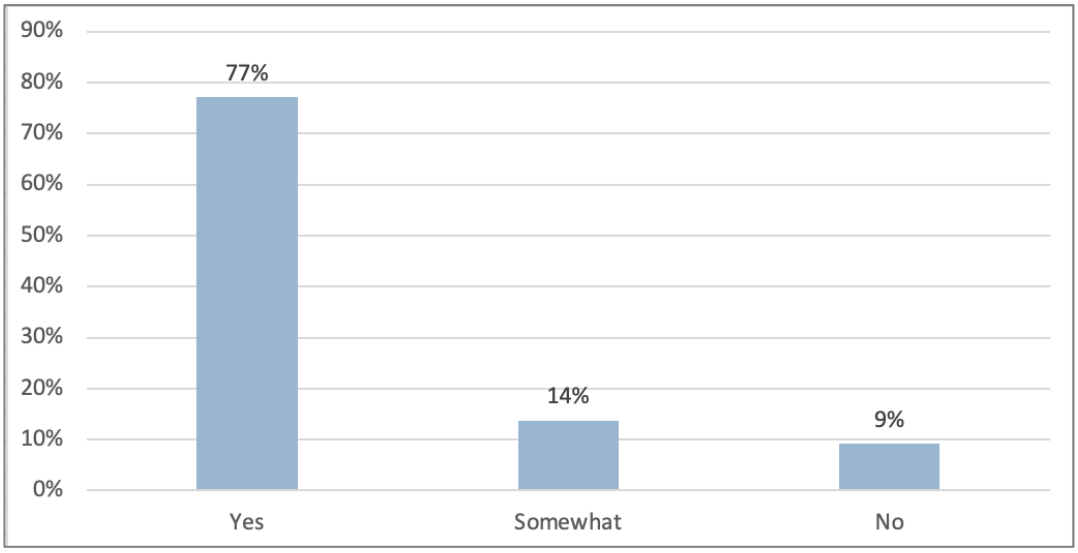

Figure 11 Familiarity with the EFP program among respondents.

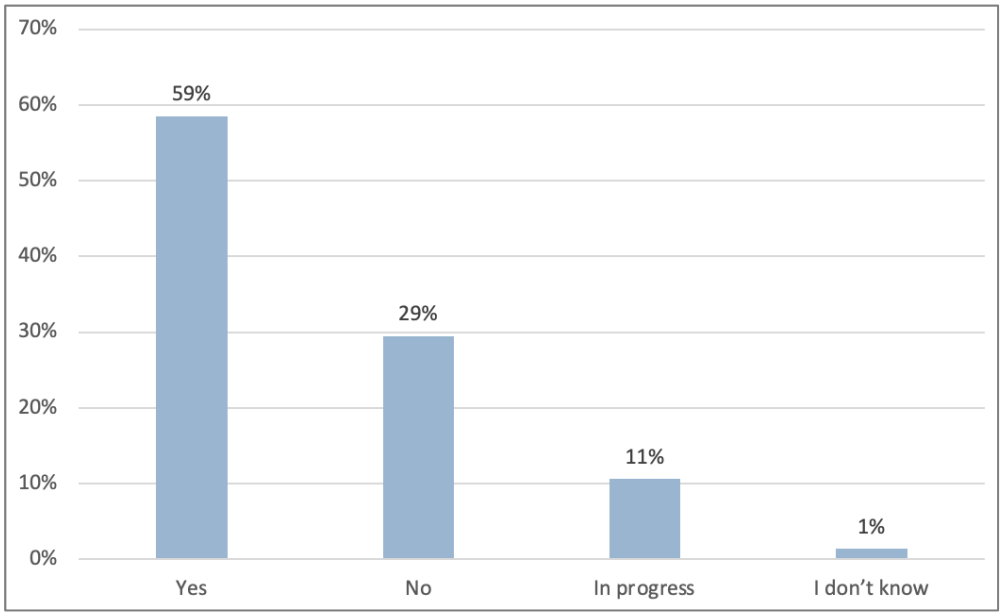

Figure 12 Respondents who have completed an EFP for their farm.

Of the 130 respondents with EFPs, the highest motivating factor to complete an EFP was to gain access to funding opportunities followed closely by the desire to undertake stewardship (Figure 13).

"Other" comments included:

- Required for proAction (e.g. dairy farms)
- Hopes of getting some different ideas and opinions as to how to manage the multitude of issues encountered in our operation.
- To be aware of the rules and regulations which are forever changing
- The Riparian zone on our zoning map was in rough shape and we needed some help figuring out how to fix it up.
- Primarily because of the bird species count done by one of my children. Over 100 species have been seen on our farm.

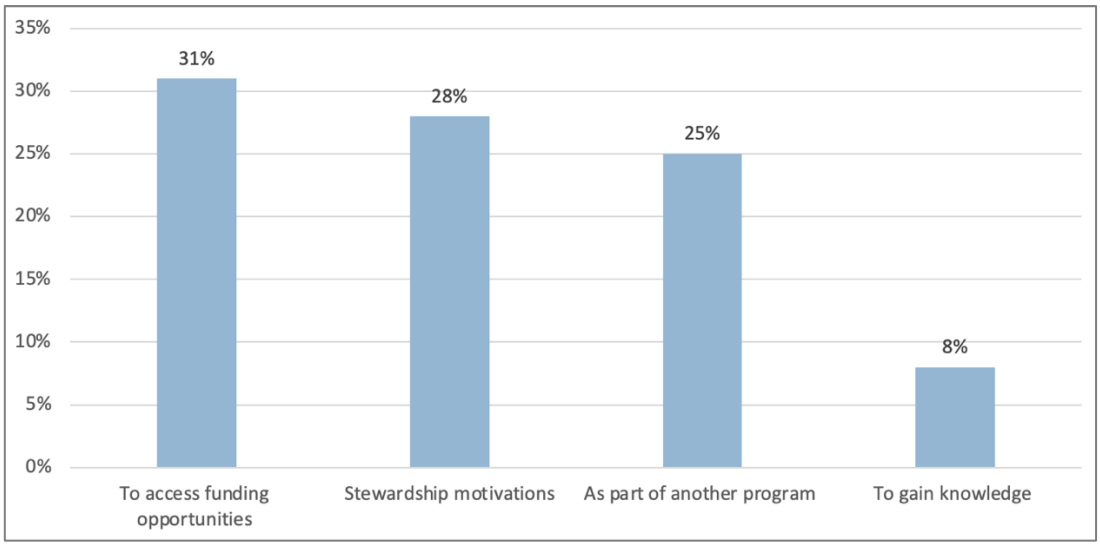

Figure 13 Motivations amongst respondents for completing an EFP.

Riparian Health Assessments (210 respondents)

"Riparian health" means the ability of a reach of stream, or an entire stream or a watershed composed of many streams, to perform a number of key ecological functions. Riparian Health Assessments (RHAs) knit together several key health characteristics, including vegetative (plants) and physical (soils and hydrology) features. 30% or 60 of the 210 respondents have had riparian health assessments (RHA) completed or in progress for their farms.

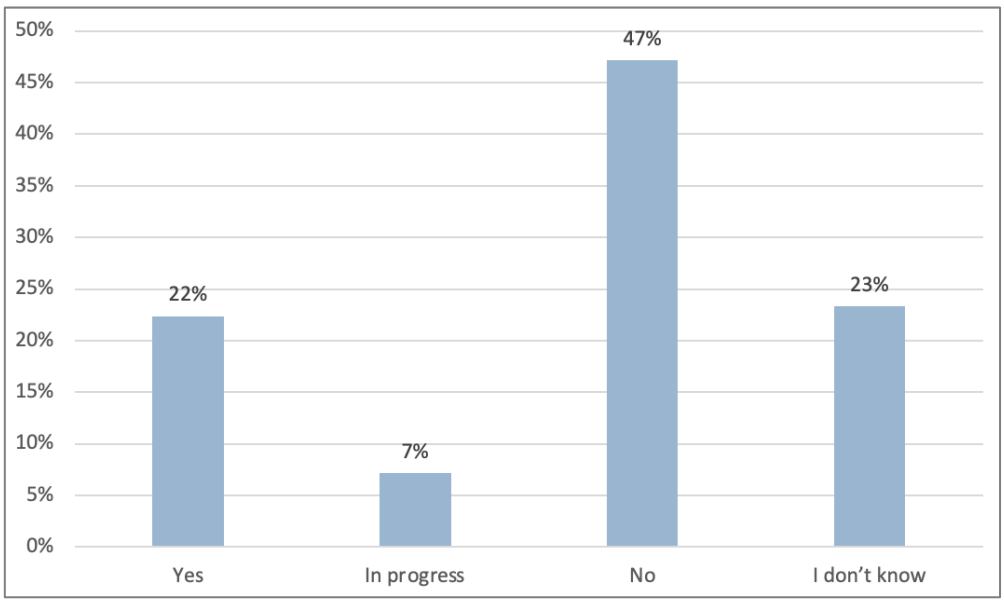

Figure 14 Riparian Health Assessments (RHAs) completed on respondents' farms.

Of the 64 respondents with completed RHAs, 44% were rated as "healthy" as defined by the RHA, 36% were "healthy but with problems" and 3% were "unhealthy". The remaining 17% were unsure.

