DOGS AND MIGRATORY BIRDS
WITHIN MIGRATORY BIRD SANCTUARIES in the Greater Victoria Area

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Environment and Climate Change Canada
Public Inquiries Centre
12th Floor, Fontaine Building
200 Sacré-Coeur Boulevard
Gatineau QC K1A 0H3
Telephone: 819-938-3860
Toll Free: 1-800-668-6767 (in Canada only)
Email: enviroinfo@ec.gc.ca

DOGS AND MIGRATORY BIRDS WITHIN MIGRATORY BIRD SANCTUARIES IN THE GREATER VICTORIA AREA

Nathan T. Hentze[1]
Ken H. Morgan[2]
Chloe K. Boynton[3]
Erin M. Roberts[3]

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[1]9768 Second St., Sidney, BC, V8L 3Y8
[2]Institute of Ocean Sciences, Environment and Climate Change Canada, 9860 W. Saanich Road, Sidney, BC, V8L 4B2'
[3]Pacific Wildlife Research Centre, Environment and Climate Change Canada, 5421 Robertson Road, Delta BC, V4K 3B2

EXECUTIVE SUMMARY

Coastal areas are important for wildlife and are used by birds for migration stopovers, wintering sites, and breeding, foraging and roosting locations. The Greater Victoria area of British Columbia hosts three Migratory Bird Sanctuaries (MBSs) for which Environment and Climate Change Canada (ECCC) is the responsible agency: these are the Victoria Harbour MBS (est. 1923), Shoal Harbour MBS (est. 1931), and Esquimalt Lagoon MBS (est. 1931). MBSs are established under the *Migratory Bird Convention Act* (MBCA) and are important areas for birds; numerous studies confirm that birds use habitat within all three MBSs. The MBCA prohibits the harm (including harassment) to migratory birds, their nests and eggs everywhere in Canada. Further, the *Migratory Bird Sanctuary Regulations* (MBSR) s.5.1 contains provisions prohibiting domestic animals at large.

ECCC has received feedback from members of the public, community organizations, and other government entities expressing concern regarding instances of dog disturbances to migratory birds in these MBSs. Literature shows that dogs can cause disturbance to birds that results in displacement, reduced foraging rates, nest abandonment, increased alert behaviours, and even increased mortality. Meanwhile, many bird species within the MBSs are facing population-level stressors and widespread declines (e.g. the great blue heron *fannini* subspecies, listed on schedule 1 of SARA as Special Concern). Therefore, dog disturbances in these MBSs are incidents of conservation concern. ECCC has jurisdiction, as dogs are not permitted to run at-large within MBSs (Migratory Bird Sanctuary Regulations [MBSRs] s.5.1. ECCC has exercised due diligence in investigating this situation through a literature review, public survey, and by publishing this report.

For the study, the three MBSs were divided into 28 smaller study areas. Presence, composition and abundance of birds was summarized from existing datasets. As species that occur near the shoreline are considered to be at higher risk to dog disturbance, the study focuses on 'shoreline-associated species' including shorebirds, great blue heron, terns, gulls, and certain waterfowl. Details of dog and bird interactions were sought from the public via a web-based survey open from October to November 2020.

Public survey results indicate that disturbance of birds by dogs has been documented in all 28 study areas. More frequent reports of bird disturbance by dogs were noted in certain areas such as the Lagoon area at Esquimalt Lagoon MBS as well as at Cadboro Bay / Gyro Beach, Gonzales Beach, Willows Beach, Cattle Point, and Clover Point within Victoria Harbour MBS. Risk of disturbance to birds increases

at certain times of year, including breeding periods or times of notable concentrations. Disturbance events from dogs in the Greater Victoria Area have the potential to have large and cumulative impacts on birds.

As these MBSs are not primarily located on federal land, a collaborative management approach with municipalities, provincial governments, First Nations, private landowners, local stewardship groups, and stakeholders is needed to achieve meaningful conservation outcomes for migratory birds within these important sanctuaries.

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Cover photo credits to Jacques Sirois for the pictures of the great blue heron and yellow sand-verbena, and to Erin Roberts for the photo of the pair of on-leash golden retrievers.

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LIST OF ABBREVIATIONS

BCCWS	BC Coastal Waterbird Survey
CWS	Canadian Wildlife Service
ECCC	Environment and Climate Change Canada
MBCA	Migratory Birds Convention Act
MBS/MBSs	Migratory Bird Sanctuary/Sanctuaries
MBSR/MBSRs	Migratory Bird Sanctuary Regulation/Regulations
VEHEAP	Victoria and Esquimalt Harbour Environmental Action Program
WED	Wildlife Enforcement Directorate
WRA	Wildlife Refuge Area

GLOSSARY

Alcid: Alcids (or "auks"), belong to the bird family *Alcidae*. This family, which includes murrelets, murres, guillemots and auklets, are generally found on the open ocean, and typically only come to land to breed.

Dabbling duck: Duck species in the family *Anatidae*, subfamily *Anatinae*, feed at the water surface or by tipping their body headfirst into the water without submerging their entire body. As they can become airborne by springing up from the water, and are often found in shallow water habitats. Species such as mallard, American wigeon, and green-winged teal are dabbling ducks.

Diving duck: Duck species in the family *Anatidae*, subfamily *Aythyinae*, feed by diving under the water's surface, submerging their entire body. Due to this foraging behaviour, they are often found over deeper waters. Most typically, they become airborne by running along the surface of the water for a distance before taking flight.

Groyne: A barrier or wall built perpendicular to the shore and extending into the ocean to limit water flow, erosion, and sediment movement.

Habitat Suitability: The ability of the habitat in its current condition to provide the life requisites of a species. It is an estimate of how well current habitat conditions provide the specified life requisite(s) of the species being considered.

Habitat Capability: The ability of the habitat, under the optimal natural (seral) conditions for a species, to provide its life requisites, irrespective of the current condition of the habitat.

Landbird: An informal name encompassing a diverse group of birds that live mostly over land, though they may migrate over bodies of water. This group encompasses the majority of all living bird species.

Passerine: Species belonging to the order *Passeriformes* are often referred to as perching birds or songbirds. Comprising the largest order of birds and making up most landbirds, the group includes species such as sparrows, blackbirds, and crows.

Precocial: Species in which young are relatively mature and mobile from the moment of birth or hatching, the opposite strategy is altricial however these are not distinct categories, but rather a continuum. Examples of precocial birds include many species of ducks, geese, and waterbirds, and often means young are born with open eyes and downy feathers. Precocial birds are often able to leave the nest much sooner and can often forage for their own food compared to altricial species.

Seasonal descriptors: In some cases, the following terms are applied for seasonal bird usage, and are here defined:

Breeds: A species that nests locally. Breeding species may be present only seasonally or year-round.

Migrant: A species that migrates to the area during a certain period of its life history. Migrants are typically species that pass through the region from wintering grounds farther south to breeding grounds farther north and are present during certain times of year such as spring and/or fall, and also include species that breed elsewhere, but winter in BC coastal environments.

Resident: A species that is present year-round. Resident species may or may not breed locally. Even though the species may be found year-round, individuals of that species are often present only for portions of the year.

Summers: A species that is only present during the summer season. Species that summer in the region may or not breed locally.

Winters: A species that is only present during the winter season.

Seaweed wrack: Seaweed cast ashore by waves, often in masses following fall and winter storm and high-wind events.

Shorebird: Birds belonging to the order *Charadriiformes* and suborders *Charadrii* and *Scolopaci*, include plovers, sandpipers, and oystercatchers. Shorebirds typically feed along beaches, mudflats, and rocky coastlines.

Shoreline: The strip of land where a body of water meets the shore. This includes the terrestrial and intertidal areas immediately adjacent to the ocean, such as beaches, peninsulas, or in some cases walkways or roads.

Shoreline-associated species: Any bird species that routinely uses shoreline areas at some point in their life cycle. This grouping has been established for the purposes of this study as shorelines are known to be areas of higher dog activity and are therefore at a higher potential risk for disturbance. Species in this bird group include shorebirds, gulls, herons, some waterfowl, and some landbirds that are characteristically found on shorelines.

Swash zone: The area along a beach that is subject to wave action. It is the area of the beach that is temporarily inundated with water after a wave breaks.

1. INTRODUCTION

Migratory Bird Sanctuaries (MBSs) are federally designated areas established under the *Migratory Bird Convention Act* (MBCA) to protect migratory birds and their nests. The MBCA prohibits harm (including harassment) to migratory birds, their nests and eggs everywhere in Canada. Further, the *Migratory Bird Sanctuary Regulations* contain provisions prohibiting domestic animals at large.

Environment and Climate Change Canada (ECCC) is the responsible agency for MBSs in Canada, although the sanctuaries can be located on federal, provincial or private land. There are three MBSs within the Greater Victoria Area: Esquimalt Lagoon MBS (est. 1923), Shoal Harbour MBS (est. 1923), and Victoria Harbour MBS (est. 1931). As the vast majority of these MBS lands are not located on federal property, the federal government is often not the landowner or manager. These three MBSs are important areas for birds; numerous studies confirm that many birds use habitat within the three MBSs both year-round and seasonally.

ECCC has received complaints about instances of dogs chasing migratory birds throughout the Victoria Harbour, Esquimalt Lagoon, and Shoal Harbour MBSs from members of the public, local landowners, community organizations, and other government entities. While there are other known threats to migratory birds and issues of conservation concern within the MBSs, ECCC has a responsibility to specifically investigate the impacts of dogs as per Section 5(1) of the *Migratory Bird Sanctuary Regulations* (MBSRs), which states: "*no person shall permit a dog or cat to run at large in a migratory bird sanctuary*". Literature shows that dogs can cause disturbance to birds that results in displacement, reduced foraging rates, nest abandonment, increased alert behaviours, and even increased mortality (see Section 1.1 for details). Meanwhile, many bird species within the MBSs are facing population-level stressors and widespread declines (e.g., the great blue heron fannini subspecies, listed on schedule 1 of SARA as Special Concern). For clarity, the purpose of this report is not to imply that dogs are the primary, or only conservation concern, but rather to provide data and knowledge to enable sound management decision making for a known threat, which is within ECCC's regulatory purview.

The report identifies 28 study areas within the three MBSs. Within each study area, i) available knowledge of migratory birds and habitat is summarized – with a focus on shoreline-associated species, and ii) results of known issues related to dog/bird conflicts are presented - as determined through an

online public survey. This report also provides a summary of the times of year when shoreline-associated bird species are most at risk of dog disturbance and makes recommendations for next steps towards greater compliance promotion.

1.1 LITERATURE REVIEW

The cities adjacent to the above-noted MBSs have undergone significant change since the sanctuaries were established. For example, when the Greater Victoria MBSs were first established, the greatest threat to migratory bird populations was hunting. Hunting is now prohibited within city limits by federal firearm regulations and city bylaws. Furthermore, the population in the Victoria area has increased from roughly 105,000 in 1950 (UN 2018) to 412,465 in 2019 (CRD 2019); it is projected to reach an estimated 493,975 people by 2038 (CRD 2019). Increasing local human populations brings many new environmental challenges and opportunities including urban development, habitat loss, invasive species introduction, as well as more recreation, tourism and stewardship (e.g., bird and whale watchers, urban naturalists).

Parks and protected areas are important for many reasons: providing and conserving nesting, foraging, or stop-over habitat for wildlife, providing ecosystem services (e.g., buffers for extreme weather events, air and water filtration); and cultural and economic value (e.g., recreation and tourism, physical and mental health benefits, and aesthetic appeal). Dogs have a long cultural history with people and are acknowledged for providing people with physical and mental health benefits (Cutt *et al.* 2007), social support and linking community members (Wood *et al.* 2007). The relationship between dog owners and their pets is often very strong, with many owners considering their dogs to be part of the family (Sanders 1993; Power 2008). Beaches and coastal areas present attractive locations for dog and human recreation (Bowes *et al.* 2015). In Greater Victoria, these coastal areas are easily accessible, relatively natural, clean, and safe. Beach areas are often constrained between the ocean and upland barriers (e.g., walled walkways, private property), and combined with their linear shape are ideal settings for dog recreation.

Beaches and coastlines are also important for wildlife and wildlife watchers. Coastal areas support many bird species comprising various groups including waterfowl, loons, grebes, gulls, great blue heron, shorebirds, raptors and passerines. These zones provide critical nesting areas, wintering sites, and foraging and roosting locations for resident and migratory birds reflected in the MBS designations. Many

bird species and groups have undergone significant and widespread declines in North America (Hope *et al.* 2019; NABCIC 2019; Rosenberg *et al.* 2019). Various species utilize coastal habitats, with some preferring sandy beaches, mudflats, and sandbars, while others favour rocky headlands or nearshore waters. When those habitats are near major population centres, there is a heightened probability of: i) interactions among dogs and birds; ii) conflicts among user groups; iii) declines in ecological integrity; and iv) adverse impacts on bird populations.

In general, human activity can often have a broad range of negative impacts on birds (Gill *et al.* 1996, 2001; Hill *et al.* 1997; Carney and Sydeman 1999; Nisbet 2000; Frid and Dill 2002; Steven *et al.* 2011). These impacts can be direct or indirect and include displacement from foraging areas and reduced foraging rates (Pfister *et al.* 1992; Gill *et al.* 1996; Galicia and Baldassarre 1997; Rees *et al.* 2005), reduced colony attendance or colony abandonment (Anderson and Keith 1980; Schulz and Stock 1993; Cairns *et al.* 1998; Skagen *et al.* 2001), increased predation rates (Keller 1991; Mikola *et al.* 1994), or direct mortality (Ruhlen *et al.* 2003). Disturbance impacts can be considered analogous, though potentially reversible, to habitat loss or degradation (Gill and Sutherland 2000; West *et al.* 2002). Disturbance can also be considered in a predation threat framework (Frid and Dill 2002); this risk-disturbance hypothesis is governed by tradeoffs between the costs and benefits of fleeing an area when faced with a predation risk, or the perceived predation risk in the case of non-lethal disturbance (Ydenberg and Dill 1986; Lima and Dill 1990; Lima 1998).

1.1.1 Direct Impacts

Flushing and Displacement

Among the most easily documented ways in which dogs can have an impact on shoreline birds is via flushing and displacement. Dogs disturb more birds than just people or vehicles alone, and the level of disturbance is often greater (Lord *et al.* 2001; Miller *et al.* 2001; Thomas *et al.* 2003; Burger *et al.* 2007; Weston and Elgar 2007; Stigner *et al.* 2016; Gómez-Serrano 2020). In a study on shorebirds, dogs were found to have twice the effect of people and reduced both shorebird abundance and site occupation probability (Stigner *et al.* 2016). Examining the effects of human recreational activities on sanderling (*Calidris alba)* foraging, Thomas et al. (2003) concluded that the presence of off-leash dogs resulted in the most significant disturbance factor, impacting the number of times and distance that birds moved, as well as the type of response (e.g., running or flying). At Boundary Bay Regional Park near Vancouver, British Columbia (BC), waterfowl were disturbed by dogs the most (38% of observations),

followed by gulls and terns (32%), passerines (27%), and shorebirds (25%) (Gerst 2002). In South Australia, the distances at which shorebirds showed alert responses and flushed were significantly greater when a walker was accompanied by an on-leash dog compared with a walker alone (Paton *et al.* 2000). At a busy beach in California, snowy plover (*Charadrius nivosus*) were disproportionately impacted by dogs than other disturbance types (Lafferty 2001). This trend has also been noted on Vancouver Island, where shorebirds showed 77% less disturbance behaviours to beach walkers within 100 m of birds compared to walkers with dogs at the same distance (Murchison *et al.* 2016). People with dogs on beaches in Spain's Castellón and Valencia provinces flushed Kentish plovers (*C. alexandrines*) ~94% and 80% of the time, respectively, when walking on dunes and pathways, compared to ~48% and ~13% for people walking without dogs (Gomez-Serrano 2020). Lone dogs flushed 100% of plovers in the dunes and 50% along the shore (Gomez-Serrano 2020). The effects of dogs are not limited to shorebirds and have been noted as well in woodlands where dog walking (near Sydney, Australia) led to a 35% reduction in bird diversity and 41% decline in abundance compared to control areas (Banks and Bryant 2007). The authors also found that people without dogs induced less than half the disturbance of that caused by people with dogs, even where dogs were required to be on-leash; bird abundance and diversity did not change whether there were one or two people. It has also been observed that the number of bird species occurring in urban yards (in Illinois) was inversely related to the number of dogs present in the neighbourhood (Belaire *et al.* 2014).

Reduced Foraging Time

Disturbance events have the potential to cause large and cumulative impacts on birds related to increased energetic demands. While birds may have sufficient energetic reserves or alternative suitable habitat to compensate for disturbance (Gill *et al.* 2001), birds that flush will need to acquire more food to compensate both for lost foraging time at their pre-disturbance location as well as increased energy expenditure (Ramli and Norazlimi 2017). Lafferty (2001) reported that roosting snowy plover were disturbed once every 43 minutes on average, with each dog disturbing 26% of the total roost on weekdays, increasing to disturbances every 27 minutes on weekends with each dog disturbing 73% of the roost. This level of disturbance may have prevented the plover species from breeding at this location and factored into bird distribution on the beach. Disturbance events leading to reduced foraging efficiency resulting in declining reproductive success have been noted (Flemming *et al.* 1988; Burger 1991; Burger 1994). As shown by Agness *et al.* (2008, 2013), the cumulatively increased energy demands of flushing seabirds can potentially lead to fitness, and population-level, consequences in seabirds. A

study of dog disturbance near Vancouver found that 51% of disturbed wildlife left the area (Gerst 2002). Availability of suitable alternate habitat plays a key role in bird reactions to human disturbance (Gill *et al.* 2001). For example, a species which feeds on more evenly distributed prey may not risk as much by leaving a foraging area than species whose prey is less reliably found. For example, European shags (*Phalacrocorax aristotelis*) were effectively excluded from the best foraging areas due to boat disturbances, which increased juvenile mortality, and may have led to population-level declines (Velando and Munilla 2011). In Europe, Eurasian wigeon (*Mareca penelope*) foraging on eelgrass (*Zostera marina*) were highly susceptible to disturbance, abandoning foraging areas until the next tidal cycle (Fox *et al.* 1993). Disturbance also appears to have displaced shorebirds from the Tofino Wah-nah-jus Hilth-hoo-is Mudflats (Drever *et al.* 2016). Disturbances in situations where foraging opportunities are limited can have significant energetic consequences and may potentially lead to the complete abandonment of a site (Fox *et al.* 1993). Direct linkages of dog disturbance on fitness consequences are not generally represented in the literature (Weston *et al.* 2014), and further research is needed on this topic.

Behavioural Responses

Behavioural responses due to disturbances in general may be based on many factors in the interaction, such as the speed (Burger 1998), angle (Burger and Gochfeld 1990, 1991a; Bulova 1994), and distance of approach (Burger 1981; Burger and Gochfeld 1991a, 1991b; Klein 1993; Roberts and Evans 1993; Fernández-Juricic and Tellería 2000), noise level (Burger 1983; Brown 1990; Delaney *et al.* 1999), amount of available suitable alternate habitat (Gill *et al.* 2001), and the individual's current state (McNamara and Houston 1996). The state of an animal represents the combination of its internal and external environments as well as its perceived view of these conditions (McNamara and Houston 1996) and is thus dynamic and changeable. Interpretations of disturbance-related behaviours can be counter-intuitive. For example, individuals that show greater responsiveness to human-induced disturbance may be those in superior physical condition as they can afford to expend more energy (Beale and Monaghan 2004). In situations where suitable alternate habitat is lacking, individuals that display a greater tolerance to disturbance may also incur the greatest fitness costs (Gill *et al.* 2001).

1.1.2 Indirect Impacts

Even if a dog has no intent to kill a bird, threatening stimuli of any kind can trigger anti-predator behaviour in birds (Frid and Dill 2002), and failure to react to an approaching dog could lead to

mortality. Many studies have focused on the degree of behavioural response as an indicator of a species' susceptibility to disturbance events (Carney and Sydeman 1999). For example, the distance at which birds flee from a disturbance (flight initiation distance) and the distance at which a bird alters its behaviour from a disturbance (alert distance) have been used to create buffer zones and set-back distances between human activities and birds (Ydenberg and Dill 1986; Erwin 1989; Rodgers and Smith 1995, 1997; Carney and Sydeman 1999; Fernández-Juricic *et al.* 2001; Rodgers and Schwikert 2002; Blumstein *et al.* 2003). However, physiological changes (e.g., increased corticosterone levels, increased heart rate) may be triggered before behavioural responses are elicited and may persist even if no behavioural change is detected (Culik and Wilson 1995; Nimon *et al.* 1995; Fowler 1999; Ackerman *et al.* 2004; Goudie and Jones 2004; Soldatini *et al.* 2015).

Increased Alertness

Disturbance events may have an impact even when no flushing of birds is observed. Dogs may increase the proportion of time birds spend alert, reducing time available for other activities such as foraging and roosting (Lafferty 2001; Thomas *et al.* 2003). This tendency of increased alertness may be of particular concern to shoreline species that have spatially and/or temporally limited foraging options (e.g., due to tidal cycles). Chatwin *et al.* (2013) investigated alert distances for marine birds from kayaks and motorboats and found that nesting birds reacted significantly differently (less likely to react) than roosting birds, and that responses were species-specific. Schwemmer *et al.* (2011) found high inter-individual variation in flush distance of sea ducks (common scoter [*Melanitta nigra*], velvet scoter [*M. fusca*], long-tailed duck [*Clangula hyemalis*], and common eider [*Somateria mollissima*]) from boat disturbance. Flight initiation distances in that study may be related, in part, to differences in flight energy expenditure between species, as the species with the highest wing-load (common eider) also had the lowest proportion of flushing birds, and the lowest flush distances (Schwemmer *et al.* 2011). It is likely that species-specific responses also exist with dog disturbance. The European shag has been documented to increase vigilance and reduce foraging activity as disturbance increases (Velando and Munilla 2011). Decreased vigilance per individual with increasing group size is well documented for many social animals (Elgar 1989; Quenette 1990; Lima and Dill 1990; Roberts 1996; Michelena and Deneubourg 2011). However, decreased vigilance rates of individuals do not necessarily confer greater successful foraging rates (Cresswell 1994; Roberts 1996). Pulliam (1973) suggested that predator detection likelihood increases with larger flock size, which has been demonstrated in field experiments (Elgar 1989). Roberts (1996) reviewed cases in which individual risk was lower in larger groups (in part

through greater predator detection) through dilution effects. Group size may also be associated with prey concentrations in seabirds (Porter and Sealy 1981, 1982; Strachan *et al.* 1995). Disturbance may also increase stress responses. Chronic stress can have a significant negative impact on wildlife, including a reduction in territorial defense by male songbirds, lower chick provisioning rates and nestling health, and nest abandonment (Wingfield and Silverin 1986; Love *et al.* 2004, 2005).

1.1.3 Habituation

Habituation is another factor that can influence reaction tolerance. The ability to habituate appears to be species or situation specific. Some studies have shown that in some wildlife species, habituation to disturbance is minimal (Burger and Gochfeld 1990; Bleich *et al.* 1994), or that repeated disturbances may increase disturbance effects (Magle *et al.* 2005). Conversely, in some species groups (e.g., gulls, terns, herons), birds may become highly tolerant of people (Nisbet 2000). Some birds may habituate when cues to predation risk are repeatedly not realized (Keller 1989; Blumstein and Daniel 2005; Blumstein 2016). However, dogs are predatory animals and may depredate birds. Shore nesting birds are especially vulnerable, and instances of egg and chick predation by dogs have been reported (e.g., review in Maguire 2018). Off-leash dogs pose a real threat to birds that do not flee, and thus habituation to dogs may not occur, even where on-leash dog walking is frequent. Rather than lead to habituation, the unpredictable movements of dogs can promote sensitization, which is an increase in stimuli response with increased exposure (Burger 1986; Glover *et al.* 2011). Habituation may also be impeded by the irregular motion of dogs on the beach compared to the more linear movements of people (Burger 1986; Ramli and Norazlimi 2017). In one study, shorebirds showed increased sensitivity levels when disturbance rates are high (Lafferty 2001). Further, birds that do not display a reaction to a disturbance stimulus may still suffer physiological effects not visible to observers and/or reduced foraging times (Wilson *et al.* 1991; Merkel *et al.* 2009; Soldatini *et al.* 2015). A bird not visibly reacting is still making a decision based on perceived costs and benefits, and additional or changing circumstances may prompt a visible reaction.

1.1.4 Mitigation

Leashing dogs does not eliminate bird disturbance but can help mitigate it. Leashing has been found to reduce disturbance probability and the extent of disturbance (Lafferty 2001). The effectiveness of leashing may in part be due to how dogs interact with wildlife when on- or off-leash. For example,

Milton *et al.* (2011) found that approach speeds were higher for off-leash dogs. A study in Boundary Bay Regional Park found that dogs disturbed wildlife 15% of the time overall, but only 2% of on-leash dogs disturbed wildlife compared to 25% of off-leash dogs. When disturbances occurred, 89% of dog handlers either ignored, watched, or actively encouraged their dog, while only 6% attempted to call their dog back (Gerst 2002).

Many studies have found a low level of leash compliance, even where leash requirements existed. In California, Lafferty (2001) reported only 21% compliance with leash requirements, while in Australia compliance was found to be at 82% on beaches where dogs were prohibited, but only 21% on average at year-round on-leash areas (Maguire *et al.* 2018). At Blackie Spit near Vancouver, compliance with leash regulations ranged from 13% in one area of the park to 100% in the parking lot (Andrusiak 2003). Esrom (2004) noted that leash requirements were ignored by 62% and 80% of visitors with dogs at Pacific Rim National Park Reserve in spring and late summer, respectively. In Pacific Rim National Park Reserve educational signage, beach patrols, and hiring summer students raised compliance reached to 60-70% in 2017 and 2018 – compared to 39% in 2011 (Zharikov 2019).

2. REGULATORY

The MBCA and *Migratory Birds Regulations* (MBR) protect migratory birds and prohibit the disturbance or destruction of migratory birds and their nests and eggs, and apply to all lands and waters in Canada, regardless of ownership.

MBSs are established under the MBSRs, for the protection and conservation of migratory birds. The primary purpose of an MBS is to protect migratory birds from killing, harm, and harassment during their life cycle (including breeding, nesting, molting, staging, and migration stopovers). As such, activities that could harm migratory birds, their nests or their eggs are prohibited. Generally, the MBSRs prohibit the following activities in an MBS:

- no person shall hunt[1] migratory birds – S.3 (2) (a)
- no person shall disturb, destroy, or take the nests of migratory birds – S.3 (2) (b)
- no person shall have in their possession a live migratory bird, or a carcass, skin, nest, or egg of a migratory bird (a resident of an MBS may have in their possession migratory birds lawfully killed outside an MBS) – S.3 (2) (c)
- no person shall have in their possession in an MBS any firearm; or any hunting appliance except as otherwise provided in these Regulations (does not apply to residents of an MBS) – S.4 (1) (b)
- no person shall permit a dog or cat to run at large in an MBS – S.5 (1)
- no person shall carry on any activity that is harmful to migratory birds or the eggs, nests, or habitat of migratory birds, except under the authority of a permit for those MBSs on provincial, territorial, and federal lands – S.10 (1) and S.10 (2)

MBSs can be established on private, provincial, territorial, and federally owned lands. Access to each MBS varies by site and is at the discretion of the landowner and/or land manager. Where MBSs are located on federal land, ECCC is responsible for the management and protection of migratory birds, nests, eggs, and habitat. Where MBSs are located on provincial land, ECCC is responsible for the protection of migratory birds and their nests, while the chief game officer of the province is responsible for the management of habitat. Where MBSs are located on private or municipal land, ECCC is

[1] "hunt" in the MBCA regulatory context means: *to chase, pursue, worry, follow after or on the trail of, stalk, lie in wait for the purpose of taking, trap or attempt to trap or shoot at a migratory bird whether or not the migratory bird is then or subsequently captured, killed or injured.*

responsible for the protection of migratory birds and their nests. Habitat management is the responsibility of the landowner.

The standard prohibitions under the MBSRs apply to Esquimalt Lagoon, Shoal Harbour, and Victoria Harbour MBSs; i.e., hunting migratory birds is prohibited and no person shall disturb, destroy or take the nest of a migratory bird or have in their possession a live migratory bird, or a carcass, skin, nest or egg of a migratory bird except under the authority of a permit issued by ECCC, or unless authorized by the MBSRs. Possession of firearms or other hunting appliances is prohibited. Dogs and cats must not be allowed to run at large. Access prohibitions or restrictions by the MBS landowner may also apply.

Another piece of federal legislation that is relevant to the Greater Victoria Area MBSs is the *Species at Risk Act* (SARA). The goal of the SARA is to prevent endangered or threatened wildlife from becoming extinct or lost from the wild, and to help in the recovery of these species. SARA is also intended to manage species of special concern and to prevent them from becoming endangered or threatened. SARA contains prohibitions against the killing, harming, harassing, capturing, taking, possessing, collecting, buying, selling or trading of individuals of endangered, threatened, and extirpated species listed in Schedule 1. The Act also contains a prohibition against the damage or destruction of their residences (e.g. nest or den), and critical habitat (e.g. breeding, nesting, overwintering habitat). Two SARA-listed bird species are known to occur within the Greater Victoria MBSs, great blue heron (Schedule 1 listed as special concern) and red knot (Schedule 1 listed as threatened).

The Wildlife Enforcement Directorate (WED) of ECCC is responsible for enforcing the MBCA, the MBSRs, SARA, as well as other federal wildlife legislation. WED Enforcement Officers regularly patrol MBSs across Canada. Federal Wildlife Enforcement Officers may respond to violations by issuing Federal Contravention Violation Tickets, Administrative Monetary Penalties, or prosecution.

Subsection 5(1) of the MBSRs requires an owner to have continuous and effective control of their animal within an MBS by restraining or constraining it to ensure that the dog or cat is not capable of disturbing, harassing, harming, or killing a migratory bird, their eggs, or their nest. Typical ways to restrain or control an animal include: a leash, transport carriage or cage, attaching them to a static object, holding tightly on the animal's collar, or holding the animal in the owner's arms. Effective control, or lack thereof, will be assessed on a case-by-case basis by a Wildlife Enforcement Officer.

Potential tickets or Administrative Monetary Penalties for a dog or cat at large within an MBS vary from $230 - $2,000 for an individual and $230 - $12,000 for a business.

3. METHODS

Each MBS was divided into study areas based on locations of known or suspected importance for migratory birds and/or areas with known or suspected interactions among birds and dogs. Study area delineations attempted to follow discrete units of land separated by geographic or human-made landmarks (e.g., points of land, roadways). Three study areas were identified for Esquimalt Lagoon, five for Shoal Harbour, and eighteen for Victoria Harbour MBSs (Table 1). Each study area was assessed and is summarized separately following the same investigative methodology.

Table 1. List of study areas by MBS

Migratory Bird Sanctuary	Study Area
Esquimalt Lagoon	Lagoon
	Royal Roads/west end of Esquimalt Lagoon
	Shoreline on ocean-side of Lagoon Road
Shoal Harbour	Roberts Bay
	All Bay/Resthaven Park
	Marina Park Marina shoreline
	Blue Heron Basin/Marinas
	Tsehum Harbour Park to Westport Marina shoreline
Victoria Harbour	Cadboro Bay/Gyro Beach
	Cattle Point
	Willows Beach
	Bowker Creek Estuary
	Haynes Park to Queens' Park
	McNeill Bay/Beach
	Gonzales Beach
	Ross Bay/Beach
	Clover Point shoreline
	Dallas Bluffs beaches
	Holland Point Park to Ogden Point
	West Bay
	Esquimalt Gorge Park/Gorge Creek Beach
	Saanich Gorge Park/Curtis Point shores
	Craigflower-Kosapsom Park beach
	Portage Inlet East
	Portage Inlet North
	Portage Inlet West

3.1 OVERVIEW

An Overview section provides a description of habitats and local factors that might affect bird and/or dog usage for each study area. Descriptions were based on the observations of the primary author, aerial imagery (i.e., Google Maps), and supporting published/unpublished reports and/or documents. Constraints on dog usage of study areas were determined from municipal bylaws, and other

relevant information as posted on each municipality's webpage.

3.2 BIRDS AND HABITAT

Birds and Habitat sections summarize current bird abundance and distribution patterns within each study area. As shoreline species are considered to be at higher risk to dog disturbance, this report focuses on geese, swans, dabbling ducks, some diving ducks, shorebirds, gulls/terns, great blue heron, and some ground-foraging landbirds.

For most areas, the data summarizes: i) the BC Coastal Waterbird Survey (BCCWS) dataset, and ii) the eBird database (www.ebird.org). Additional details on bird occurrences are based on the Victoria and Esquimalt Harbours Bird Censuses 1997-1999 (Shepard 1999) and other published and unpublished data sources where applicable. Bird habitat associations are in part also informed by the author's personal observations from the study areas.

BCCWS data for all waterbird survey locations in the Victoria area, from 1999 to 2019, were requested via NatureCounts (https://www.naturecounts.ca). The actual date span at each study area with an associated count varies. A second data request was submitted directly to the BCCWS Project Coordinator for ancillary information regarding the number of people and dogs recorded. This ancillary data included human and dog count data from 1999-2020; again, the survey period varied by study area. Many waterbird survey counts are only completed from September to April, though survey data for months outside of this winter window are available for certain survey locations. While the BCCWS dataset is focused on waterbirds, landbirds are also reported. In most cases, "landbirds" in the BCCWS context refers only to American crow (*Corvus brachyrhynchos*) and/or common raven (*C. corax*).

To supplement the BCCWS, data from eBird were also reviewed. Both the BCCWS and eBird are citizen-science based programs. Unlike the BCCWS, contributors to eBird are not constrained to a standardized survey protocol. eBird data are useful for determining seasonal trends in bird activity at a given location, as well as for calculating the frequency of detections of specific birds. eBird data were summarized from "hotspots" (from here forward "eBird hotspot(s)"), which are generally publicly accessible locations containing the aggregated results of multiple users entering data into the same shared location. Hotspots exist for many, but not all, of the identified study areas.

3.3 PUBLIC SURVEY

A public survey was created to gather public perceptions of dog and bird interactions within

each study area. This survey was created in Microsoft Forms and hosted online by LGL Limited. It was sent to a variety of local contacts compiled by ECCC and local stewardship groups. The survey was also posted on a Vancouver Island birding listserv (https://groups.io/g/bcvibirds) and Facebook (Bird Fanatics Vancouver Island) and was subsequently shared on other community Facebook pages. Over the two-week survey period (October 27 - November 12, 2020), 494 survey responses were received (Table 2).

Table 2. Public survey responses by study area.

Migratory Bird Sanctuary	Study Area	Number of Responses
Esquimalt Lagoon	Lagoon	60
	Royal Roads / west end of Esquimalt Lagoon	15
	Shoreline on ocean-side of Lagoon Road	48
Total Responses for Esquimalt Lagoon MBS		***123***
Shoal Harbour	Roberts Bay	18
	All Bay / Resthaven Park	12
	Marina Park Marina shoreline	8
	Blue Heron Basin/Marinas	2
	Tsehum Harbour Park and Westport Marina shoreline	3
Total Responses for Shoal Harbour MBS		***43***
Victoria Harbour	Cadboro Bay / Gyro Beach	125
	Cattle Point	19
	Willows Beach	62
	Bowker Creek Estuary	4
	Haynes Park to Queens' Park	9
	McNeill Bay / Beach	10
	Gonzales Beach	23
	Ross Bay / Beach	7
	Clover Point shoreline	14
	Dallas Bluffs beaches	24
	Holland Point Park to Ogden Point*	-
	West Bay	6
	Esquimalt Gorge Park / Gorge Creek Beach	9
	Saanich Gorge Park / Curtis Point shores	4
	Craigflower-Kosapsom Park beach	2
	Portage Inlet East	3
	Portage Inlet North	5
	Portage Inlet West	2
Total Responses for Victoria Harbour MBS		***328***
Total Responses (all MBS)		***494***

*The Holland Point Park to Ogden Point study area did not receive any responses as it was inadvertently left off the online survey form options.

Each survey consisted of questions relevant to a specific study area within a specific MBS. Respondents could fill out separate surveys for different study areas if they were familiar with more than one. Each questionnaire consisted of up to 14 questions, plus optional comment and contact

information fields (Appendix A).

Questions focused on potential dog disturbances to determine which bird groups' respondents believe to be harassed by dogs and when and where the harassment (if any) took place. Questions related to the frequency of dog use asked how often dogs were observed, and what percentage were off-leash. As different user groups may have different perceptions about dogs and wildlife, and different individuals may have different familiarity with a given study area, questions also asked how often respondents visited the study area, what their general purpose for visiting was, and why they visited that particular area over other areas.

3.4 BIRD ACTIVITY PERIODS

Section 7 describes shoreline-associated species which are most at risk of disturbance by dogs (e.g., geese, swans, dabbling ducks, some diving ducks, shorebirds, gulls/terns, great blue heron, and some ground-foraging landbirds). Excluded species (e.g., alcids, cormorants, oceanic diving ducks) are those that are abundant within the MBSs but are unlikely to be subjected to frequent harassment by dogs due to their typical distribution on marine waters beyond the range where dogs are likely to influence their behaviour.

Distributions and abundance throughout the year are based on known occurrences (e.g., eBird data) in the MBSs overall. Species that breed within or near the MBSs have an elevated risk associated with disturbance as harassment by dogs could result in direct mortality of adults on nests, eggs and/or young, or influence nest attendance or foraging rates. Species that use the MBSs seasonally, or congregate during particular life-stages (e.g., for moulting, or staging during spring and/or fall migration), may have increased impacts of dog disturbance during those specific time periods.

General breeding s chronologies used here are based on Campbell *et al.* (1990a; 1990b). Additional seasonal abundance/presence is based on eBird and BCCWS datasets, and the Victoria and southeastern Vancouver Island Checklist of Birds (VNHS 2017).

4. ESQUIMALT LAGOON MBS

Esquimalt Lagoon MBS comprises 134 ha along the Colwood coastline. The boundaries of this MBS, as defined in the MBSRs, extend 100 m inland from the lagoon on all sides except towards the ocean, as shown in Figure 1. While the beach area below the high tide line (Section 4.3) is <u>not</u> within the MBS, the foreshore area has been identified as an important area for birds, so it was included in this study for the purposes of knowledge gathering and information sharing. The Esquimalt Lagoon MBS is within municipal parkland, Hatley Park and Fort Rodd Hill National Historic Sites. Private property overlaps the MBS near the west and southwest corner of the lagoon.