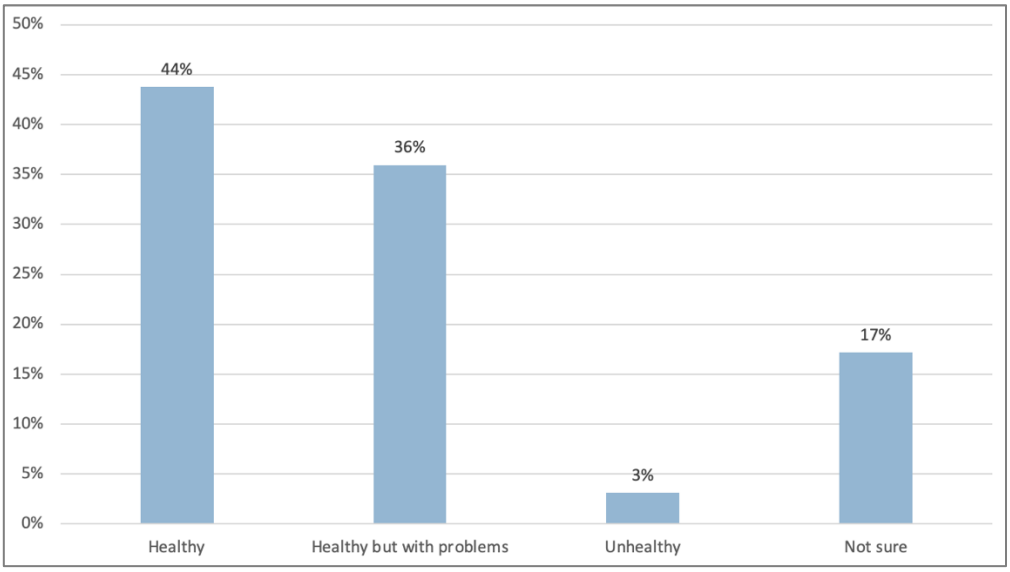

Figure 15 Results of the Riparian Health Assessments (RHAs) completed on respondents' farms.

Beneficial Management Practices (BMPs) (206 responses)

Of the 206 respondents 73%, or 131 individuals have undertaken BMPs on their farms. A further 37% of respondents identified that they have not undertaken any riparian BMPs on their farms. For those

that have, the most common are related to fencing out livestock (45%) and controlling invasive species (29%) (Figure 16).

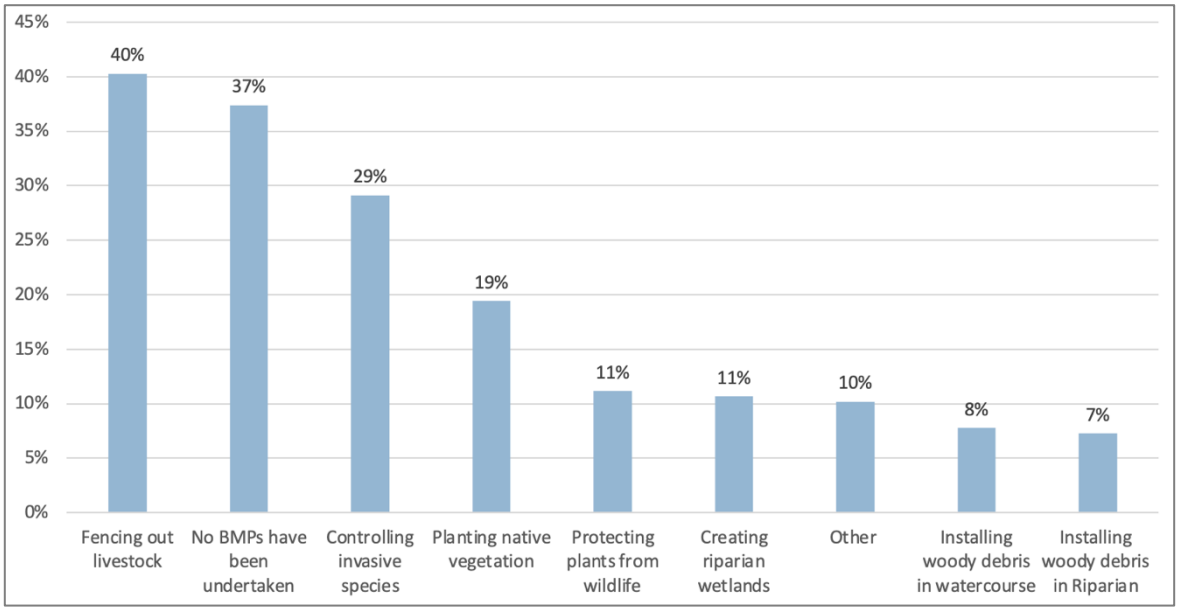

Figure 16 Riparian Beneficial Management Practices (BMPs) adopted on respondents' farms.

10% of respondents selected "other" BMPs which included:

- Controlling spring runoff through manure storage
- Building buffers/setbacks
- Off-stream livestock watering systems
- Construction of salmon beds, spawning habitat/channel
- Reducing tillage near watercourses

Of the 131 respondents with BMPs, (78%) feel that the BMPs have been at least somewhat successful in improving the health of the Riparian area (Figure 17).

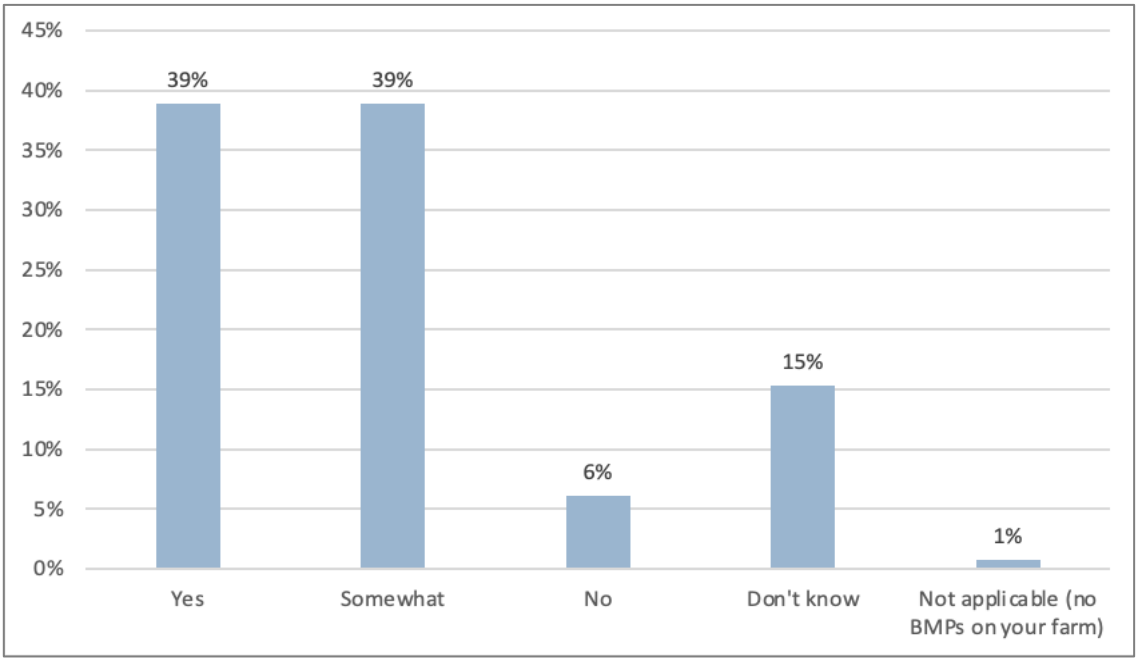

Figure 17 Rating of success by survey respondents who implemented BMPs on their farms.

Species at Risk (SAR) and Migratory Birds (205 responses)

There were 205 respondents to this question. 48% or 101 of 205 respondents indicated that they have species at risk (SAR) and/or migratory birds on their farm, while another 21% are not sure (Figure 18).

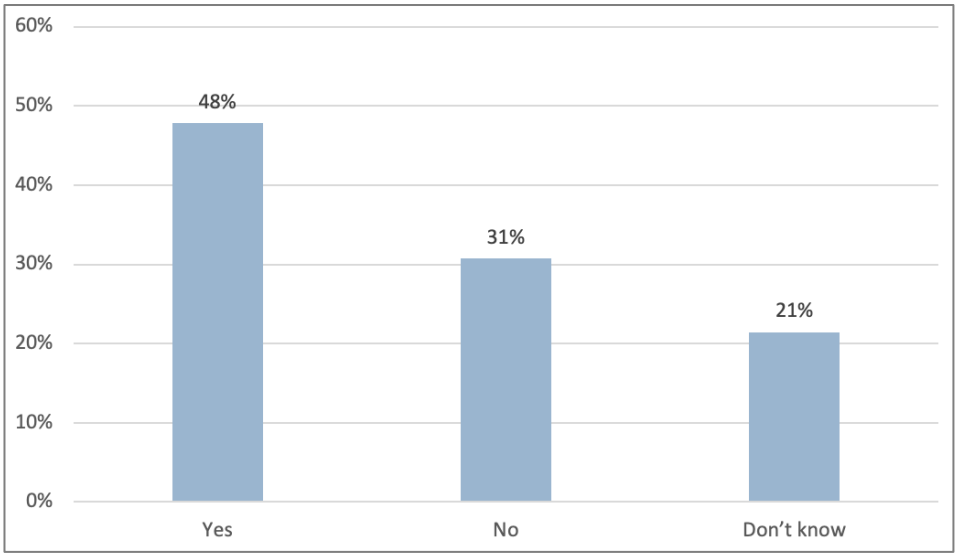

Figure 18. Identification of Species at Risk (SAR) on respondents' farms.

For those with SAR (101 responses), the majority (56%) do not believe that their farm is impacting SAR habitat (Figure 19). Those who are taking action to protect SAR habitat they are participating in restricting or eliminating the access of grazing animals into SAR areas and/or fencing off areas inhabited by SAR. 16% of respondents selected "other", which included:

- Using cottonwoods
- Use of buffers/setbacks
- Creating dugouts and ponds as breeding and overwintering sites for long-toed salamanders, spotted frogs, and western toads.
- Winter cover crops for migratory birds
- Planting native trees and shrubs
- Building nest boxes
- Respondent noted that poultry operators are discouraged from attracting migratory birds

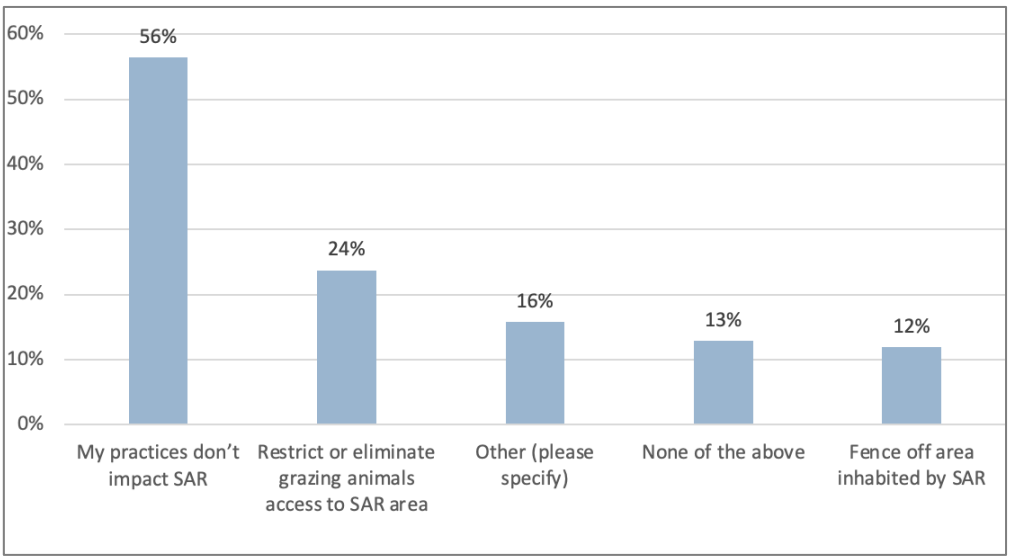

Figure 19. Actions respondents are taking on their farms to protect SAR habitat.

Invasive Plant Species (207 responses)

Of the 207 responses, 59% or 100 individuals indicated that invasive plants were present on their farm and another 21% indicated that they did not know (Figure 20).

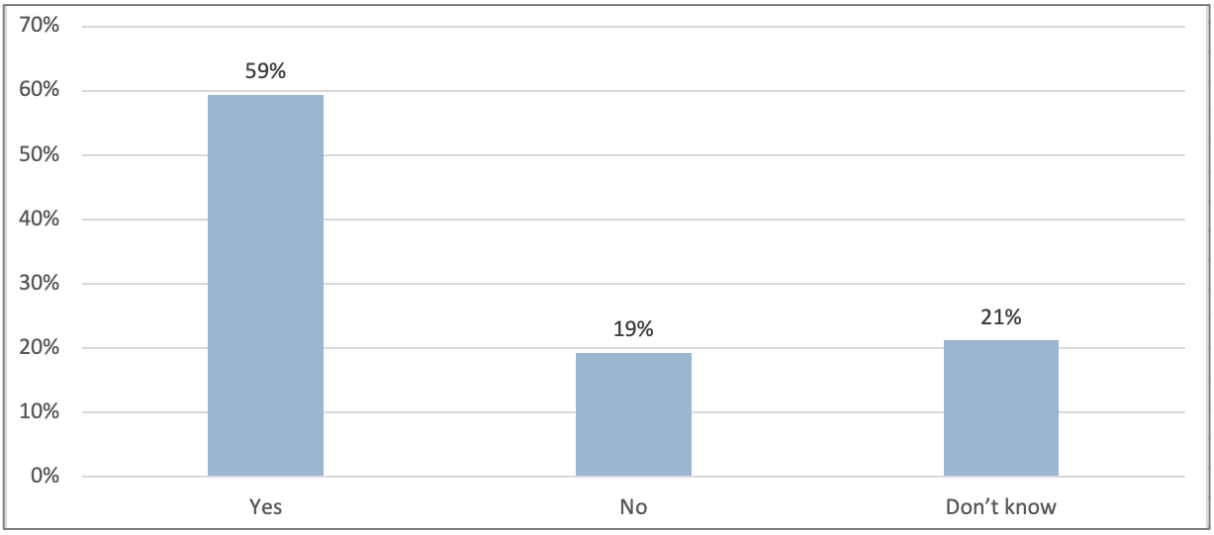

Figure 20 Identification of invasive species on respondents' farms.

Of the 100 respondents who indicated that they have acted in the past 5 years to reduce invasive plant species, the most common method used was manual removal (77%), followed by monitoring over time (52%), learning and understanding how the species spreads (40%), and applying herbicides or insecticides (38%). 17% of respondents selected "other", which included:

- Mechanical means (e.g. mowing, brush cutter)
- Targeted grazing
- Overseeding with grass
- Replanting with native species
- Cultivation, removing seed heads
- Using Integrated Pest Management
- Advocated to local governments to control weeds in public road right of ways

One noted that annual flooding prevents proper maintenance and leads to spreading of lupins on hay fields.

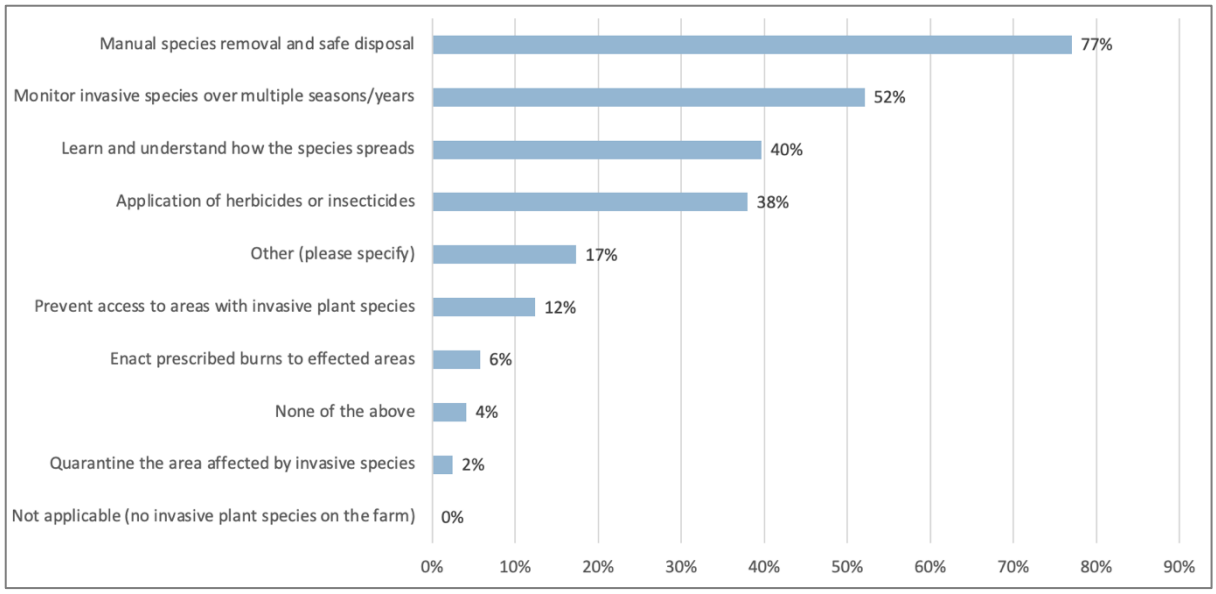

Figure 21 Actions taken by respondents in the last 5 years to reduce invasive plant species on their farms.

Familiarity of Regulations (198 responses)

A list of provincial, federal and local legislation was provided to respondents, who were asked to rate their familiarity with the legislation. The legislation that respondents were most familiar with were the Water Sustainability Act, Code of Practice for Agricultural Environmental Management, and the Canadian Fisheries Act (Figure 22). There was less familiarity with local Development Permit Areas.