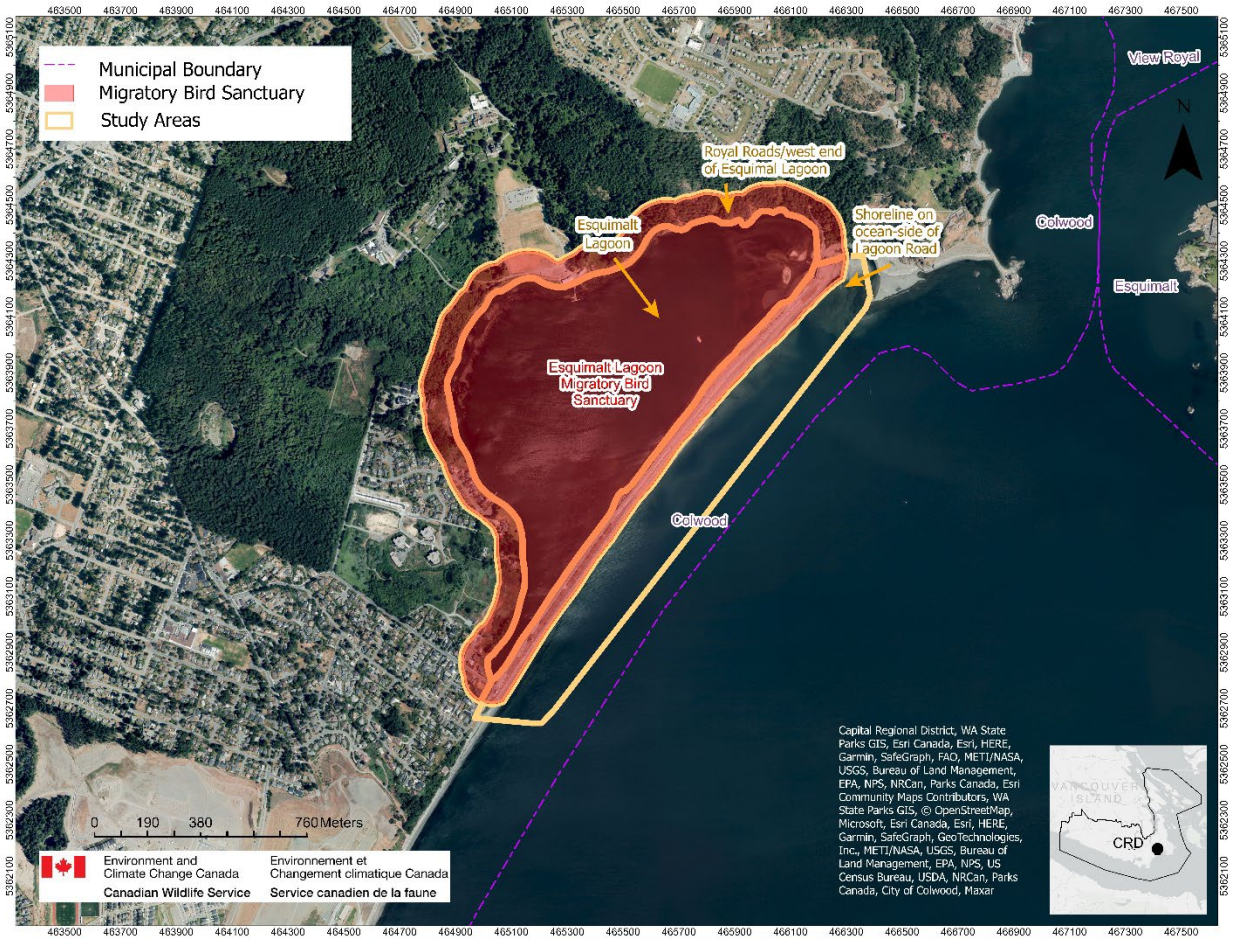

Figure 1: Map of the Esquimalt Lagoon MBS showing study areas.

<u>Past Surveys</u>

There have been a number of past studies of birdlife within the Esquimalt Lagoon MBS. A study was commissioned by the Victoria and Esquimalt Harbours Environmental Action Program (VEHEAP)

from 1997-1999 (Shepard 1999). In 2007, additional surveys were completed to record the daily distribution and behaviour of birds through November and December (Clowater 2008). Both of these studies are discussed in study area specific sections below. Regular surveys as part of the BCCWS have been undertaken here since 2010. Esquimalt Lagoon is a popular recreational birding hotspot and has regular, though not systematic, coverage by local birders. A total of 229 species have been reported at this eBird hotspot location (eBird 2020), including 30 species of provincial or federal conservation concern (Appendix B).

4.1. Lagoon

4.1.1 Overview

The Lagoon study area of Esquimalt Lagoon MBS comprises both the main water body of the lagoon as well as lagoon shores and plant communities on the lagoon-side of the Coburg Peninsula. Some identified plant habitat types include mixed herbaceous plants, Oregon grape (*Mahonia aquifolium*), Scotch broom (C*ytisus scoparius*), and Nootka rose (*Rosa nutkana*), disturbed mixed grasses, and a salt marsh fringe (Wilson *et al.* 2002). Tidal meadows and marshes are found in the mid to upper intertidal zones, delineated based on substrate (ELSI 2006). Subtidal surveys of Esquimalt Lagoon have also been conducted (Archipelago Marine Research Ltd. 2000). Important biophysical features identified during those surveys include ~15 ha of eelgrass beds and significant intertidal clam beds (notably along intertidal gravel bars at the entrance to the lagoon). The lagoon is relatively shallow (<3 m) and restricted in tidal amplitude relative to Victoria and Esquimalt Harbours (Archipelago Marine Research Ltd. 2000). The substrate type is mostly mud and sand sediment, with most gravel content along the tidal channel and intertidal flats (Archipelago Marine Research Ltd. 2000). About half of the subtidal lagoon area is vegetated, with shoreline margins, entrance channels, and the northwest part of the lagoon basin having the densest cover comprised of eelgrass, kelp, and green and red algae.

4.1.2 Birds and Habitat

Baseline bird data based on surveys conducted approximately every two months from April 1997 to May 1999 can be found in Shepard (1999). These surveys show that birds utilize the lagoon year-round. However, there are seasonal differences linked with different life-history requirements of the various species (Figure 2). For example, while gulls were detected in large numbers year-round, their numbers increased dramatically during the late summer and fall when locally-breeding species such as

glaucous-winged gull (*Larus glaucescens*) are joined by large numbers of species that stage in the area or pass through during migration, such as California gull (*L. californicus*) (**Error! Reference source not found.**Figure 2). Shorebird numbers show a corresponding pattern, with peak diversity and abundance in the fall as arctic and boreal-breeding species migrate south, using the lagoon shoreline to forage and roost. Overall numbers were lowest during May/June surveys, which is expected, as many individuals and species breed outside of the lagoon and/or region (Figure 2).

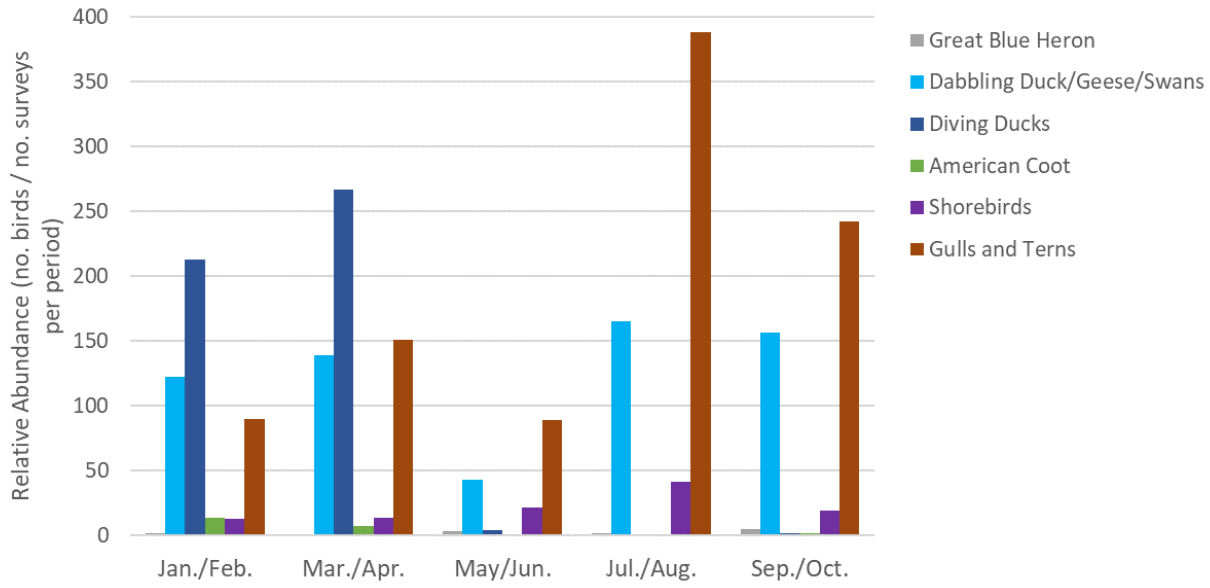

Figure 2: Relative abundance and seasonal trends of shoreline-associated bird groups within the lagoon area of the Esquimalt Lagoon MBS from April 1997 and May 1999. Adapted from Shepard (1999).

Additional surveys were completed on nine dates from 31 October to 18 December 2007 to understand how boat use of the lagoon might impact waterbirds during the winter months (Clowater 2008). In total, 53 marine-associated birds were recorded during those surveys, with between 1,038 and 2,812 birds per survey (Clowater 2008). Bird densities were highest in the southern sections of the lagoon, as well as the north end and on the Royal Roads side of the lagoon. Bird use was also found to be concentrated on shore or within 6 m of shore (approximately 70% of birds), with about 21% of birds detected from 6-30 m of shore (Clowater 2008). These areas of greater bird density were influential in siting the WRAs.

Surveys completed under the BCCWS program from 2010 and 2019 tallied 47 species of shoreline-associated and other marine birds. No surveys were completed during May or August in any year. Results from these surveys broadly mirror those of Shepard (1999), indicating high numbers of waterfowl through much of the year, with lower numbers of waterfowl through the summer months,

especially for diving ducks, and a large pulse of gulls in the lagoon during the late summer and fall (Figure 3).

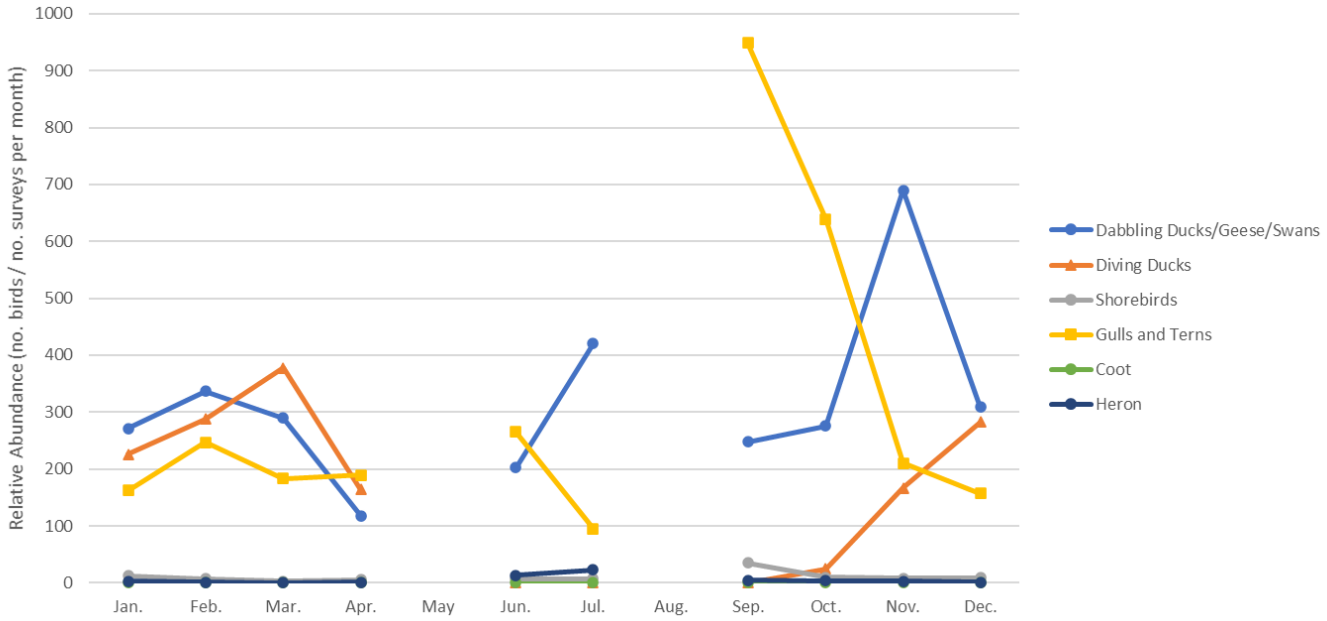

Figure 3: Relative abundance and seasonal trends of shoreline-associated bird groups within the lagoon area of the Esquimalt Lagoon MBS from 2010 to 2019. Adapted from BCCWS (Birds Canada).

People were observed in high numbers regularly during BCCWS counts at the Lagoon study area. Dogs, while fewer than people, were also regularly encountered in low to moderate numbers within the lagoon area of the MBS during the waterbird surveys (Appendix C). The presence of people and dogs has remained constant since 2010 when survey data begins, though the number of either varies (Appendix C).

A bar chart of seasonal abundance for the Esquimalt Lagoon eBird hotspot as a whole can be found at https://ebird.org/barchart?r=L350246&yr=all&m=. The eBird dataset shows that resident shoreline-associated birds, such as Canada goose (*Branta canadensis*) and mallard (*Anas platyrhynchos*) - both of which breed in the region – are joined by other species such as American wigeon (*Mareca americana*), northern pintail (*A. acuta*), green-winged teal (*A. crecca*), greater and lesser scaups (*Aythya marila/affinis*), and hooded merganser (*Lophodytes cucullatus*) roughly from August/September to May. Shorebirds, such as black oystercatcher (*Haematopus bachmani*) and killdeer (*Charadrius vociferus*), may be present year-round at the lagoon. Other shorebirds are present during the winter (e.g., dunlin

[*Calidris alpina*]), or migrate through during the spring (particularly April and May) and fall (notably July to September) migrations (e.g., western sandpiper [*C. mauri*], short-billed dowitcher [*Limnodromus griseus*]). Shorebird usage of the lagoon is in part tide-dependent, with shorebirds foraging at low tide particularly on the exposed sand and gravel flats near the tidal channel, though shorebirds may forage or roost along the entirety of the shoreline. A total of 32 shorebird species have been recorded from the Esquimalt Lagoon eBird hotspot (eBird 2020).

Landbirds are common and present in areas surrounding the lagoon. Sparrows (notably white-crowned [*Zonotrichia leucophrys*], golden-crowned [*Z. atricapilla*], and song [*Melospiza melodia*] are frequent in shrubby vegetation surrounding the lagoon. The sparse vegetation and shoreline along the Coburg Peninsula are also attractive to open-country landbirds such as Brewer's blackbird (*Euphagus cyanocephalus*), savannah sparrow (*Passerculus sandwichensis*), and occasionally snow bunting (*Plectrophenax nivalis*), American pipit (*Anthus rubescens*) and horned lark (*Eremophila alpestris*).

Feeding of birds in the Esquimalt Lagoon MBS is frequent. Clowater (2008) reported that people had been feeding birds daily for up to 19 years. Given that feeding continues to happen, it is likely that birds have been fed by people at the Lagoon for over three decades. This feeding activity has the potential to alter bird distribution and behaviour patterns in the Lagoon.

The lagoon area of Esquimalt Lagoon MBS supports large numbers of waterfowl, including dabbling and diving species, shorebirds, great blue heron (*Ardea herodia*) and other species. Birds utilize the lagoon during the entire year, though usage is greatest from the fall through spring when resident birds are joined by migrants and/or overwintering species. The lagoon's kelp and eelgrass beds, shellfish beds in the intertidal channel, and semi-sheltered conditions (relative to the outer coastline) provide requisite conditions for the life history requirements of many bird species. While there are some constraints on the habitat's capability, the lagoon remains highly important for migratory and resident birds in its current state.

4.1.3 Public Survey

Sixty survey responses were received for the Lagoon area of the MBS. Respondents visited the Lagoon study area at different intervals, ranging from daily to sporadically (Table 3). Most respondents encountered dogs on every visit, and the majority of respondents reported dogs either every visit or frequently. Over three-quarters of respondents reported that of dogs present, >25% were off-leash, and over half of the respondents reported >50% of dogs being off-leash (Table 3).

Table 3. Public survey results from the lagoon study area of the Esquimalt Lagoon MBS.

Question	Response	No. of Responses (n=60)	Proportion of Responses (%)
How often do you visit this location?	Daily	8	13.3
	Weekly	16	26.7
	Monthly	24	40.0
	Other	12	20.0
When you visit, how often do you see dogs?	Every visit	43	71.7
	Frequently	12	20.0
	Occasionally	4	6.7
	Rarely	1	1.7
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	1	1.7
	1-25%	12	20.0
	26-50%	15	25.0
	51-75%	17	28.3
	76-99%	14	23.3
	100%	1	1.7

The majority of respondents (~72%) reported seeing dogs chasing or harassing birds at the Lagoon study area, and 60% felt that dogs were the biggest threat to birds. Thirty-two respondents noted that dog activity was greatest at specific locations; of those, 21 identified the shoreline near the bridge as having the most conflicts. Other respondents identified the Lagoon Road side of the lagoon, as well as the Royal Roads shoreline as having off-leash dogs. Seasonality in dog and bird interactions were identified by approximately 37% of respondents. The spring and summer were identified as the primary seasons for dog disturbance, coinciding with a greater number of park users, though disturbance was noted by respondents year-round. One respondent discussed witnessing a dog with a Canada goose in its mouth, though it was not clear from the response if the goose was alive or dead prior to the dog possessing it. Harassment was noted particularly towards waterfowl (30 responses), shorebirds (25 responses), and gulls (23 responses), as well as great blue heron (8 responses), pigeons (5 responses),

and other landbirds (blackbirds and sparrows) (2 responses)[2]. At least 10 respondents commented that they felt signage and enforcement actions were insufficient. Comments suggested that many dog owners were unaware that the area was a bird sanctuary and/or were unaware of existing leash requirements. Adequate signage is especially challenging as access to the lagoon is essentially possible anywhere along the Coburg Peninsula or Royal Roads sides of the lagoon.

4.2. Royal Roads / West End of Esquimalt Lagoon

4.2.1 Overview

The Royal Roads / West End study area includes the inland sections of the MBS (Figure 1). As such, this study area includes significantly different habitat than those found elsewhere in the MBS, including coniferous forest, riparian/creek habitats, and saltmarsh. Open, field-like areas are present on the southern end of the Royal Roads University property. Residential property around the lagoon is in the southwest section.

4.2.2 Birds and Habitat

Specific bird data from the Royal Roads/west end of the lagoon segment of the MBS is lacking. Data exist for Esquimalt Lagoon overall, as well as Royal Roads and Ocean Grove areas, but these are not restricted to the MBS boundaries. However, the extent and types of habitats present relative to other sections of the MBS suggest a greater diversity of landbirds, such as warblers, flycatchers, woodpeckers, and sparrows. Geese are frequent in yards and fields at the west end of the lagoon and south of Royal Roads, and gulls, shorebirds, and waterfowl are present along the lagoon edge.

Habitat suitability ranges from poor (residential yards) to high (forest and riparian corridors, marsh). Aside from landbirds, the area likely provides the most optimal nesting locations for waterfowl. Suitability for shoreline-associated birds (e.g., gulls, shorebirds, and waterfowl) is high along the immediate shoreline areas, but low to moderate suitability elsewhere. The habitat capability is moderate. Urban development (e.g. residential development, university lands, etc.) negatively affects

[2] The number of responses for the types of birds seen being harassed are greater than the number of respondents as a single response could identify more than one bird type.

some birds, though open fields (and in some cases, yards) may provide foraging areas for some waterfowl (i.e., geese).

4.2.3 Public Survey

Fifteen survey responses were received for the Royal Roads / West End of Esquimalt Lagoon. Respondents visited at different intervals, ranging from daily to monthly (Table 4). Most respondents encountered dogs on every visit, and the majority of respondents reported dogs either every visit or frequently. Over one-quarter of respondents reported that of dogs present, >50% were off-leash (Table 4).

Table 4. Public survey results from the Royal Roads/west end of Esquimalt Lagoon study area of the Esquimalt Lagoon MBS.

Question	Response	No. of Responses (n=15)	Proportion of Responses (%)
How often do you visit this location?	Daily	3	20.0
	Weekly	6	40.0
	Monthly	3	20.0
	Other	3	20.0
When you visit, how often do you see dogs?	Every visit	8	53.3
	Frequently	5	33.3
	Occasionally	2	13.3
	Rarely	0	0
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	0	0
	1-25%	5	33.3
	26-50%	6	40.0
	51-75%	2	13.3
	76-99%	1	6.7
	100%	1	6.7

Half of the respondents reported seeing dogs chasing or harassing birds at the Royal Roads / West End study area, and ~29% felt that dogs were the biggest threat to birds. Ten respondents noted that they saw greater dog activity in certain locations, but there was no strong concordance among observations as to where. Several respondents noted disturbance or off-leash dogs in the fields and

waterfront below Royal Roads University. Seasonality in dog and bird interactions was identified by four respondents (~29%). The spring, summer, and fall were identified as the primary seasons for dog disturbance. Harassment was noted particularly towards waterfowl (5 responses), as well as great blue heron and shorebirds (2 responses each), and ground-nesting birds (1 response). Several respondents commented that they felt signage and enforcement actions were insufficient. There also appears to be confusion regarding designated off-leash areas, based on respondent comments.

4.3. Shoreline on Ocean-Side of Lagoon Road

4.3.1 Overview

The Shoreline on Ocean-Side of Lagoon Road study area comprises areas that are above and below the high tide line. While the area below the high tide line is not within the MBS boundary, it is included in this study for the purposes of conservation and knowledge sharing, as the area is important for birds. The Shoreline study area is bisected from the lagoon by Ocean Boulevard, which is typically heavily used by vehicles. Identified plant habitat types include dune habitats of varying health, mixed grasses, and dune grass/beach pea (Wilson *et al.* 2002). The shoreline is comprised of sand and gravel, with extensive driftwood deposits along upper tidal bands. The peninsula changes throughout the year, with winter wave and storm activity removing sand and creating a steeply-sloped beach, and more gentle summer conditions allowing for the re-deposition of sand resulting in a less sloped beach (ELSI 2006). The northern end of the study area contains tidal flats and gravel bars, and intertidal bivalve beds (Archipelago Marine Research Ltd. 2000). The peninsula is roughly 2 km long, and of similar habitat along its length. The width of the exposed beach varies based on tide and weather conditions.

4.3.2 Birds and Habitat

Surveys were conducted approximately every two months from April 1997 to May 1999 (Shepard 1999). These surveys revealed that birds utilize the ocean-side of the MBS all year (Figure 4). However, many of these detections were outside of the MBS boundary (i.e., birds on the ocean). While 30 shoreline-associated and other bird species were recorded, those utilizing the shoreline area specifically were not distinguished from other sightings. Species such as great blue heron, brant (*Branta bernicla*), killdeer, black turnstone (*Arenaria melanocephala*), gulls, and Caspian tern (*Hydroprogne caspia*) are the birds in this dataset that are more likely to be present within the MBS portions of the shoreline. The majority of detections are comprised of diving ducks and gulls, both of which have

detections year-round (Figure 4). Relatively few detections were made of great blue heron, dabbling ducks/geese, or shorebirds. The small pulse of dabbling ducks/geese in March/April was entirely brant.

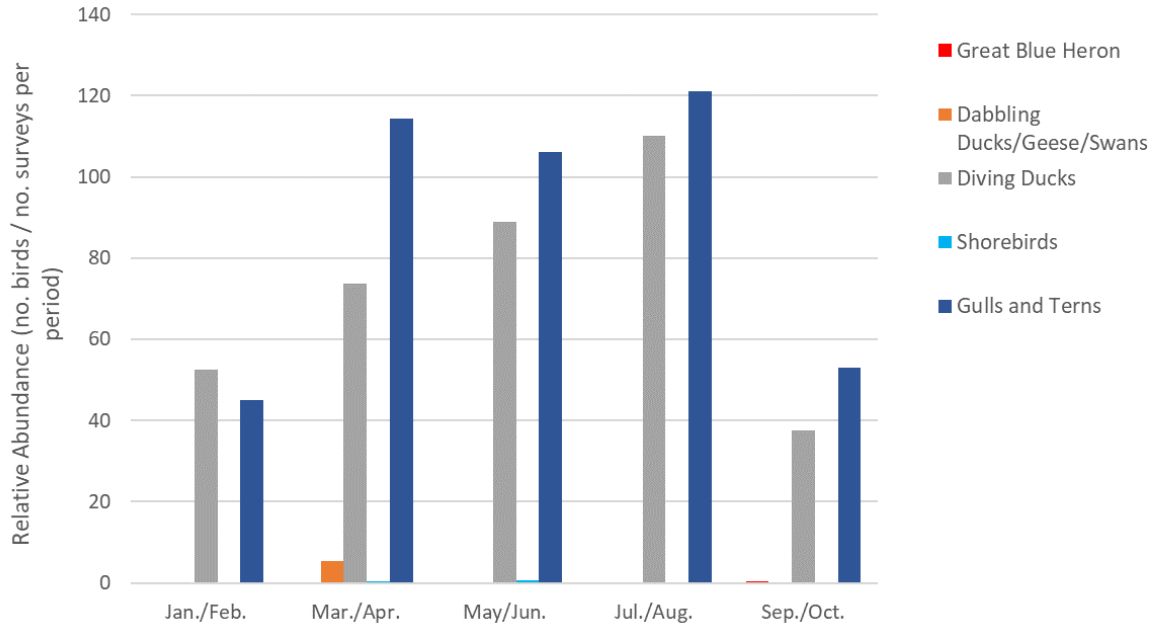

Figure 4: Relative abundance and seasonal trends of shoreline-associated bird groups within the ocean-side area of the Esquimalt Lagoon MBS from April 1997 to May 1999. Adapted from Shepard (1999).

Surveys completed under the BCCWS program from 2010 to 2019 tallied 54 shoreline-associated and other birds. No surveys were completed during May or August. Relative to the lagoon area, the ocean-side counts include a greater diversity of species associated with ocean environments, such as alcids (e.g., marbled murrelet [*Brachyramphus marmoratus*], common murre [*Uria aalge*]), cormorants, grebes, loons, and oceanic diving ducks (e.g., scoters [*Melanitta* spp.], and long-tailed duck). Results from these surveys show relatively high abundances of diving ducks and gulls from the fall through spring (Figure 5). Numbers of dabbling ducks are low compared to the lagoon, which is expected based on the food and foraging requirements of those species. Looking only at species that are more likely to be present on the beach, these results suggest spring and summer peaks in great blue heron; spring and fall peaks in shorebirds; spring peaks in brant (Figure 6).

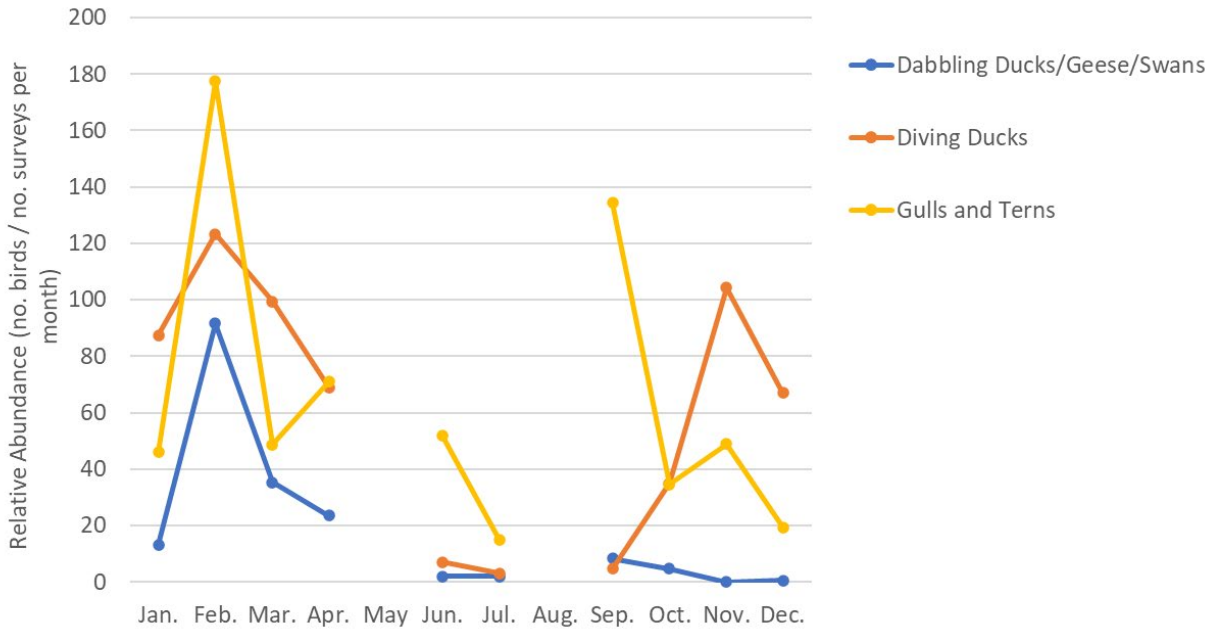

Figure 5: Relative abundance and seasonal trends of waterfowl and gulls/terns within the ocean-side area of the Esquimalt Lagoon MBS from 2010 to 2019. Adapted from BCCWS (Birds Canada).

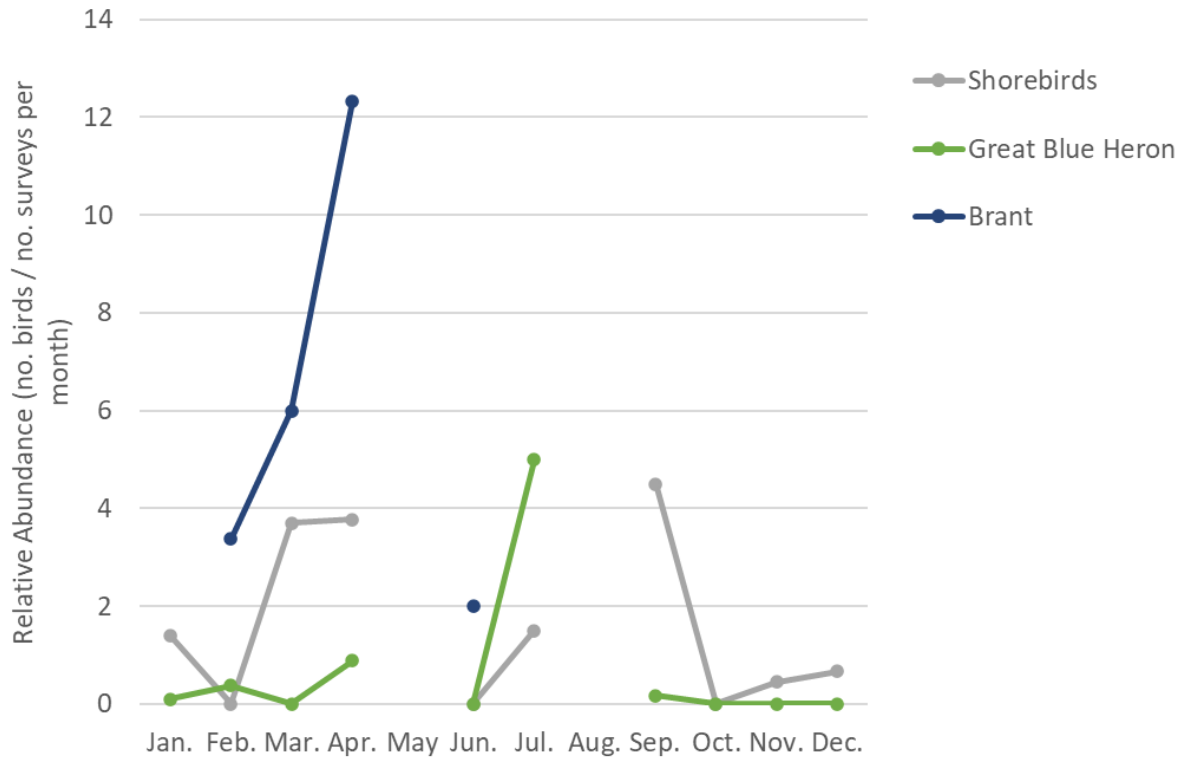

Figure 6: Relative abundance and seasonal trends of three shoreline-associated species/groups likely to occur on the beach area of the Esquimalt Lagoon MBS from 2010 to 2019. Adapted from BCCWS (Birds Canada).

People were observed in high numbers regularly during BCCWS counts. Dogs while fewer than people, were also regularly encountered in low to high numbers within the ocean-side area of the MBS; with a high of 50 dogs reported during the waterbird surveys (Appendix C).

A bar chart of seasonal abundance for the Esquimalt Lagoon eBird hotspot as a whole can be found at https://ebird.org/barchart?r=L350246&yr=all&m=. The eBird dataset shows that brant occur predominantly from February to May. Dunlin are present through the winter, from approximately September to May, and sanderling may be present during roughly this same overwintering time period. Sanderling frequently forage in the swash zone and are one of the shorebird species most expected on the ocean-side of the MBS. Gulls are again present year-round, but the late summer and fall have increases of Heermann's (*Larus heermanni*) and California gulls (eBird 2020). The vast majority of Heermann's gull (90-95%) breed on a single island in Mexico (Isla Rasa). After the end of the breeding season, the species disperses northward from the Baja Peninsula, arriving in BC as early as mid-June and departing by early November. The south coast of BC encompasses the entire Canadian range (Islam and Velarde 2020). The largest concentrations of birds on the ocean-side of the MBS occur on the gravel bars and intertidal flats at the entrance to the lagoon. Here hundreds of gulls frequently roost when tide levels allow. The Shoreline area is also frequently used by brant during spring migration. In rockier segments, black oystercatchers are regularly encountered, and numbers of killdeer are often highest.

Landbirds are less common in the Shoreline area of the Esquimalt Lagoon MBS. However, Brewer's blackbird are conspicuous and common throughout the driftwood and dune areas, and savannah sparrow can be abundant during the fall migration. The lack of shrubby or treed vegetation may limit use by most other landbird species.

The ocean-side shoreline area of Esquimalt Lagoon MBS is of moderate to high suitability for shoreline species over most of its length. The intertidal flats and bars on the north end near the lagoon entrance are of high suitability for numerous species, such as brant, shorebirds, gulls, and great blue heron. Birds utilize the shoreline during the entire year, though usage is greatest from the fall through spring when resident birds are joined by migrants and/or overwintering species. The swash zone may be a particularly important foraging area for gulls and some shorebirds (e.g., sanderling). The habitat capability also remains high, though it is likely that bird usage of the shoreline is limited by the large number of users along beach areas.

4.3.3 Public Survey

Forty-eight survey responses were received for the ocean-side of Lagoon Road area of the MBS. Respondents visited at different intervals, ranging from daily to several times per year (Table 5). The large majority of respondents encountered dogs on every visit. Over half of the respondents reported that of dogs present, >50% were off-leash (Table 5).

Table 5. Public survey results from the shoreline on the ocean-side of Lagoon Road study area of the Esquimalt Lagoon MBS.

Question	Response	No. of Responses (n=48)	Proportion of Responses (%)
How often do you visit this location?	Daily	4	8.3
	Weekly	17	35.4
	Monthly	19	39.6
	Other	8	16.7
When you visit, how often do you see dogs?	Every visit	44	91.7
	Frequently	4	8.3
	Occasionally	0	0
	Rarely	0	0
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	1	2.1
	1-25%	5	10.4
	26-50%	13	27.1
	51-75%	11	22.9
	76-99%	17	35.4
	100%	1	2.1

Most respondents (approximately 60%) reported seeing dogs chasing or harassing birds, and just over 54% felt that dogs were the biggest threat to birds. Twenty-three respondents noted that dog activity was greatest at specific locations. The single area with the greatest levels of dog disturbance according to respondents was the beach area near the bridge (8 respondents), while 10 respondents indicated just the ocean shoreline in general. Seasonality in dog and bird interactions were identified by ~21% of respondents. The spring, summer, and fall were evenly identified as the primary seasons for dog disturbance, coinciding with a greater number of park users. Harassment was noted particularly

towards shorebirds (18 responses), waterfowl (15 responses), and gulls (13 responses), as well as great blue heron (4 responses), and other landbirds (e.g., American crow, blackbirds [7 responses]). Most respondents discussed only disturbance, though a brown pelican (*Pelecanus occidentalis*) was reportedly attacked by a dog in November 2018 and subsequently died[3]. Numerous respondents commented that they felt signage and enforcement actions were insufficient. There also appears to be confusion regarding off-leash areas, based on respondent comments.

5. SHOAL HARBOUR MBS

The Shoal Harbour MBS comprises 144 ha of bays and intertidal flats in Sidney and North Saanich (Figure 7). The Shoal Harbour MBS is comprised of approximately 80% shallow bays and 20% tidal mudflats (CWS 1986). Many of the sheltered bays in the MBS are impacted by marina developments. Shoreline areas vary from mudflats and areas of sand to gravel and silt, interspersed by rocky outcrops (CWS 1986). Tidal flats are highly productive, and shallow bays contain sea lettuce (*Ulva spp.*) and eelgrass (CWS 1986).

The entirety of the Shoal Harbour MBS also lies within the Sidney Channel Important Bird Area, a designation that signifies the importance of an area for birds but does not confer any legal protection or restrictions. The Shoal Harbour MBS is also close to portions of the Gulf Islands National Park Reserve, and some birds (e.g., gulls and shorebirds) may move between the MBS and Sidney Island, which is within the Reserve.

[3] https://www.cheknews.ca/brown-pelican-rehabilitated-at-wild-arc-earlier-this-year-dies-from-another-injury-510928

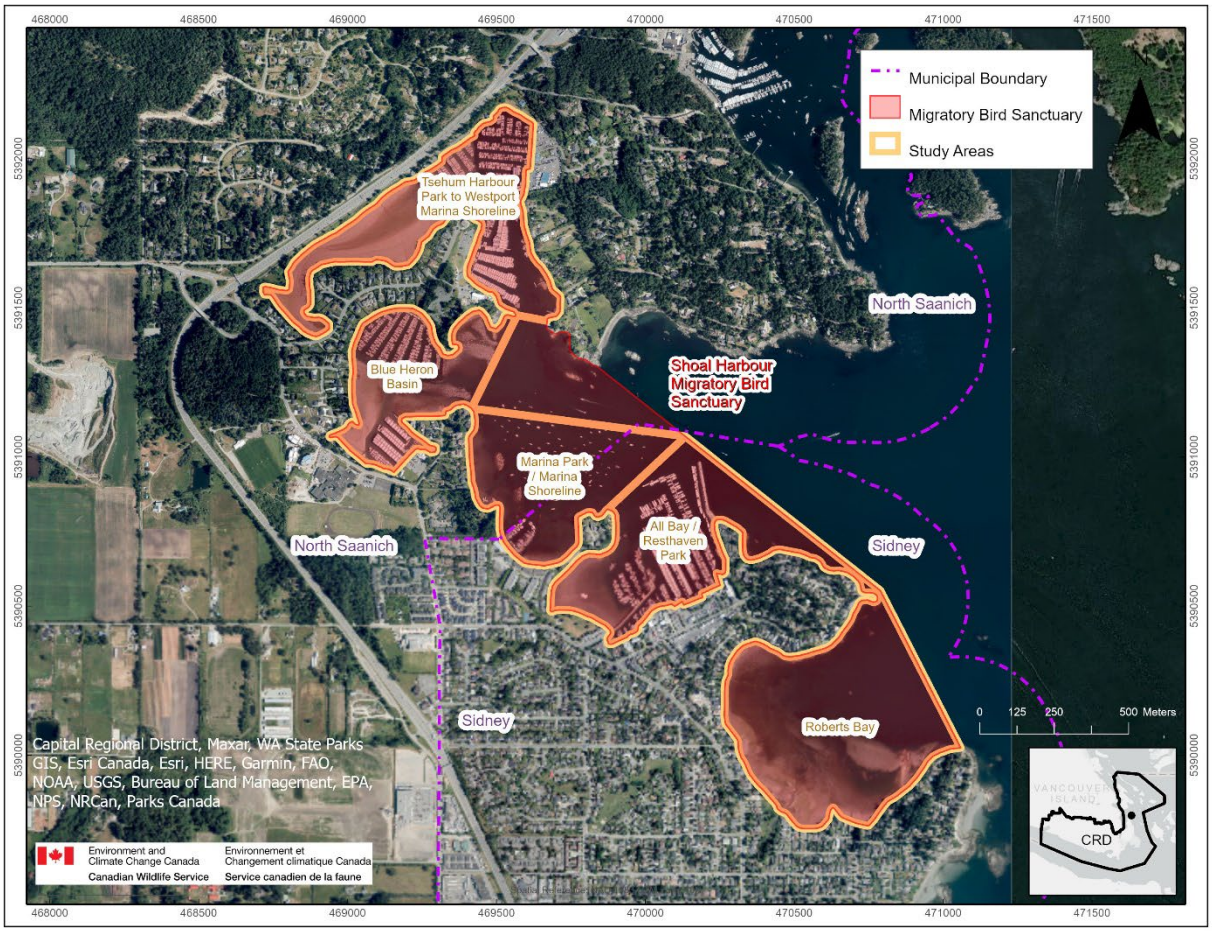

Figure 7: Map of the Shoal Harbour MBS showing study areas.