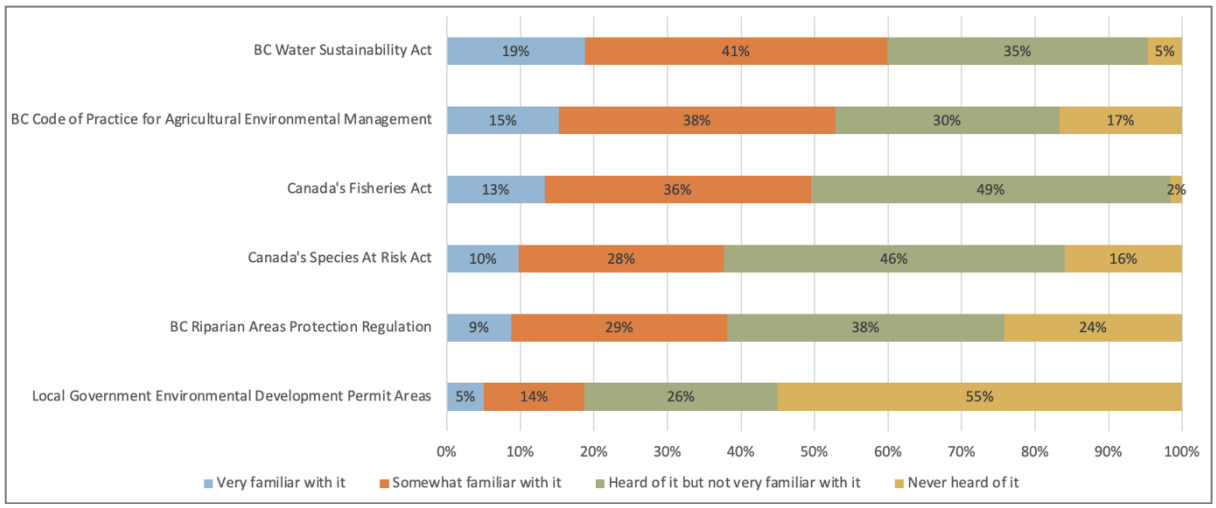

Figure 22 Respondents' familiarity with provincial, federal and local legislation.

Modifications or Alterations to Watercourses (198 responses)

Of the 198 respondents 38% or 79 individuals indicated that at some point they had needed to make modifications or alterations to their watercourse (Figure 23).

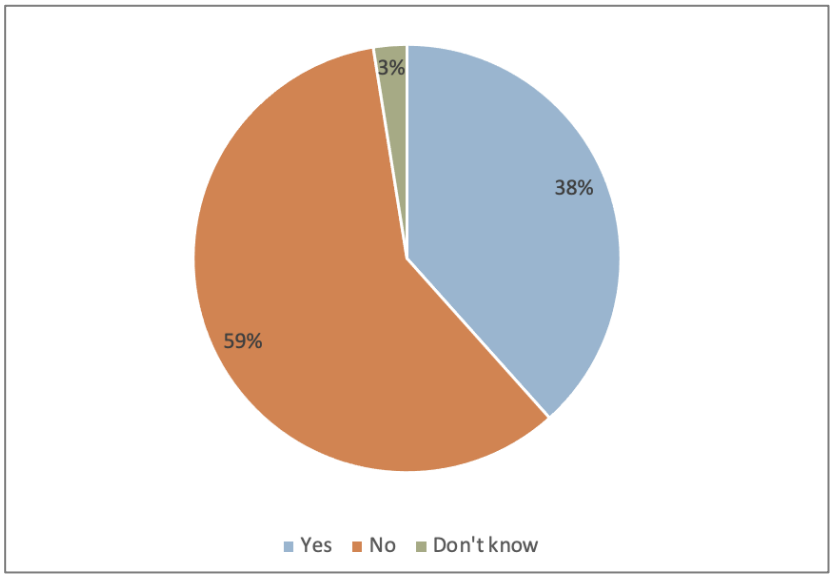

Figure 23 Respondents who have made modifications or alterations to the watercourses on their farms.

Of those that have conducted modifications (79 responses), over 50% or those changes were building bridges or crossings over watercourses (Figure 24). Other responses included:

- Removal of invasive species
- Salmon habitat enhancement
- Diking
- Bank stabilization
- Ditch/culvert maintenance
- Wetland restoration
- Beaver dam removal
- Rock piles for erosion control
- Dam upgrades

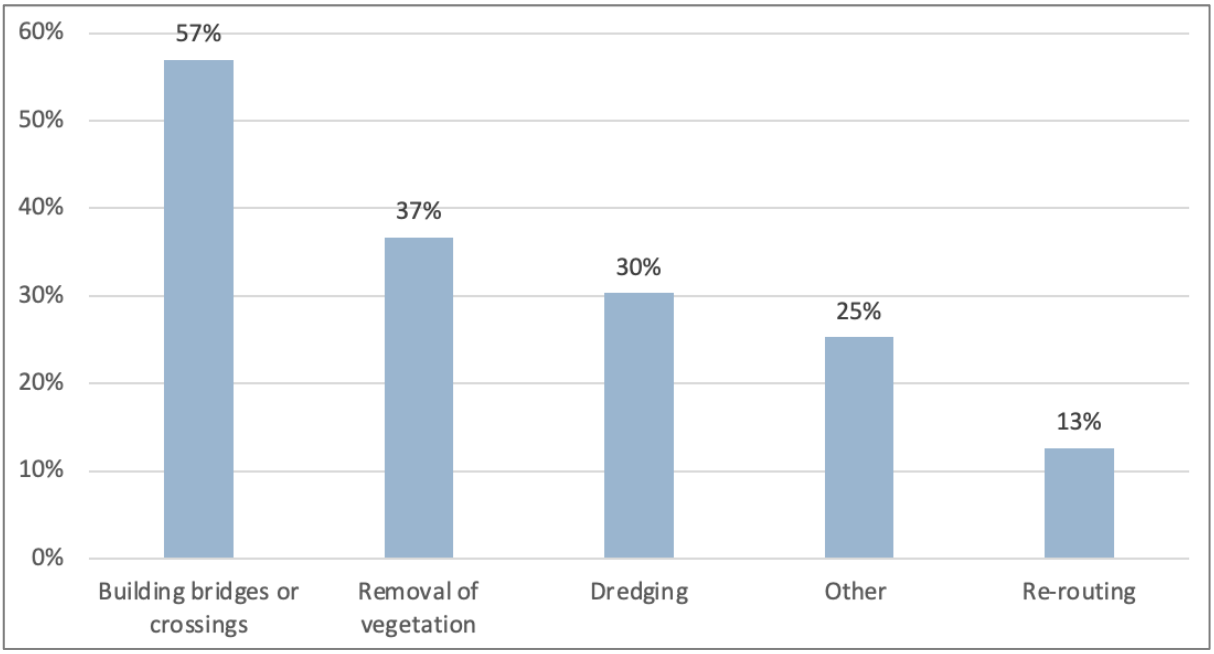

Figure 24 Modifications and alterations implemented by survey respondents on their farms.

Change Approval Permits and/or Notifications (75 responses)

A change approval is written authorization to make complex changes in and about a stream under Section 11 of the Water Sustainability Act (WSA). A notification is used for specified low risk changes in and about a stream that have minimal impact on the environment or third parties. Of the 75

respondents to this question, more than half (55%) did not apply for change approval permits or notifications and a further 20% did not know (Figure 25).

19 respondents provided additional information about challenges encountered with the application process:

- Application processing time too long: 11
- Lack of support to fill out applications: 7
- Application cost: 4
- Lack of follow-up from government staff: 3
- Other: 7
    - No single application that deals with all regulatory agencies
    - Lack of coordination between Federal and Provincial government, and within Provincial government (between ministries)
    - Inability to conduct regular cleaning of water courses to enhance drainage, irrigation, and fish habitat
    - Lack of common sense in regards to the environmental assessment and plan

Comments included:
"We installed a bridge across our creek, it took numerous permits and permission from DFO, highways, navigable waters, and the Regional District for a project that had minimal impact in construction to the stream. there is no flexibility in system for common sense projects."

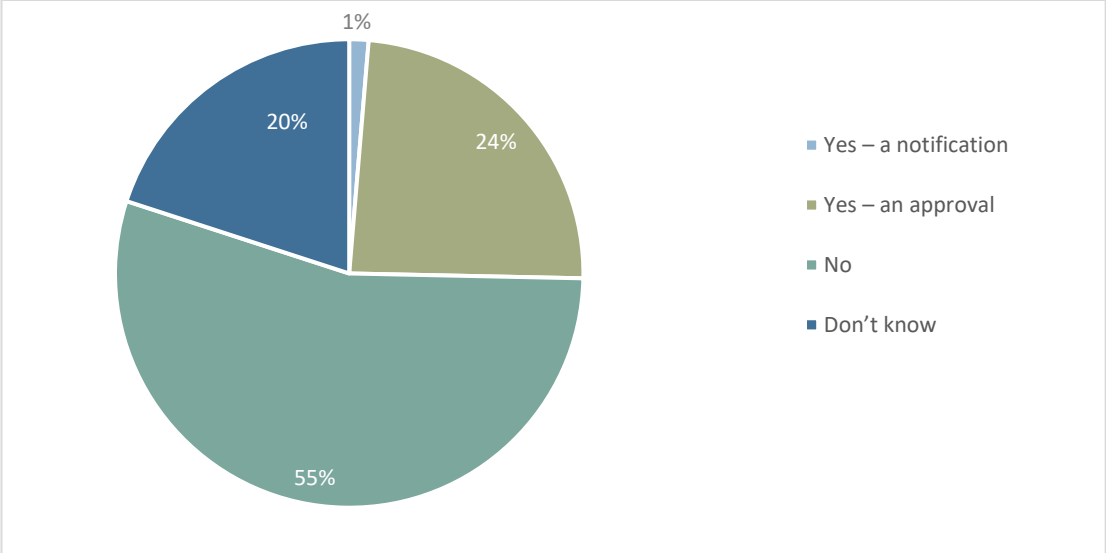

Figure 25 Applications submitted by survey respondents for Change Approvals and Notifications under Section 11 of the Water Sustainability Act.

Federal and Provincial Enforcement (195 respondents)

Of the 195 respondents, 10 (5%) had received complaints or been directed to act related to enforcement from either the provincial or federal government on watercourses. Half had undertaken corrective actions, and the other half had not. A further 5 were not sure. Further details include:

- Incorrect mapping was acknowledged and the matter was dropped, but the maps were not updated.
- Dam safety review is ongoing and costs are prohibitive

Local Government Permits (196 responses)

Of the 196 respondents, 16 (8%) indicated that local government permitting related to riparian area work had been made for the farm (e.g. through an Environmental Development Permit Area application or similar).

Challenges encountered with the local government application included:

- Application processing time (58%)
- Lack of support to fill out the application (37%)
- Application cost (21%)
- Lack of follow-up (16%)

Comments included:

"We sent notice to regional district about hazard tree creation - exempt from RAR process. Still had to pay $900 for hazard tree assessment. We have been following all the rules - but creek degradation and problems caused by municipality refusing to follow the rules. For example, they never secured a water license before linking a large drainage system directly into our creek at boundary of district and municipality. Municipalities are above the law in BC apparently."

Challenges to Protecting Watercourses on Farms (190 responses)

Respondents were asked to select all reasons which applied to them, the most selected challenge in protecting watercourses on farms was regulations, permitting and red tape (51%). Following this were infrastructure costs (44%) and cost of maintenance (43%) (Figure 26). A few (6%) indicated they did not see value in protecting watercourses.

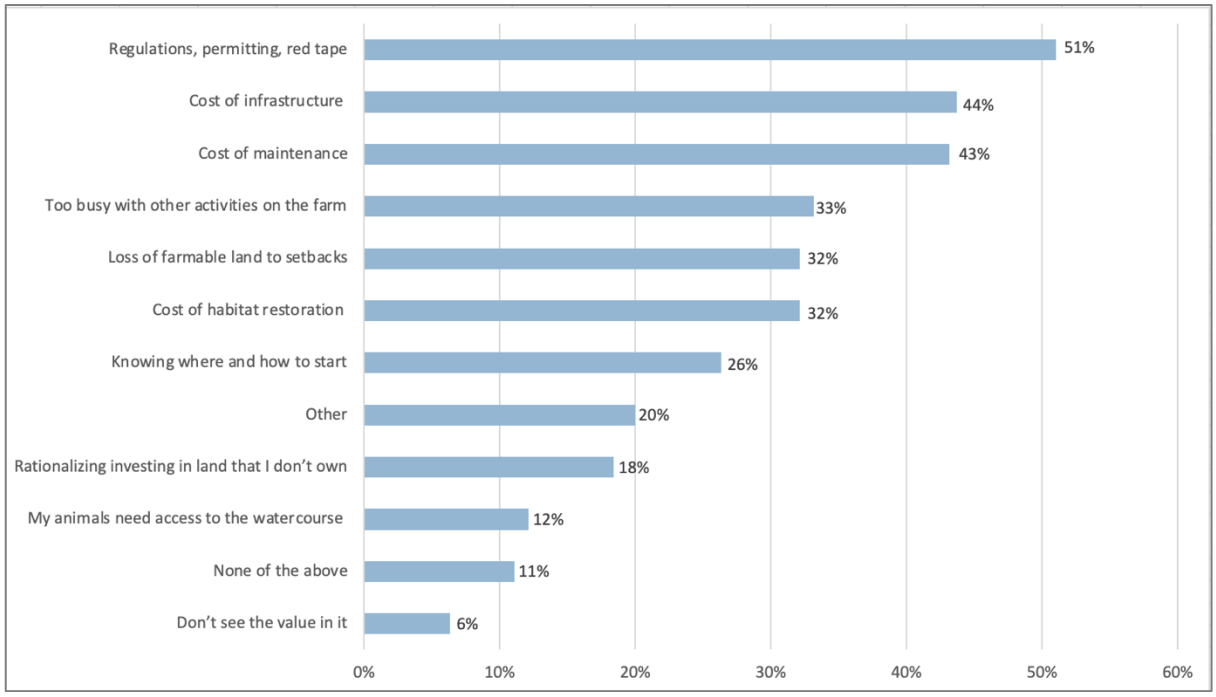

Figure 26 Biggest challenges faced in protecting watercourses on respondent's farms.

20% selected "other" and these responses included:

- Lack of enforcement of stream restoration mandates on neighbouring properties
- Waiting for water licensing
- Lack of cooperation from BC Hydro and other utilities corporations
- Lack of responsibility by local governments
- Off-stream livestock watering systems are too expensive, otherwise would fence off the creek

Additional comments include:

"I've pretty much done everything I can: pulling invasive weeds, fencing out livestock. It is fine on our property. It's my neighbour's activities that it needs protecting from."

"Lack of funding to support work needed, funding opportunities that change/become unavailable before I can fulfill the prerequisite steps, and don't allow enough time for planning and implementation."

"It is virtually impossible to protect riparian areas from erosion because of federal restrictions/permitting/red tape"

"We have maintained a licenced supplemental water source for in-farm wetland/pond. This has involved many hours of labour and care. It feels more than a little ironic that we are we also have to pay (albeit modest) surface water licence fees for this purpose. The biggest challenge for our habitat integrity is invasive species -- water lily in the pond, reed canary grass in wetland, and blackberries all around. After years of attempts at hand maintenance of blackberries, we recently invested in a side flail mower, which was a significant blow to our modest farm budget. We found no assistance for this but think it should exist. Similarly, our homemade water intake for feeding the wetland habitat is very labour intensive. A more efficient intake screen is commercially available, but is expensive; we have found no source of funds for this and we can't afford it yet. Similarly, the water lilies in the wood-duck habitat require removal, but we can't afford to contract a long-reach dredge and have found no public funding for this so the rich habitat remains degraded for now."

"Frustration that other neighbours don't have to install culverts under their bridges but filled them in even though the local government was notified. I want to see culverts installed under the 7 nearby bridges. Their negligence affects all of us that want to have and maintain a healthy slough."

"Having to pay an annual water license fee for a Conservation Water License that is used to protect and improve the environment, water course and riparian habitat."

"The best protection for water courses in my area would be regular cleaning to enhance water flow."

"It makes zero sense that I have to incur very high expenses and time to manage our riparian area when it is being degraded by a municipal body. I am paying out of pocket because of illegal actions by upstream players who evade and refuse to address situation."

"Greater emphasis on the value of ecosystem services need to be developed to be able to compensate farmers for maintaining functional riparian and other green areas."

"I should be able to farm every square inch of the land I own."

"Why are farmers financially responsible for a public asset?"

"We do our best to protect our farm streams, the biggest threat is by logging activities on their mountain source."

"Contradiction between encouraging habitat and discouraging migratory birds due to avian influenza risk."

Important Factors for Protecting Watercourses (182 responses)

Respondents were asked to rank different factors based on how important they were to protecting watercourses on a scale of 1 (most important) to 4 (least important). Respondents noted that access to funding would be the most important factor for them to protect watercourses (Figure 27). Needing to see proof of benefits from other farms was not a priority.

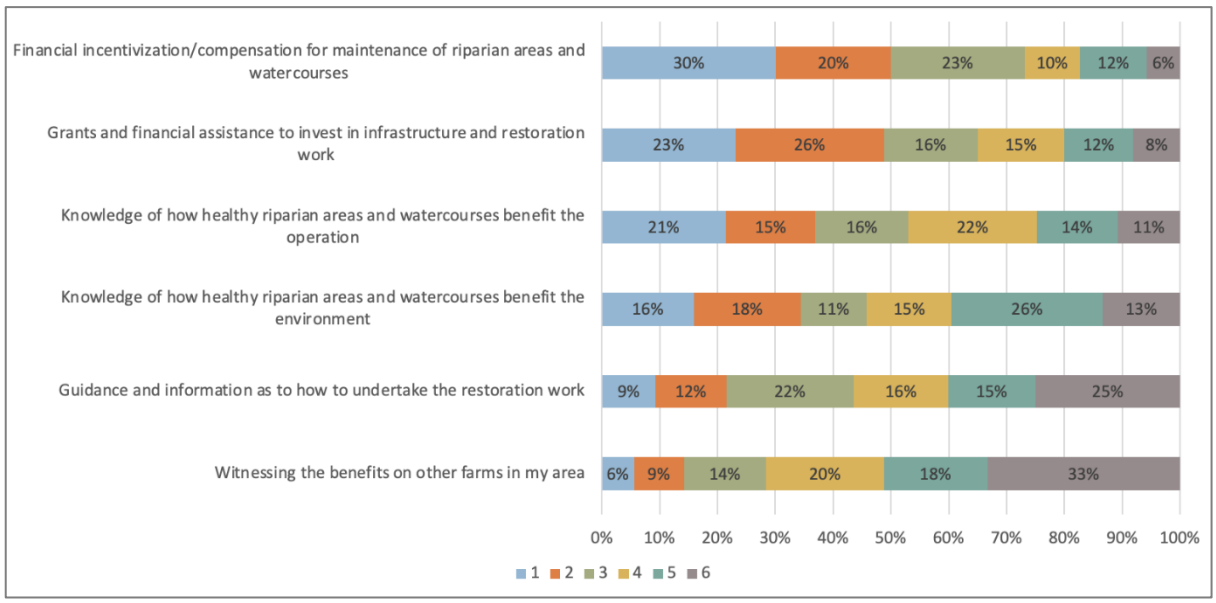

Figure 27 Ranking by survey respondents on the importance of deciding factors in protecting watercourses on a scale of 1-6.