Past Surveys

There have been a number of studies of birdlife within the Shoal Harbour MBS. Bird surveys were completed by CWS from October 1977 to April 1978; from April to December 1978 by Seatech Consultants; and from October 1980 to April 1981 by the provincial government. Those studies are summarized in Dawe (1982). Over the 1977-78 period, it was estimated that 2,400 birds relied on the MBS (Dawe 1982). Regular surveys as part of the BCCWS have been undertaken there since 1999, within two survey areas (Roberts Bay and Tsehum Harbour). A total of 144 species have been reported from Roberts Bay, Tsehum Harbour, and Resthaven Park eBird hotspots (eBird 2020), though not all of these were necessarily within the MBS boundary. These include 16 species of provincial or federal conservation concern (Appendix B).

5.1. Roberts Bay

5.1.1 Overview

Roberts Bay is a large bay at the southern end of the MBS, measuring 37.5 ha. The Bay is formed between Roberts Point on the south side and Armstrong Point on the north. Both of these points have rocky shorelines. The Bay is completely surrounded on the inland side by residential development. Mermaid Creek flows into Roberts Bay, forming a small estuary on the southern end of the Bay, and a raised, rocky area that is saltwater influenced and contains a different vegetation type than elsewhere in the Bay. Several rocky islets and gravel bars exist near the bay entrance. The remainder of the Bay in the intertidal areas is gravelly/muddy. Public access points to Roberts Bay exist at Third Street, Fifth Street, Ardwell Avenue, Bowden Road and off Allbay Road/Bigrock Road. The Fifth Street public access point is just south of Mermaid Creek. Signs are located at public access points notifying visitors of the municipal bylaw requirements (Figure 8).

Figure 8: Signage at public access points to Robert's Bay informing of leash requirement (left image), and a larger, custom bird sanctuary sign at the same access point with smaller, "official" Environment Canada MBS sign (right). Note that the Sidney municipal sign is outdated as "Bylaw 1107"; it has subsequently been replaced by Bylaw 1965. (Photos: N. Johnston).

5.1.2 Birds and Habitat

Surveys in the late 1970s determined that 49% of all birds recorded within the MBS during the winter were found at Roberts Bay (Dawe 1982). Waterfowl were the most abundant, with dabbling and diving ducks comprising 42% and 27% of all detections, respectively (Dawe 1982). Dawe (1982) also recorded the highest overwintering bird density within the MBS from Roberts Bay (11.4 birds/ha), and

second-highest number of birds (2,789) during the summer. Dabbling duck numbers were found to peak in early December and declined in Roberts Bay in January (however, a concurrent increase of dabbling ducks in January was noted elsewhere in the MBS). Diving duck numbers peaked in November and remained relatively stable from January through April (Dawe 1982).

Surveys (from September to April) were completed under the BCCWS program at Roberts Bay from 1999 to 2011, as well as in 2014. A total of 47 shoreline-associated and other bird species were recorded. Results from these surveys broadly mirror those of Dawe (1982), with peak dabbling duck numbers in November/December followed by a decline in spring. Diving ducks in the bay peaked in November, with numbers remaining high through April (Figure 9). As with most coastal areas, an increase in gulls in the late summer is shown in the Dawe (1982) dataset.

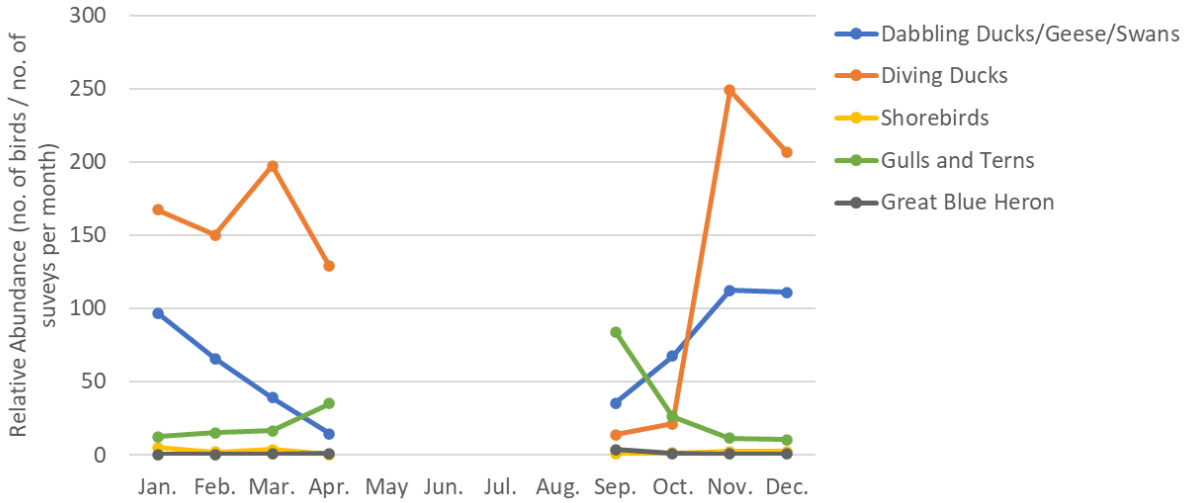

Figure 9: Relative abundance and seasonal trends of shoreline-associated bird groups within the Roberts Bay area of the Shoal Harbour MBS from 1999 to 2011, and 2014. Adapted from BCCWS (Birds Canada).

People are observed in low numbers regularly during BCCWS counts at Roberts Bay. Dogs are less often encountered during these surveys and only during the most recent survey years (2010 and 2020)) (Appendix C). Waterbird survey counts do not include the warmer months when beach recreational use is expected to be highest.

A total of 111 species are recorded from the "Roberts Bay" eBird hotspot (https://ebird.org/barchart?r=L1173047&yr=all&m=). The eBird dataset shows that dabbling ducks such as American wigeon, mallard, and green-winged teal are commonly encountered through the winter months, while diving ducks such as bufflehead (*Bucephala albeola*), common goldeneye (*B. clangula*),

and red-breasted merganser (*Mergus serrator*) are also frequently encountered. There are relatively few records of shorebirds, with only nine species in the eBird database. Of these, black oystercatcher, black turnstone, and killdeer are the most frequently recorded. Both the oystercatcher and turnstone are rocky coast specialists, while the killdeer is a more habitat generalist. Gulls are also present throughout the year, with resident glaucous-winged gull and a distinct increase in California gull during the summer, as is common throughout the region. Three species of Cormorants are recorded, with pelagic (*Phalacrocorax pelagicus*) and double-crested (*P. auritus*) cormorants common throughout the year. Great blue heron is also frequently reported year-round.

Records of landbirds may not refer to sightings within the MBS, though a number of species including American crow, and song and savannah sparrows would be expected along the shoreline. Bald eagle (*Haliaeetus leucocephalus*) is also commonly reported and likely occurs both along the shoreline within the MBS boundary as well as in adjacent trees.

Roberts Bay is of high suitability for birds, especially dabbling and diving ducks during the fall through spring. Other species will use Roberts Bay year-round, including Canada goose, glaucous-winged gull and great blue heron. Roberts Bay likely represents one of the most important habitat area of the Shoal Harbour MBS, owing to its relatively high bird usage and lack of marina development. Shorebirds use the tidal flats potentially year-round and may be under-represented in available datasets which have not necessarily focused on the peak shorebird migration periods. Residential development, human and dog activity, and pollution concerns may limit the capability of Roberts Bay to some extent. However, it likely remains highly important for migratory and resident birds in its current state, boosted by its lack of marina and anchorage developments compared to elsewhere in the Shoal Harbour MBS.

5.1.3 Public Survey

Eighteen survey responses were received for Roberts Bay. Of these, the majority of respondents visited at least weekly (half visited daily) (Table 6). Most respondents encountered dogs here either every visit or frequently. Over half of the respondents reported that of the dogs present, 1-25% were off-leash, with 51-75% of all dogs being off-leash reported by the second highest number of respondents (Table 6).

Table 6. Public survey results from the Roberts Bay study area of the Shoal Harbour MBS.

Question	Response	No. of Responses (n=18)	Proportion of Responses (%)
How often do you visit this location?	Daily	9	50.0
	Weekly	7	38.9
	Monthly	1	5.6
	Other	1	5.6
When you visit, how often do you see dogs?	Every visit	8	44.4
	Frequently	6	33.3
	Occasionally	3	16.7
	Rarely	1	5.6
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	1	5.6
	1-25%	11	61.1
	26-50%	1	5.6
	51-75%	4	22.2
	76-99%	0	0
	100%	1	5.6

Survey respondents reported few interactions between birds and dogs at Roberts Bay. A minority of respondents (nearly 28%) reported seeing dogs chasing or harassing birds, and two respondents (~11%) felt that dogs were the biggest threat to birds. Five (~28%) respondents noted that dog activity is greatest at specific locations. Four of five responses highlighted issues at locations corresponding to beach access points from Ardwell Avenue to Fifth Street, including the Mermaid Creek delta. All Bay Beach was also highlighted. Seasonality in dog and bird interactions were identified by one-third of respondents. The spring and summer were identified as the primary seasons for dog disturbance, with one respondent indicating that dog harassment occurs from the fall through spring. Harassment was noted particularly towards great blue heron (4 responses), and waterfowl, gulls and shorebirds (2 responses each). One respondent reported harassment of juvenile bald eagles. Most respondents did not feel that there were major problems between dogs and birds in this study area. However, one resident felt that the number of bird/dog interactions has increased over time, and off-leash dog activity was noted by several people.

5.2. All Bay / Resthaven Park

5.2.1 Overview

All Bay/Resthaven Park is north of Roberts Bay and enclosed between Thumb Point/Armstrong Point and Resthaven Island/Resthaven Linear Park. The area is exposed to extensive marina and anchorage development along the entire eastern portion of the bay. The western shoreline has extensive residential development, and the area is bounded on the south by Resthaven Park. Thus, the MBS boundary is somewhat distinct, punctuated by raised pathways, walls and wharfs. The bay area has relatively extensive intertidal mudflats in the southwest corner, which is an important remaining habitat element.

5.2.2 Birds and Habitat

Surveys in the late 1970s focus on Tsehum Harbour, which includes All Bay study area in part, but also the Marina Park Marina area to the west (Dawe 1982). As a whole, Tsehum Harbour had the lowest winter bird density in the MBS (4.0 birds/ha) (Dawe 1982). It was noted that areas with marinas had significantly lower bird usage (Dawe 1982). Bird numbers are dominated by dabbling ducks, diving ducks, other diving birds (i.e., loons, grebes, cormorants) and gulls (Dawe 1982).

Surveys were completed under the BCCWS program at Tsehum Harbour from 1999 to 2019. The "Tsehum Harbour" count does not conform to the "Tsehum Harbour Park to Westport Marina" study area (Section 5.5) used in this report. Likely, the BCCWS survey also includes birds that occur in the i) All Bay / Resthaven Park (Section 5.2), ii) Marina Park Marina Shoreline (Section 5.3), iii) Blue Heron Basin / Marinas study areas (Section 5.4). BCCWS surveys were completed during all months except May and August. A total of 58 shoreline-associated and other bird species were recorded. Results from these surveys show high numbers of dabbling ducks and diving ducks (Figure 10). Unlike the data from Roberts Bay, both of these waterfowl groups show increasing numbers from September through the winter, peaking in January or February, before declining through April (Figure 10). Diving ducks were absent during June and July counts, while dabbling ducks/geese remained over these summer months. All of these summer "dabbler" records pertain to Canada goose. Gulls were also present throughout the year (Figure 10). Shorebird numbers show a peak in September, which represents the fall migration period; though a lack of August sampling prevents determination of when the actual peak occurs.

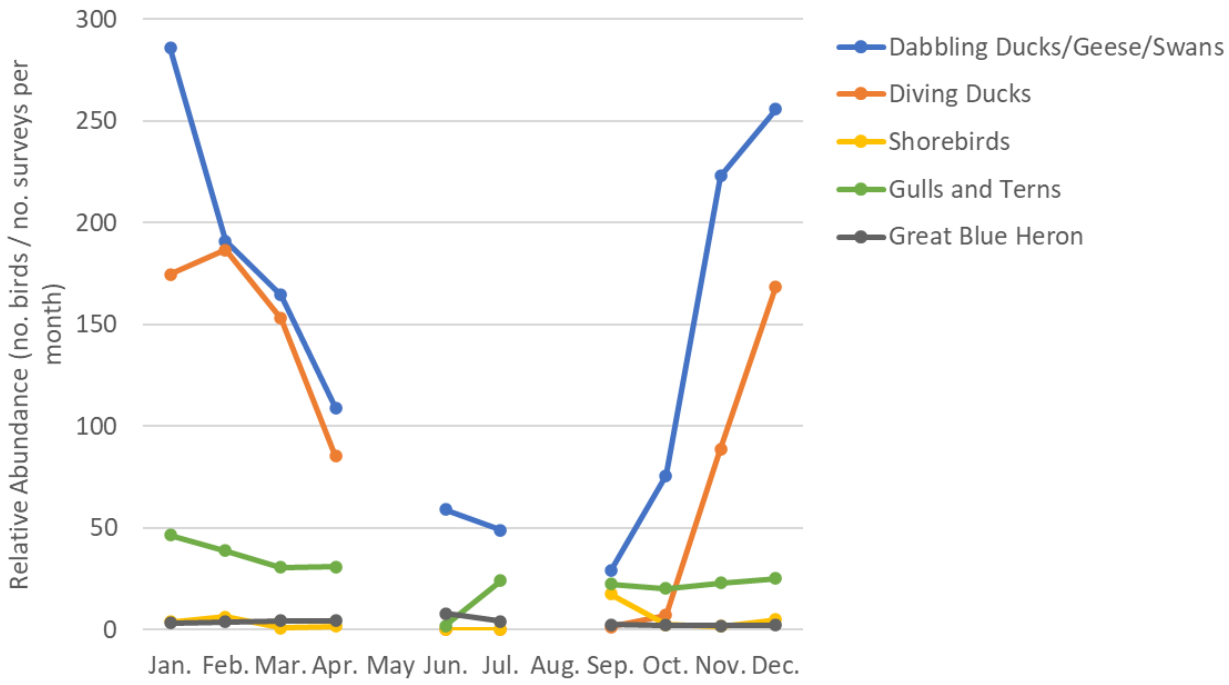

Figure 10: Relative abundance and seasonal trends of shoreline-associated bird groups within the Tsehum Harbour area of the Shoal Harbour MBS from 1999 to 2019. Adapted from BCCWS (Birds Canada).

People were observed in low to moderate numbers regularly during BCCWS counts. Dogs were less often encountered during these surveys but have been consistently reported since 2013 (Appendix C). Reported dog numbers during these surveys ranged from zero to four.

A total of 112 species have been recorded from the "Resthaven Park" eBird hotspot (https://ebird.org/barchart?r=L3069195&yr=all&m=). Canada goose is a common resident, while American wigeon, mallard, and green-winged teal are frequently encountered from roughly October to May (though mallard have a slightly longer season of occurrence, with sightings from August to June). Diving ducks are also present from the fall through spring, including bufflehead, common goldeneye, and hooded, common (*Mergus merganser*), and red-breasted mergansers. The Resthaven Park shoreline has 13 shorebird species reported which may suggest greater foraging ability here relative to Roberts Bay, perhaps owing to a muddier substrate. Of these, killdeer are present predominantly from the summer to early spring, with few records in April through June. Most migratory shorebirds show a spring and fall migration occurrence, with July to September showing the greatest abundance and diversity of shorebirds. Gulls, notably glaucous-winged, are present year-round, and short-billed gull (*Larus brachyrhynchus*) are also abundant from August to April, though they breed outside the region. Cormorants are present year-round, with double-crested cormorant being most frequently sighted

followed by pelagic cormorant and relatively few reports of Brandt's cormorant (*Phalacrocorax penicillatus*). Great blue heron is also common year-round. Individual birds may commute back and forth between All Bay and Sidney Island, which is suggested by photographs of a vagrant sandpiper, little stint (*Calidris minuta*) from both locations.

Records of landbirds are mostly of birds outside the MBS boundary, though species such as American crow and song sparrow likely utilize intertidal areas. Purple martin (*Progne subis*) is a common breeder from April to September, nesting in boxes placed for them near the marina.

The All Bay/Resthaven Park is of high suitability for shorebirds and likely waterfowl. The muddy intertidal flats may offer important foraging opportunities for shorebirds, great blue heron and dabbling waterfowl. The area is likely most important for shorebirds during migration periods, notably during southbound migration and overwintering waterfowl. Birds utilize the bay during the entire year, though usage is lowest for most species groups during the late spring and early summer. The habitat capability is hindered by the extensive marina developments and pollution. Bird usage is likely restricted compared to historical times.

5.2.3 Public Survey

Twelve survey responses were received for All Bay/Resthaven Park. Of these, the majority of respondents visited daily (Table 7). Most respondents encountered dogs either every visit (half of the respondents) or frequently. Three-quarters of the respondents reported that of the dogs present, 1-25% were off-leash (Table 7).

Table 7. Public survey results from the All Bay/Resthaven Park study area of the Shoal Harbour MBS.

Question	Response	No. of Responses (n=12)	Proportion of Responses (%)
How often do you visit this location?	Daily	8	66.7
	Weekly	1	8.3
	Monthly	3	25.0
	Other	0	0
When you visit, how often do you see dogs?	Every visit	6	50.0
	Frequently	4	25.0
	Occasionally	2	16.7

Question	Response	No. of Responses (n=12)	Proportion of Responses (%)
	Rarely	0	0
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	0	75.0
	1-25%	9	75.0
	26-50%	1	8.3
	51-75%	1	8.3
	76-99%	1	8.3
	100%	0	0

Approximately 42% of the respondents reported seeing dogs chasing or harassing birds in All Bay / Resthaven Park, and two respondents (~17%) felt that dogs were the biggest threat to birds here. Four (just over 33%) respondents noted that dog activity was greatest at specific locations. All of these responses highlight dog issues around Resthaven Park. Seasonality in dog and bird interactions were identified by one-quarter of respondents, though all seasons were noted as having dog disturbance. Harassment was noted particularly towards shorebirds (e.g., killdeer) and dabbling ducks (e.g., green-winged teal and American wigeon) that attempt to overwinter on the Resthaven Park shoreline, Canada goose goslings during the summer, and additional species (e.g., shorebirds) during the spring and fall migrations. Survey respondents frequently highlighted the many non-dog stressors in All Bay / Resthaven Park, including pollution from boats and marinas.

5.3. Marina Park / Marina Shoreline

5.3.1 Overview

The Marina Park / Marina Shoreline encompasses the area of the MBS between Resthaven Island and Mill Point, within Tsehum Harbour. The area is bounded on the east by Resthaven Island and residential properties. The Marina Park / Marina Shoreline is a prominent feature in the southern area of the Shoal Harbour MBS and is bordered by a municipal park to the west. The remainder of the western end has a linear gravel beach bordered by residential development. Several rocky islets also exist in the bay. The Marina Park / Marina Shoreline area of the Shoal Harbour MBS faces more open water than the enclosed All Bay, although boat activity is frequent in this area as it is a marina.

5.3.2 Birds and Habitat

Surveys in the late 1970s (Dawe 1982) and 1999-2019 (BCCWS) do not separate Marina Park Marina Shoreline study area from the broader Tsehum Harbour area. Nor is there an eBird hotspot for this study area.

For a discussion of BCCWS data, which includes the Marina Park / Marina Shoreline study area in part, refer to Section 5.2.2 Birds and Habitat.

The Marina Park / Marina shoreline area of the MBS is of high suitability for a number of bird species. It most notably helps support large numbers of waterfowl, including dabbling and diving ducks and other diving birds such as cormorants. Great blue heron and shorebirds also utilize the shorelines here, though perhaps less than other nearby areas of the MBS owing to the relatively steep-sloped edge and limited extent of intertidal areas. Pollution, disturbance, and marina development limits the capability of this otherwise suitable habitat. A lack of dedicated bird survey effort within this specific area prevents a thorough assessment.

5.3.3 Public Survey

Eight survey responses were received for the Marina Park / Marina shoreline. Most respondents visited the area frequently (at least weekly) (Table 8). The three responses for "other" all indicated that they lived at this location. All respondents encountered dogs either every visit (half of the respondents) or frequently. Half of the respondents reported that of the dogs present, ≤25% were off-leash, while a quarter of the respondents each reported that 26-50% and 51-75% of dogs were off-leash, respectively (Table 8).

Table 8. Public survey results from the Marina Park Marina shoreline study area of the Shoal Harbour MBS.

Question	Response	No. of Responses (n=8)	Proportion of Responses (%)
How often do you visit this location?	Daily	1	12.5
	Weekly	3	37.5
	Monthly	1	12.5
	Other	3	37.5
When you visit, how often do you see dogs?	Every visit	4	50.0
	Frequently	4	50.0

Question	Response	No. of Responses (n=8)	Proportion of Responses (%)
	Occasionally	0	0
	Rarely	0	0
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	1	12.5
	1-25%	3	37.5
	26-50%	2	25.0
	51-75%	2	25.0
	76-99%	0	0
	100%	0	0

Half of the respondents reported seeing dogs chasing or harassing birds in the Marina Park / Marina Shoreline area, and three respondents (~38%) felt that dogs were the biggest threat to birds here. Four (50%) respondents noted that dog activity was greatest at specific locations. Three of these four responses highlighted dog issues around Resthaven Linear Park / Resthaven Island. Seasonality in dog and bird interactions was identified by one-quarter of respondents. All seasons were noted as having dog disturbance, but both respondents noted harassment of Canada goose goslings during spring. Waterfowl, great blue heron, and cormorants were also specifically identified as being harassed by dogs. Survey respondents frequently highlighted the many non-dog stressors, including pollution from boats and marinas.

5.4. Blue Heron Basin / Marinas

5.4.1 Overview

The Blue Heron Basin between Marina Way and Blue Heron Road is a heavily developed study area of the MBS. The bay is bounded on both the north and south sides by yacht club marinas, and most remaining shoreline areas back onto residential developments. Rocky coastline and some gravel intertidal flats exist at Mill Point and Nymph Point on the southern and northern sides of the bay, respectively. Some muddy intertidal areas exist west of Mill Point and along the western side of the bay. Blue Heron Creek flows into the bay in the southwestern part of the bay. A channel, roughly north-south in orientation, has been dredged in the southern half of the bay to facilitate boat traffic in and out of the marina. Public access is limited, though people may access the tidal flats from Bayfield Road near where

Blue Heron Creek flows into the bay.

5.4.2 Birds and Habitat

Surveys in the late 1970s found that the Blue Heron Basin had the second highest winter bird density in the MBS (8.2 birds/ha) (Dawe 1982). Further, it had the highest summer bird use at 3,132 birds detected (Dawe 1982). Dabbling ducks, diving ducks, and gulls were the main species groups recorded. However, it should be noted that increased marina development, and expansion of previously existing marinas, have occurred since these studies were completed.

For a discussion of BCCWS data, which includes the Blue Heron Basin study area in part, refer to section 5.2.2 Birds and Habitat.

The Blue Heron Basin is of high suitability for birds, based on bird survey results in the late 1970s/early 1980s. The mudflats in the southwest offer habitat for shorebirds and other species, and the bay would likely be of importance to waterfowl. However, the capability of the bay is likely significantly lower from historic times due to the extensive marina development on both the north and south side of the bay, which also included dredging of a channel in the bay. Residential developments surrounding the study area, human activity, and pollution further degrade the ecological value of the site. It is not clear to what extent birds continue to utilize the Blue Heron Basin location, though low usage is expected based on current habitat conditions.

5.4.3 Public Survey

Two survey responses were received for the Blue Heron Basin study area. One respondent visited the location weekly, and the other several times per week (Table 9). Both survey respondents encountered dogs frequently, but not every visit. Respondents reported no dogs off-leash (one response) or few dogs (1-25%) off-leash (one response) (Table 9).

Table 9. Public survey results the Blue Heron Basin / Marinas study area of the Shoal Harbour MBS.

Question	Response	No. of Responses (n=2)	Proportion of Responses (%)
How often do you visit this location?	Daily	0	0
	Weekly	1	50.0
	Monthly	0	0

Question	Response	No. of Responses (n=2)	Proportion of Responses (%)
	Other	1	50.0
When you visit, how often do you see dogs?	Every visit	0	0
	Frequently	2	100.0
	Occasionally	0	0
	Rarely	0	0
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	1	50.0
	1-25%	1	50.0
	26-50%	0	0
	51-75%	0	0
	76-99%	0	0
	100%	0	0

Neither respondent for the Blue Heron Basin / Marinas area reported seeing any harassment of birds by dogs and did not feel it was an issue. As frequent within the Shoal Harbour MBS, attention was drawn to the boat-based garbage and pollution in the area.

5.5. Tsehum Harbour Park to Westport Marina Shoreline

5.5.1 Overview

The study area between Tsehum Harbour Park and Westport Marina is comprised mostly of sheltered tidal mudflat along the western half and marinas on the eastern half. The study area is bounded by residential developments on the south side and Highway 17 along the northern/western extent. Tsehum Harbour Park is located along the southwestern edge. The mudflat is bordered by small areas of saltmarsh and shoreline vegetation.

5.5.2 Birds and Habitat

Surveys in the late 1970s found that the Tsekum Inlet (the area that corresponds with the Tsehum Harbour Park shoreline in this report) had the second lowest winter bird density in the MBS at (7.9 birds/ha) and the lowest summer bird use at 1,003 birds detected (Dawe 1982). Dabbling ducks, diving ducks, and other diving birds (i.e., loons, grebes, and cormorants) were the main species groups

recorded.

For a discussion of BCCWS data, which includes the Tsehum Harbour Park to Westport Marina study area in part, refer to section 5.2.2 Birds and Habitat.

A total of 104 bird species have been recorded from the "Tsehum Harbour" eBird hotspot (https://ebird.org/barchart?r=L2752915&yr=all&m=). While less complete than other hotspots within the MBS, the eBird dataset shows trends largely equivalent to nearby shoreline areas. The trend includes overwintering dabbling and diving ducks, resident great blue heron, glaucous-winged gull, cormorants, and bald eagle. Nine species of shorebird are present in the eBird database including both rocky-coastline and tidal flat foraging species such as black turnstone, surfbird (*Calidris virgata*), western sandpiper (*C. mauri*) and least sandpiper (*C. minutilla*). It is likely that shorebird usage of the area is under-documented, especially during the peak spring and fall migration periods.

The Tsehum Harbour Park shoreline area is moderately suitable for a number of birds. Most notably, it supports large numbers of waterfowl, including dabbling and diving species, shorebirds, as well as great blue heron and other species. The more sheltered geography and smaller size of the mudflat may limit its use by shorebirds owing to heightened perceived predation risk (Taylor *et al.* 2007). Birds may utilize the inlet at any time of year, though the mudflat areas are likely to be most frequently used by shorebirds during spring and fall migrations. Waterways will be used by waterfowl predominantly from the fall through spring. The highway, residential, and marina developments limit the capability of the area for birds, and bird utilization is likely less than it would be in the absence of such structures.

5.5.3 Public Survey

Two survey responses were received for the shoreline between Tsehum Harbour Park and Westport Marina. Survey respondents visited the area weekly (two responses) or daily (Table 10). Survey respondents encountered dogs infrequently (occasionally, rare, and never each received one response), and no off-leash dogs were reported by respondents (Table 10).

Table 10. Public survey results from the Tsehum Harbour Park and Westport Marina shoreline study area of the Shoal Harbour MBS.

Question	Response	No. of Responses (n=3)	Proportion of Responses (%)
How often do you visit this location?	Daily	1	33.3
	Weekly	2	66.6
	Monthly	0	0
	Other	0	5
When you visit, how often do you see dogs?	Every visit	0	0
	Frequently	0	0
	Occasionally	1	33.3
	Rarely	1	33.3
	Never	1	33.3
When you see dogs, what proportion do you estimate are active off-leash?	0%	3	100.0
	1-25%	0	0
	26-50%	0	0
	51-75%	0	0
	76-99%	0	0
	100%	0	0

No respondents reported seeing dogs chasing or harassing birds in the Tsehum Harbour Park to Westport Marina Shoreline study area, and neither felt that dogs were a major threat to birds here. One respondent noted that the proximity of the area to the highway and the parallel trail being popular with walkers and cyclists prevents it from being popular with dog owners.

6. VICTORIA HARBOUR MBS

Victoria Harbour MBS comprises 1,700 ha of bays, intertidal flats, rocky coastline and islets in the Municipalities of Saanich, Oak Bay, Victoria, Esquimalt, and View Royal (Figure 11-Figure 14). The Victoria Harbour MBS is comprised of approximately 60% open sea, 20% rocky seashore, and 20% tidal channel (CWS 1986). Due to the size of the MBS, a variety of land uses surrounds the sanctuary.

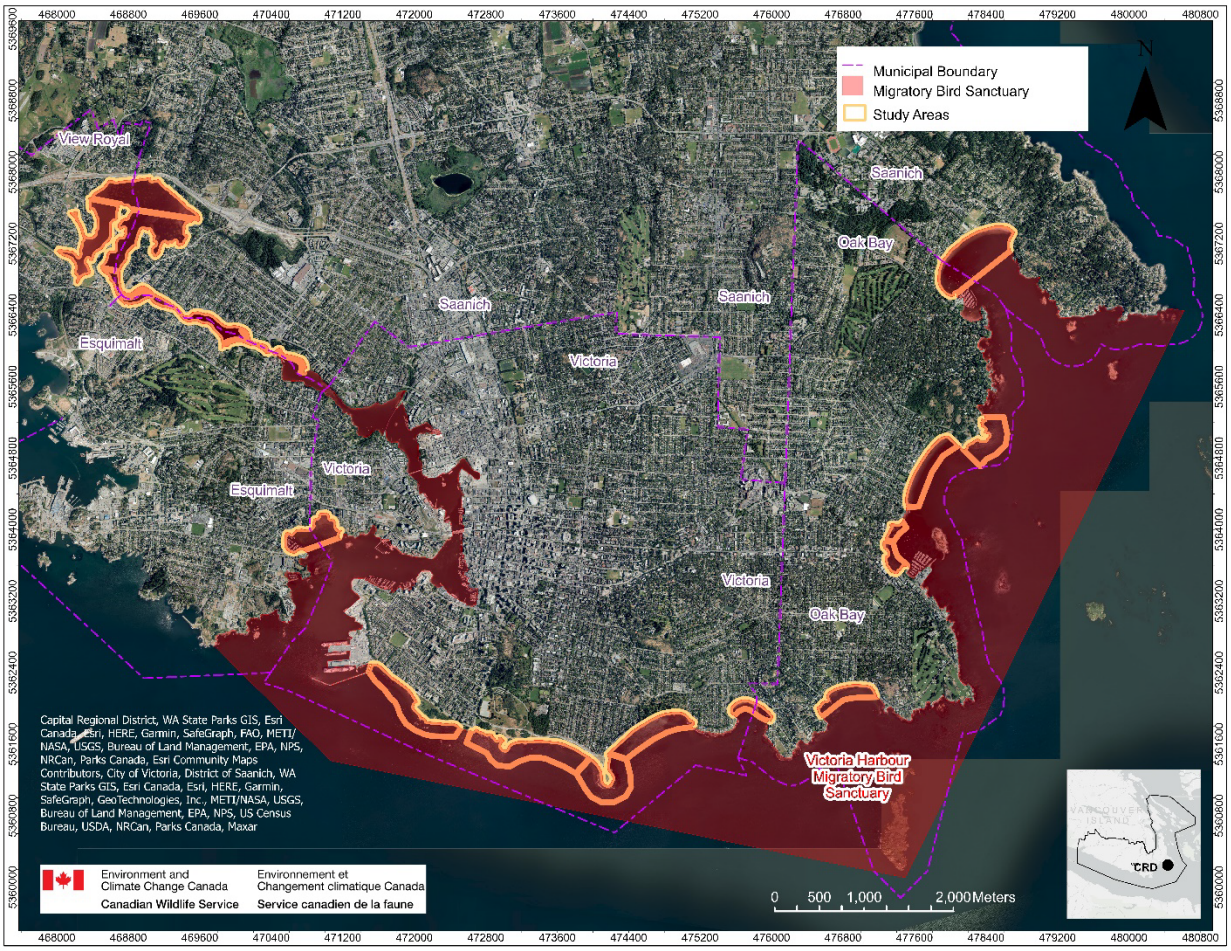

Figure 11: Overview map of the Victoria Harbour MBS.

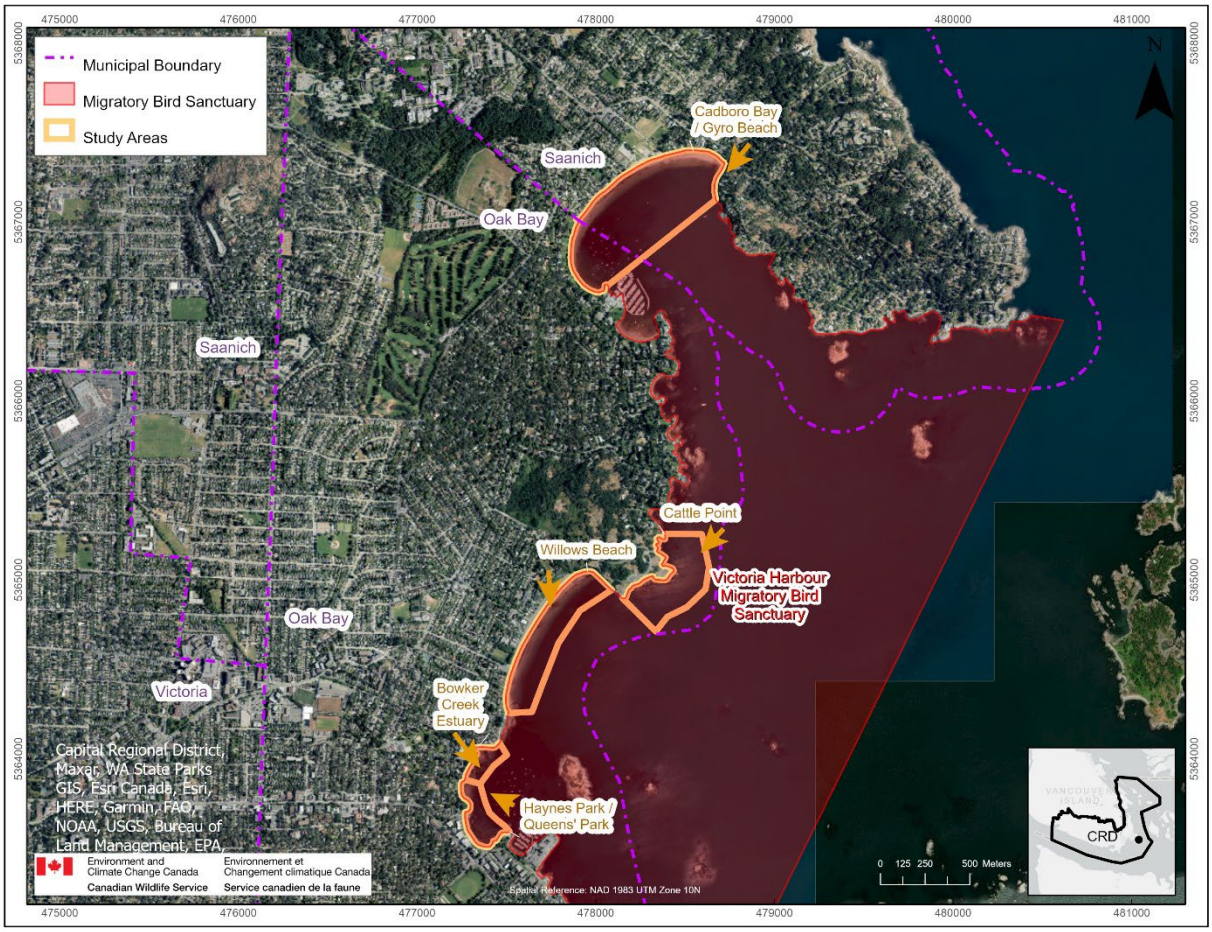

Figure 12: Map of the eastern study areas in the Victoria Harbour MBS.

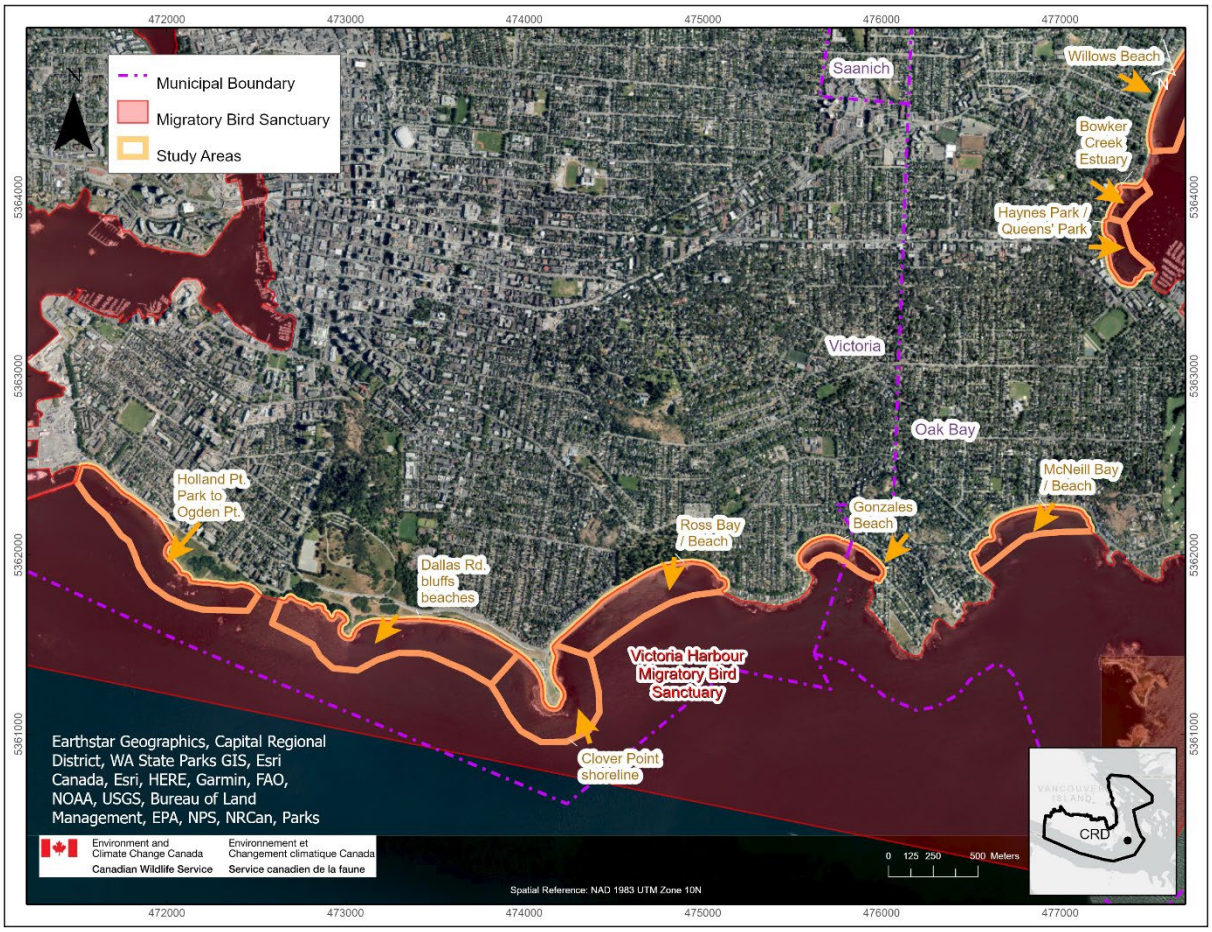

Figure 13: Map of the central study areas of the Victoria Harbour MBS.

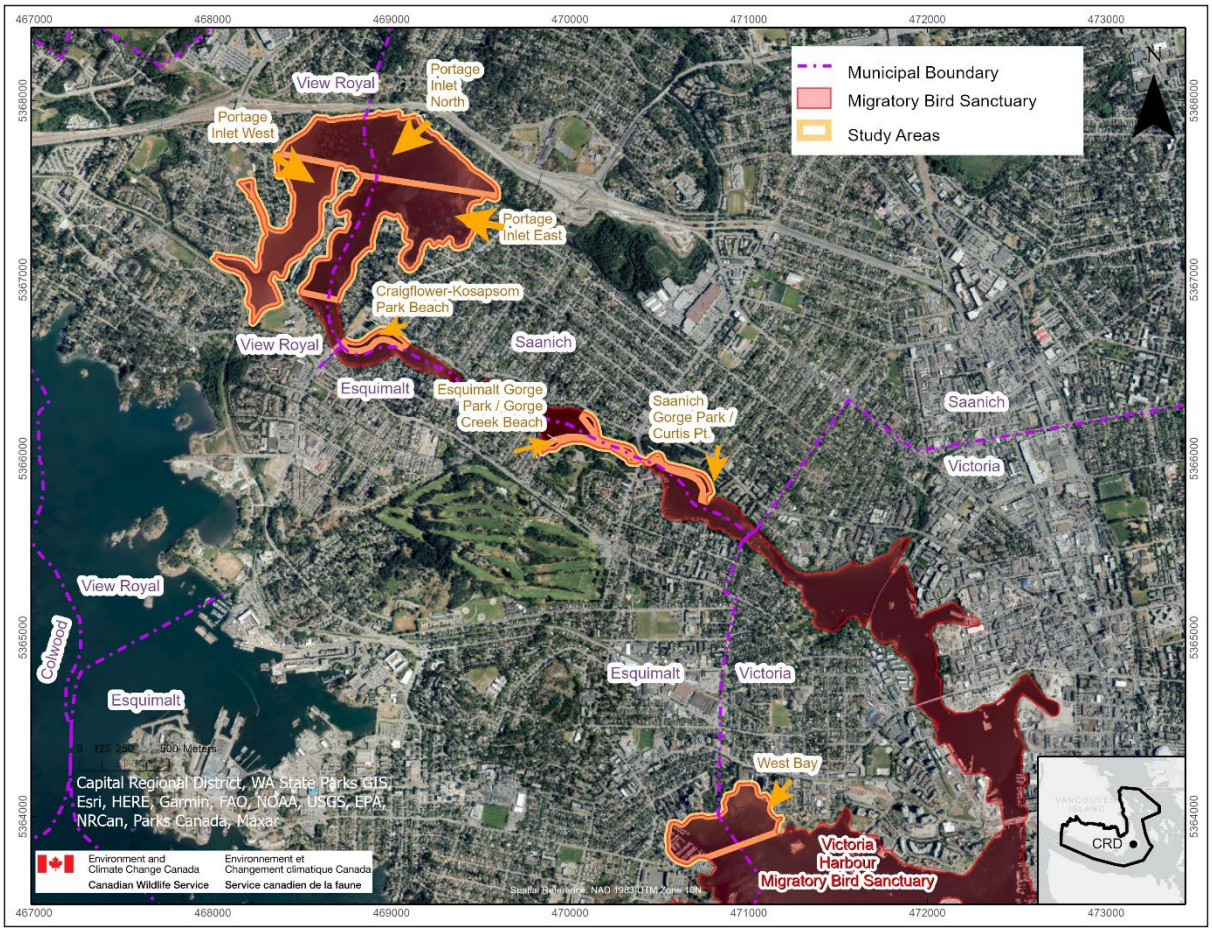

Figure 14: Map of the western study areas of the Victoria Harbour MBS.

Past Surveys

There have been a number of past studies of birdlife within the Victoria Harbour MBS. From 1997 to 1999, a study was commissioned by the VEHEAP, which included the portions of the MBS from Portage Inlet to Ogden Point Breakwater (Shepard 1999). Regular surveys as part of the BCCWS have been undertaken at various locations throughout the MBS. In addition, many locations within the MBS are popular recreational birding spots and have regular, though not systematic, coverage by local and visiting birders. Over 260 species have been reported in the Victoria Harbour MBS (eBird 2020). These include 35 species of provincial or federal conservation concern (Appendix B).

6.1. Cadboro Bay / Gyro Beach

6.1.1 Overview

The Cadboro Bay / Gyro Beach study area includes a large beach at the end of Cadboro Bay near the northeastern boundary of the Victoria Harbour MBS. The shoreline is bordered by the Royal Victoria Yacht Club, residential homes, and Cadboro Gyro Park. Cadboro Bay / Gyro Beach is one of the most popular recreational locations (including frequent boating) in the Victoria Harbour MBS. Shoreline composition varies throughout the study area, transitioning between rocky outcrops, gravel, pebble, and sandy beaches, interspersed with driftwood and coarse woody debris. Natural and artificial drainages can be found terminating at the shorelines.

6.1.2 Birds and Habitat

Surveys were completed under the BCCWS program at the Cattle Point to Flower Island polygon, which includes but is not restricted to Cadboro Bay / Gyro Beach, from 1999-2001 and 2010-2019. Surveys were mainly completed from September to May, though at least one or two surveys were completed from June to August. A total of 73 species were recorded. Total bird abundance was highest from the late fall through spring, with peak numbers during January and November (Figure 15). Dabbing ducks and geese, diving ducks, gulls, and landbirds (mostly American crow) were the most numerous species groups monitored (Figure 16). Dabbling ducks/geese show an early winter peak, though usage of the area remains relatively high all year. Diving duck numbers were low from spring through fall. Gull numbers peak in both spring and late September. While less numerous than the waterfowl, other species groups were also recorded in relatively high numbers. Great blue heron showed a post-breeding peak in numbers in July and August (Figure 17).

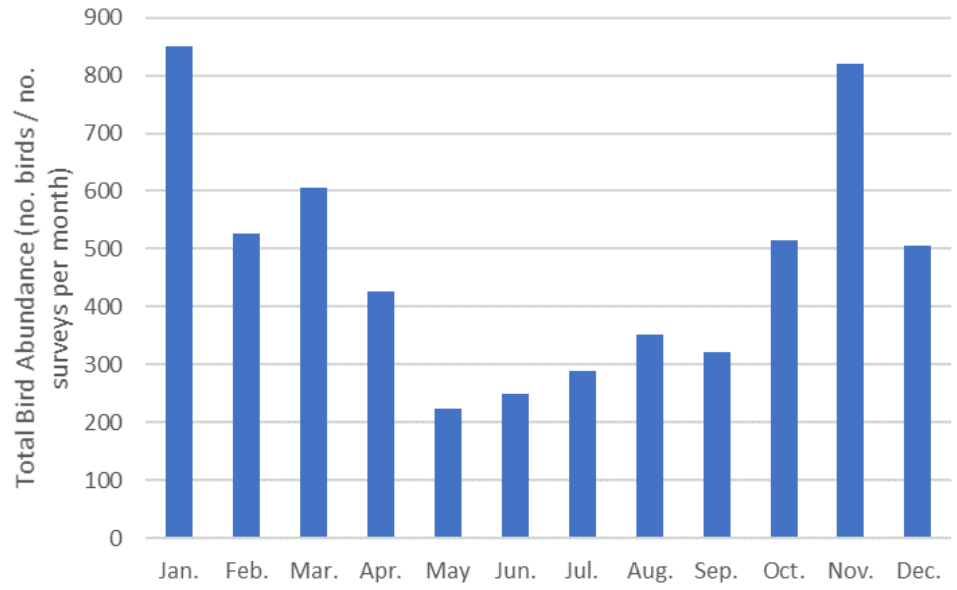

Figure 15: Total relative abundance and seasonal trends of all birds recorded on the BCCWS from the Cattle Point - Flower Island polygon from 1999 to 2001, and 2010 to 2019. Adapted from BCCWS (Birds Canada).

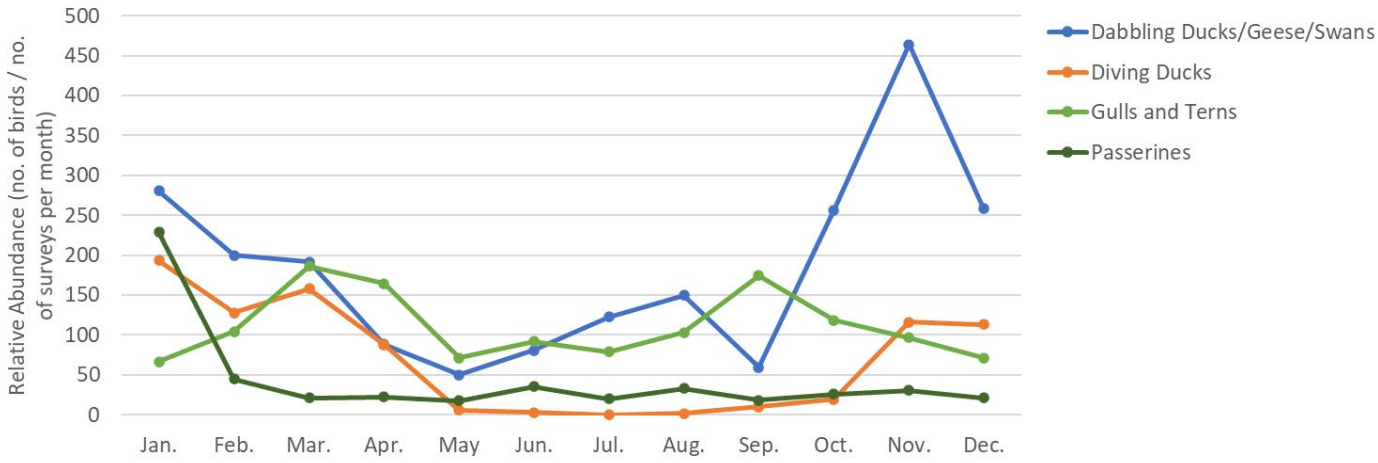

Figure 16: Relative abundance and seasonal trends of waterfowl, gulls and terns, and landbirds (mostly American crow) within the Cattle Point to Flower Island area of the Victoria Harbour MBS from 1999 to 2001, and 2010 to 2019. Adapted from BCCWS (Birds Canada).

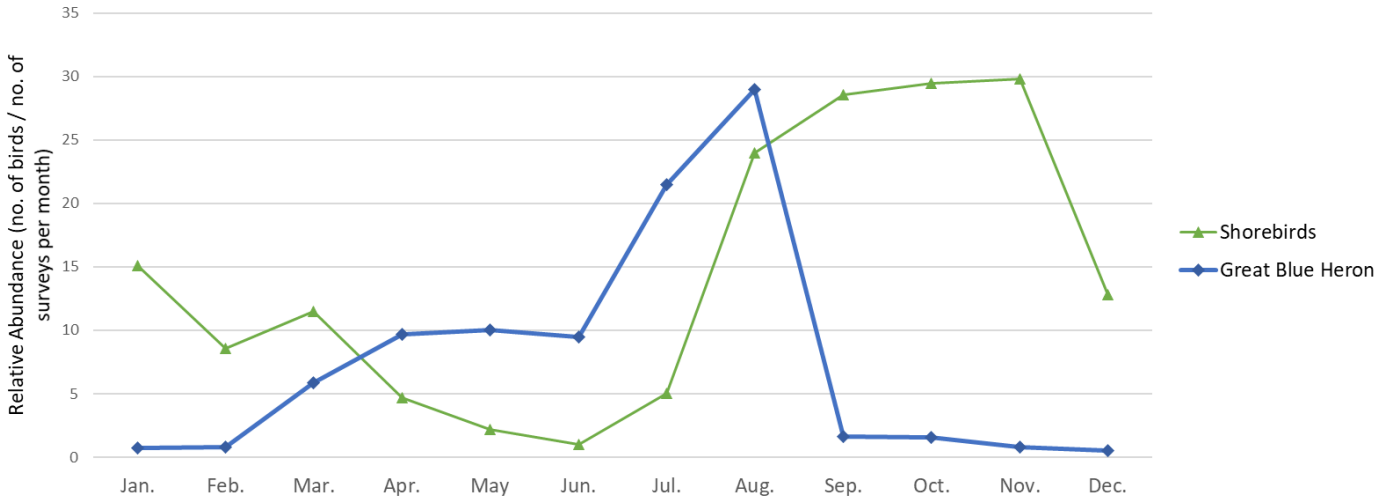

Figure 17: Relative abundance and seasonal trends of shorebirds and great blue heron within the Cattle Point-Flower Island area of the Victoria Harbour MBS from 1999 to 2001, and 2010 to 2019. Adapted from BCCWS (Birds Canada).

People and dogs were observed in high numbers regularly during BCCWS counts. Overall, there were 37% more dogs than people. Dog activity remained fairly high from the fall through spring, but no data was recorded for June, July or August despite a low number of waterbird surveys having been completed in those months (Appendix C).

There is no eBird hotspot for the Cadboro Bay / Gyro Beach study area, though there is for Mystic Pond nearby. A total of 124 species have been recorded from the "Mystic Pond, Cadboro Bay" eBird hotspot (https://ebird.org/barchart?r=L1217270&yr=all&m=). Data from eBird indicate that waterfowl can be found year-round, with two locally breeding species: Canada goose and mallard. Glaucous-winged gull and great blue heron, listed on schedule 1 of SARA as Special Concern, are also year-round residents in the area, with the latter being known to breed around Mystic Pond.

Cadboro Bay / Gyro Beach appears to be of high suitability for birds. While some species occur minimally through the summer (e.g., diving ducks), there is year-round use of the beaches by great blue herons and gulls and seasonal use by shorebirds and other species. The capability of the habitat is also reduced by the high levels of human and dog use along the beaches. The study area is in proximity to a heronry (great blue heron breeding colony), and is likely important for that species, though the level of human and dog activity may cause the site to be underutilized by many other species, such as shorebirds.

6.1.3 Public Survey

One hundred and twenty-five survey responses were received for Cadboro Bay / Gyro Beach, representing approximately one-quarter of all survey responses from all MBSs and study areas combined. Respondents visited Cadboro Bay / Gyro Beach at different intervals, with over three-quarters of respondents visiting either daily or weekly (Table 11). Dogs were typically encountered, with the majority of respondents indicating dogs were present on every visit. Nearly half of all respondents indicated that >76% of dogs were off-leash (Table 11).

Table 11. Public survey results from the Cadboro Bay / Gyro Beach study area of the Victoria Harbour MBS.

Question	Response	No. of Responses (n=125)	Proportion of Responses (%)
How often do you visit this location?	Daily	49	39.2
	Weekly	47	37.6
	Monthly	11	8.8
	Other	18	14.4
When you visit, how often do you see dogs?	Every visit	103	82.4
	Frequently	20	16.0
	Occasionally	1	0.8
	Rarely	0	0
	Never	1	0.8
When you see dogs, what proportion do you estimate are active off-leash?	0%	2	1.6
	1-25%	16	12.8
	26-50%	16	12.8
	51-75%	29	23.2
	76-99%	55	44.0
	100%	7	5.6

Almost half of all respondents (~45%) reported seeing dogs chasing or harassing birds in the Cadboro Beach / Gyro Beach study area, and ~34% of respondents felt that dogs were the biggest threat to birds here. Seventy-six respondents (nearly 61%) noted that dog activity was greatest at specific locations. Nearly all of these responses highlighted the eastern beach. Seasonality in dog and bird interactions were identified by 23 respondents (~18%). All seasons were noted by these respondents as

having disturbance. Harassment was noted particularly towards great blue heron (30 responses), gulls (22 responses), shorebirds (19 responses), waterfowl (17 responses), and American crow (12 responses).

6.2. Cattle Point

6.2.1 Overview

Cattle Point is home to a variable shoreline and has a rich glacial history resulting in an outcrop of bedrock with vernal (seasonal) pools, tide-pools, rock cover, and glacial striations (Herzer and Bornhold 1982). In the intertidal zone, small rocks and pebbles are interspersed amongst the bedrock, boulders, and tide pools, providing abundant foraging opportunities for shorebirds. Cattle Point is southerly exposed and has an abundance of intertidal marine life including various species of invertebrates such as barnacles, whelks, anemones, limpets, and shore crabs. Driftwood and coarse woody debris are scattered along the high tide margin. The study area is bordered by a public access road, parking lot, and two public boat launches.

6.2.2 Birds and Habitat

Surveys were completed under the BCCWS program at the Cattle Point to Flower Island polygon, which includes Cattle Point. Total bird abundance is highest from the late fall through spring, with peak numbers during January and November. Shorebirds are present year-round but show a distinct peak in activity from August through November which is reflective of the fall shorebird migration in part but also reflects a relatively high proportion of rock-associated shorebirds (e.g., black oystercatcher, black turnstone and surfbird).

See section 6.1.2 Birds and Habitat for additional details on the BCCWS results. People and dogs were observed in high numbers regularly during BCCWS counts (Appendix C).

A total of 220 species have been recorded from the “Cattle Point” eBird hotspot (https://ebird.org/barchart?r=L348477&yr=all&m=). Data from eBird indicates that waterfowl can be found year-round. Two local breeding species, Canada goose and mallard, are present in low numbers throughout the year. Small to mid-sized flocks (typically <50) of American wigeon can be observed foraging on the shoreline or in adjacent waters from September to April, occasionally with a Eurasian wigeon among them. Other dabbling duck species (e.g., northern pintail, northern shoveler [*Spatula*

clypeata], green-winged teal) are recorded infrequently but may also use the shallow waters along the shoreline for foraging. The full compliment of local marine diving ducks is present offshore from mid-September/early October through late April/May, but some species, such as surf (*Melanitta perspicillata*) and white-winged (*M. deglandi*) scoters, have non-breeding individuals present through the summer. Hooded and common mergansers are often observed resting on the rocks and feeding close to shore. Harlequin duck (*Histrionicus histrionicus*) is a common sight on and around the nearshore rocky islets from the fall through spring but small groups can be seen through the summer. Shorebirds can be found using the shoreline and nearshore rocky islets year-round. Black oystercatcher and killdeer are resident species that have been recorded in all months. Black turnstone, surfbird, dunlin, and black-bellied plover (*Pluvialis squatarola*) overwinter around Victoria and their preference for rocky substrates makes them regular fixtures of the rocky shoreline and adjacent islets at Cattle Point from the late summer and early fall (late July to early October) through spring (late April to late May). Of the 29 shorebird species reported to eBird, most only occur during their northbound and/or southbound migration(s) or are uncommon to rare passage migrants. Gulls are present year-round at Cattle Point, in part due to the presence of food scraps and handouts. In addition to the local breeding glaucous-winged and hybrids, both California and short-billed gulls can be found virtually year-round, usually loafing on rocks along the shore or on nearshore islets. Other gull species, such as Heermann's and Iceland (*Larus glaucoides*) will also use the rocks seasonally.

Cattle Point is of high suitability for birds. While some species occur minimally through the summer (e.g., diving ducks), there is year-round use of the rocky shoreline and nearshore waters. Cattle Point and adjacent rocky areas support high numbers of rock-associated shorebirds, such as black oystercatcher. Habitat degradation has occurred at Cattle Point, and attempts (i.e., exclosures) have been made to isolate some area from disturbance. Thus, the capability of the habitat is reduced in large part due to disturbance, but declining site capability could likely be reversed. Despite these concerns, the site remains locally important for migratory and resident birds in its current state.

6.2.3 Public Survey

Nineteen survey responses were received for Cattle Point. Respondents visit the Cattle Point study area at different intervals, with over half visiting at least weekly (Table 12). Dogs are typically encountered, with the vast majority of respondents indicating dogs are present on every visit (over half of the responses), or frequently. Survey responses were highly variable (i.e., 0% to 100%) with respect to

the proportion of dogs present that were off-leash (Table 12).

Table 12. Public survey results from the Cattle Point study area of the Victoria Harbour MBS.

Question	Response	No. of Responses (n=19)	Proportion of Responses (%)
How often do you visit this location?	Daily	3	15.8
	Weekly	7	36.8
	Monthly	4	21.1
	Other	5	26.3
When you visit, how often do you see dogs?	Every visit	11	57.9
	Frequently	6	31.6
	Occasionally	2	10.5
	Rarely	0	0
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	1	5.3
	1-25%	6	31.6
	26-50%	2	10.5
	51-75%	5	26.3
	76-99%	3	15.8
	100%	2	10.5

Almost half of the respondents (~47%) reported seeing dogs chasing or harassing birds in the Cattle Point study area, and approximately 42% of respondents felt that dogs were the biggest threat to birds here. Five (~26%) respondents noted that dog activity was greatest at specific locations. All of these responses highlight the rocky shoreline near the point that lies between the two boat ramps. Seasonality in dog and bird interactions were identified by four respondents (21%). All seasons were noted by these respondents as having disturbance, though the spring and fall migration periods were noted in three responses. Harassment was noted particularly towards shorebirds and gulls (7 responses each), as well as waterfowl and great blue heron (4 responses each). Dog disturbance was also noted for landbirds, cormorants, and alcids. One respondent stated that they have witnessed dogs attacking nesting shorebirds, resulting in the loss of nests. Most respondents felt that there are major problems between dogs and birds. Many respondents also felt that dogs were negatively impacting the ecosystem at Cattle Point, which is known for a number of rare plant species listed on Schedule 1 of the *Species at Risk Act*.

6.3. Willows Beach

6.3.1 Overview

Willows Beach is a very popular swimming area in Oak Bay. Public beach accesses can be found on Bowker Avenue, Cavendish Road, and Esplanade. Residential properties and Willows Park border the study area, which is utilized year-round by residents. Substrate composition varies throughout the study area; driftwood and coarse woody debris are prominent in the upper littoral zone, which transitions to soft sand and pebbles in the mid and lower littoral zones. Native and invasive herbaceous and graminoid vegetation is interspersed amongst the debris at the high tide line. A small patch of a large continuous eelgrass bed occurs within the intertidal zone (Boyer and Wright 2015). Multiple groynes were constructed to prevent beach drift and are located in the northern and southern reaches of the beach.

6.3.2 Birds and Habitat

Surveys were completed under the BCCWS program for the Mary Tod Island to Cattle Point polygon, which includes Willows Beach. Surveys were completed in 2004, and 2007-2018 primarily from September to May, though some survey effort occurred every month. A total of 66 shoreline-associated and other bird species were recorded. Total bird abundance is relatively high year-round, with peaks in the spring and fall (Figure 18). Gulls are abundant year-round, but with notable peaks in abundance during the spring and the late summer and fall (Figure 19). Dabbling duck and geese numbers increase over the summer months, and again in November (primarily due to higher Canada goose numbers). The November increase in dabbling duck the numbers was attributed to the arrival of overwintering species such as American wigeon. Diving duck numbers follow the trend of elsewhere on the coast, of low numbers over the summer and relatively high numbers from the fall through spring. Shorebird numbers increase during the fall migration and remain relatively high through the winter (Figure 20). Because the BCCWS count area includes areas outside of Willows Beach, not all of these shorebirds are expected along Willows Beach itself, though the general trend in seasonal abundance is likely similar.

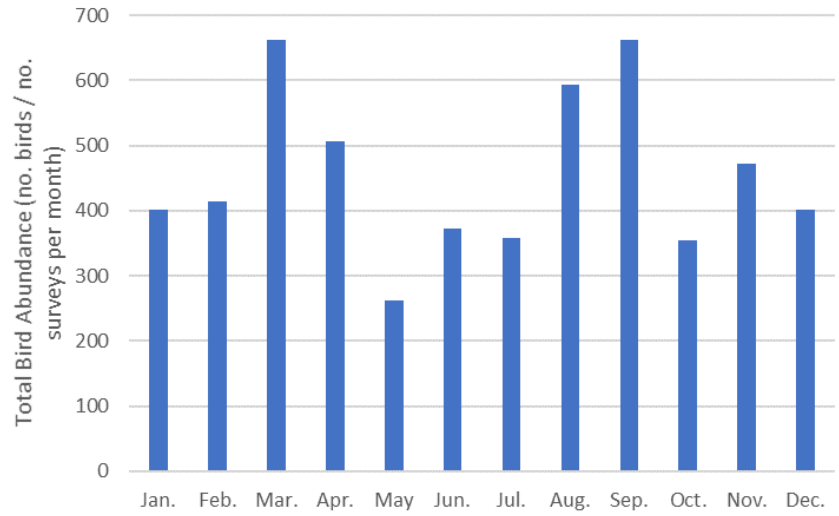

Figure 18: Total relative abundance and seasonal trends of all birds recorded on the BCCWS from the Mary Tod Island to Cattle Point polygon during 2004, and 2007 to 2018. Adapted from BCCWS (Birds Canada).

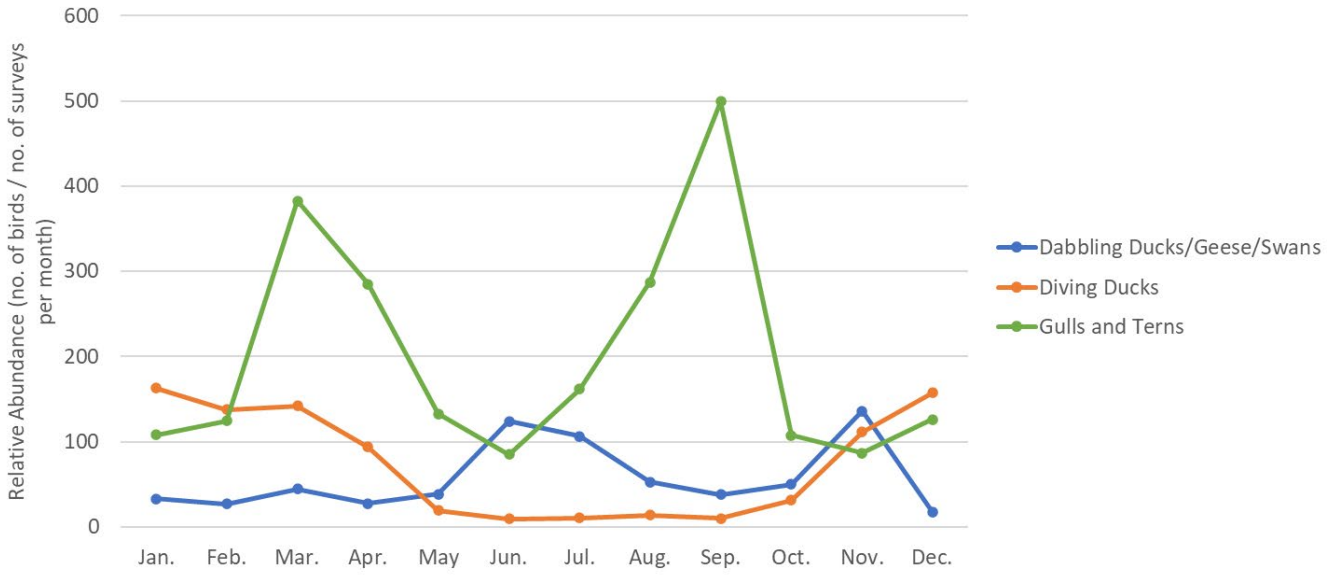

Figure 19: Relative abundance and seasonal trends of waterfowl and gulls and terns within the Mary Tod Island to Cattle Point area of the Victoria Harbour MBS during 2004, and 2007 to 2018. Adapted from BCCWS (Birds Canada).

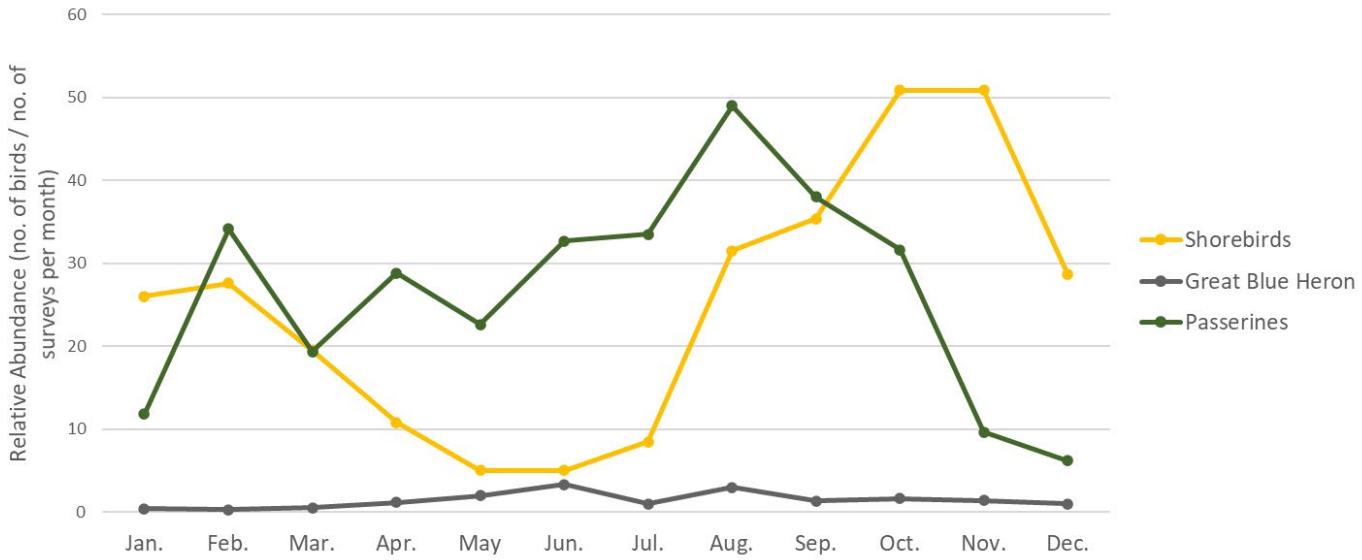

Figure 20: Relative abundance and seasonal trends of shorebirds, great blue heron, and passerines (mostly American crow) within the Mary Tod Island to Cattle Point area of the Victoria Harbour MBS during 2004, and 2007 to 2018. Adapted from BCCWS (Birds Canada).

People and dogs were observed in high numbers regularly during BCCWS counts. Overall, there were 23% more dogs than people. Dog activity was high, with >10 dogs often present during waterfowl surveys (Appendix C).

A bar chart of seasonal abundance for the Willows Beach eBird hotspot (listed as Oak Bay) can be found at https://ebird.org/barchart?r=L368405&yr=all&m=. Some of the observations from this eBird hotspot may include observations from adjacent rocky shoreline habitats at Cattle Point and south of Willows Beach. The sandy beach provides year-round loafing habitat for Canada goose and mallard. American wigeon have been documented in flocks of varying size, occasionally numbering in the hundreds. Fourteen species of diving ducks have been reported from Willows Beach, most of which spend their time in marine waters offshore. Shorebird data appears to primarily reflect species recorded from the rocks exposed during low tide and the nearshore rocky islets south of Willows Beach. Shorebird species that are most likely to use sandy habitats are primarily observed during southbound migration (roughly July to late September), which is reflected in eBird data for species such as western and least sandpipers. Following stormy or high wind conditions in the fall and winter, certain shorebird species (e.g., black turnstone, dunlin) may forage on seaweed wracks deposited on sandy beaches. Gulls have been recorded year-round at Willows Beach. Many gull species rest on sandy beaches if human disturbance is minimal. Additionally, gulls (e.g., glaucous-winged, short-billed, and California) forage along sandy beaches, in surf of shallow bays, and on seaweed wracks.

Willows Beach is likely of high suitability for birds as it is one of the few sandier beaches that certain shorebirds prefer. While some species occur minimally through the summer (e.g., diving ducks), there is year-round use of the shoreline and nearshore waters. Residential development borders the beach, and human usage of the area is high. As a result, disturbance reduces the capability of the habitat.

6.3.3 Public Survey

Sixty-two survey responses were received for Willows Beach. Respondents visited Willows Beach study area at different intervals, with over three-quarters of respondents visiting either weekly or daily (Table 13). Dogs were typically encountered at Willows Beach, with the majority (nearly three-quarters) of respondents indicating dogs were present on every visit. Nearly half of all respondents indicated that 76-99% of dogs were off-leash, and an additional quarter of respondents indicated that 51-75% of dogs were off-leash (Table 13).

Table 13. Public survey results from the Willows Beach study area of the Victoria Harbour MBS.

Question	Response	No. of Responses (n=62)	Proportion of Responses (%)
How often do you visit this location?	Daily	19	30.6
	Weekly	30	48.4
	Monthly	8	12.9
	Other	5	8.1
When you visit, how often do you see dogs?	Every visit	46	74.2
	Frequently	14	22.6
	Occasionally	2	3.2
	Rarely	0	0
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	1	1.6
	1-25%	4	6.5
	26-50%	12	19.4
	51-75%	16	25.8
	76-99%	28	45.2
	100%	1	1.6

Dogs chasing or harassing birds were noted by just under 44% of the respondents in the Willows Beach study area. Almost half of the respondents (about 47%) reported seeing dogs chasing or harassing birds, and approximately 37% of respondents felt that dogs were the biggest threat to birds. Thirteen (21%) respondents noted that dog disturbance is greatest at specific locations. Most of these highlight the northern and southern ends of the beach, particularly the beach area below the public parking lots at Willows Park. Seasonality in dog and bird interactions were identified by twenty respondents (~32%). Many respondents who reported the greatest bird disturbance during the fall, winter, and spring (15, 15 and 13 responses, respectively) also noted this seasonality trend in dog/bird interactions. Three respondents noted that disturbance was high during the summer by dog use in contravention of the bylaw. Harassment was noted particularly towards great blue heron, (17 responses), gulls (15 responses), waterfowl (13 responses), and shorebirds (11 responses). Disturbance to American crow was also noted (4 responses).

6.4. Bowker Creek Estuary

6.4.1 Overview

South of Willows Beach lies the Bowker Creek Estuary, a small rocky intertidal estuary comprised of rocky outcrops, glacial boulders, and pebbly gravelly substrate. Residential properties and a private school border the estuary. The estuary is somewhat sheltered by Mary Tod Island and Oak Bay Marina from easterly/southeasterly wave action. Many boats are moored in the waters around the estuary. Bowker Creek outflows have created a channel that runs roughly northwest to southeast through the intertidal zone. Multiple groynes are present along the shoreline below the mouth of Bowker Creek. The area is accessible via multiple beach access points along Beach Drive between Haynes Park and Queen's Park.

6.4.2 Birds and Habitat

Surveys were completed under the BCCWS program for the Mary Tod Island to Cattle Point polygon, which includes Bowker Creek. Refer to section 6.3.2 Birds and Habitat section for details on these survey results. In general, waterfowl, shorebird, and gull numbers were high in Bowker Creek Estuary. Most waterfowl were present from the fall through spring, though Canada goose and to a lesser extent mallard were present year-round. Shorebird numbers increased during the fall migration and remained relatively high through the winter. The rocky areas around Bowker Creek were particularly

used by shorebirds, and the Bowker Creek outflow was also utilized (e.g., for bathing).

People and dogs were observed in high numbers regularly during BCCWS counts. Data was not specific to the Bowker Creek Estuary study area, but for the area overall between Mary Tod Island and Cattle Point dog activity was high (Appendix C).

A bar chart of seasonal abundance for the Bowker Avenue eBird hotspot can be found at https://ebird.org/barchart?r=L1298602&yr=all&m=. Hotspot locales are not strictly defined in eBird, but experience with the Bowker Creek Estuary suggests that most observations are limited to the approximately 200 m stretch of mixed rocky and sandy (upper elevations) shoreline that runs NNE/SSW, accessed at the north end from Bowker Avenue. A variety of waterfowl can be observed on the shoreline, in nearshore waters, and further offshore. Canada goose and mallard are common and present throughout the year. American wigeon is recorded from late August to the end of April, where they can be observed foraging along the shoreline, typically in shallow waters. Fourteen species of diving ducks have been reported here, most of which occur offshore, but species like harlequin duck and common and hooded mergansers rest on exposed rocks. Bowker Creek Estuary hosts a diverse shorebird assemblage on the exposed rocks, especially during low tides during north and southbound migrations. Most of the 28 shorebird species reported are passage migrants, but a quarter of the species are regular winter residents, including black oystercatcher, black turnstone, surfbird, dunlin, black-bellied plover, killdeer, and greater yellowlegs (*Tringa melanoleuca*). Gulls can be observed year-round. Resident glaucous-winged gull is joined by short-billed, California, Heermann's, ring-billed (*Larus delawarensis*), and Iceland gulls in the mid- to late summer through the fall, with short-billed and glaucous-winged gulls being the common species through the winter. Great blue heron is reported year-round here but is most common throughout the summer months.

The Bowker Creek Estuary is of high suitability for birds. The rocky shoreline areas are regionally important for shorebirds and supports a high number of birds throughout the year. The creek itself has been degraded but has been identified for restoration activities. The capability of the area as evidenced by continued use of a high number of species remains high but is subject to stressors from human activity.

6.4.3 Public Survey

Four survey responses were received for the Bowker Creek Estuary. Most (75%) respondents

visited weekly (Table 14). Dogs were frequently (often present but not every visit) encountered by most respondents, with one individual reporting dogs on every visit. All respondents indicated that >25% of dogs were off-leash, with three respondents indicating that >75% of dogs were off-leash (Table 14).

Table 14. Public survey results from the Bowker Creek Estuary study area of the Victoria Harbour MBS.