What improvements would be made if no barriers existed (150 responses)

There were many responses to this question and some of the top themes included:

- Build/fix/maintain fencing to keep livestock out of watercourses: 21
- Plant trees and/or vegetation: 21
- Dredge and/or clean out ditches and watercourses: 19
- Channel engineering works: 19
- Develop or maintain water storage infrastructure (dams, reservoirs, dugouts, ponds): 13
- Build/fix/maintain boardwalks, bridges, or other crossings: 11
- Manage invasive species: 11
- Bank stabilization: 11
- Build habitat/nesting structures: 10
- Compost and/or nutrient management: 6
- Education/partnership/collaboration with neighbours: 4
- Provide compensation to farmers: 4
- Dyking/flood protection: 3
- Manage beavers: 3
- Off-stream watering systems: 3

One comment which elaborated on the barriers present in watercourse stewardship was as follows:

"Improve water flow by allowing me on my land to maintain ditches to keep the water moving and oxygenated to allow fish and other aquatic life to live . By waiting for government approval, whether it be local, provincial or federal, does not allow for me to correct a problem immediately to keep environmental healthy water coarse oxygenated and alive. By waiting for several levels of government to get approval the problem is more often exacerbated when the problem could be rectified with quick action…The land and the health of my immediate area is to my benefit and the longevity of my farm. Who better to take of the land than a farmer as it's how I make my living."

3.1.2 Survey Summary

Over 200 respondents provided valuable input into better understanding the challenges and opportunities in stewarding agricultural watercourses. About half of the respondents have embarked upon the EFP/BMP programs. For those who have undertaken work, only about half have applied for change approval permits and/or notifications.

The results of the survey underscored the following key points:

- While the survey was self-selecting, respondents are for the most part aware of, and involved in, watercourse stewardship and riparian health management on their farms.
- There are real frustrations around government wait times for water licensing and applications for changes in and about a stream, and authorizations.
- Critical impediments to undertaking more restoration work centre on the following resources: assistance with completing necessary paperwork; time and labour to do the restoration work; funding to do the restoration work.
- Tools involving infrastructure development on farms and ranches (e.g. fencing, channel engineering, water retention) are some of the most impactful but also the most expensive and difficult to implement in terms of available funding and regulatory paperwork.

The survey results indicate that the level of frustration regarding paperwork in conjunction with the expenses related to restoration work activities is hampering the level of watercourse stewardship that would otherwise be possible on farmland in BC based on the interest levels of respondents.

3.2 Interviews

3.2.1 Interview Process

A list of potential stakeholders to interview was developed in conjunction with the Project Steering Committee. A target of 30 interviews was set. At the time of writing, 29 interviews have been completed with the following:

- 8 government staff
- 8 contractors
- 7 NGO and researcher representatives
- 6 producers or agricultural industry representatives

3.2.2 What We Heard from Government Staff Interviews

A total of 8 government representatives were interviewed, representing federal and provincial ministries and agencies. The following themes arose from those interviews and are presented as successes, challenges, and opportunities that were identified:

Working with producers can be challenging for government staff

- Producers' inherent distrust of government makes it difficult to communicate, to identify what producers are going through and how best to help.
- Many of the applications are for moving streams or ditches to the edge of the property, which are large and complicated requests.
- Applications made through specialists or consultants working directly with the farmer will likely have more success in achieving ecological goods and services and being approved in a smooth and timely manner.

Lack of outreach and education is a pitfall

- Past efforts to inform and educate communities on the importance of watercourse stewardship have had positive results on stewardship efforts and relationships between government and producers.
- Lack of education around these topics leave producers with confusion on navigating the application and notification system and a lack of clarity on their importance.
- Budget cuts in recent years have resulted in fewer outreach or extension services to help producers assess their watercourses and create plans of action.
- Boots on the ground is going to be important – leading conversations to get the communities and producers on board through creating and understanding the impacts and benefits.

There is interest and efforts within government to improve communications and clarity in water resource management

- The Watershed Security Strategy (WSS) is in early/ high level stages but looking at developing a broad declaration across all sectors on how to manage watercourses. There is an opportunity for AF staff within the context of the WSS to step up as advocates for the role of agriculture in water stewardship and the potential impacts that could be leveraged by partnering with farmer and ranchers and possibly compensating them for their restoration and maintenance efforts.
- Many of the issues around water stewardship span multiple ministries and jurisdictions, necessitating cross sector collaboration for effective management. This includes projects involving water storage (e.g. dams, dugouts, reservoirs), beaver management, nutrient and compost management, building bridges or stream crossings, bank stabilization, channel engineering, and cleaning/clearing ditches and waterways.
- LWRS is interested in working with AF to update guidance resources for producers to be more consistent with the WSA.

The regulations and change approval application process present multiple challenges

- Change approval applications can take many months to be reviewed and processed.
- Approval criteria is inflexible which creates conflict when construction times are delayed, and approvals cannot be transferred to the following year – re-start application.
- Lack of clear definitions between regulations and ministries as to what a stream and a ditch are on agricultural land.
- Lack of clarity and specificity regarding the need to consult with Indigenous peoples.
- General sense that the departments and ministries involved are under-resourced.

3.2.3 What We Heard from Contractor/Consultant Interviews

A total of 8 contractors/consultants were interviewed, representing EFP planning advisors, those working on the installation of water infrastructure, Professional Agrologists (PAgs), and Registered Professional Biologists (RPBios). The following themes arose from those interviews and are presented as key themes that were identified:

There are opportunities to help farmers find ways to achieve similar results without work which requires permits

- Supporting farmers in stewarding what is already there rather than building new watercourse features.
- Farmland assessments can help identify management shortfalls – i.e. Not leaving enough of a buffer.
- Focus should be placed on what producers can do within the notifications process rather than the application process.
- There is a need to educate farmers on changing climate. Will need to plan for future changing conditions to avoid economic losses due to flooding or drought.

Processing times for applications for change approvals are significant and often result in important work not getting done

- Contractors have had to put an end to jobs because the application for a change approval took far too long, sometimes years.
- There is reduced interest in accepting jobs which need to go through the approval process because of these long wait times.
- Current timeline issues harm the public perception of the Water Sustainability Act (WSA) and the Ministry of Land, Water and Resource Stewardship (LWRS).
- During emergency situations there is a triage process set up, and this helps to move things along quickly to get change permits approved and is an effective method.
- First Nations consultation can sometimes be the element which increases project timelines. There is a lack of clarity as to the approach and appropriate amount of consultation for any given application, e.g., a letter of acknowledgement, a meeting hosted by the farmer with the First Nations community, etc. Also, sometimes the First Nations are the applicant and are told that they need to consult with themselves.

There is a need for education on watercourse stewardship across all actors

- Some producers need to be better informed about the importance of not cutting corners, and the general responsibility to the environment.
- Producers would benefit from support in creating long term management plans for riparian areas and watercourses.
- Within the consulting and contractor realm there is a lack of understanding due to a lack of knowledge transfer.
- There is a lack of information available to producers about what they can do with a water license, without going through the application process.

Costs associated with watercourse stewardship are prohibitive for producers

- Producers need financial support throughout these processes. Costs to the producers can be high to hire specialists and consultants to get the paperwork started, as well as the cost to get the work done.

- Producers often need to utilize every inch of land for their operations to be economically feasible, e.g., encouraging producers to keep riparian buffers can be difficult.
- Producers require compensation (incentive)to be interested in stewarding watercourses

3.2.4 What We Heard from NGO and Researcher Interviews

A total of 7 NGO and research representatives were interviewed to gain insight into the opportunities and challenges they face in watercourse stewardship. The following themes arose from those interviews:

Government resources focus heavily on front end (processing applications, regulation development) with little being directed to follow up, enforcement or education and outreach.

- Risk of over-regulating things which may not need to be regulated such as off stream livestock watering.
- Producers who attempt to do things by the book are caught up in regulation and applications for years, with little to no-follow up to ensure the work was done correctly.
- There is a lack of adequate or accurate data/ mapping (what the riparian area is supporting and why it is important to protect. i.e. species at risk.
- There is a lack of extension services to support farmers in gaining knowledge about riparian health and ways to maintain, rehabilitate waterways.
- A lack of support in terms of education for farmers to know the rules, who to speak with, and where to look for resources.

Most work is being done in siloed efforts on individual land parcels, which is an ineffective approach

- Stretches of watercourses are impacted heavily by up and downstream actions, good or bad.
- Producers can invest their money into repairing, rebuilding or otherwise restoring their watercourse, but an extreme event such as the 2021 floods in the Fraser Valley (or even smaller events) can wipe out all that work and financial input.
- It is important to look at the bigger picture rather than just one piece of land, improvements to watercourses are more impactful when they are approached collectively by agriculture sector, the public and government.

Producers need incentives to do the work to steward watercourses

- Producers would like to steward watercourses, but the complicated and expensive application processes are disenchanting for busy and cash strapped producers.
- There are competing on-farm demands for capital and often farmers are lacking the financial resources to invest in environmental pursuits.
- Competing on-farm priorities mean that farmers are often coming to NGOs to improve other elements of their farms.
- Lack of support for farmers in doing the “right thing” (money, information, resources etc.)
- There is an interest in stewardship work for the sake of marketing/branding for their customers.

Expense of watercourse stewardship is a large burden on producers

- Expense of watercourse stewardship comes in multiple forms: loss of productive land to buffers, cost of infrastructure, cost and time of implementation and maintenance.
- Cost of watercourse and riparian stewardship comes out of farmers’ pocket and sometimes that money just isn’t there.