Question	Response	No. of Responses (n=4)	Proportion of Responses (%)
How often do you visit this location?	Daily	0	0
	Weekly	3	75.0
	Monthly	1	25.0
	Other	0	0
When you visit, how often do you see dogs?	Every visit	1	25.0
	Frequently	3	75.0
	Occasionally	0	0
	Rarely	0	0
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	0	0
	1-25%	0	0
	26-50%	1	25.0
	51-75%	0	0
	76-99%	2	50.0
	100%	1	25.0

All respondents reported seeing dogs chasing or harassing birds, and three (75%) felt that dogs were the biggest threat to birds in the Bowker Creek Estuary study area. Highlighted locations for dog disturbance include the shoreline between Bowker Avenue and Bowker Creek (1 response) and the Bowker reef area, along with beaches both to the north and south of the estuary (1 response). Seasonality in dog and bird interactions were identified by three respondents (75%). Disturbance was noted during the fall, winter, and spring, with the fall migration (August to November) in particular being noted by one respondent. One respondent also noted large numbers of gulls, including the locally-breeding glaucous-winged gull, using the fresh creek waters to bathe and drink. All respondents highlighted waterfowl and shorebirds as being disturbed by dogs, and gulls and great blue heron were

also noted. Specific species noted as being harassed by dogs included black-bellied plover, black turnstone, surfbird, dunlin, glaucous-winged, short-billed, and California gulls, American wigeon, mallard, brant, and great blue heron. One respondent noted that creek restoration efforts, including salmon reintroduction, are underway, which may increase its utilization by birds in the absence of dog disturbance.

6.5. Haynes Park to Queens' Park

6.5.1 Overview

The shoreline below Haynes Park, Queen's Park, and Marina Park is a rocky intertidal area with varying substrates including sand, pebbles, gravel, glaciated boulders, and bedrock. The Haynes Park to Queens' Park study area is located within the southern pocket of Oak Bay and is surrounded by residential areas and the Oak Bay Marina. The beach area between Hayne's Park and Queens' Park is mostly sheltered from easterly and southeasterly wave action by Mary Tod Island and the marina, while the beach at Marina Park is mostly exposed. Multiple beach accesses are located along Beach Drive.

6.5.2 Birds and Habitat

Surveys were completed under the BCCWS program for the Mary Tod Island to Cattle Point polygon, which includes the Haynes Park to Queens' Park area. Refer to section 6.3.2 Birds and Habitat for details on these survey results. In general, waterfowl, shorebird, and gull numbers were high. Most waterfowl were present from the fall through spring, though Canada goose and to a lesser extent mallard are present year-round. Shorebird numbers increased during the fall migration and remained relatively high through the winter. The rocky areas around Haynes Park and Queens' park were attractive to overwintering shorebirds and waterfowl, and the study area had a regionally high number of overwintering greater yellowlegs. Shorebirds were also frequent along the gravel beaches, and waterfowl are frequent in nearshore waters and exposed rocky areas.

A bar chart of seasonal abundance for the combined Queens' Park / Turkey Head eBird hotspot can be found at https://ebird.org/barchart?r=L1271726&yr=all&m=. Turkey Head is the point of land east of Queens' Park. Haynes Park does not have a dedicated eBird hotspot; however, observations from Queens' Park may include birds from Haynes Park. Most waterfowl recorded from Queens' Park are in the sheltered bay, but Canada goose and dabbling ducks, such as American wigeon and mallards can be

found on the small mudflat and gravel beach shoreline west of the rock outcrop points. Queens' Park is known as the best location to find greater yellowlegs during the winter on southern Vancouver Island, with a high count of 26 recorded in January 2020. Killdeer and black oystercatcher are locally breeding shorebirds that can be found year-round at Queens' Park. Other shorebird species found overwintering here include black turnstone, surfbird, dunlin, and black-bellied plover.

The Haynes Park to Queens' Park study area is of high suitability for birds, combining rocky outcrops used by shorebirds, gulls and waterfowl as foraging and roosting areas with gravel/mud shoreline for foraging and nearshore waters. Beach Drive borders the study area to the west and residential development is prevalent on the west side of Beach Drive. The Oak Bay Marina, boat activity, and associated pollution, reduces the habitat capability of the area, and habitat capability is likely more greatly reduced for waterfowl. Overall capability of the Haynes Park to Queens' Park study area habitat appears moderate to high relative to its suitability.

6.5.3 Public Survey

Nine survey responses were received for Hayne's Park to Queens' Park. All respondents visited either daily or weekly (Table 15). Dogs were typically encountered, with the vast majority of respondents indicating dogs were present on every visit or frequently. Survey responses were highly variable with respect to the proportion of dogs present that were off-leash. Responses varied from 1-25% to 76-99% of dogs being off-leash (Table 15).

Table 15. Public survey results from the Haynes Park to Queens' Park study area of the Victoria Harbour MBS.

Question	Response	No. of Responses (n=9)	Proportion of Responses (%)
How often do you visit this location?	Daily	4	44.4
	Weekly	5	55.6
	Monthly	0	0
	Other	0	0
When you visit, how often do you see dogs?	Every visit	4	44.4
	Frequently	4	44.4
	Occasionally	1	11.1
	Rarely	0	0
	Never	0	0

Question	Response	No. of Responses (n=9)	Proportion of Responses (%)
When you see dogs, what proportion do you estimate are active off-leash?	0%	0	0
	1-25%	2	22.2
	26-50%	3	33.3
	51-75%	2	22.2
	76-99%	2	22.2
	100%	0	0

The majority of respondents (almost 78%) reported seeing dogs chasing or harassing birds in the Haynes Park to Queens' Park study area, and ~67% of respondents felt that dogs were the biggest threat to birds here. Six respondents (~67%) noted that dog disturbance is greatest at specific locations. No single area was strongly indicated by responses, though disturbance was noted from the beach areas between Queens' Park and Glenlyon Norfolk School. Seasonality in dog and bird interactions were identified by three respondents (just over 33%). Respondents varied in what time of year they believed had the highest number of interactions between dogs and birds; one indicated the summer, one the migratory periods when a greater number of birds were present, and one the winter and migratory periods. Harassment was noted particularly towards shorebirds and waterfowl (9 responses each), as well as great blue heron (6 responses) and gulls (4 responses each).

6.6. McNeill Bay / Beach

6.6.1 Overview

McNeill Bay is a moderately deep, southerly exposed bay north of Trial Islands Ecological Reserve. Multiple beaches are found in McNeill Bay, nested between rocky bedrock outcrops and islets. The largest beach is McNeill Beach, which is primarily comprised of sand, gravel, cobble and moderately-sized boulders. Kelp beds are prominent in the offshore waters. The area surrounding McNeill Bay is mostly residential. Beach is accessible via multiple access points along Beach Drive.

6.6.2 Birds and Habitat

Surveys were completed under the BCCWS program for the Harling Point to Gonzales Point polygon, which includes McNeill Bay / Beach. Surveys were completed from 1999-2019, with efforts in all months of the year though concentrated from September to April. A total of 65 shoreline-associated

and other bird species were recorded. Total bird abundance was highest in August, November, and December, and lowest in May, though moderate numbers of birds were recorded year-round (Figure 21). The lowest number of gulls were observed in May; thereafter, they increased over the summer and fall, before reaching a peak in November (Figure 22). Glaucous-winged and short-billed gull numbers remained relatively high throughout the year, with summer and fall aggregations of Heermann's and California gulls. Diving duck and cormorant numbers also increased in the fall and early winter period, with diving duck numbers remaining relatively stable until the spring migration period. The McNeil Bay / Beach area was underutilized by dabbling ducks compared to other areas within the Victoria Harbour MBS; with numbers peaking in the summer months due to increasing Canada goose numbers. Shorebirds were detected year-round, most notably due to higher black oystercatcher counts (Figure 23). Winter saw increased shorebird numbers with black turnstone, surfbird, black-bellied plover, and dunlin. Other shorebird species that may use McNeill Beach, including western and least sandpipers, were detected in low numbers during the spring and fall migration periods. Numbers of these birds may be negatively influenced by beach use during the migration periods (April/May and July to September). American crow was common year-round, being relatively more common during the summer months (Figure 23).

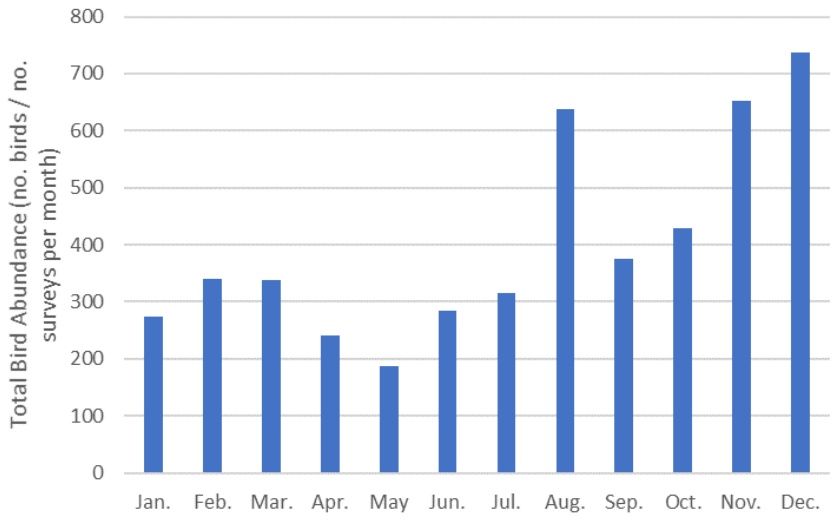

Figure 21: Total relative abundance and seasonal trends of all birds recorded on the BCCWS from the Harling Point to Gonzales Point polygon from 1999 to 2019. Adapted from BCCWS (Birds Canada).

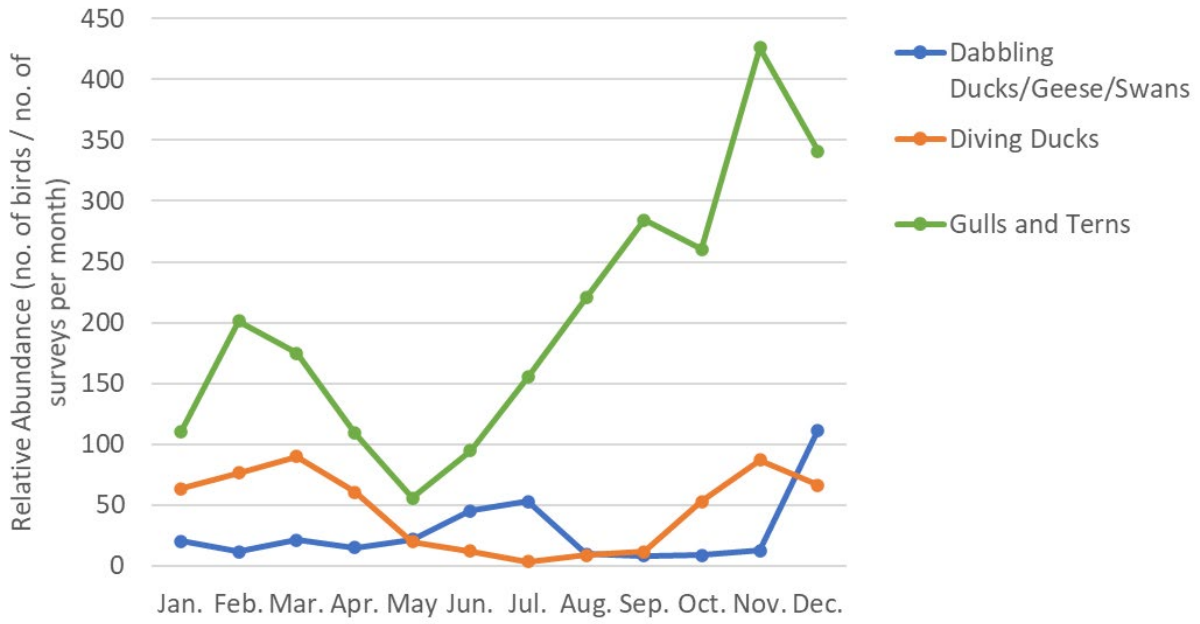

Figure 22: Relative abundance and seasonal trends of waterfowl, and gulls and terns within the Harling Point to Gonzales Point area of the Victoria Harbour MBS from 1999 to 2019. Adapted from BCCWS (Birds Canada).

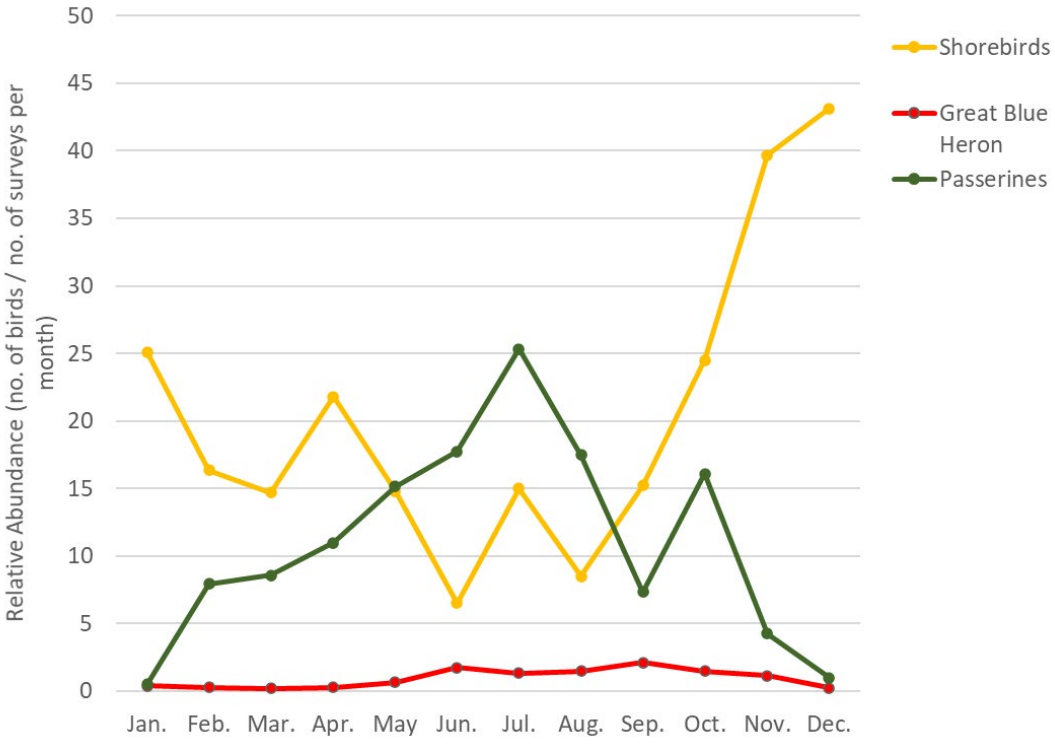

Figure 23: Relative abundance and seasonal trends of shorebirds, great blue heron, and passerines (mostly American crow) within the Harling Point to Gonzales Point area of the Victoria Harbour MBS from 1999 to 2019. Adapted from BCCWS (Birds Canada).

People and dogs were observed in low to high numbers during BCCWS counts. Overall, there

were 24% more dogs than people. These data suggest that dog activity may be relatively stable over time during the bird counts, with typically fewer than 10 dogs recorded during a count (Appendix C).

Bar charts of seasonal bird abundance for Kitty Islet and McNeill Bay eBird hotspots can be found at https://ebird.org/barchart?r=L3272905&yr=all&m= and https://ebird.org/barchart?r=L5413245&yr=all&m=, respectively. Kitty Islet is visited more often by birders (805 checklists compared to 105 for McNeill Bay) because there is roadside access, shorebirds can be found regularly on the exposed, nearshore rocky islet, and the location offers superior scanning opportunities of the Trial Islands and the strait beyond. Consequently, observations from Kitty Islet may also include birds from the Trial Islands. Waterfowl recorded from the McNeill Bay area primarily pertain to species found offshore; however, Canada goose is reported sporadically across the year. Additionally, harlequin duck and common and hooded mergansers are present as overwintering species and routinely rest on exposed rocks on or near shore. Shorebirds are frequent along the McNeill Bay / Kitty Islet waterfront, with 24 species reported from the two eBird hotspots. While many shorebirds utilize isolated, nearshore islets, the rocks at the west end of McNeill Bay also hosts the regular suite of overwintering shorebirds, including black oystercatcher, black-bellied plover, black turnstone, surfbird, and dunlin. Kitty Islet is one of the few locations where rock sandpiper (*Calidris ptilocnemis*) is reported in the region from late October to January. Gulls can be found throughout the year, with glaucous-winged gull breeding nearby on the Trial Islands. Short-billed gull can be found along the shoreline or foraging in shallow waters from late September to early April. All three species of cormorant present in the region can be found in McNeill Bay and resting on the rocks of Kitty Islet. Great blue heron has been reported in low numbers year-round, with a maximum count of three individuals.

McNeill Beach is likely moderately suitable for birds. The suitability increases to high when considering Kitty Islet and the nearshore waters of McNeill Bay. The capability of the bay also remains high, due to the lack of development. The capability of McNeill Beach is likely lower due to frequent human activity, but most of the shoreline habitat itself remains intact.

6.6.3 Public Survey

Ten survey responses were received for McNeill Bay / Beach. The majority of respondents visited the McNeill Bay / Beach study area either daily or weekly (Table 16). Most respondents indicated that they encountered dogs frequently, while over one-quarter of respondents saw dogs on every visit. Survey responses indicated a high proportion of off-leash dogs (>75% of dogs present were off-leash)

(Table 16).

Table 16. Public survey results from the McNeill Bay / Beach study area of the Victoria Harbour MBS.

Question	Response	No. of Responses (n=10)	Proportion of Responses (%)
How often do you visit this location?	Daily	4	40.0
	Weekly	5	50.0
	Monthly	1	10.0
	Other	0	0
When you visit, how often do you see dogs?	Every visit	3	30.0
	Frequently	6	60.0
	Occasionally	1	10.0
	Rarely	0	0
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	0	0
	1-25%	0	0
	26-50%	2	20.0
	51-75%	1	10.0
	76-99%	6	60.0
	100%	1	10.0

Two respondents reported seeing dogs chasing or harassing birds and one respondent felt that dogs were the biggest threat to birds in McNeil Bay / Beach. One respondent noted that dog disturbance is greatest at specific locations ("left side of the beach") though it was not clear to which direction "left" referred. Another response indicated that dog use in contravention of municipal bylaws was also frequent on Kitty Islet. No seasonality in dog and bird interactions were identified by respondents. Harassment was noted towards shorebirds, great blue heron, gulls, and waterfowl. Most respondents did not feel that there were major problems between dogs and birds in the McNeill Bay / Beach study area.

6.7. Gonzales Beach

6.7.1 Overview

Gonzales Beach is a very popular, fairly sheltered, south-oriented swimming area in Gonzales

Bay with sandy beaches and warm shallow water during the summer months. The shoreline and tidal flats are surrounded by rocky outcrops. The substrate is predominantly sand intermixed with gravel, small rocks, and bedrock. Driftwood and coarse woody debris are scattered along the high tide line. A large glacial erratic is located in the lower intertidal zone. The beach is accessible from multiple access points. The surrounding areas are primarily residential and recreational.

6.7.2 Birds and Habitat

Surveys were completed under the BCCWS program for the Clover Point to Harling Point polygon, which includes Gonzales Beach. Surveys were completed from 2004-2019, with survey effort in all months of the year. A total of 68 shoreline-associated and other bird species were recorded. Total bird abundance was lowest in May and June, but relatively high during other periods (Figure 24). As is consistent with the region, gull numbers increased in the summer and were high until November (Figure 25). This summer/fall increase was due to increased aggregations of post-breeding California and Heermann's gulls in the area, along with high numbers of glaucous-winged and short-billed gulls that are present for all or most of the year. Diving duck numbers were generally low from May until October, and fairly high through the winter months. Dabbling ducks/geese were less numerous in this area, with most detections occurring in the summer due to peak in Canada goose numbers during that period. However, larger numbers of brant were detected in the early spring, mostly during April. Shorebird detections were relatively stable throughout the year except from May to July when low numbers were recorded (Figure 26). Rocky-shoreline associated species, such as black oystercatcher, black turnstone and surfbird were well represented in the dataset. Migrants, such as western and least sandpipers, were infrequently detected; this may be due to lower overall numbers of those species in the area, a greater probability of missing passing migrants during a once-a-month survey, and/or greater disturbance events of those species on their preferred beach habitat. American crow was common year-round, being relatively most abundant from the spring through fall (Figure 26).

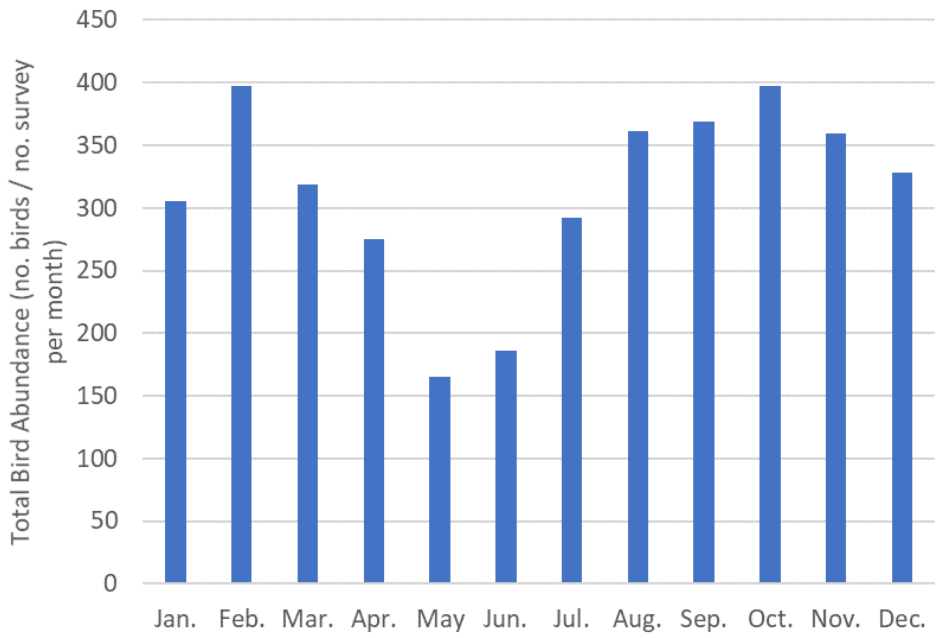

Figure 24: Total relative abundance and seasonal trends of all birds recorded on the BCCWS from the Clover Point to Harling Point polygon from 2004 to 2019. Adapted from BCCWS (Birds Canada).

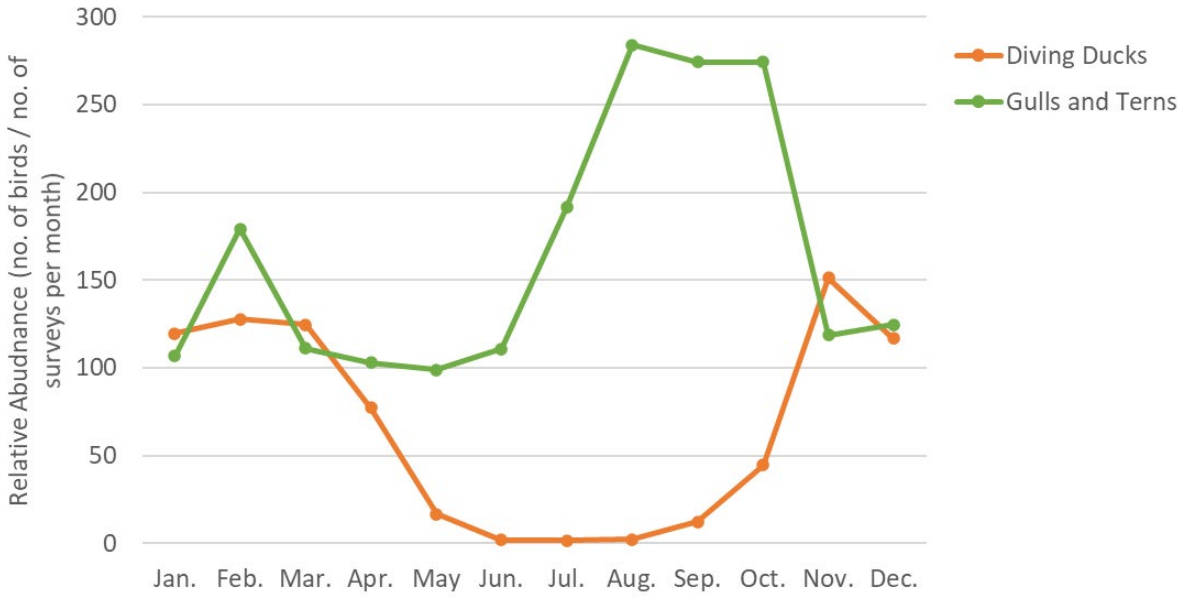

Figure 25: Relative abundance and seasonal trends of diving ducks and gulls and terns within the Clover Point to Harling Point area of the Victoria Harbour MBS from 2004 to 2019. Adapted from BCCWS (Birds Canada).

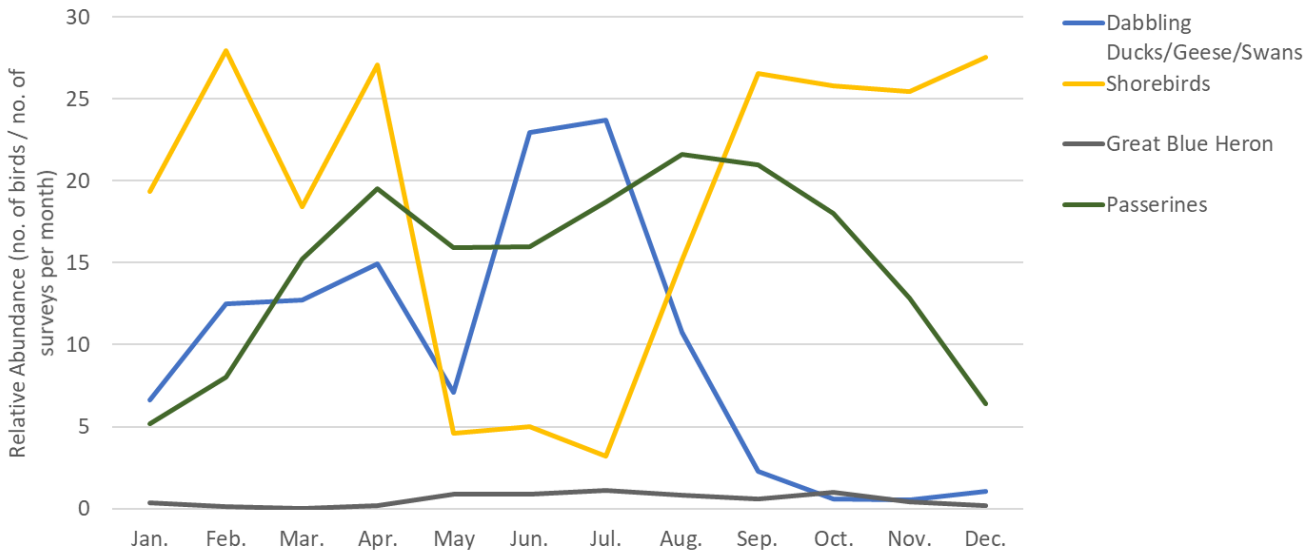

Figure 26: Relative abundance and seasonal trends of select shoreline-associated bird groups within the Clover Point to Harling Point area of the Victoria Harbour MBS from 2004 to 2019. Adapted from BCCWS (Birds Canada).

People and dogs were observed in high numbers during BCCWS counts. Overall, there were 21% more dogs than people. Between 5 and 15 dogs were often present during the waterbird surveys (Appendix C).

A total of 120 species have been recorded from the Gonzales Bay area on eBird. A bar chart of seasonal bird abundance for the Gonzales Bay eBird hotspot can be found at https://ebird.org/barchart?r=L809837&yr=all&m=. Gonzales Beach is a sheltered bay is used by waterfowl year-round, with Canada goose and mallard present in the summer months and a diverse assemblage of diving ducks present from the late summer through the spring. Most diving ducks are found in offshore waters, but species such as harlequin duck and common and hooded mergansers regularly rest on exposed rocks along the shoreline or nearshore islets. The combination of sandy and rocky shorelines and multiple nearshore islets provide shorebirds with habitat to rest and forage. A total of 15 species have been reported from Gonzales Bay. Black oystercatcher is present year-round, with sparser reports during the summer breeding season; all other shorebirds are either passage migrants or overwintering species present from the late summer through the spring. Several species that are generally restricted to offshore rocky islets in the bay (e.g., marbled godwit [*Limosa fedoa*], least and western sandpipers, sanderling, greater yellowlegs, and killdeer) may be found on the sandy shorelines. Gulls can be found year-round in Gonzales Bay. Glaucous-winged gull, reported throughout the year, never occur in large numbers. From mid-July through October, the California gull can be found on the

rocks in the bay in large numbers, with an estimated high count of 500 from late August 2020. Heermann's gull can also be found during the same period, but in much lower numbers. Arriving primarily in mid-July, short-billed gull can also be found through the winter and into the spring (late April), with a high count of 450 reported in late February 2012. Low numbers of Great blue heron are scattered throughout the year.

Gonzales Beach is of high suitability for birds. The sandy shoreline provides foraging and roosting opportunities for a variety of species, and the rocky area connected to the shoreline at low tide provides habitat for additional species. While the upland area surrounding Gonzales Bay has extensive residential development, the shoreline and nearshore waters are relatively devoid of development. The capability of the area is high, though less than the suitability owing to human uses of the area including dog activities.

6.7.3 Public Survey

Twenty-three survey responses were received for Gonzales Beach. Respondents visited Gonzalez Beach at different intervals; though over three-quarters visited either daily or weekly (Table 17). Dogs were often encountered, with the vast majority of respondents indicating dogs were present on every visit (over half of the responses), or frequently. High off-leash dog use was noted, with the vast majority of respondents reporting >50% of dogs present being off-leash (Table 17).

Table 17. Public purvey results from the Gonzales Beach study area of the Victoria Harbour MBS.

Question	Response	No. of Responses (n=23)	Proportion of Responses (%)
How often do you visit this location?	Daily	8	34.8
	Weekly	10	43.5
	Monthly	2	8.7
	Other	3	13.0
When you visit, how often do you see dogs?	Every visit	14	60.9
	Frequently	8	34.8
	Occasionally	1	4.3
	Rarely	0	0
	Never	0	0

Question	Response	No. of Responses (n=23)	Proportion of Responses (%)
When you see dogs, what proportion do you estimate are active off-leash?	0%	0	0
	1-25%	1	4.3
	26-50%	1	4.3
	51-75%	5	21.7
	76-99%	13	56.5
	100%	3	13.0

Dogs chasing or harassing birds was reported by ~39% of respondents in the Gonzalez Beach study area. An equal percentage of respondents felt that dogs were the biggest threat to birds. Respondents did not note dog disturbance being greater at specific locations. Seasonality in dog and bird interactions were identified by three respondents (13%), and it was noted that dogs are prohibited from the beach during the summer. Winter was noted as a season of higher interaction by all three respondents, while the spring and fall migration periods were also mentioned in two responses. Harassment was noted particularly towards shorebirds (5 responses), gulls (4 responses), waterfowl and herons (3 responses each). Dog disturbance was also noted for American crow (2 responses). One respondent noted frequent problems between dogs and wildlife, which includes high-profile interactions between dogs and a moulting northern elephant seal[4].

6.8. Ross Bay / Beach

6.8.1 Overview

Ross Bay is a heavily modified coastal area with a rich history. A seawall was built in 1911 to protect the Ross Bay Cemetery from erosion; over the past century, the modifications to the landscape presented new challenges and the intertidal zone has mostly disappeared due to scouring at the base of the seawall (Archipelago Marine Research Ltd. 2021). Groynes were constructed to reduce erosion and

[4] https://vancouverisland.ctvnews.ca/moulting-seal-frequently-harassed-taunted-on-victoria-beach-dfo-1.3914217

to attempt to restore habitat near the high tide line. The shoreline is primarily comprised of pebbles and cobble with rocky outcrops at each end. Driftwood and coarse woody debris are deposited along the beach at the high tide line. Small kelp patches are typically observed offshore. The areas surrounding Ross Bay Beach include the Ross Bay Cemetery and residential areas.

6.8.2 Birds and Habitat

Surveys were completed under the BCCWS program for the Clover Point to Harling Point polygon, which includes Ross Bay and Beach. For a discussion of these data refer to section 6.7.2 Birds and Habitat. Bird usage of Ross Beach is broadly similar with Gonzales Beach.

People and dogs were both observed in moderate to high numbers during BCCWS counts. While human usage was about five times higher than that of dogs, both were frequently encountered (Appendix C).

Ross Bay does not contain an eBird hotspot, but checklists submitted for Clover Point are likely to include observations from Ross Bay. A bar chart of seasonal bird abundance for Clover Point can be viewed at https://ebird.org/barchart?r=L268086&yr=all&m=. Waterfowl use the bay year-round; however, most species are absent during the breeding season. The majority are found offshore, but species such as Canada goose, harlequin duck, and common merganser come ashore to rest. Shorebirds such as black oystercatcher, black-bellied plover, killdeer, black turnstone, sanderling and dunlin are found along the gravel and cobble beach; however, these birds are more likely to be on the exposed rocks at the east end of Ross Bay. The presence of seaweed wracks, following fall and winter storm and high-wind events, may promote an increase in shorebird abundance. Gulls are present throughout the year in the area, but May through July generally have lower numbers. Glaucous-winged gull is common throughout the year, but the majority remain offshore near the sewage outflow in the strait. Most other species present in the area are not likely to be found along the shoreline of Ross Bay, but short-billed gull can be found in the shallow surf and on the gravel beach, typically from September through April. Great blue heron reports from Ross Bay cannot be determined from the Clover Point eBird hotspot data; however, independent records ascribed to Ross Bay are present indicating they do use the shoreline of Ross Bay to some degree.

Data specific to Ross Bay / Beach exclusive of adjacent areas can be difficult to discern from adjacent areas such as Clover Point. The extensive gravel shoreline here is one of the most extensive

within the Victoria Harbour MBS. This gravel substrate type may be less suitable for birds than areas with either finer substrates (e.g., mudflat) or more rocky shores. Dallas Road and a popular walking path run the length of Ross Beach, though development is limited in the shoreline and nearshore areas. Residential development borders the north side of Dallas Road along the southern half of the beach, while the Ross Bay Cemetery limits residential development opposite the northern half of the beach. A series of small breakwaters have been installed to prevent coastal erosion. It is unknown to what extent the capability of the habitat is limited relative to its suitability, though is likely most limited by human activities.

6.8.3 Public Survey

Seven survey responses were received for Ross Bay / Beach. All respondents visited weekly (Table 18). Dogs were encountered either every visit, or frequently. All survey responses except for one indicated that >50% of dogs present were off-leash (Table 18).

Table 18. Public survey results from the Ross Bay / Beach study area of the Victoria Harbour MBS.

Question	Response	No. of Responses (n=7)	Proportion of Responses (%)
How often do you visit this location?	Daily	0	0
	Weekly	7	100.0
	Monthly	0	0
	Other	0	0
When you visit, how often do you see dogs?	Every visit	4	57.1
	Frequently	3	42.9
	Occasionally	0	0
	Rarely	0	0
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	0	0
	1-25%	0	0
	26-50%	1	14.3
	51-75%	4	57.1
	76-99%	2	28.6
	100%	0	0

Dogs in Ross Bay / Beach study area were reported chasing or harassing birds by three respondents (~43%). Two respondents (about 29%) felt that dogs were the biggest threat to birds. Seasonality in dog and bird interactions were identified by two respondents, with the winter, spring and fall migration periods noted by both. Harassment was noted particularly towards shorebirds (3 responses), with single responses each for gulls, waterfowl, great blue heron, and raptors. One respondent suggested that the pebble beach may limit dog disturbance as it is hard to walk on.

6.9. Clover Point Shoreline

6.9.1 Overview

Clover Point and the surrounding area is a popular destination frequented by tourists and residents year-round. The shoreline and nearshore areas are largely undeveloped. However, some infrastructure exists and is currently under construction due to an upgrade to the Clover Point Pump Station, as part of Victoria's wastewater treatment project. The surrounding shoreline is very exposed and the substrate composition varies between pebble, cobble, large boulders, and bedrock. Driftwood and coarse woody debris are evident at the high tide line. Moderately sized kelp beds are found throughout the year in the waters off the coast.

6.9.2 Birds and Habitat

Per the BCCWs, the Clover Point area is considered two separate polygons. The Clover Point to Harling Point area covers the eastern half of Clover Point. For details on that survey, see the Gonzales Beach Section 6.7.2 Birds and Habitat. The western half of Clover Point is captured by surveys from the Ogden Point to Clover Point area.

Surveys for the Ogden Point to Clover Point area were completed from 1999 to 2019, with surveys only completed from September to April. A total of 75 shoreline-associated and other bird species were recorded. Out of the months surveyed, total bird abundance was lowest in April and relatively high and stable from October to February (Figure 27). Gull numbers were particularly high relative to other bird groups in this area. Glaucous-winged and short-billed gulls were overall the most numerous, though notable are regionally significant counts of Heermann's and Iceland gulls. Diving ducks increased from October to November, then declined through to spring, while dabbling ducks and geese had relatively stable numbers through the September to April survey period (Figure 28). Unlike

other areas where the dabbling duck/goose category was dominated by Canada goose, American wigeon and mallard made up the bulk of detections. Brant is seen in highest numbers during March and April. Shorebird detections were relatively stable throughout the survey period, though sampling gaps missed a significant portion of the fall migration for that group (Figure 29). Relatively high numbers of black oystercatcher, black-bellied plover, black turnstone, surfbird, and sanderling were recorded. Most of these are rocky coastline species that would be expected on the outer rocks along Clover Point and other rocky shoreline areas along the coast.

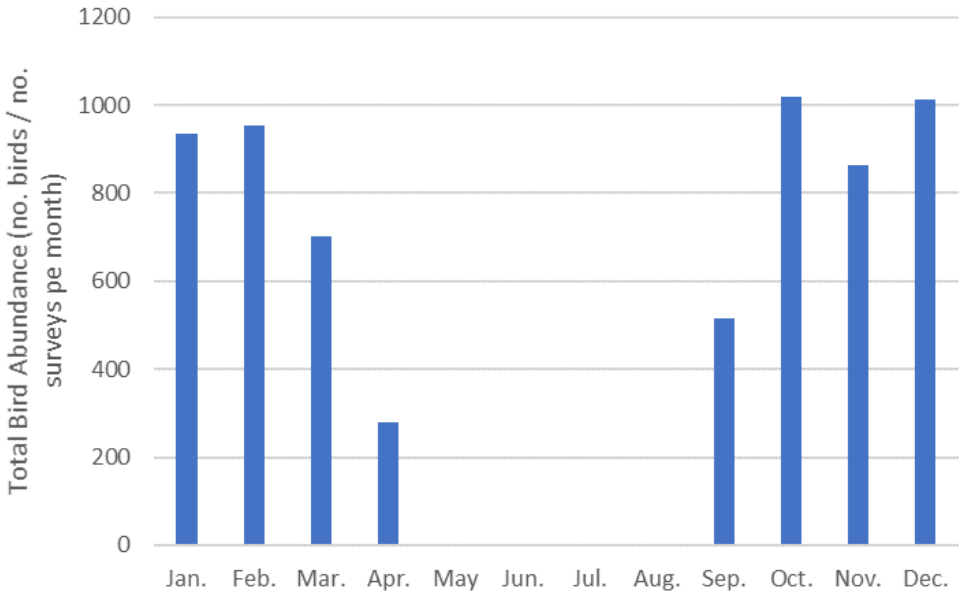

Figure 27: Total relative abundance and seasonal trends of all birds recorded on the BCCWS from Ogden Point to Clover Point from 1999 to 2019. Adapted from BCCWS (Birds Canada).