- The application process, including application processing, hiring engineers, PAgs, RPBios any other needed experts require a significant amount of up-front capital from the producer/ landholder.

3.2.5 What We Heard from Producer Interviews

A total of 6 producers across BC were interviewed to gain greater insight into the opportunities and challenges they face in watercourse stewardship. Information about the project as well as a call for interview candidates was sent to agricultural associations across BC, because of this, producers self-selected for interviews by responding to the request. The following themes arose from those interviews:

Producers want to be good stewards of their watercourses

- Producers identified important reasons to steward their watercourses:
    - Resiliency in the face of climate change,
    - Protection of water resources for the farm and future generations of farmers
- Some producers participate in, or have instigated, community initiatives to conserve, raise awareness for or rehabilitate watercourses including building salmon spawning channels, working with neighbours to clean watercourses, hosting water awareness events and initiating salmon habitat rehabilitation groups.
- Many producers are aware of the inherent value of their watercourses and are utilizing BMPs such as fencing out livestock, building culverts, removing invasive weeds and planting native plant species on their own dollar.

Difficulty navigating all the levels of government, regulations and Acts which dictate watercourse management

- Too many levels of government are overseeing watercourses and riparian areas
    - Each level of government has different processes for communication, as well as definitions for watercourses which dictate what can and cannot be done to/around them, creating confusion and inconsistency for producers.
    - Inconsistent messaging around what you can and cannot do to a watercourse depending on who (ministry or level of government) is contacted.
- Stewardship of watercourses is often hindered by a lack of cohesion between various ministries.
    - Example: Watercourses are impacted by the state of culverts under roadways, but those culverts are under the jurisdiction of Ministry of Transportation and Infrastructure (TRAN), so improving culverts requires approvals from TRAN and Ministry of Land and Water Resource Stewardship (LWRS).
- There are too many Acts and regulations which influence watercourse management furthering the confusion around what is and is not possible or permissible.
    - Water Stewardship Act, Farm Practices Protection Act, ALC Regulations, Riparian Areas Protection Regulation, Agricultural Environmental Management Code of Practice.
- There are so many regulations, Acts and governing bodies overseeing and protecting water that it is hard for a producer to know where to start.

The Water Sustainability Act (WSA) is perceived as a barrier to producers practicing stewardship

- Practices that producers have been using for years are no longer legal due to the Water Sustainability Act, such as:

    - Utilizing water captured in self-built lagoons or ditches on property (likely due to wetland conflicts).
    - Perception that buffers along watercourses have changed, reducing farmable land – however property taxes are still being paid for said land.
    - Some producers have built and maintained salmon spawning channels on their properties, which are now considered sensitive habitats, changing the way they can interact with them and the adjacent land.
- WSA is perceived to have more power than AF, reducing producers' faith that AF can advocate for them.
- WSA is perceived as not having agriculture's best interest at heart, and often acts to hinder agricultural operations.

Change approval applications are complex, confusing and time consuming

- Online change approval applications are complicated and difficult to navigate, and some producers just give up and either don't do the work or do the work illegally.
    - Example: "It took us 3 months to sort out the steps involved in figuring this out. So it was a lot of effort on my part to find these steps."
    - It's hard to know where to start with making the application, there is a need for a clear guide to help producers navigate the complex system and multitude of steps.
- Wait times for change approval applications are so long that often by the time it is approved the window of opportunity has passed and the producer no longer has the money, time, skilled labour or interest in doing the work.

External factors have a large influence over watercourse stewardship on farms

- Poor neighborly relations impact watercourse stewardship.
    - Differing ideas of how to manage watercourses may cause conflict.
    - Inherent connectivity along watercourses means actions taken (or not taken) by one landholder are felt by others.
    - Erosion and top-soil loss into waterways due to culverts (or lack of) and poor riparian management on neighbors' streambanks impacts downstream users and upstream users who are trying to improve or steward their watercourses.
- Upstream influences such as forestry and development often threaten the health of watercourses or riparian areas. For example,
    - Reducing vegetative growth may cause flooding and erosion downstream.
    - Pollutants and sediment which come off development sites.
- Agricultural Land Reserve (ALR) regulations limit what can be done on the land, and sometimes it conflicts with watercourse stewardship goals.

Appendix A – Online Survey

Stewarding Agricultural Watercourses in BC - Survey

About the Survey

The BC Ministry of Agriculture and Food is undertaking a new initiative on Stewarding Agricultural Watercourses (SAW). The first phase of the SAW is to better understand how farmers and ranchers are managing riparian areas and watercourses on agricultural land. The study will build upon existing programs and initiatives that many producers in BC already participate in, which seek to minimize impacts from farming on watercourses, while maintaining agricultural activities on farmland.

The voices and experiences of BC's farmers are critical and invaluable. By participating in this survey, you are helping inform recommendations to support the agricultural sector in continuing to adopt and implement beneficial management practices. The benefits back to the farming community will include a set of recommendations to government that will focus on streamlining programs and funding.

The SAW is separate from the ongoing development of a provincial Watershed Security Strategy, however results of the SAW will be shared with those leading the Watershed Security Strategy to help inform its development and implementation.

Instructions

For the purposes of this survey, a "**watercourse**" is defined as per the Code of Practice for Agricultural Environmental Management, and includes:

(a) an area of land that perennially or intermittently contains surface water, other than
(i) puddles,
(ii) groundwater and dugout ponds for livestock watering, and
(iii) furrows, grassed waterways and other temporary ponded areas that are normally farmed, and
(b) drainage ditches that lead to an area described in paragraph (a)

For the purposes of this survey, a STREAM is defined as per the Water Sustainability Act as:

(a) a natural watercourse, including a natural glacier course, or a natural body of water, whether or not the stream channel of the stream has been modified, or

(b) a natural source of water supply, including, without limitation, a lake, pond, river, creek, spring, ravine, gulch, wetland or glacier, whether or not usually containing water, including ice, but does not include an aquifer;

This survey contains 33 questions and should take approximately 10-15 minutes to complete.

Participants should not provide personal information about themselves or others when completing this survey. We will only be capturing information on general location within the province and agricultural commodity type to ensure we capture all agricultural sectors and regions in BC. If you have questions about our collection of your information, please contact Andrea Shaw at Andrea.E.Shaw@gov.bc.ca or 250-331-9933.

Section 1: Characteristics of Your Farm

1. Please identify the AGRICULTURAL REGION in which you farm (if you farm in more than one area please just select one for the purposes of this survey):

1	Vancouver Island/ Coast	
2	South Coast/ Lower Mainland	
3	Thompson Nicola	
4	Kootenay	
5	Cariboo-Chilcotin	
6&7	Omenica Skeena	
8	Okanagan	
9	Peace	

2. Please identify what type of AGRICULTURAL PRODUCTION takes place on your farm Check all that apply)

Agricultural Production	Occurring on my farm
Beef cattle	
Dairy cattle	
Hogs	
Layer chickens	
Broiler chickens	
Turkey	
Poultry hatcheries	
Sheep	
Goats	
Apiculture	
Horses and/or other equine	
Fur-bearing animals and/or rabbits	
Oilseed and/or grain	
Corn and/or silage	
Hay and/or forage	
Vegetables (field)	
Vegetables (greenhouse)	
Fruit trees	
Small fruits/berries	
Nut trees	
Cannabis (field)	
Cannabis (greenhouse)	
Mushroom production	

Nursery and/or tree production	
Flowers (field)	
Flowers (greenhouse)	
Other (please specify): _____	

3. Please identify what type of LAND MANAGEMENT PRACTICES occur on your farm: (Check all that apply)

Land management practice	Occurring on my farm
Livestock or poultry outdoor access / pasture	
Livestock or poultry indoor / confined	
Agroforestry / silvopasture	
Application of manure	
Application of commercial fertilizers	
Composting manure	
Composting green waste	
Application of insecticides, herbicides or fungicides	
Use of cover crops	
Seasonal Fallow	
Use of green manure crops	
No till	
Low till	
Other (please specify): _____	

4. Do you own or lease the land you farm? (select all that apply)

   - Own
   - Lease private land
   - Lease Crown land
   - Combination of owning and leasing

5. Does your farm contain or border any of the following, all of which are defined as a STREAM under the Water Sustainability Act? (select all that apply)

   - Lake
   - Pond
   - River
   - Creek
   - Spring
   - Ravine
   - Gulch
   - Wetland
   - Glacier
   - Other (please specify):_____

- None of the above

6. Does your farm contain or border any of the following, all of which are defined as a STREAM under the Water Sustainability Act? (select all that apply)

   - Channelize watercourse (e.g. irrigation canal)
   - Constructed ditch
   - Constructed dugout for irrigation or livestock watering
   - Other (please specify): _____
   - None of the above

Section 2: Riparian and Watercourse Health

Riparian areas are important transition zones between watercourses and fields or upland areas. Healthy riparian areas support healthy watercourses. Healthy riparian areas also support ecosystem services by reducing flood impacts, minimizing the loss of land to erosion, supporting clean water, improving habitat for pollinators, and increasing biodiversity by providing habitat and habitat connectivity.

Riparian areas and watercourses in agricultural areas can be impacted by excessive tree clearing, invasive plants, unrestricted livestock access, drainage works, and runoff from nutrient applications (manure and fertilizers). When the health of riparian areas and watercourses are impacted, the ecosystem services they provide can be compromised.