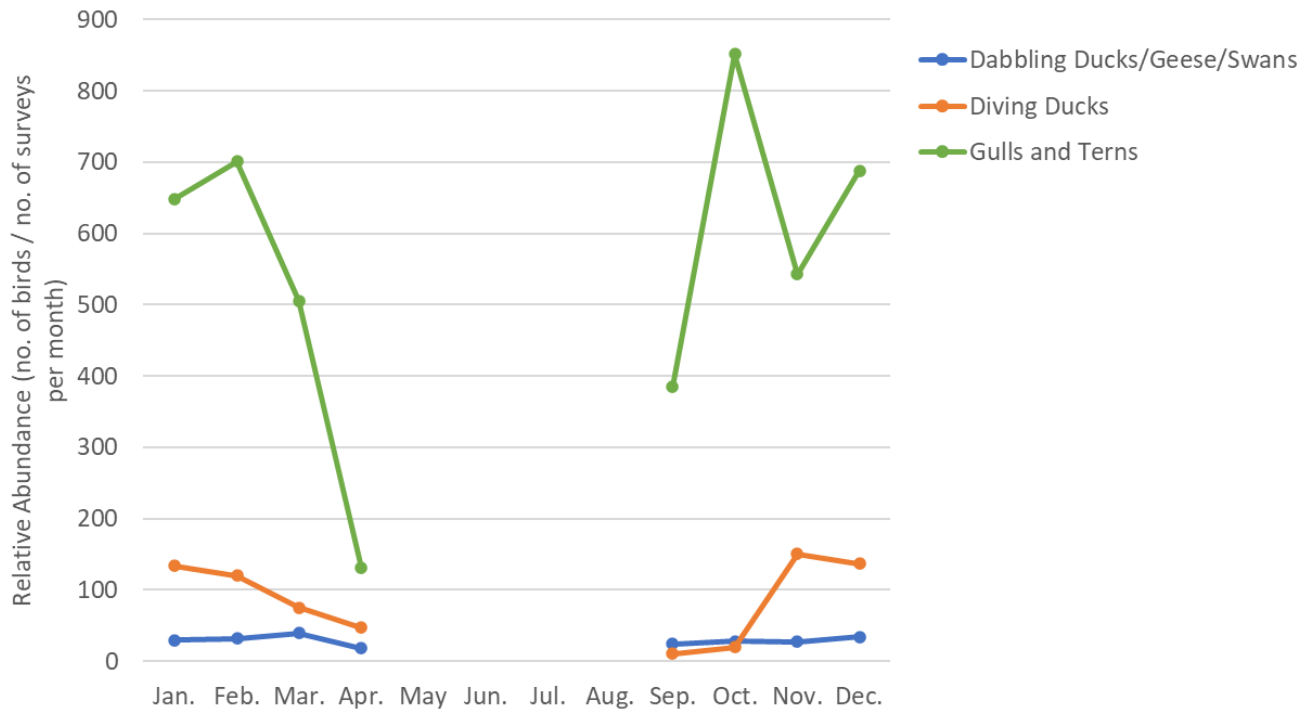

Figure 28: Relative abundance and seasonal trends of waterfowl and gulls and terns within the Ogden Point to Clover Point area of the MBS from 1999 to 2019. Adapted from BCCWS (Birds Canada).

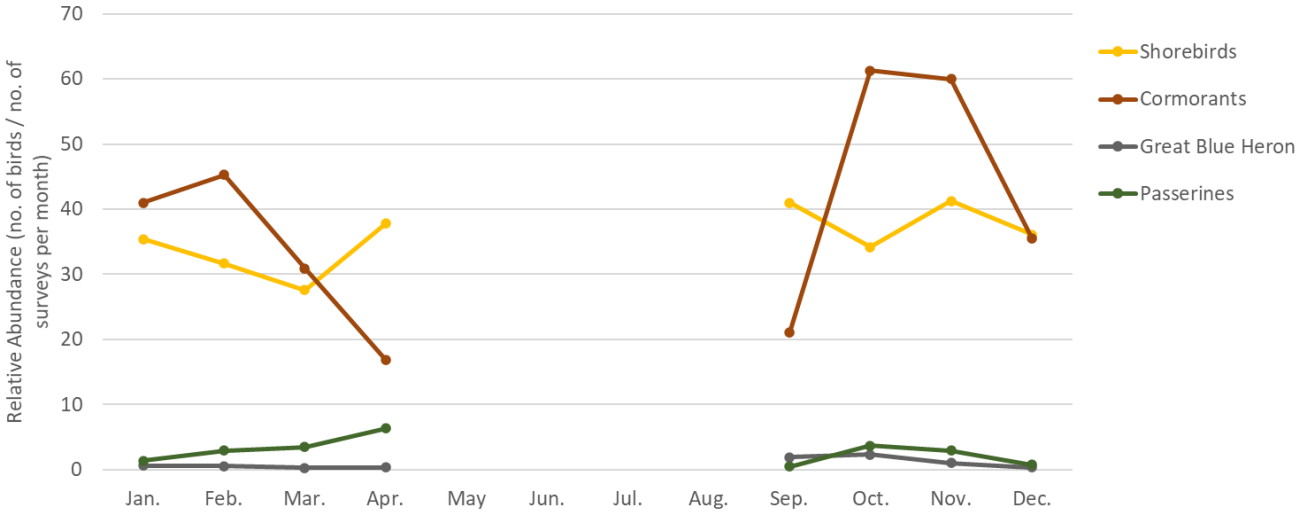

Figure 29: Relative abundance and seasonal trends of select shoreline-associated bird groups within the Ogden Point to Clover Point area of the Victoria Harbour MBS from 1999 to 2019. Adapted from BCCWS (Birds Canada).

People and dogs were both observed in high numbers during BCCWS counts; there is approximately one dog for every four people. Dog activity appears particularly high from roughly 2000 to 2002; the cause of this increase is unknown. In recent years, most waterbird surveys have recorded counts between approximately 10 and 30 dogs. (Appendix C).

A total of 203 bird species have been recorded from the Clover Point eBird hotspot in eBird. A bar chart of seasonal bird abundance for the Clover Point eBird hotspot can be viewed at https://ebird.org/barchart?r=L268086&yr=all&m=. Waterfowl are present in waters around the point year-round; however, most species are absent during the breeding season. Canada goose and mallard are present throughout the year in low numbers and are most likely to be sighted along the shoreline or in nearshore waters. Brant are frequent during the spring migration that peaks in February and March, and the Clover Point area is an important location for brant within the Victoria Harbour MBS. American wigeon is frequently reported from mid-August through early May, and usually in the intertidal zone. Diving ducks are primarily found offshore, but common species such as harlequin duck and common merganser forage in waters around exposed rocks and rest on shore or nearby islets. The diverse intertidal zone, sheltered rocky shoreline, and nearshore islets provide shorebirds with habitat to rest and forage. A total of 30 shorebird species have been reported from the Clover Point eBird hotspot. Black oystercatcher is the only shorebird species reported year-round. Around two-thirds of the species that have been recorded are common to rare passage migrants through the region. The usual assortment of overwintering shorebirds found along the rocky shoreline of Clover Point includes black-bellied plover, black turnstone, surfbird, sanderling (although becoming increasingly uncommon locally), and dunlin. The Clover Point Shoreline is also one of the most reliable in the region for wandering tattler (*Tringa incana*) during the fall migration (predominantly August to September). The presence of seaweed wracks following fall and winter storm and high-wind events may promote an increase in shorebird abundance. Gulls are present in all months at Clover Point. Glaucous-winged gull and hybrids are common throughout the year, in part due to handouts and food waste provided by people. The exposed rocks around the point are commonly used by a variety of gull species through the year. Groups of non-breeding, California and short-billed gulls, can be found during the summer loafing on the rocks, with the latter species present in lower number. Heermann's gull can be seen resting on the rocks in between feeding forays in the strait. Iceland gull arrives in September and can be found among the gull assortment on the rocks over the winter, departing by the end of April. Great blue heron is reported throughout the year and are most common from May to mid-October. The proximity of Clover Point to a known great blue heronry at Beacon Hill Park likely contributes to the heightened presence of this species over the breeding season. While cormorants are generally seen farther from shore or perched on items in the strait (e.g., buoys), they are occasionally seen perched on the rocks off the tip of Clover Point.

Clover Point is an important site within the MBS, supporting high numbers of coastal birds. The rocky shoreline is highly suitable for birds. The general lack of development and geography of the point jutting out into the strait and providing further distance from residential development increases the capability of the site. The roadway encircling the point and human activities reduces the capability of the area to some extent, though the capability currently remains high for birds.

6.9.3 Public Survey

Fourteen survey responses were received for the Clover Point shoreline. Respondents mostly visited the Clover Point Shoreline study area weekly or monthly, with a couple of responses from daily visitors (Table 19). Most respondents encountered dogs on every visit, with a few respondents seeing dogs frequently, but not every visit. More than 75% of dogs present were off-leash according to over half of all respondents (Table 19).

Table 19. Public survey results from the Clover Point shoreline study area of the Victoria Harbour MBS.

Question	Response	No. of Responses (n=14)	Proportion of Responses (%)
How often do you visit this location?	Daily	2	14.3
	Weekly	6	42.9
	Monthly	6	42.9
	Other	0	0
When you visit, how often do you see dogs?	Every visit	11	78.6
	Frequently	3	21.4
	Occasionally	0	0
	Rarely	0	0
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	0	0
	1-25%	1	7.1
	26-50%	4	28.6
	51-75%	0	0
	76-99%	8	57.1
	100%	1	7.1

Dogs chasing or harassing birds were reported by over three-quarters (>78%) of respondents, and 50% of respondents felt that dogs were the biggest threat to birds in the Clover Point Shoreline study area. Four respondents (nearly 29%) noted that dog activity is greatest at specific locations. Responses highlighted the rocky areas on the beach below the parking area, the beach south of Moss Street, and on the beach near the access ramp. Seasonality in dog and bird interactions were identified by six respondents (~43%). All respondents noted year-round disturbance; among them, six respondents noted that the disturbance was more serious during the spring and/or fall migration periods. Harassment was noted particularly towards shorebirds (8 responses) and gulls (7 responses), as well as waterfowl (4 responses). Disturbance to passerines (notably open-country species such as savannah sparrow, horned lark, and Lapland longspur [*Calcarius lapponicus*]) was noted in two responses, and single responses were received of disturbance to great blue heron, eagles, alcids, cormorants, and pigeons.

6.10. Dallas Bluffs Beaches

6.10.1 Overview

The beaches below Dallas Bluffs are accessible from many points along the Dallas Road Waterfront Trail between Clover Point and Mile Zero. The largest expanse of beach is known as Spiral Beach, which is mostly comprised of cobble, pebbles, and gravel. An abundance of driftwood and coarse woody debris is found scattered near the high tide line. Several rock outcrops are visible at low tide in the lower intertidal zone. Between Finlayson Point and Mile Zero are several small coves. These coves are bordered by bedrock and mostly contain cobble, gravel and an accumulation of driftwood and coarse woody debris. While people and dogs less frequently utilize the coves due to steep paths, Spiral Beach is moderately visited year-round. The study area is almost entirely surrounded by residential neighborhoods and parks. The Dallas Road Waterfront is popular with people walking dogs.

6.10.2 Birds and Habitat

The beach area below Dallas Road is covered under the Ogden Point to Clover Point BCCWS polygon. Refer to section 6.9.2 Birds and Habitat section for a discussion of those data.

The beaches below Dallas Bluffs do not have an eBird hotspot, but checklists submitted for Clover Point and the Dallas Road Waterfront Trail are likely to include observations extending to the

Dallas Bluff Beaches. Bar charts of seasonal bird abundance for these locations can be viewed at https://ebird.org/barchart?r=L268086&yr=all&m= and https://ebird.org/barchart?r=L2172070&yr=all&m=, respectively. Waterfowl use the bay year-round; however, most species are absent during the breeding season. The majority are found offshore, but species such as Canada goose, harlequin duck, and common merganser come ashore to rest. Shorebirds such as black oystercatcher, black-bellied plover, killdeer, black turnstone, sanderling, and dunlin, can be found along the beaches. The rocky shoreline and nearshore islets from Finlayson Point west to the edge of the Dallas Bluff Beaches is also likely to be used by the same suite of species. Passage migrant shorebirds, such as western and least sandpipers, may be found in small flocks, primarily during southbound movements in the fall. The presence of seaweed wracks following fall and winter storms and high-wind events may promote an increase in shorebird abundance. Gulls are present throughout the year in the area, but May through July generally have lower numbers. Glaucous-winged gull is common throughout the year, but the majority remain offshore near the sewage outflow in the strait. Most other species present in the area are not likely to be found along the shoreline of the beaches below the Dallas Bluffs, but short-billed gull can be found in the shallow surf and on shore, typically from September through April. Great blue heron reports cannot be determined from adjacent eBird hotspot data; however, independent records entered for the stretch below the Dallas Bluffs are present, indicating they do use the shoreline here to some degree.

The beaches below Dallas Road appear less suitable for many birds than other areas within the Victoria Harbour MBS; this may be due to the pebblier substrate of the shoreline, which is not as heavily utilized by many species of bird. Wrack lines may be used for foraging, especially after winter storms, though bird presence and abundance data are lacking. As such, the suitability of the area is considered moderate. The shoreline is bordered by relatively steep bluffs providing a buffer between upland uses. Parkland additionally separates the shoreline from Dallas Road and residential areas. Coastal developments (e.g., marinas) do not exist along the Dallas Bluff Beaches. The capability of the area is thus likely only reduced by human/dog use of the beach and boat activities in the waters. It is not known to what extent human uses of the shoreline may be responsible for relatively low bird use, though it likely naturally has lower bird activity based on shoreline substrate.

6.10.3 Public Survey

Twenty-four survey responses were received for the beaches below Dallas Bluffs area.

Respondents visited at different intervals, though over half visited at least weekly (Table 20). Dogs were typically encountered, with the vast majority of respondents indicating dogs were present on every visit (over three-quarters of responses) or frequently. A large majority of respondents indicated that >50% of dogs encountered were off-leash, with most indicating that >75% of dogs were off-leash (Table 20).

Table 20. Public survey results from the Dallas Bluffs beaches study area of the Victoria Harbour MBS.

Question	Response	No. of Responses (n=24)	Proportion of Responses (%)
How often do you visit this location?	Daily	4	16.7
	Weekly	10	41.7
	Monthly	9	37.5
	Other	1	4.2
When you visit, how often do you see dogs?	Every visit	19	79.2
	Frequently	4	16.7
	Occasionally	1	4.2
	Rarely	0	0
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	0	0
	1-25%	0	0
	26-50%	2	8.3
	51-75%	6	25.0
	76-99%	15	62.5
	100%	1	4.2

Almost half of the respondents (~46%) reported seeing dogs chasing or harassing birds in the Dallas Bluff Beaches study area, and one-third (just over 33%) of respondents felt that dogs were the biggest threat to birds here. Six respondents (25%) noted that dog activity is greatest at specific locations. Most of these responses highlighted areas near beach access points (e.g., Cook Street). Seasonality in dog and bird interactions were identified by three respondents (~13%). All seasons were noted by these respondents as having disturbance, with “migration”, “spring to fall”, and “fall through spring” all being noted. Harassment was noted particularly towards gulls (7 responses), shorebirds (5 responses), and waterfowl (4 responses). Great blue heron and American crow received two responses each, with a range of other species also being noted by single observers (passerines, bald eagle, alcids, cormorants,

and pigeons).

6.11. Holland Point Park to Ogden Point

6.11.1 Overview

The shoreline between Holland Point Park and Ogden Point is accessible via the Holland Point Shoreline Trail, which begins at Steve Fonyo Beach. Steve Fonyo Beach, and the adjacent shoreline between Holland Point Park and Ogden Point, is fairly exposed to southerly winds and wave action. The substrate varies but is predominantly comprised of cobble, gravel, sand, large rocks, and bedrock. The beach west of Holland Point Park is much more rugged with several rocky outcrops. Offshore, several outcrops visibly protrude the surface. The study area is close to residential neighbourhoods, commercial businesses, and Ogden Point Breakwater.

6.11.2 Birds and Habitat

Baseline bird data collected by Shepard (1999) shows a relatively low number of birds from the marine area to the east of Ogden Point Breakwater. The fall (September/October) period showed a large increase in bird numbers, particularly amongst diving ducks, shorebirds, and gulls (Figure 30). The higher numbers are mostly due to October increases in red-breasted merganser, surf scoter, black turnstone, and Bonaparte's (*Chroicocephalus philadelphia*) and glaucous-winged gulls. No dabbling ducks or geese were recorded during these surveys. Overall numbers were lowest during the August survey period when only glaucous-winged gull was detected (Figure 30).

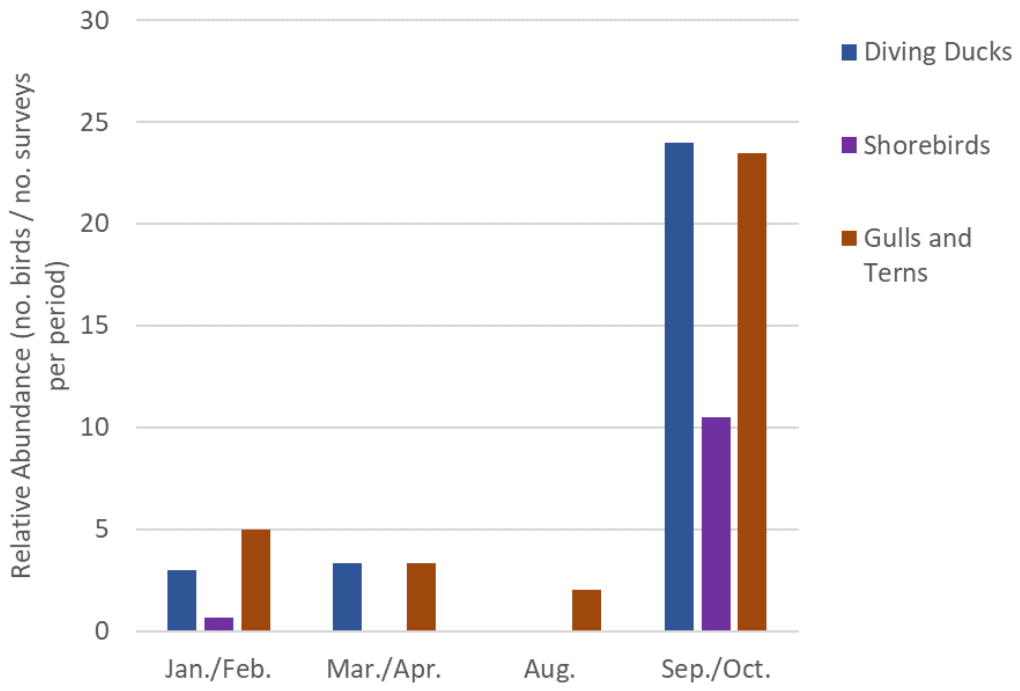

Figure 30: Relative abundance and seasonal trends of shoreline-associated bird groups within the Holland Point to Ogden Point study area of the Victoria Harbour MBS from April 1997 to May 1999. Adapted from Shepard (1999) from data provided by ECCC.

The beach area below Dallas Road is covered under the Ogden Point to Clover Point BCCWS polygon. Refer to the Clover Point section 6.9.2 Birds and Habitat for a discussion of those data.

Bar charts of seasonal bird abundance for the Holland Point to Ogden Point waterfront is covered by the Holland Point Park and Ogden Point Breakwater eBird hotspots, which can be viewed at https://ebird.org/barchart?r=L5291902&yr=all&m= and https://ebird.org/barchart?r=L385215&yr=all&m=, respectively. User data from the Dallas Road Waterfront Trail eBird hotspot may also represent the Holland Point Park to Ogden Point shoreline, and the bar chart can be viewed at https://ebird.org/barchart?r=L2172070&yr=all&m=. The Ogden Point Breakwater eBird hotspot has the most data, with nearly five times as many checklists as the next most visited of the three eBird hotspots (Dallas Road Waterfront Trail). Most of the birds reported from Ogden Point Breakwater are unlikely to be impacted by normal foot traffic; however, intrepid visitors can still walk on the rock blocks on the ocean side, which often host shorebirds from late July through April. Waterfowl recorded along the Holland Point to Ogden Point waterfront primarily pertain to species found offshore; however, Canada goose and mallard are usually along the shoreline and have been reported throughout the year. Harlequin duck, common and hooded mergansers are present as

overwintering species and routinely rest on exposed rocks on or near shore. The rocky intertidal zone and isolated, nearshore islets support the regular suite of overwintering shorebirds, including black oystercatcher, black-bellied plover, black turnstone, surfbird, sanderling, and dunlin. Gulls can be found throughout the year, with glaucous-winged gull being a resident species. Several other gull species have been recorded, but the vast majority of these are offshore birds. Short-billed gull is a common species that can be found along the shoreline or foraging in shallow waters from late September to early April. Great blue heron breeds locally and is commonly reported throughout the year. A high count of nine individuals was reported from the Breakwater eBird hotspot in July of 2019.

The Holland Point Park to Ogden Point study area is of unknown suitability for many shoreline birds. The width of the shoreline here is relatively narrow, though it likely provides good foraging opportunities for a variety of species in the nearshore waters and surf-influenced shores. The seawall, which eliminates the natural coastline along a portion of the Holland / Ogden study area, may negatively impact birds relative to an undisturbed, 'natural' state. Conversely, it provides a beneficial barrier between people/dog and birds. Bird presence and abundance data are lacking for the Holland / Ogden specific stretch of beach, as are influences of dogs. It is likely that the habitat's capability is similar to its suitability, though potentially influenced by seawall and breakwater constructions as well as human uses of the limited available shoreline.

6.11.3 Public Survey

No survey responses were received for the Holland Point Park to Ogden Point study area, which was due to a survey error rather than a lack of use by people.

6.12. West Bay

6.12.1 Overview

West Bay is located in Middle Harbour of Victoria Harbour and is fairly sheltered from the elements. West Bay is a high traffic area for vessel activity including, seaplanes, ferries, yachts, pleasure crafts, and kayaks. The surrounding area is a mix of residential and commercial properties, including the West Bay Marina. The shoreline is mostly composed of rocky outcrops and small, rocky beaches. Driftwood and other coarse woody debris are accumulating in some areas. Within the study area is a popular walking trail known as the Songhees Walkway, which connects to Johnson Street Bridge.

6.12.2 Birds and Habitat

Baseline bird data collected by Shepard (1999) show a relatively large number of birds from the West Bay study area. Numbers were highest in the January/February period for dabbling ducks before declining through the remainder of the surveys, while diving duck numbers remained relatively high in both the January/February and March/April periods (Figure 31).

Gull numbers also peaked in the January/February period. Higher counts among those bird groups were mostly due to increased numbers of American wigeon, bufflehead, red-breasted merganser, and short-billed and glaucous-winged gulls. For shorebirds, black turnstone was the principal species. The presence of rocky-coastline shorebirds, as well as alcids such as marbled murrelet and rhinoceros auklet (*Cerorhinca monocerata*), indicate that West Bay has a bird composition that still resembles that of the outer Victoria coast, compared to study areas further up the Gorge Waterway.

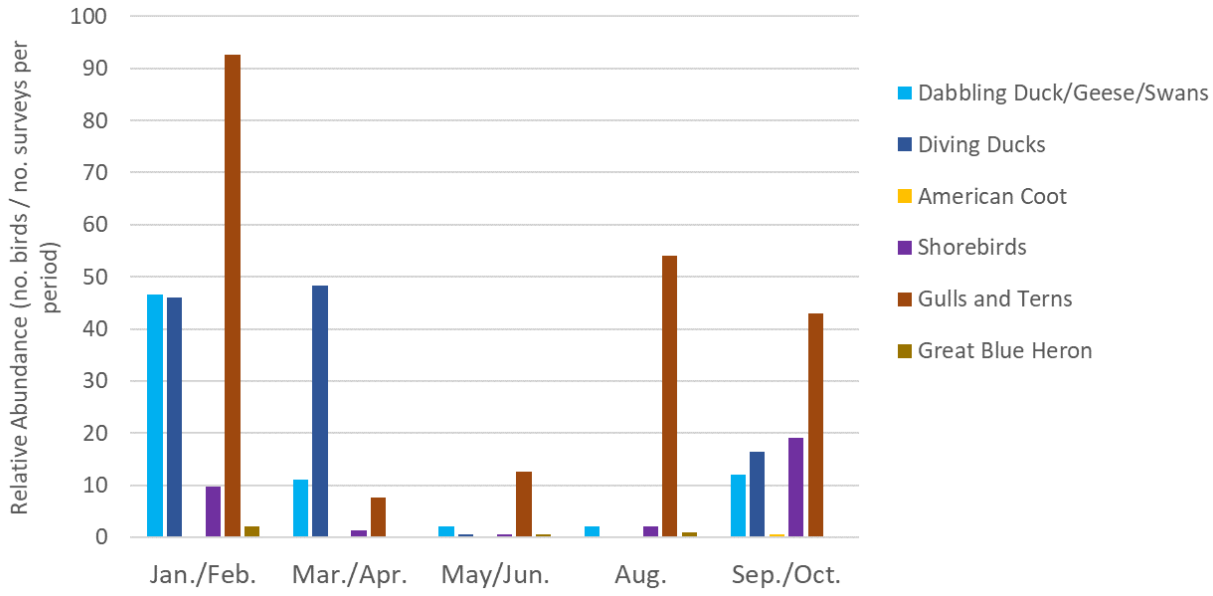

Figure 31: Relative abundance and seasonal trends of shoreline-associated bird groups within the West Bay study area of the Victoria Harbour MBS from April 1997 to May 1999. Adapted from Shepard (1999) from data provided by ECCC.

Surveys were completed under the BCCWS program for the Victoria Harbour polygon, which includes West Bay. Surveys were completed from 2000-2006, and 2009-2019 with survey efforts in all months of the year. A total of 71 shoreline-associated and other bird species were recorded. Total bird abundance was lowest from the spring through the fall (Figure 32). Diving ducks were abundant through the winter (November to March), and relatively absent through the summer months (Figure 33). In

contrast, dabbling ducks and geese were present year-round but with peaks of abundance through the winter as well as during mid-summer. The mid-summer peak was due to locally-breeding Canada goose. Other marine and shoreline birds were present through the year without distinct peaks in abundance, except alcids (notably rhinoceros auklet) and American crow which peaked in September and October, respectively (Figure 34). Great blue heron numbers were fairly low and consistent year-round. Shorebird numbers were relatively low, and species were mostly those associated with rocky coastlines (e.g., black oystercatcher, black turnstone).

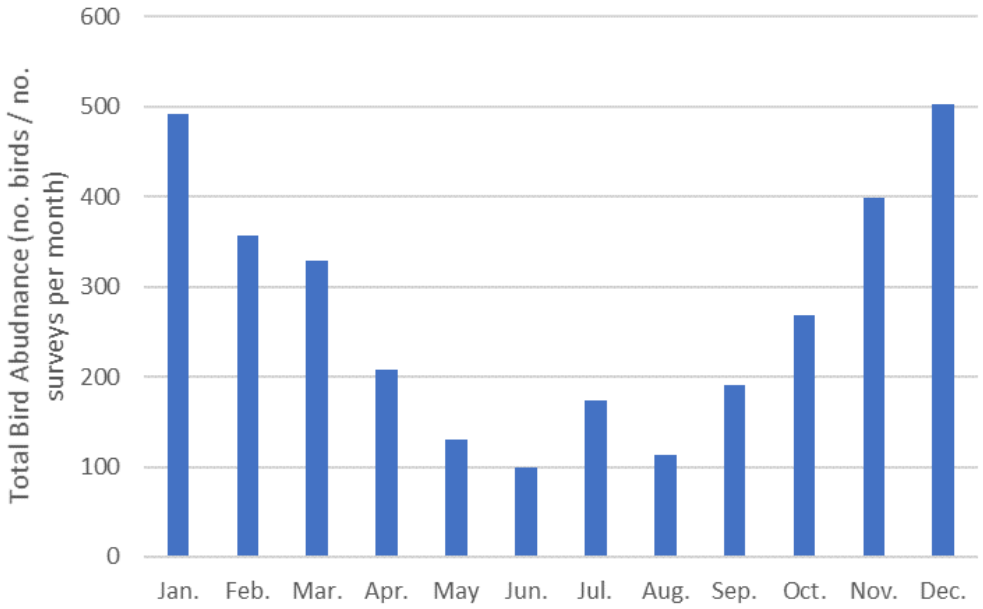

Figure 32: Total relative abundance and seasonal trends of all birds recorded on the BCCWS from the Victoria Harbour polygon from 2000 to 2006, and 2009 to 2019. Adapted from BCCWS (Birds Canada).

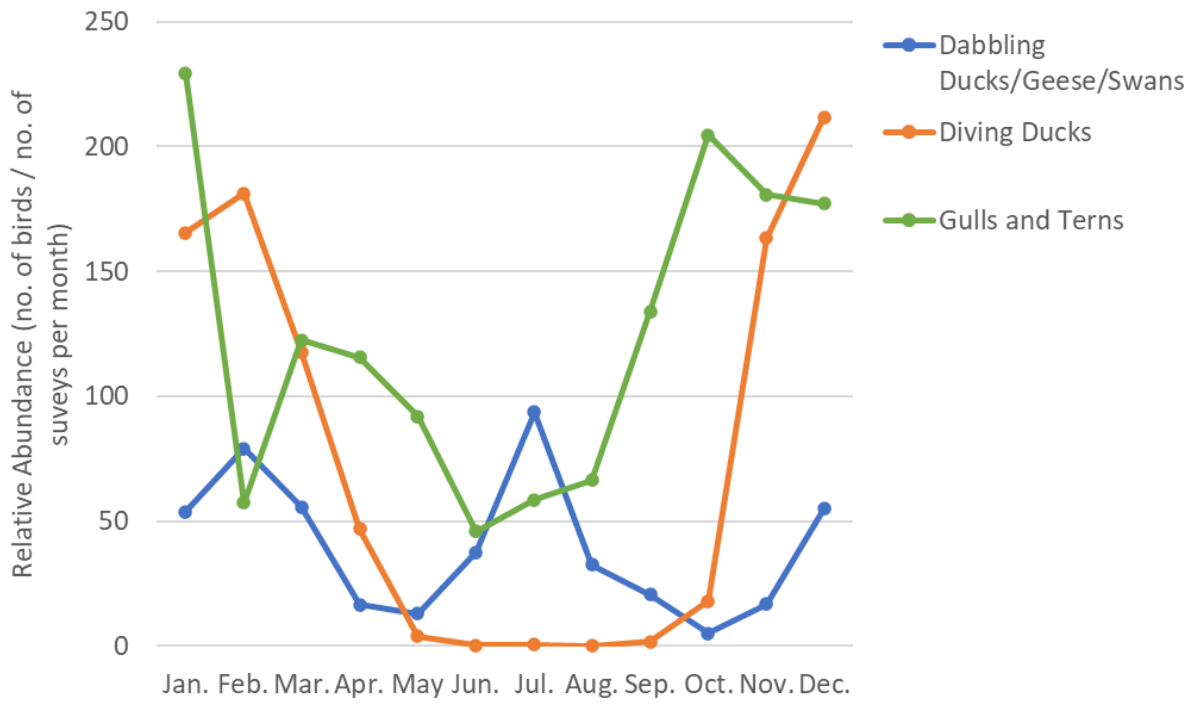

Figure 33: Relative abundance and seasonal trends of waterfowl and gulls and terns within the Victoria Harbour area of the Victoria Harbour MBS from 2000 to 2006, and 2009 to 2019. Adapted from BCCWS (Birds Canada).

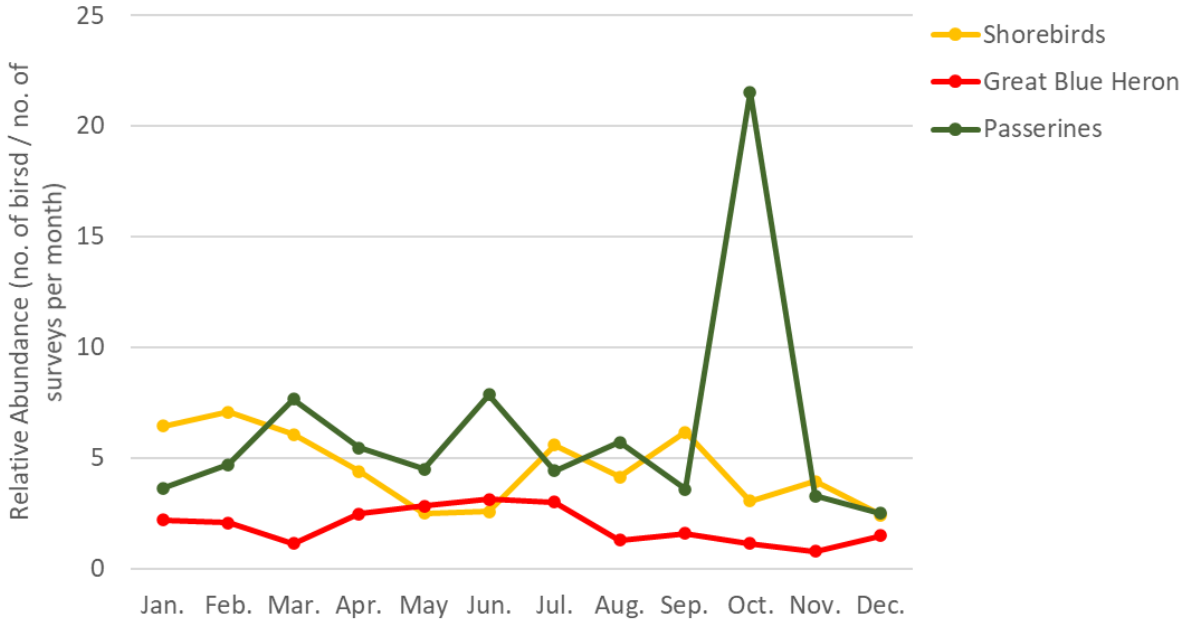

Figure 34: Relative abundance and seasonal trends of select marine-associated bird groups within the Victoria Harbour area of the Victoria Harbour MBS from 2000 to 2006, and 2009 to 2019. Adapted from BCCWS (Birds Canada).

People and dogs were both observed in high numbers during BCCWS counts. Overall, there were

12% more dogs than people. Between 5 and 15 dogs were often present during the waterbird surveys (Appendix C).

A bar chart of seasonal bird abundance for West Bay is best represented by the Victoria Harbour eBird hotspot, which can be viewed at https://ebird.org/barchart?r=L1168111&yr=all&m=. The Songhees Walkway and Barnard Park eBird hotspots are less utilized, but they are found along the West Bay waterfront. The bar charts for these two locations can be viewed at https://ebird.org/barchart?r=L4858825&yr=all&m= and https://ebird.org/barchart?r=L6594147&yr=all&m=, respectively. Most birds recorded in Victoria Harbour pertain to species found either offshore or in terrestrial habitats; however, there are some that utilize the shoreline. Waterfowl are present year-round, including Canada goose and mallard that are resident species that loaf on shorelines and feed either in shallow water or nearby grassy areas. American wigeon can be found close to or on shore from November to early April. There are many species of diving ducks recorded in the harbour, but only harlequin duck, common and hooded mergansers are regularly observed resting on rocks along the shore or on offshore islets. The shorebird diversity inside Victoria Harbour is low compared to more exposed stretches of shoreline. The occasional passage migrants, such as western and least sandpipers, have been recorded and some intertidal rocky areas may attract black oystercatcher, black-bellied plover, black turnstone, and surfbird. However, most shorebirds are likely to be found on Colville and Pelly Islands in the harbour. Gulls can be found throughout the year in the harbour due to the presence of resident glaucous-winged gull. Several other gull species have been reported around West Bay. However, short-billed gull is the only other species expected along the shoreline or foraging in shallow waters, from late September to early April. Great blue heron breeds locally and is reported commonly throughout the year. A high count of 15 individuals was reported from the Victoria Harbour eBird hotspot in July of 2017.

West Bay is a relatively large bay along Victoria Harbour's western shore. The shoreline is mostly rocky, which may support shorebirds and waterfowl, though mudflats may be exposed at low tide. The shoreline and in particular any tidal flats and nearshore waters, are likely moderately suitable for birds. Extensive residential development occurs along West Bay, with a marina on the western end. It is likely that the capability of the area is impacted by these land and water uses and thus reduced relative to its potential.

6.12.3 Public Survey

Six survey responses were received for West Bay. Most respondents visited daily or weekly (Table 21). Dogs were typically encountered, with all but one respondent indicating dogs were present on every visit. Most respondents (4 of 6) indicated that <25% of dogs were off-leash (Table 21).

Table 21. Public survey results from the West Bay study area of the Victoria Harbour MBS.

Question	Response	No. of Responses (n=6)	Proportion of Responses (%)
How often do you visit this location?	Daily	2	33.3
	Weekly	3	50.0
	Monthly	1	16.7
	Other	0	0
When you visit, how often do you see dogs?	Every visit	5	83.3
	Frequently	1	16.7
	Occasionally	0	0
	Rarely	0	0
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	0	0
	1-25%	4	66.7
	26-50%	1	16.7
	51-75%	1	16.7
	76-99%	0	0
	100%	0	0

One respondent reported seeing dogs chasing or harassing birds in the West Bay study area, while a separate respondent felt that dogs were the biggest threat to birds here. Two respondents (~33%) noted that dog activity is greatest at specific locations; both highlighted the rocky and beach areas east of Barnard Park. Seasonality in dog and bird interactions were identified by one respondent, who noted increased disturbance during the winter months. Harassment was noted towards great blue heron, gulls, and geese at low-tide mudflats. One respondent stated that most dog activity occurs on the Songhees Walkway where disturbance to birds by dogs is minimal relative to other locations in the MBS, but that when the tide is low disturbance to birds by dogs is higher. One respondent indicated the areas require additional MBS signage.

6.13. Esquimalt Gorge Park / Gorge Creek Beach

6.13.1 Overview

The Gorge Waterway is a tidal estuary and inlet located north of Inner Harbour. Years of industrial activity and pollution resulted in decades of diminished water quality. Restoration efforts over the past three decades have greatly improved water quality, fish, and wildlife habitat. Multiple park areas exist along the Gorge, including Esquimalt Gorge Park / Gorge Creek Beach. Restoration efforts in Gorge Creek have resulted in the return of native vegetation and provides important habitat for waterfowl and other birds. The estuary of Gorge Creek contains a large channel that dissects the mudflats and flows into the Gorge Waterway.

6.13.2 Birds and Habitat

Marine bird data collected by Shepard (1999) show the presence of dabbling ducks and geese throughout most survey periods, peaking in abundance during March/April surveys (Figure 35). These were American wigeon, Canada goose, and mallard observations, with both mallard and Canada goose being resident species in the region. Diving ducks, represented mostly by bufflehead and scaup, were relatively abundant in the January/February and March/April periods, but absent other study periods (Figure 35). Gulls were less abundant, represented mostly by the glaucous-winged gull.

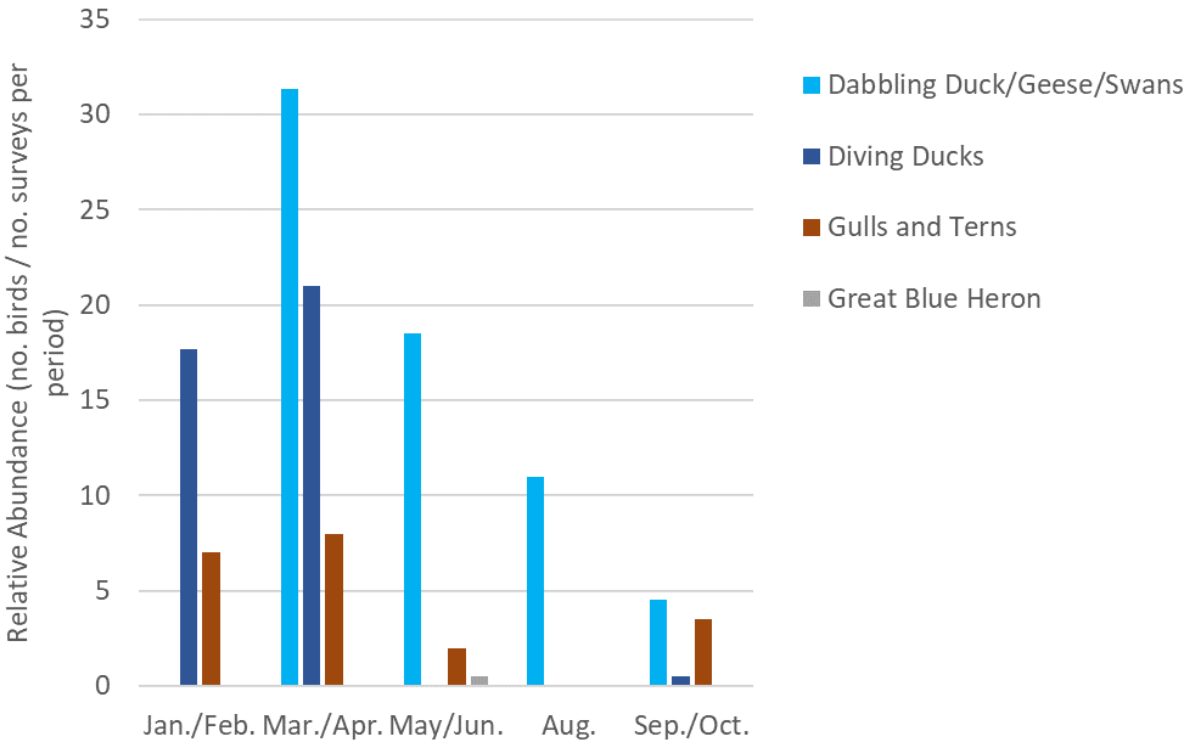

Figure 35: Relative abundance and seasonal trends of shoreline-associated bird groups within the Esquimalt Gorge Park / Gorge Creek Beach study area of the Victoria Harbour MBS from April 1997 to May 1999. Adapted from Shepard (1999) from data provided by ECCC.

Surveys were completed under the BCCWS program for the Esquimalt Gorge Park polygon. Surveys were completed from 2010 to 2019 with survey effort in all months of the year except for July, but only single surveys in June and August. A total of 36 shoreline-associated and other bird species were recorded. Total bird abundance was lowest from the spring through the fall (Figure 36). Numbers of dabbling ducks and geese were highest of all bird groups detected, being present year-round but with maximum numbers during the winter (Figure 37). Diving ducks were present and in moderate numbers from November to April, but absent during the summer months. Most other bird groups were present in very low numbers (Figure 38). American crow was present year-round. Shorebirds were rarely detected, and overwintering species detected elsewhere in the Victoria Harbour MBS were not recorded during these surveys.

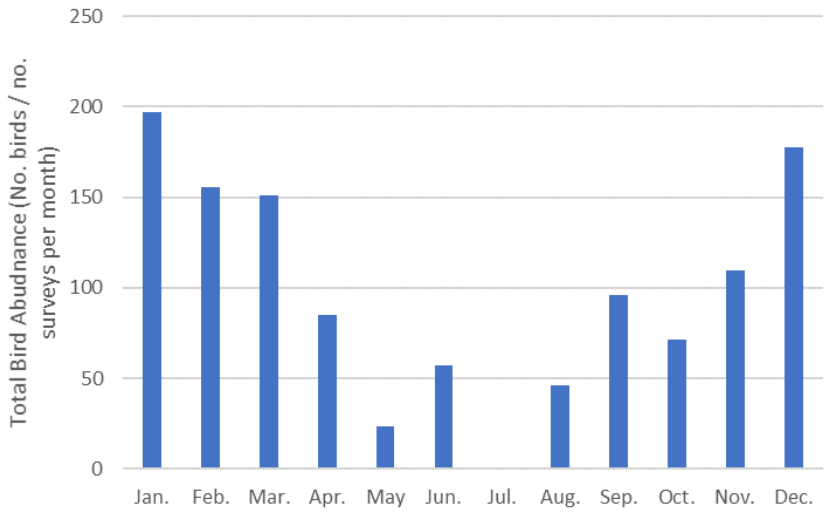

Figure 36: Total relative abundance and seasonal trends of all birds recorded on the BCCWS from the Esquimalt Gorge Park polygon from 2010 to 2019. Adapted from BCCWS (Birds Canada).

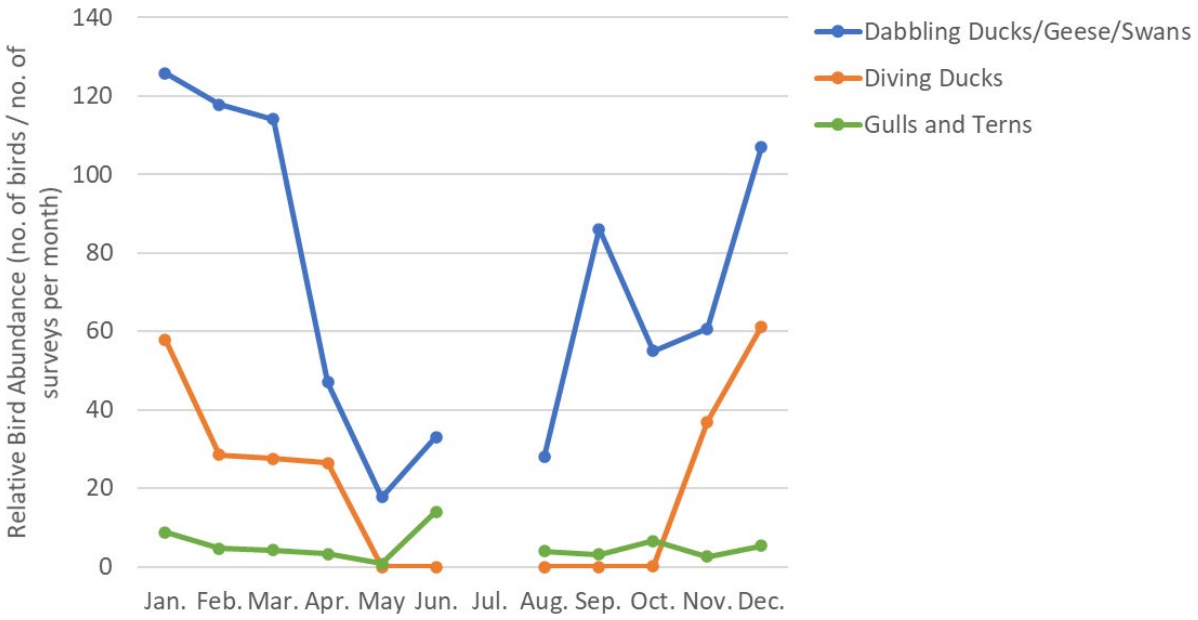

Figure 37: Relative abundance and seasonal trends of waterfowl and gulls and terns within the Esquimalt Gorge Park area of the Victoria Harbour MBS from 2010 to 2019. Adapted from BCCWS (Birds Canada).

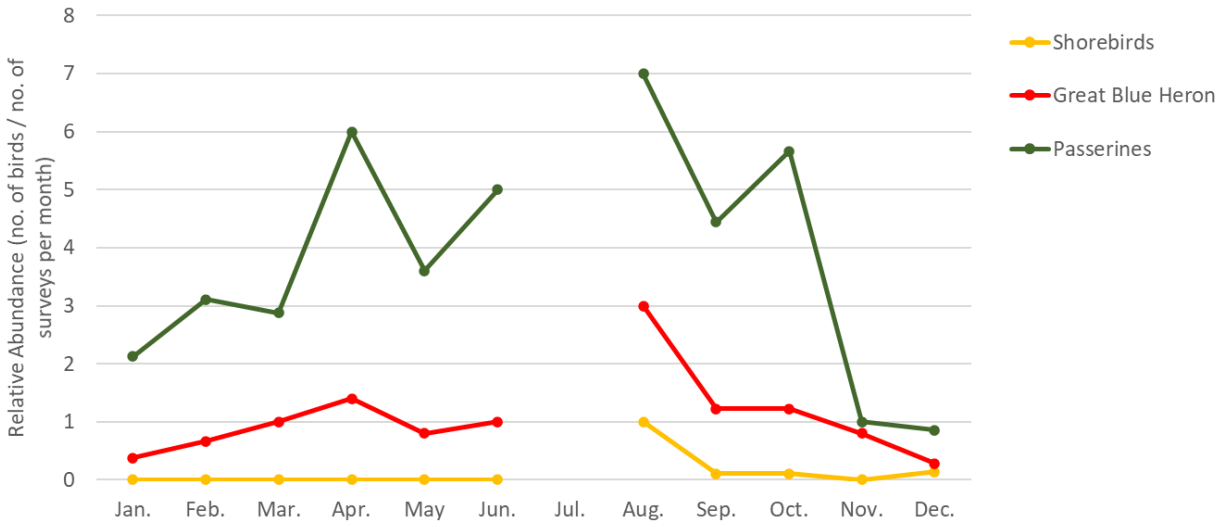

Figure 38: Relative abundance and seasonal trends of shorebirds, great blue heron, and passerines (mostly American crow) within the Esquimalt Gorge Park area of the Victoria Harbour MBS from 2010 to 2019. Adapted from BCCWS (Birds Canada).

People and dogs were both observed in high numbers during BCCWS counts. Overall, there were 43% more dogs than people. Between 5 and 15 dogs were often present during the waterbird surveys, with a high count of 50 dogs (Appendix C).

A bar chart of seasonal bird abundance for Esquimalt Gorge Park can be viewed at https://ebird.org/barchart?r=L6852718&yr=all&m=. Most birds recorded in Esquimalt Gorge Park pertain to species found in terrestrial habitats; however, there are some that utilize the shoreline and nearshore waters. Waterfowl are present year-round, including Canada goose and mallard, which are resident species that loaf on shorelines and feed either in shallow water or nearby grassy areas. American wigeon can be found close to or on shore predominantly from November to early April. Few other dabbling ducks have been recorded. Diving ducks are mostly represented by bufflehead, scaup, and hooded and common mergansers. Bird diversity is lower at the Esquimalt Gorge Park area site than along the outer coasts. No shorebirds have been reported in eBird, and little shorebird habitat is available. Resident glaucous-winged gull can be found throughout the year, but other gull species are seldom recorded here. Great blue heron breed locally and is reported here throughout the year, though only a high count of three has been reported from the Esquimalt Gorge Park in June 2018.

Esquimalt Gorge Park has relatively little shoreline. Most of the waterfront abuts a public walkway resulting in a vertical interface between the Gorge Waterway and the land. The area along Gorge Creek presents a flat, grassy area along the creek edge fanning out into a small, gravelly tidal flat.

While most of the park's waterfront has minimal value for shoreline birds, owing to the placement of the public walkway, the creek area has higher suitability for dabbling ducks, Canada goose, and great blue heron. The habitat capability within the creek area is likely near its suitability. Additional restoration activities within the creek could potentially increase capability if they result in increased foraging or safe resting areas. There is little capability elsewhere within the Esquimalt Gorge Park area for shoreline birds.

6.13.3 Public Survey

Nine survey responses were received for Esquimalt Gorge Park. Respondents visited at different intervals, though most visited either weekly or monthly (Table 22). Dogs were typically encountered, with the majority of respondents indicating dogs were present on every visit (over half of the responses), or frequently. Survey responses were varied with respect to the proportion of dogs present that were off-leash, varying from 1-25% to 75-99% (Table 22).

Table 22. Public survey results from the Esquimalt Gorge Park / Gorge Creek Beach study area of the Victoria Harbour MBS.

Question	Response	No. of Responses (n=9)	Proportion of Responses (%)
How often do you visit this location?	Daily	1	11.1
	Weekly	3	33.3
	Monthly	4	44.4
	Other	1	11.1
When you visit, how often do you see dogs?	Every visit	6	66.7
	Frequently	3	33.3
	Occasionally	0	0
	Rarely	0	0
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	0	0
	1-25%	1	11.1
	26-50%	4	44.4
	51-75%	2	22.2
	76-99%	2	22.2

Question	Response	No. of Responses (n=9)	Proportion of Responses (%)
	100%	0	0

Nearly half of the respondents (~44%) reported seeing dogs chasing or harassing birds in the Esquimalt Gorge Park study area, but only two respondents (~22%) felt that dogs were the biggest threat to birds here. Seven respondents (almost 78%) noted that dog disturbance is greatest at specific locations. Four of these responses highlighted areas that are part of the park but away from the MBS, such as fields that are frequently used as off-leash dog parks. Three other respondents noted frequent dog activity within the Gorge Creek and beach areas that could impact shoreline birds within the MBS. Seasonality in dog and bird interactions were identified by two respondents (~22%). The spring and the summer were noted in both of these responses, with one also including the fall. Harassment was noted particularly towards waterfowl (4 responses), as well as great blue heron (2 responses), and gulls, shorebirds, American crow and passerines (1 response each, all from the same respondent).

6.14. Saanich Gorge Park / Curtis Point Shores

6.14.1 Overview

The Gorge Waterway is a tidal estuary and inlet located north of Inner Harbour. The shores of Saanich Gorge Park / Curtis Point include the northern shore of the Gorge east of Tillicum Road. It is a fairly steep-sided, rocky shoreline. Curtis Point extends outwards into the Gorge and is steeply sloped bedrock. Much of the narrow shoreline is heavily vegetated above the high tide line

6.14.2 Birds and Habitat

Relatively few birds were detected from the Saanich Gorge Park study area during surveys by Shepard (1999). Dabbling ducks were most abundant during the September/October period due to the presence of mallards in that time (Figure 39). There was a greater diversity of diving ducks, with bufflehead being the most numerous species. Other species were seldom recorded, and the area had relatively low diversity of shoreline-associated birds.

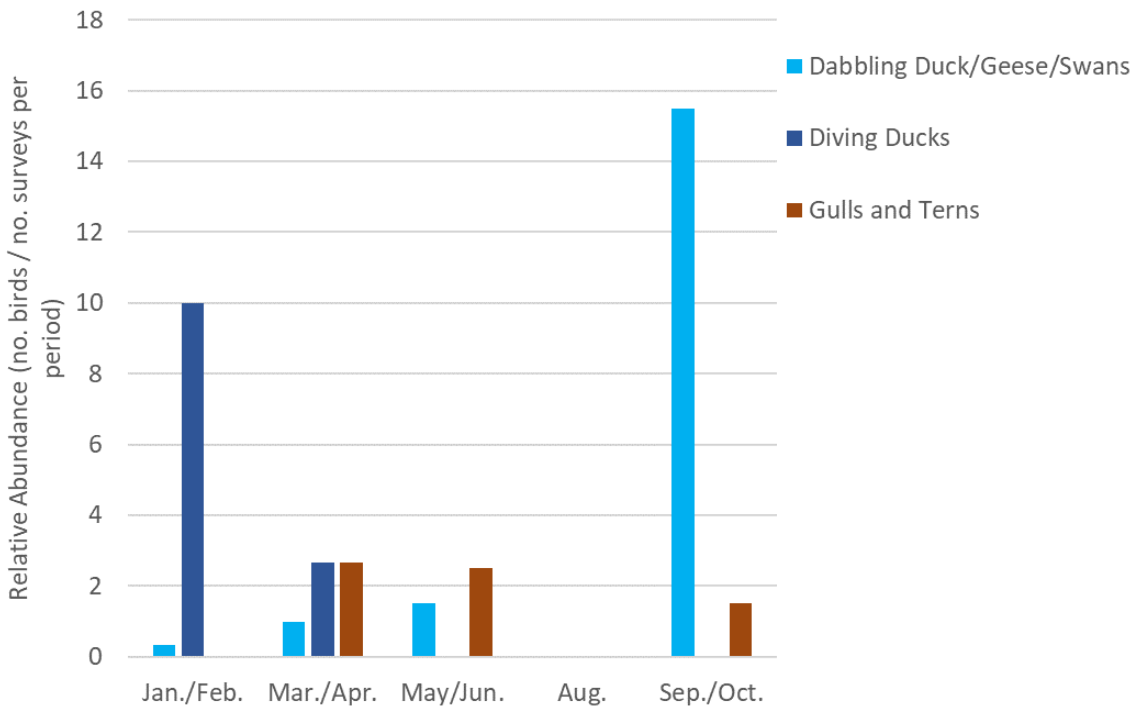

Figure 39: Relative abundance and seasonal trends of shoreline-associated bird groups within the Saanich Gorge Park / Curtis Point study area of the Victoria Harbour MBS from April 1997 to May 1999. Adapted from Shepard (1999) from data provided by ECCC.

BCCWS counts were not completed in the Saanich Gorge Park / Curtis Point study area but were completed within "Selkirk Arm" nearby. Surveys were also completed at Esquimalt Gorge Park (refer to section 6.13.2 Birds and Habitat for details on those surveys). Surveys were completed at Selkirk Arm from 2010-2011 and 2015-2019. No surveys were completed from June to August, and no more than four surveys were completed for any other month over the survey period. A total of 20 shoreline-associated and other bird species were recorded. Total bird abundance was relatively low throughout the year (Figure 40). Numbers of dabbling ducks and geese, diving ducks, and gulls were highest (Figure 41), consistent with other areas in the MBS.

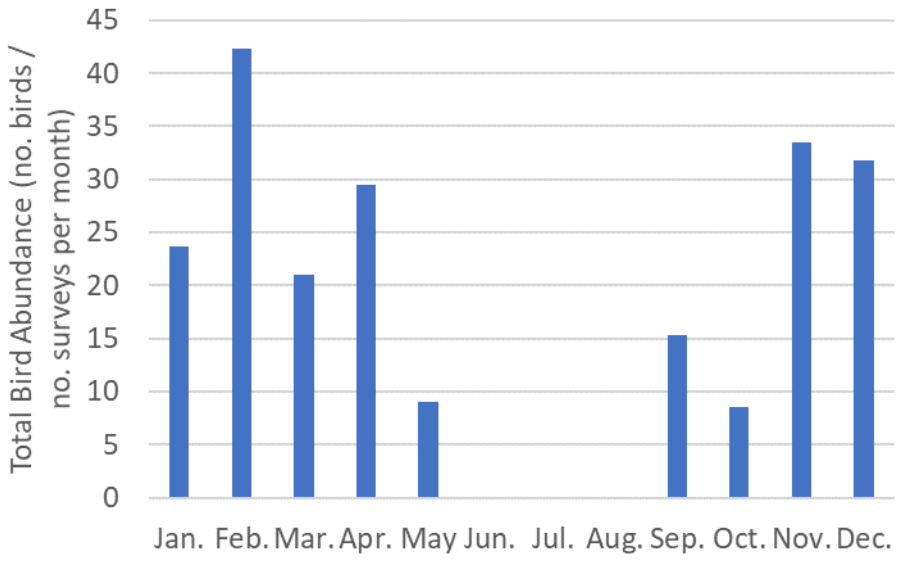

Figure 40: Total relative abundance and seasonal trends of all birds recorded on the BCCWS from the Selkirk Arm polygon from 2010 to 2011 and 2015 to 2019. Adapted from BCCWS (Birds Canada).

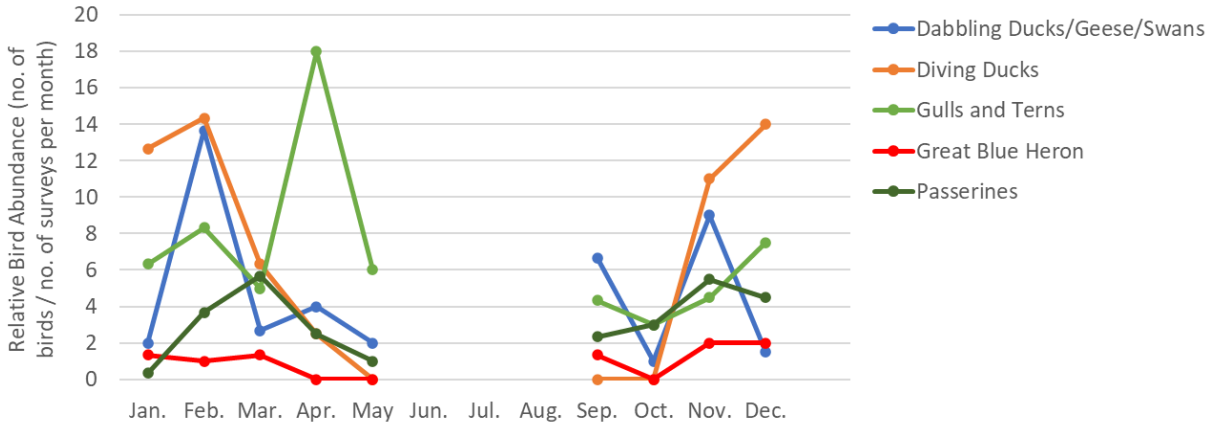

Figure 41: Relative abundance and seasonal trends of shoreline-associated birds within the Selkirk Arm area of the Victoria Harbour MBS from 2010 to 2011 and 2015 to 2019. Adapted from BCCWS (Birds Canada).

People and dogs were observed in low numbers during BCCWS counts at Selkirk Arm, which does not align exactly with the Saanich Gorge Park / Curtis Point Shores study area. Overall, there were 38% more dogs than people, with only one or two dogs present during most waterbird surveys (Appendix C).

An eBird bar chart of seasonal bird abundance is not available for the Saanich Gorge Park / Curtis Point Shores study area. However, it is for a general "The Gorge" eBird hotspot, viewable at https://ebird.org/barchart?r=L808804&yr=all&m=. A total of 94 bird species have been recorded at the Gorge eBird hotspot. Frequently detected waterfowl include Canada goose, mute swan (*Cygnus olor*),

American wigeon, mallard, bufflehead, and hooded merganser. Of these, only the Canada goose, mute swan, and mallard are present year-round. As with Esquimalt Gorge Park, shorebirds are rarely recorded here, and gulls other than glaucous-winged gull are mostly absent. Great blue heron is present in low numbers year-round.

Saanich Gorge Park / Curtis Point has relatively little shoreline, except at Curtis Point, which is rocky and deep, though some area is exposed along the length of the park during low tide. The Saanich Gorge Park / Curtis Point area appears to be of low suitability for birds, likely offering minimal foraging or resting habitat. Although there has been some residential development near the shoreline, most of it is separated from the waterfront by a row of trees. As the suitability appears to be low along the shore (it is higher for diving ducks that utilize the gorge waterway but are not likely to be disturbed by dogs), the capability is likewise low.

6.14.3 Public Survey

Four survey responses were received for Saanich Gorge Park / Curtis Point. Respondents visited at different intervals, ranging from daily to a couple of times per year (Table 23). Dogs were encountered occasionally (two responses) to every visit (one response). Most survey responses indicated relatively few off-leash dogs were present (Table 23).

Table 23. Public survey results the Saanich Gorge Park / Curtis Point shores study area of the Victoria Harbour MBS.

Question	Response	No. of Responses (n=4)	Proportion of Responses (%)
How often do you visit this location?	Daily	1	25.0
	Weekly	1	25.0
	Monthly	1	25.0
	Other	1	25.0
When you visit, how often do you see dogs?	Every visit	1	25.0
	Frequently	1	25.0
	Occasionally	2	50.0
	Rarely	0	0
	Never	0	0
When you see dogs, what	0%	1	25.0

Question	Response	No. of Responses (n=4)	Proportion of Responses (%)
proportion do you estimate are active off-leash?	1-25%	2	50.0
	26-50%	0	0
	51-75%	0	0
	76-99%	1	25.0
	100%	0	0

No respondents reported seeing dogs chasing or harassing birds in the Saanich Gorge Park / Curtis Point Shores study area, but two respondents (50%) felt that dogs were the biggest threat to birds. Corresponding with a lack of noted bird disturbance, seasonality in dog and bird interactions were not identified. Most respondents did not feel that there were problems between dogs and birds.

6.15. Craigflower-Kosapsom Park Beach

6.15.1 Overview

The Gorge Walkway along the eastern side of the Craigflower-Kosapsom Park Beach study area is a steep-sided, human-built wall, preventing any natural shoreline from occurring. Craigflower-Kosapsom Park borders Admirals Road and Gorge Road West and includes a narrow strip of beach including deposited sand and a grassy, vegetated shore. The Craigflower-Kosapsom study area is beside a playground and popular walking path, and is especially busy during the summer months.

6.15.2 Birds and Habitat

Data from Shepard (1999) show a low abundance and diversity of waterbirds at the beach in the Craigflower- Kosapsom Park study area over most study periods. Consistent with other locations within the Gorge Waterway, dabbling duck and diving duck numbers were highest during the January/February and March/April periods (Figure 42). Also consistent with other areas was the prevalence of American wigeon and mallard comprising the dabbling duck group and Bufflehead and scaups comprising the diving ducks.

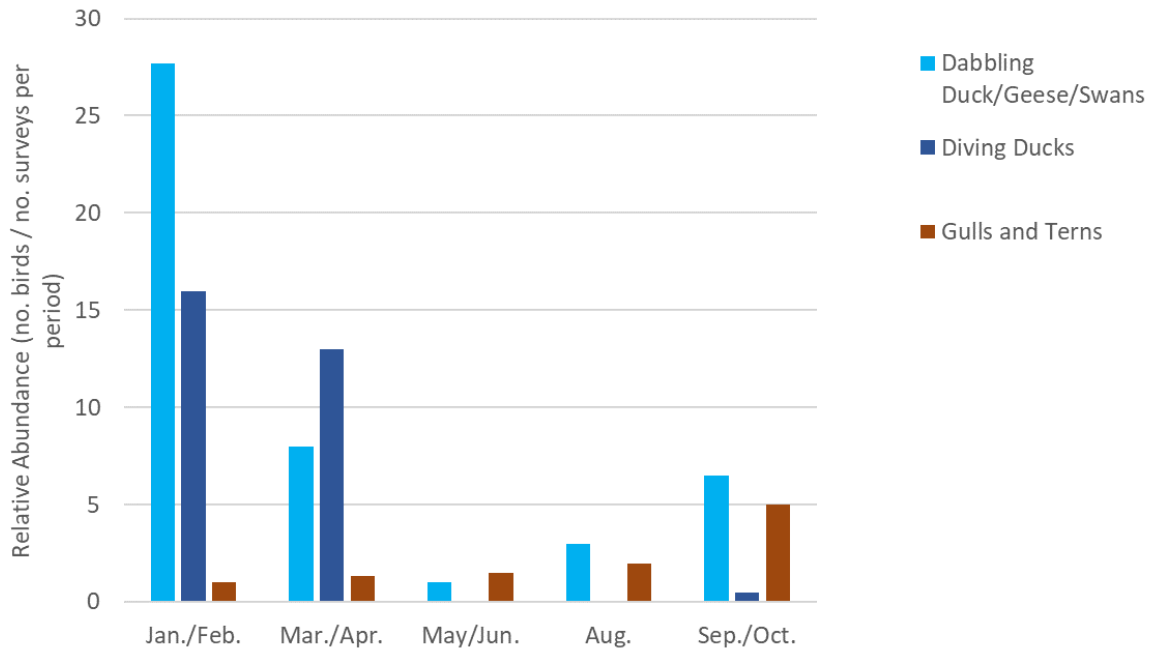

Figure 42: Relative abundance and seasonal trends of waterfowl and gulls and terns within the Beach at Craigflower- Kosapsom Park study area of the Victoria Harbour MBS from April 1997 to May 1999. Adapted from Shepard (1999) from data provided by ECCC.

Surveys were completed under the BCCWS program for the Gorge Road Walkway, from 2010-2019. There were no surveys from June to August, and only two surveys in May. A total of 24 shoreline-associated and other bird species were recorded. Total bird abundance was lowest in the spring and the fall (Figure 43). Both dabbling duck and geese, and diving duck numbers were highest during the winter months (Figure 44). Canada goose, American wigeon, and mallard were the most frequently encountered dabbling duck and goose species recorded, with mallard and Canada goose detected during every month with surveys. Evidence from elsewhere in the Gorge Waterway suggests that these species are likely present year-round. Diving ducks were comprised mostly of bufflehead, with lower numbers of common goldeneye, and hooded and common mergansers. Glaucous-winged gull had lower but more stable numbers throughout the sampling period. Most other shoreline birds were encountered in low numbers, such as great blue heron that was present during most survey months. Only two species of shorebird were recorded (killdeer and western sandpiper), and both were rare, consistent with a low level of shorebird usage documented elsewhere in the Gorge Waterway. American crow was present year-round.

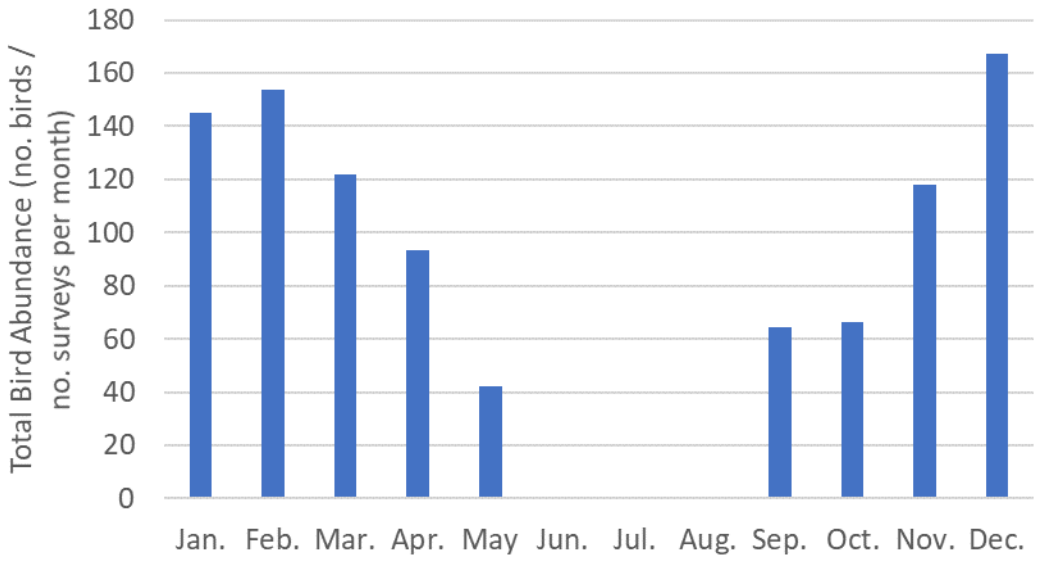

Figure 43: Total relative abundance and seasonal trends of all birds recorded on the BCCWS from the Gorge Road Walkway polygon from 2010 and 2019. Adapted from BCCWS (Birds Canada).

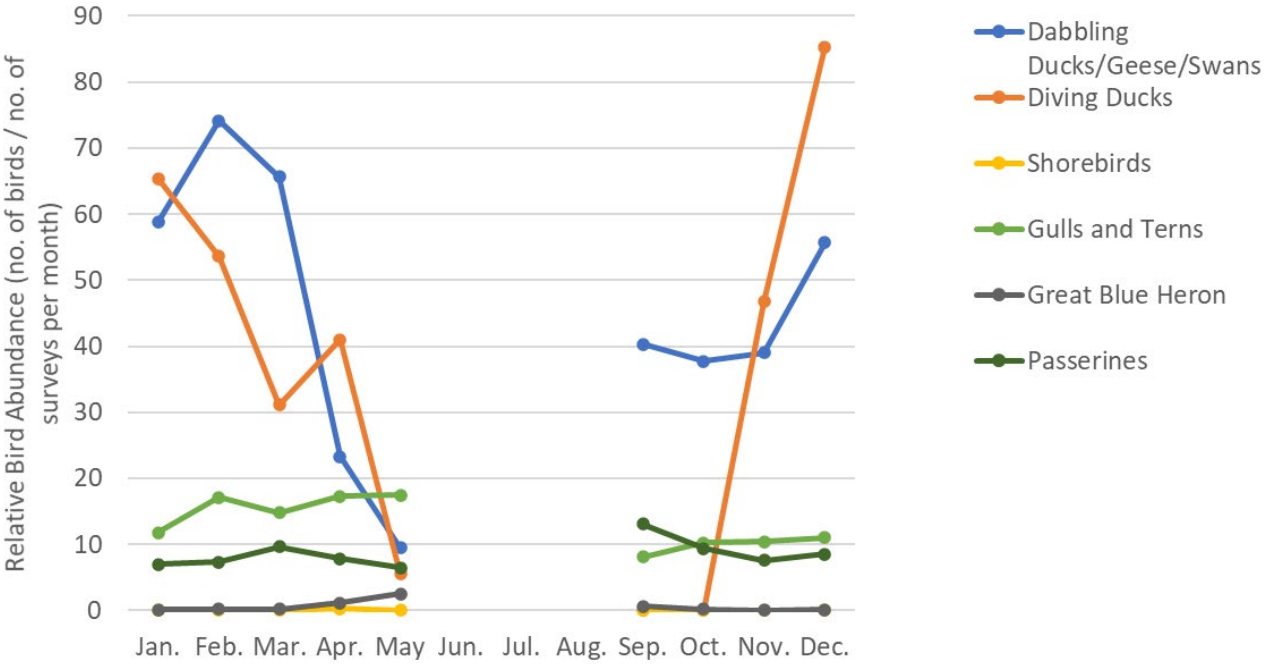

Figure 44: Relative abundance and seasonal trends of shoreline-associated bird groups within the Gorge Road Walkway area of the Victoria Harbour MBS from 2010 to 2019. Adapted from BCCWS (Birds Canada).

People and dogs were both observed in large numbers during BCCWS counts. Overall, there were 37% more dogs than people. Between 5 and 15 dogs were often present during the waterbird surveys (Appendix C).

The Craigflower-Kosapsom Park area has a limited area where shoreline birds would be expected to occur. Areas that birds would be expected to occur in include a sandy beach area, a narrow shoreline strip west of the sandy beach, and grassy areas immediately adjacent to these beach areas. The Craigflower-Kosapsom Park area does not appear to have much bird use and is of low to moderate habitat suitability. To the south, the Gorge Walkway creates a vertical wall between the public path and the Gorge waters, which is not suitable for shoreline birds. The high activity area adjacent to the shoreline likely reduces the capability of the habitat owing to disturbance.

6.15.3 Public Survey

Two survey responses were received for the Craigflower-Kosapsom Park study area. One respondent visited daily, and the other once per season (Table 24). Both respondents encountered dogs on every visit, and both reported 26-50% of dogs being off-leash (Table 24).

Table 24. Public survey results from the Craigflower-Kosapsom Park beach study area of the Victoria Harbour MBS.

Question	Response	No. of Responses (n=2)	Proportion of Responses (%)
How often do you visit this location?	Daily	1	50.0
	Weekly	0	0
	Monthly	0	0
	Other	1	50.0
When you visit, how often do you see dogs?	Every visit	2	100.0
	Frequently	0	0
	Occasionally	0	0
	Rarely	0	0
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	0	0
	1-25%	0	0
	26-50%	2	100.0
	51-75%	0	0
	76-99%	0	0
	100%	0	0

One of the respondents reported seeing dogs chasing or harassing birds in the Craigflower-Kosapsom Park Beach study area, though neither felt that dogs were the biggest threat to birds here. The winter was identified by one respondent as having the greatest amount of dog disturbance to birds, and harassment was noted towards waterfowl (specifically American wigeon and mallard).

6.16. Portage Inlet East

6.16.1 Overview

The eastern side of Portage Inlet, including the shores and waters east of Craigowan Road, is comprised of extensive, rocky shorelines that are heavily influenced by residential development. The northeastern corner of Portage Inlet includes the outflow of Colquitz Creek, resulting in a small estuary. The eastern section of Portage Inlet contains deeper waters, with little exposed flats.

6.16.2 Birds and Habitat

Data from Shepard (1999) show that dabbling ducks, geese, and diving ducks comprise the majority of detections from areas that roughly correspond to the Portage Inlet East study area. Diving ducks had higher relative abundances in the January/February and March/April periods, consistent with other areas sampled by Shepard (1999) (Figure 45). Also consistent with other locations, diving ducks were mostly represented by bufflehead and scaup (of those identified, all were listed as greater scaup [*Aythya marila*]). Contrary to other areas, the peak of dabbling ducks/geese was in the May/June period, though this was due to high numbers of Canada goose recorded in June (Figure 45Figure 44). Mallard was otherwise the most common species of that bird group.

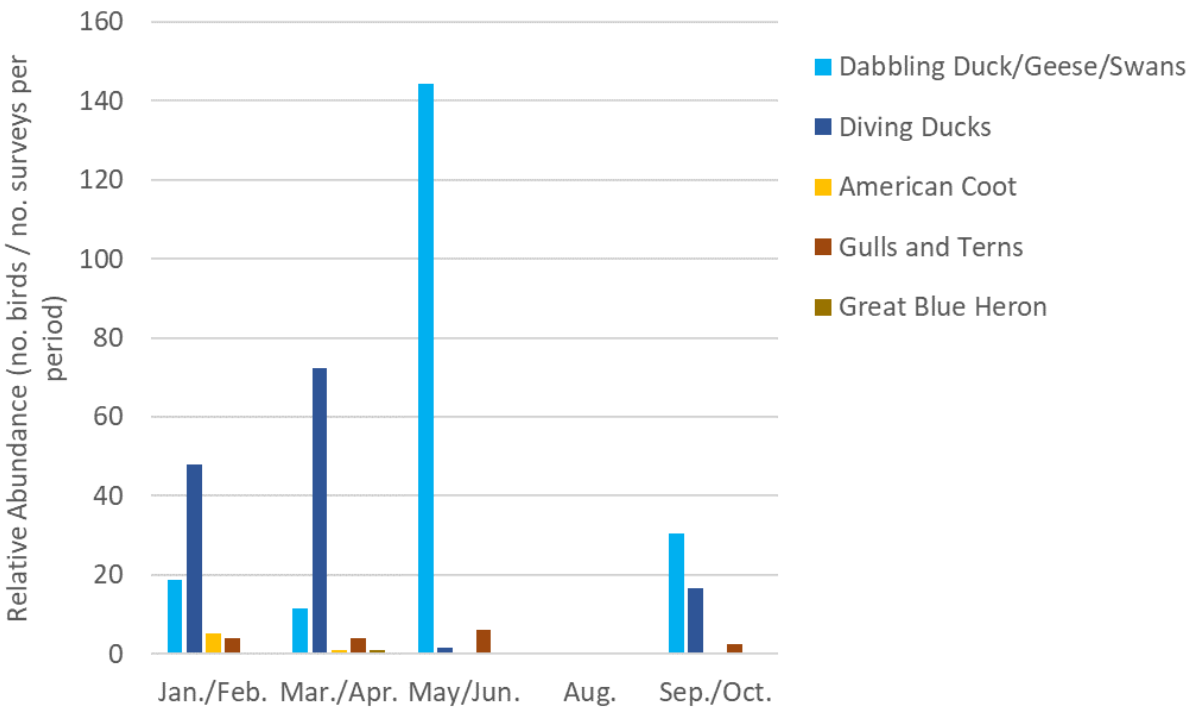

Figure 45: Relative abundance and seasonal trends of shoreline-associated bird groups within the Portage Inlet East study area of the Victoria Harbour MBS from April 1997 to May 1999. Adapted from Shepard (1999) from data provided by ECCC.