Protecting the riparian zone (the vegetated area that both influences the watercourse and is influenced by it) can lead to healthier farms.

7. Which of the following benefits does your farm receive from the watercourse and associated riparian areas?

   - Irrigation source
   - Aesthetics/landscape
   - Pollinator habitat
   - Fishing opportunities
   - Property value
   - Wildlife habitat
   - Shade
   - Wind protection
   - Other (please specify): _____
   - None of the above

8. In your opinion/experience how healthy (1-10) are the riparian areas and watercourses on your farm?
   10 = water running clear and clean, vegetated setbacks, native plants, fish and animal habitat
   1 = water may be contaminated, vegetation is sparse, invasive species are present, no setbacks

Sliding scale 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10

9. What are the biggest EXTERNAL threats (things you don't have control over) to watercourses on your farm? (Select all that apply)

   - Upstream agricultural use
   - Other upstream land use
   - Invasive plants
   - Flooding
   - Climate change
   - Pollution
   - Sediment from roads
   - Flashiness
   - Drought
   - Other (please specify): _____
   - None of the above

10. What are the biggest INTERNAL threats (things you do have some control over) to watercourses on your farm? (select all that apply)

    - Runoff
    - Lack of setbacks
    - Livestock access
    - Water withdrawal
    - Invasive species
    - Clearing riparian area for cropland
    - Other (please specify): _____
    - None of the above

11. Are you familiar with the BC Environmental Farm Plan program?

    - Yes
    - No
    - Somewhat

12. Do you have an Environmental Farm Plan for your farm?

    - Yes
    - No
    - In progress
    - I don't know

13. If YES, please describe what encouraged you to complete the plan, e.g. was it part of a program you are involved with?

    Please describe: _____

14. Was a Riparian Health Assessment and/or Riparian Management Plan completed for your farm?

    - Yes
    - No
    - In progress
    - I don't know

15. If YES, what category was the riparian area assessed as:

    - Healthy
    - Healthy but with problems
    - Unhealthy
    - Not sure
    - Not applicable (no riparian assessment or plan completed)

16. Identify which, if any, riparian beneficial management plans (BMPs) have been undertaken on your farm: (Select all that apply)

    - Fencing out livestock
    - Planting native vegetation
    - Protecting plants from wildlife
    - Controlling invasive species
    - Installing large woody debris in the water course
    - Installing coarse woody debris in the riparian area
    - Creating riparian wetlands
    - Other (please specify): _____
    - No BMPs have been undertaken

17. Do you feel that the Beneficial Management Practices (BMPs) have been successful?

    - Yes
    - Somewhat
    - No
    - Don't know
    - Not applicable (no BMPs on your farm)

18. Are there terrestrial or aquatic Species at Risk (SAR) or migratory birds on your farm?

- Yes
- No
- Don't know

19. If YES, what actions are being taken to protect SAR habitat? (Select all that apply)

- Restrict or eliminate grazing animals access to SAR area
- Fence off area inhabited by SAR
- My practices don't impact SAR
- Other (please specify): _____
- None
- Not applicable (no SAR on the farm)

20. Are there any invasive plant species on your farm?

- Yes
- No
- Don't know

21. If YES, which actions have been taken to reduce the invasive plant species? (Select all that apply)

- Manual species removal and safe disposal (bagging, burning, composting under necessary conditions to kill seeds and prevent spread)
- Quarantine the area affected by invasive species
- Apply herbicides or insecticides
- Prevent grazing animals from accessing areas with invasive plant species
- Monitor invasive species over multiple seasons/years
- Enact prescribed burns to effected areas
- Learn and understand how the species spreads before deciding on management practice
- Other (please specify): _____
- Not applicable (no invasive plant species on the farm)

Section 3: Riparian and Watercourse Policies and Regulations

In order to streamline programming, it is important to understand the level of awareness within the agricultural community on specific policies and regulations.

22. Please indicate your level of familiarity with the following:

Title	Never heard of it	Heard of it but not very familiar with it	Somewhat familiar with it	Very familiar with it

Local Government Environmental Development Permit Areas				
BC *Water Sustainability Act*				
BC Code of Practice for Agricultural Environmental Management				
BC Riparian Areas Protection Regulation				
Federal *Species At Risk Act*				
Federal *Fisheries Act*				

23. Have you had to make any modifications or alterations to the watercourses on your farm?

- Yes
- No
- Don't know

24. If YES, what work has been done in and around watercourses on the site? (select all that apply)

- Dredging
- Building bridges or crossings
- Re-routing
- Removal of vegetation
- Other (please specify): _____
- Not applicable (no modifications or alterations of the watercourses have been required)

25. If YES, was an application made for a Change Approval Permit for Changes in and About a Stream (Section 11, *Water Sustainability Act*)?

- Yes – a notification
- Yes – an approval
- No
- Don't know
- Not applicable (no modifications or alterations of the watercourses have been required)

26. If YES, what challenges, if any, were encountered with the application? (select all that apply)

- Application processing time
- Application cost
- Lack of support to fill out the application
- Lack of follow-up
- None of the above
- Not applicable (no modifications or alterations of the watercourses have been required)
- Other (please specify): _____

27. Have you received any complaints or directed to take action related to enforcement from either the provincial or federal government?

- Yes
- No
- Don't know

28. If YES, were corrective actions completed?

- Yes
- No
- Don't know
- Not applicable (no complaints or actions taken)
- Other (please specify): _____

29. Has an application for any local government permitting related to riparian area work been made for your farm? (e.g. through an Environmental Development Permit Area application or similar).

- Yes
- No
- Don't know
- Not applicable

30. If YES, what challenges, if any, were encountered with the application? (select all that apply)

- Application processing time
- Application cost
- Lack of support to fill out the application
- Lack of follow-up
- Other (please specify): _____
- None of the above
- Not applicable (no local government permitting required)

Section 4: Overcoming Barriers to Riparian Area and Watercourse Stewardship

31. What are the biggest challenges faced in protecting watercourses on your farm? (select all that apply)

- o Knowing where and how to start
- o Cost of infrastructure (e.g. fencing, beaver guards)
- o Cost of habitat restoration (e.g. invasive species removal)
- o Cost of maintenance
- o Loss of farmable land to setbacks
- o Regulations, permitting, red tape
- o Rationalizing investing in land that I don't own
- o My animals need access to the watercourse as a drinking water source
- o Too busy with other activities on the farm
- o Don't see the value in it
- o None of the above
- o Other (please specify): _____

32. Which of the following are most important when deciding to implement stewardship activities in riparian areas and/or watercourses? Please RANK

    1 = Most Important and 6 = Least Important

- o Knowledge of how healthy riparian areas and watercourses benefit the operation
- o Knowledge of how healthy riparian areas and watercourses benefit the environment
- o Financial incentivization/compensation for maintenance of riparian areas and watercourses
- o Witnessing the benefits on other farms in my area
- o Grants and financial assistance to invest in infrastructure and restoration work
- o Guidance and information as to how to undertake the restoration work

33. If barriers/challenges to protecting riparian areas were removed, what would you do to improve riparian areas and/or watercourses on your farm?

Appendix B – Interview Questions

One-On-One Interview Questions

Producers

- Where within the Province are you farming?
- What type of farming do you primarily engage in?
- What type of Watercourse do you have on or bordering your property?
- What is the current state of health of that watercourse/ riparian area?
    - What signs of health/ lack of health do you see in your watercourse? (biodiversity, habitat, water purity, drainage, flooding etc.)
    - Do you have any SAR or migratory birds utilizing your watercourse?
- In what ways do you manage or steward the watercourse/ riparian area?
    - Do you have an EFP? Riparian management plan? BMPs (fencing, invasives removal, removing debris etc.)
- What are the biggest challenges facing the watercourse/ riparian area?
    - External (upstream use, industry, residential, recreation) or internal (invasive species, livestock access, flooding etc.)
- What supports or resources do you need to continue/ improve managing or stewarding the watercourse/ riparian area?
    - Information, financial support, physical support etc.
- How do you think barriers to supporting the watercourse/ riparian area can best be overcome?
- In an ideal world, how would you like to be managing your watercourse?
    - What needs to happen in order to get there?

NGO Members

- What does your organization do to support watersheds/ riparian areas within the context of agriculture?
    - Have the parameters of this work changed in recent years? In what ways has your organization adapted to meet the current needs of the industry?
- What opportunities are there in your work to support producers in watershed/ riparian area management?
    - What are the gaps which the agriculture sector is seeking support in?

    - What opportunities for collaboration with other organizations or governing bodies do you see?
- What are the biggest challenges that you see facing watershed/ riparian area stewardship?
    - How do you think these challenges can be overcome?
- What supports or resources do you see missing in watershed/ riparian stewardship?
    - Where do you think these supports/resources could/should come from?

<u>Government</u>

- What policies, strategies, or bylaws are in place to support watercourse/ riparian area management within your community?
    - Have you received feedback from the agriculture community on these?
- What is the permitting and approvals process like for producers who wish to do work in watercourse/ riparian areas?
    - Is this process effective? Can it be improved? How? Why is it working?
- Does you have any best practices or success stories related to watercourse/ riparian stewardship in agricultural areas to share?
- Does you have any success stories on collaborative efforts which have been made to steward watercourses/ riparian areas?
- What supports or resources do you see missing in watercourse/ riparian stewardship at your government level?
    - What barriers are there to these supports? What needs to happen for them to exist?