Surveys were completed under the BCCWS program for the Portage Inlet polygon. These surveys cover the entirety of Portage Inlet and are presented here without regard to the study areas chosen in this report. Surveys were completed from 2000 to 2019, except in 2002 and 2017. Surveys were completed in all months of the year, with a focus on September to April. A total of 51 shoreline-associated and other bird species were recorded. Total bird abundance was lowest from May to September and peaked in November (Figure 46). Diving ducks were the most numerous species group present, reaching peak numbers in November and mostly absent from May through September (Figure 47). Dabbling duck and geese numbers were lower than diving ducks, but present year-round, as were gulls. Great blue heron was present in low numbers year-round (Figure 48). Shorebirds were also scarce; a peak in July was due to large numbers of Lesser Yellowlegs (*Tringa flavipes*) reported during one count date.

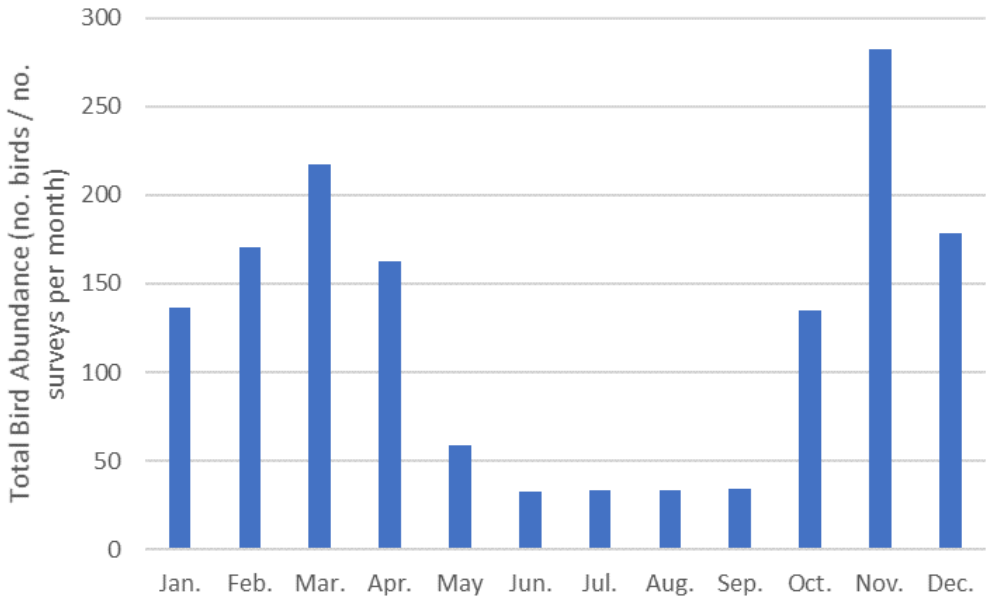

Figure 46: Total relative abundance and seasonal trends of all birds recorded on the BCCWS from the Portage Inlet polygon from 2000 to 2019, excluding 2002 and 2017. Adapted from BCCWS (Birds Canada).

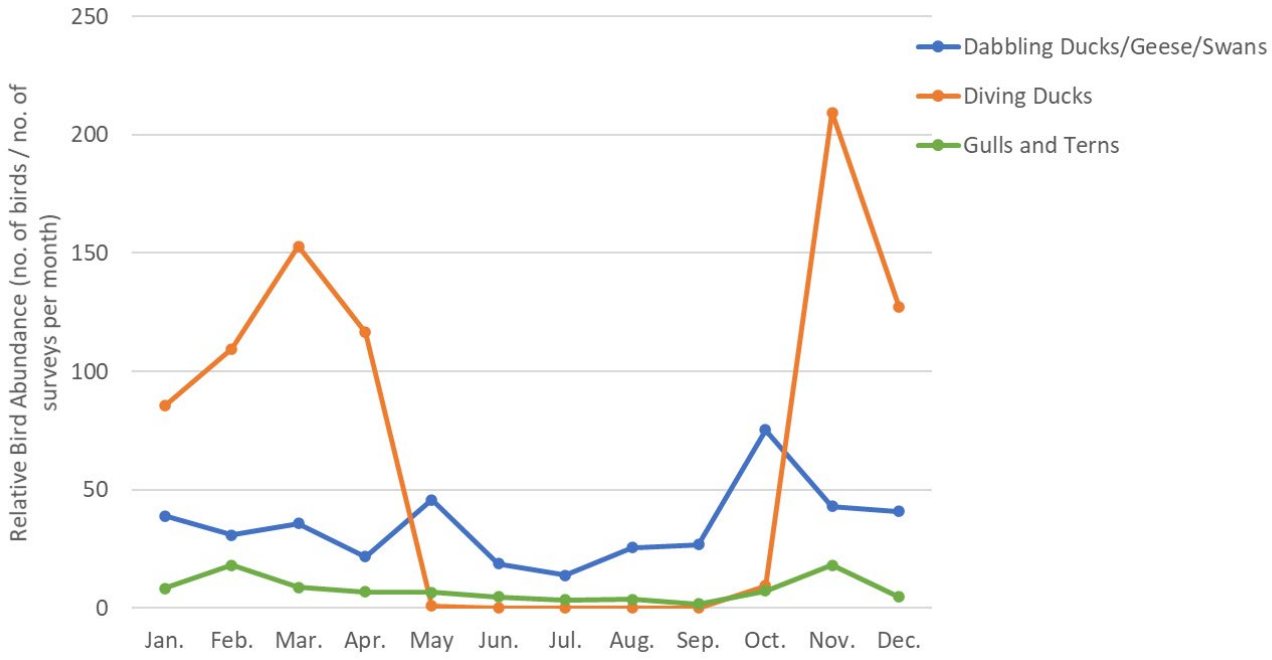

Figure 47: Relative abundance and seasonal trends of waterfowl and gulls and terns within the Portage Inlet area of the Victoria Harbour MBS from 2000 and 2019, excluding 2002 and 2017. Adapted from BCCWS (Birds Canada).

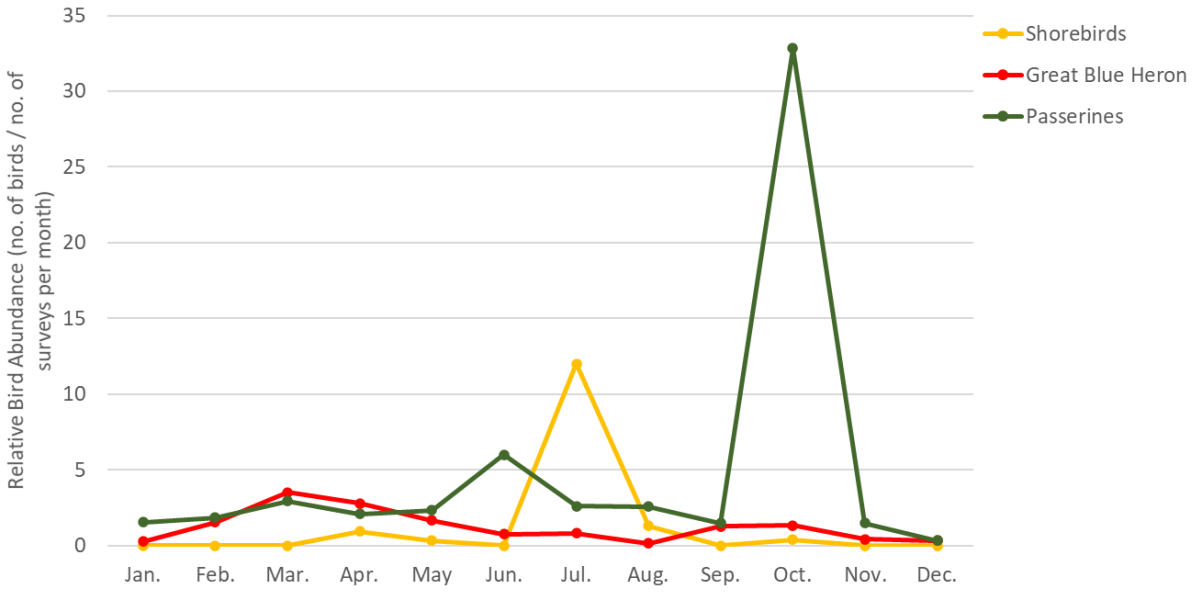

Figure 48: Relative abundance and seasonal trends of select shoreline-associated bird groups within the Portage Inlet area of the Victoria Harbour MBS from 2000 to 2019, excluding 2002 and 2017. Adapted from BCCWS (Birds Canada).

People and dogs were both observed in low numbers during BCCWS counts, with only a single dog observed on many survey dates (Appendix C). However, relatively few surveys recorded numbers of people or dogs, with many days with blank (as opposed to zero) data.

A total of 89 species have been recorded from the "Portage Inlet" eBird hotspot (https://ebird.org/barchart?r=L2751353&yr=all&m=). The Portage Inlet eBird dataset is incomplete, lacking data especially during the summer months. It also covers the entire "Portage Inlet" and is not subdivided per the segments used in this report. However, it indicates that a large diversity of waterfowl uses the area. A total of 24 species of swans, geese, and ducks have been recorded here, including Canada goose, trumpeter swan (*Cygnus buccinator*), mallard, greater and lesser scaups, bufflehead, and hooded and common mergansers. Great blue heron is present and has been observed throughout the year. Glaucous-winged gull is reported with the greatest frequency in the eBird database, though it is likely that the lack of summer reporting masks the late summer pulse of other gull species into the region, such as California gull. It is also possible that Portage Inlet receives fewer gulls than more outer coastal locations such as Esquimalt Lagoon nearby. Only two shorebirds are recorded in the eBird database for the Portage Inlet eBird hotspot, killdeer and least sandpiper, and both appear infrequently encountered.

6.16.3 Public Survey

Three survey responses were received for Portage Inlet East. Respondents visited daily, monthly, or twice a year (Table 25). Dogs were encountered only rarely or never, and of dogs present, only a small percentage were off-leash (Table 25).

Table 25. Public survey results from the Portage Inlet East study area of the Victoria Harbour MBS.

Question	Response	No. of Responses (n=3)	Proportion of Responses (%)
How often do you visit this location?	Daily	1	33.3
	Weekly	0	0
	Monthly	1	33.3
	Other	1	33.3
When you visit, how often do you see dogs?	Every visit	0	0
	Frequently	0	0
	Occasionally	0	0
	Rarely	2	66.7
	Never	1	33.3
When you see dogs, what proportion do you estimate are active off-leash?	0%	1	33.3
	1-25%	2	66.7
	26-50%	0	0
	51-75%	0	0
	76-99%	0	0
	100%	0	0

Only one respondent reported seeing dogs chasing or harassing birds, though the location they described was part of the Portage Inlet West study area and is thus discussed in that section. No seasonality in dog and bird interactions was identified. One respondent felt that dogs were the main threat to birds, and another recommended increased Victoria Harbour MBS signage.

6.17. Portage Inlet North

6.17.1 Overview

The northern side of Portage Inlet parallels Highway 1. As with the eastern portion, the shoreline is narrow and rocky. A walking path parallels the shoreline along a portion, while residential developments line the western and eastern shorelines. Eelgrass and green algae beds are present nearshore, while narrow strips of boulder, sand beach, sand and mud tidal flats, are present along the shoreline (Archipelago Marine Research Ltd. 2020).

6.17.2 Birds and Habitat

Data from Shepard (1999) show that dabbling ducks/geese and diving ducks comprise the majority of detections from areas that roughly correspond to the Portage Inlet North study area. Diving ducks ,in particular, were the most abundant, with peak numbers in September/October (Figure 49). The late season peak was due to the observation of 200 “diving ducks”, considered likely to be bufflehead and scaup. Bufflehead, greater scaup, and unidentified scaup were otherwise the most frequently detected diving duck species. Dabbling ducks/geese were mostly represented by Canada goose and mallard in abundance, though other species were present in low numbers.

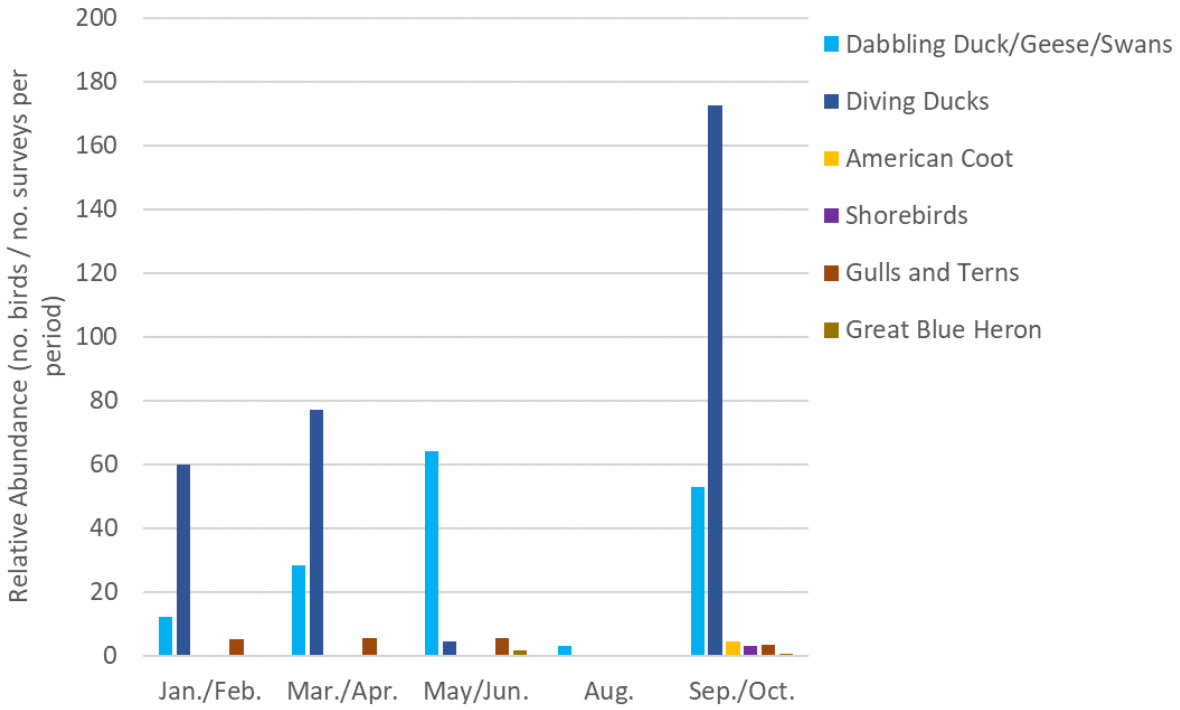

Figure 49: Relative abundance and seasonal trends of shoreline-associated bird groups within the Portage Inlet North study area of the Victoria Harbour MBS from April 1997 to May 1999. Adapted from Shepard (1999) from data provided by ECCC.

For discussion of BCCWS and eBird datasets relevant to the Portage Inlet North study area see Section 6.16.2 Birds and Habitat.

6.17.3 Public Survey

Five survey responses were received for Portage Inlet North. Respondents visited either daily or monthly (Table 26). Respondents encountered dogs either rarely (2 respondents), frequently, or every visit (3 respondents). A wide range of responses were received for the proportion of off-leash dogs, ranging from 0% to 76-99% (Table 26).

Table 26. Public survey results from the Portage Inlet North study area of the Victoria Harbour MBS.

Question	Response	No. of Responses (n=3)	Proportion of Responses (%)
How often do you visit this location?	Daily	2	40.0
	Weekly	0	0
	Monthly	3	60.0
	Other	0	0
When you visit, how often do you see dogs?	Every visit	2	40.0
	Frequently	1	20.0
	Occasionally	0	0
	Rarely	2	40.0
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	1	20.0
	1-25%	1	20.0
	26-50%	1	20.0
	51-75%	1	20.0
	76-99%	1	20.0
	100%	0	0

One respondent reported seeing dogs chasing or harassing birds in the Portage Inlet North study area and considered dogs to be the biggest threat to birds. One respondent noted that dog disturbance was greatest at a specific location, identifying the Cuthbert Holmes Park Estuary. No seasonality in dog and bird interactions were identified by respondents. Harassment was noted towards great blue heron,

waterfowl, and shorebirds.

6.18. Portage Inlet West

6.18.1 Overview

The western side of Portage Inlet includes the shores and waters west of Craigowan Road. It is heavily influenced by residential development around the perimeter of its shoreline, similar to the remainder of Portage Inlet. However, Craigflower Creek empties into the inlet along the southwestern shore; thus, shallower mudflats occur near Craigflower Creek, including near Shoreline Community Middle School and Helmcken Centennial Park, with the latter location having a small area of saltmarsh.

6.18.2 Birds and Habitat

Within the area corresponding to the Portage Inlet West study area, data from Shepard (1999) show that dabbling ducks/geese were the most abundant marine bird group, being detected in all survey periods (Figure 50). A greater diversity of dabbling ducks was recorded in the Portage Inlet West study area, including American wigeon, Canada goose, gadwall (*Mareca strepera***)**, green-winged teal, and mallard. As with other locations in the Gorge Waterway and Portage Inlet, bufflehead and scaup made up the majority of diving ducks. Also consistent with elsewhere in the vicinity, relatively few birds from other bird groups were present.

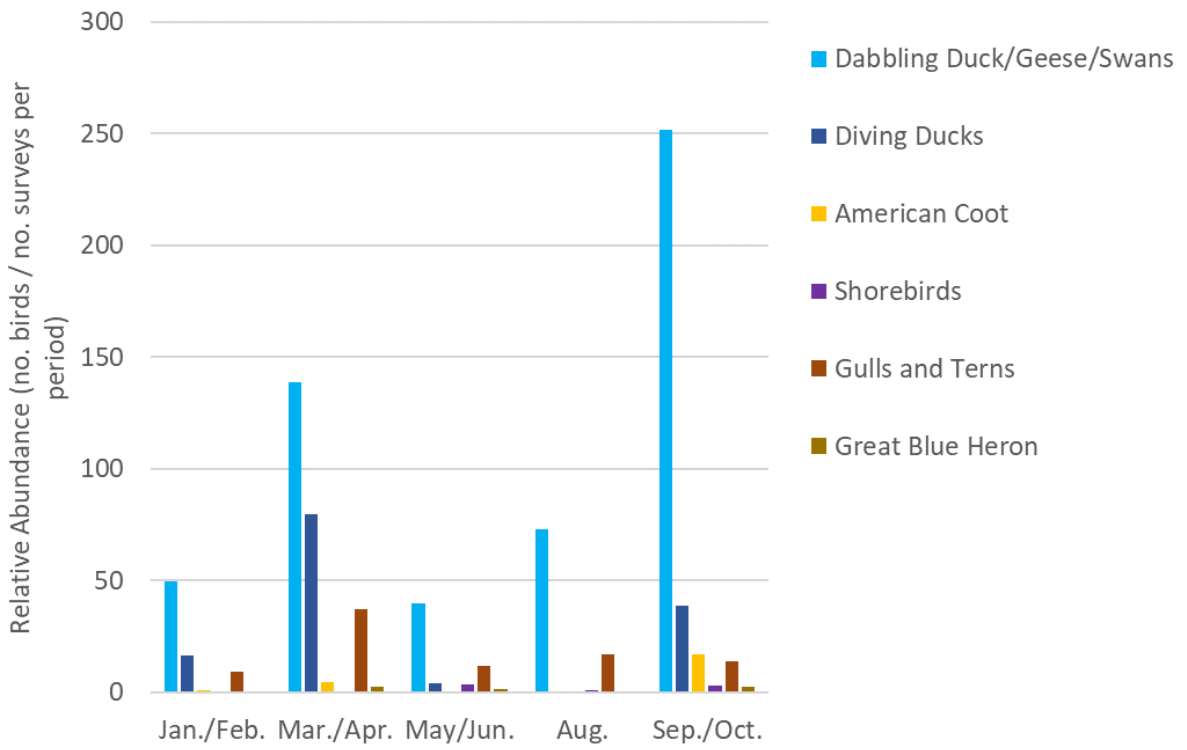

Figure 50: Relative abundance and seasonal trends of shoreline-associated bird groups within the Portage Inlet West study area of the Victoria Harbour MBS from April 1997 to May 1999. Adapted from Shepard (1999) from data provided by ECCC.

For discussion of BCCWS and eBird datasets relevant to the Portage Inlet West study area see Section 6.16.2 Birds and Habitat.

6.18.3 Public Survey

Two survey responses were received for Portage Inlet West. Both respondents visited monthly (Table 27). Dogs were encountered occasionally or rarely, and both respondents indicated that only 1-25% of dogs were off-leash (Table 27).

Table 27. Public survey results from the Portage Inlet West study area of the Victoria Harbour MBS.

Question	Response	No. of Responses (n=2)	Proportion of Responses (%)
How often do you visit this location?	Daily	0	0
	Weekly	0	0
	Monthly	2	100.0
	Other	0	0

Question	Response	No. of Responses (n=2)	Proportion of Responses (%)
When you visit, how often do you see dogs?	Every visit	0	0
	Frequently	0	0
	Occasionally	1	50.0
	Rarely	1	50.0
	Never	0	0
When you see dogs, what proportion do you estimate are active off-leash?	0%	0	0
	1-25%	2	100.0
	26-50%	0	0
	51-75%	0	0
	76-99%	0	0
	100%	0	0

No respondents of this study area reported seeing dogs chasing or harassing birds, though one respondent in the Portage Inlet East study areas identified disturbance of geese on the Shoreline Community Middle School field that is part of this study area. Greater dog activity was identified at the Helmcken Centennial Park area. No seasonality in dog and bird interactions was identified. One respondent felt that dogs were the main threat to birds in the Portage Inlet West study area.

6.19. Trial Islands

6.19.1 Overview

The Trial Islands are located within the Victoria Harbour MBS, south of McMicking Point, near the mouth of McNeill Bay. The Trial Islands Ecological Reserve (provincial designation) was established with the purpose to protect “the most outstanding known assemblage of rare and endangered plant species in British Columbia” (BC Parks 2003). Nearly 30 rare vascular plants are present in the reserve.

6.19.2 Birds and Habitat

A total of 121 bird species have been recorded from the Trial Islands eBird hotspot in eBird. A bar chart of seasonal bird abundance for the Trial Islands ebird hotspot can be viewed at

https://ebird.org/barchart?r=L2747482&yr=all&m=. Bird composition on the Islands is similar to other rocky shoreline areas within the MBS including waterfowl (e.g., Canada goose, harlequin duck), shorebirds (e.g., black oystercatcher, black-bellied plover, black turnstone), gulls (e.g., glaucous-winged, short-billed, Heermann's gulls) and cormorants. Additional species (e.g., alcids, grebes) are found in the waters nearby (eBird 2020). Glaucous-winged gull has been found breeding on the island (BC Parks 2021).

6.19.3 Public Survey

The Trial Islands are restricted to public access; therefore, they were not initially identified as a study area for this report. While not part of the public survey feedback, one stakeholder noted that two dogs are often loose on the main island, with concern both for bird disturbance as well as damage to rare plants.

7. BIRD ACTIVITY PERIODS

Approximately 300 bird species have been recorded in the Esquimalt Lagoon, Shoal Harbour, and Victoria Harbour MBSs. Some of these species are vagrants and occur less than once per year.

While the MBSs are of high importance to many oceanic bird species such as alcids (e.g., marbled murrelet, ancient murrelet (*Synthliboramphus antiquus*), rhinoceros auklet), certain diving ducks (e.g., scoters, long-tailed duck, red-breasted merganser), cormorants, jaegers, loons, grebes, terns, and phalaropes are unlikely to be subjected to dog harassment, except individuals that may rest on shore or nearshore rocks on occasion. Similarly, many raptor and songbird species may pass through the MBSs but are otherwise not reliant upon its habitats. Thus, these species have been largely omitted from analysis in this report.

The remaining shoreline-associated species consist of geese, swans, dabbling ducks, some diving ducks, shorebirds, gulls/terns, herons, and some ground-foraging passerines. These species are all likely to be disturbed by dogs given the areas in which both dogs and shoreline-associated species occur. Table 28 details the periods of greatest activity (and therefore risk to dog disturbance) by these regularly occurring species, divided by taxonomic group.

In sections 7.1 through 7.8, species listed as “migrant” are ones that pass through the area, typically during spring and/or fall migrations. Species that are present throughout the winter are indicated by “winters”. Similarly, those that are present during the summer months are listed as “summers” if they do not nest within a MBS; or as “breeds” for species that nest within a MBS. Species that may be found throughout the year are listed as “resident”, even if individuals of that species are present only during certain times of the year.

Table 28.Shoreline-associated species presence and sensitive periods within the Greater Victoria Area MBSs.

Species	Species Group	J	F	M	A	M	J	J	A	S	O	N	D
Snow Goose	Ducks/Geese/Swans												
Greater White-fronted Goose	Ducks/Geese/Swans												
Cackling Goose	Ducks/Geese/Swans												
Canada Goose	Ducks/Geese/Swans												
Brant	Ducks/Geese/Swans												
Trumpeter Swan	Ducks/Geese/Swans												
Tundra Swan	Ducks/Geese/Swans												

Species	Species Group	J	F	M	A	M	J	J	A	S	O	N	D
Northern Shoveler	Ducks/Geese/Swans												
Gadwall	Ducks/Geese/Swans												
Eurasian Wigeon	Ducks/Geese/Swans												
American Wigeon	Ducks/Geese/Swans												
Mallard	Ducks/Geese/Swans												
Northern Pintail	Ducks/Geese/Swans												
Green-winged Teal	Ducks/Geese/Swans												
Harlequin Duck	Ducks/Geese/Swans												
Hooded Merganser	Ducks/Geese/Swans												
Common Merganser	Ducks/Geese/Swans												
American Coot	Coot												
Black Oystercatcher	Shorebirds												
Black-bellied Plover	Shorebirds												
Semipalmated Plover	Shorebirds												
Killdeer	Shorebirds												
Whimbrel	Shorebirds												
Long-billed Curlew	Shorebirds												
Marbled Godwit	Shorebirds												
Black Turnstone	Shorebirds												
Red Knot	Shorebirds												
Surfbird	Shorebirds												
Sanderling	Shorebirds												
Dunlin	Shorebirds												
Rock Sandpiper	Shorebirds												
Baird's Sandpiper	Shorebirds												
Least Sandpiper	Shorebirds												
Pectoral Sandpiper	Shorebirds												
Semipalmated Sandpiper	Shorebirds												
Western Sandpiper	Shorebirds												
Short-billed Dowitcher	Shorebirds												
Long-billed Dowitcher	Shorebirds												
Wilson's Snipe	Shorebirds												
Spotted Sandpiper	Shorebirds												
Wandering Tattler	Shorebirds												
Greater Yellowlegs	Shorebirds												
Lesser Yellowlegs	Shorebirds												
Heermann's Gull	Gulls and Terns												

Species	Species Group	J	F	M	A	M	J	J	A	S	O	N	D
Short-billed Gull	Gulls and Terns												
Western Gull	Gulls and Terns												
California Gull	Gulls and Terns												
Iceland Gull	Gulls and Terns												
Glaucous-winged Gull	Gulls and Terns												
Caspian Tern	Gulls and Terns												
Great Blue Heron	Heron												
American Crow	Landbirds												
Common Raven	Landbirds												
White-crowned Sparrow	Landbirds												
Golden-crowned Sparrow	Landbirds												
Savannah Sparrow	Landbirds												
Song Sparrow	Landbirds												
Brewer's Blackbird	Landbirds												

Note: Light red shading indicates species presence. Bright red shading indicates sensitive period (e.g., breeding periods or times of notable concentrations).

7.1 GEESE (ORDER *ANSERIFORMES*)

Snow Goose (*Anser caerulescens*) – migrant, winters
Greater White-fronted Goose (*Anser albifrons*) – migrant, winters
Cackling Goose (*Branta hutchinsii*) – migrant, winters

These species are found in greatest numbers from September to November as they migrate from northern breeding grounds to overwintering areas. Small numbers of snow and greater white-fronted geese may overwinter in the Victoria area, and cackling goose may occur in the hundreds. All of these species are most likely overflight during migration within or adjacent to the MBS boundaries (i.e. along fields / golf courses such as the Royal Roads lower fields). Although their habitat preferences may put them at risk of disturbance, they are seldom found within the MBS boundaries where dogs occur.

Canada Goose (*Branta canadensis*) –migrant and resident populations, breeds

In the Victoria area, Canada goose consists of both resident and migratory populations. Resident birds breed in the area, and family groups are a frequent sight within all MBSs. Young are precocial (young are relatively mature and mobile from hatching) and flightless and are at risk of disturbance or predation by dogs. Adult geese may be disturbed along shorelines or in fields. They may encounter dogs at any time of year, but resident birds are perhaps at greatest risk during the breeding season. Migratory populations are at greatest risk during the fall migration when larger numbers congregate in the area;

however, they are more frequent in fields and farmland outside of the MBS boundaries.

Brant (*Branta bernicla*) – migrant, winters

Brant is most common within the MBSs from January through May, with numbers peaking in March and April as large numbers arrive on Vancouver Island during their northward migration. Brant feed largely on eelgrass, and the disturbance of brant during tidally-dependent foraging times may have negative consequences. Disturbance is considered a threat to brant accessing food and may be the cause of decreased residence times in staging areas on Vancouver Island (Smith *et al.* 2012). Thus, dogs pose a risk to brant wherever they forage or congregate, such as at Esquimalt Lagoon and Clover Point.

7.2 SWANS (ORDER *ANSERIFORMES*)

Mute Swan (*Cygnus olor*), resident
Trumpeter Swan (*Cygnus buccinator*), migrant, winters
Tundra Swan (*Cygnus columbianus*), migrant, winters

Three swan species are possible within the MBSs. Of these, trumpeter and tundra swans are native, and the mute swan is introduced. Mute swan occasionally occur within the Victoria Harbour and Esquimalt Lagoon MBSs. Trumpeter swan is the most common species occurring within the area, and some individuals (perhaps sick or injured birds) occasionally remain through the summer. Both trumpeter and tundra swans are migratory species breeding north of the Victoria region, with local numbers typically peaking in late October and November. Trumpeter and tundra swans are more abundant in farm fields than within the MBSs, but do occur in shallow water areas, such as Esquimalt Lagoon. One trumpeter swan is currently a resident at Esquimalt Lagoon (as of March 2021, it has been present for over a decade), where it has become habituated to people feeding it. Dogs may disturb swans when they occur in shallow waters or shoreline areas, though typically they do not co-occur, and the overall risk to swans is low within the MBSs.

7.3 DABBLING DUCKS (ORDER *ANSERIFORMES*)

Northern Shoveler (*Spatula clypeata*), migrant, winters
Gadwall (*Mareca strepera*), migrant, winters
Eurasian Wigeon (*Mareca penelope*), migrant, winters
American Wigeon (*Mareca americana*), migrant, winters
Mallard (*Anas platyrhynchos*), resident, breeds
Northern Pintail (*Anas acuta*), migrant, winters

Green-winged Teal (*Anas crecca*), migrant, winters

Most dabbling duck species are present from approximately August through May, with abundance peaking from October through April. They are present in both nearshore, shallow waters, as well as on shorelines, on mudflats, and adjacent fields. These species forage along shorelines and in shallow and/or nearshore waters. In some areas, certain species may habituate to people where they are fed, such as at Esquimalt Lagoon, where they may be particularly susceptible to disturbance from dogs. In locations such as Esquimalt Lagoon or Portage Inlet, ducks may be able to retreat to deeper waters to escape dog activity, but in mudflats such as at Roberts Bay, they may be flushed from the area entirely. One species, mallard, is a year-round resident and local breeder; young mallards are precocial and flightless and may be especially vulnerable to dogs during their breeding period.

7.4 DIVING DUCKS (ORDER *ANSERIFORMES*)

Harlequin Duck (*Histrionicus histrionicus*), resident
Hooded Merganser (*Lophodytes cuccullatus*), resident
Common Merganser (*Mergus merganser*), resident

Most species of diving duck occur in nearshore marine waters around the coastline, or more sheltered locations such as Esquimalt Lagoon and Portage Inlet / the Gorge. Here they are removed from potential disturbance by dogs by virtue of occurring in deeper waters than dogs normally venture. The majority of these species are present within the MBS from the fall through the spring, typically September to May. Some species may be present year-round, though in lower abundances through the summer. These species are typically only at risk to dog disturbance when roosting on nearshore rocks or shorelines, as hooded and common mergansers frequently do. While harlequin duck do not breed within the MBSs, they may be found year-round. During the summer months, harlequin ducks may be flightless for periods as they undergo flight feather moult. They also often occur on shoreline rocks or in waters close to shore, especially along rocky coastline stretches such as Cattle Point and Clover Point, which places them at greater risk of disturbance by dogs compared to most other diving duck species within the MBSs.

7.5 SHOREBIRDS (ORDER *CHARADRIFORMES*)

Black Oystercatcher (*Haematopus bachmani*), resident, breeds
Black-bellied Plover (*Pluvialis squatarola*), migrant, winters
Semipalmated Plover (*Charadrius semipalmatus*), migrant

Killdeer (*Charadrius vociferus*), resident, breeds
Whimbrel (*Numenius phaeopus*), migrant
Long-billed Curlew (*Numenius americanus*), migrant
Marbled Godwit (*Limosa fedoa*), migrant
Black Turnstone (*Arenaria melanocephala*), migrant, winters
Red Knot (*Calidris canutus*), migrant; Species at Risk Act: Threatened; COSEWIC: Endangered
Surfbird (*Calidris virgata*), migrant, winters
Sanderling (*Calidris alba*), migrant, winters
Dunlin (*Calidris alpina*), migrant, winters
Rock Sandpiper (*Calidris ptilocnemis*), migrant, winters
Baird's Sandpiper (*Calidris bairdii*), migrant
Least Sandpiper (*Calidris minutilla*), migrant
Pectoral Sandpiper (*Calidris melanotos*), migrant
Semipalmated Sandpiper (*Calidris pusilla*), migrant
Western Sandpiper (*Calidris mauri*), migrant
Short-billed Dowitcher (*Limnodromus griseus*), migrant
Long-billed Dowitcher (*Limnodromus scolopaceus*), migrant
Wilson's Snipe (*Gallinago delicata*), migrant, winters
Spotted Sandpiper (*Actitis macularius*), migrant, breeds
Wandering Tattler (*Tringa incana*), migrant
Greater Yellowlegs (*Tringa melanoleuca*), migrant, winters
Lesser Yellowlegs (*Tringa flavipes*), migrant; COSEWIC: Threatened

The Victoria area MBSs are important for a wide variety of shorebirds. Three species breed in the area: black oystercatcher, killdeer, and spotted sandpiper. Of these, black oystercatcher and killdeer may be found year-round, while spotted sandpiper is typically only present from May to October. Black oystercatchers are only found along the ocean coastline, where they are commonly encountered on rocky coastlines, or foraging in gravel flats. They are often noisy and conspicuous and may be flushed by dogs that are active in gravel flats such as near the bridge at Esquimalt Lagoon or any of the rocky coastline stretches of Victoria Harbour MBS. All three of these species are ground-nesters, with nests typically being a scrape on the ground variably lined with vegetation, shells, or other materials. These shorebirds typically rely on camouflage to conceal their eggs. Young are precocial and flightless, and leave the nest soon after hatching, but remain vulnerable to predators. Shorebirds are extremely vulnerable to harassment by dogs during their nesting and fledgling period. There are reports that dogs have caused abandonment of nesting by killdeers at Cattle Point. The breeding season for these nesting shorebirds can range from early March to late September, including periods when eggs and young are present.

Other shorebirds, such as black-bellied plover, black turnstone, surfbird, and dunlin breed north of the Victoria region, but are present within the MBSs from late summer to spring. They may occur on

mud/sand flats or on rocky coastlines, and they often roost on larger rocks or islets that remain exposed at high tide. These species are susceptible to harassment at any time of the year when they are present, owing to their shoreline habitat associations.

Red knot (*Calidris canutus*), SARA-listed special concern species, requires quality coastal marine and estuarine habitats (e.g. sandy beaches, sandpits, sandbanks, sandy/muddy tidal mudflats, intertidal rocky flats, and salt marshes) for foraging and roosting during migration (ECCC 2017). The species requires these migration stop-over areas to be relatively free of human disturbance as red knots must meet their energy demands during a short window of time, and this requires the availability of stopover sites with abundant easily digested food (e.g., juvenile clams and mussels, marine worms) (ECCC 2017).

The remaining group of shorebirds neither breed nor overwinter in the MBSs, but are variably present during the spring, and especially, the fall migrations. The migration periods vary by species, but are generally April to May for northbound migration and July to October for southbound migration. For many species, the adults are the first to leave the breeding grounds, followed separately by juveniles making their first journeys south. Many of these species depend on beaches, mudflats, and sand flats to forage during migration. The migration period is an energetically demanding period for shorebirds and is further constrained by tidally-dependent resources. Dog harassment may prevent individuals from being able to forage. Some of these migratory periods overlap with the busy summer periods when many people may be using the same beaches and shorelines for recreation and dog activity.

7.6 GULLS AND TERNS (ORDER *CHARADRIIFORMES*)

Heermann's Gull (*Larus heermanni*), migrant
Ring-billed Gull (*Larus delawarensis*), migrant
Short-billed Gull (*Larus canus*), resident, does not breed
Western Gull (*Larus occidentalis*), resident, does not breed
California Gull (*Larus californicus*), migrant, resident, does not breed
Iceland Gull (*Larus glaucoides*), migrant, winters
Glaucous-winged Gull (*Larus glaucescens*), resident, breeds
Caspian Tern (*Hydroprogne caspia*), summers

Many species of gull use the waters of the MBSs. A few species are regular along shoreline areas where they may be disturbed by dogs. Individual species have unique patterns of abundance. The glaucous-winged gull is the only gull species that breeds in the MBSs. Nests are located on the ground on offshore islets, roofs, or other structures. In general, glaucous-winged gulls are not expected to nest

along the main shorelines of the MBSs where dog activity is more prominent, though any dogs brought to islets are a concern. The remaining species may be disturbed where they concentrate near shorelines to forage and rest. Large numbers of gulls often congregate near Esquimalt Lagoon and the rocks off Clover Point, where they are subject to harassment by dogs. In particular, large concentrations (thousands) of California Gulls occur during the summer from July to October, following breeding. Heermann's gull also makes post-breeding movements into the Victoria area MBSs (most notably Esquimalt Lagoon and Victoria Harbour MBSs) from their Mexican breeding grounds. After the end of the breeding season, the species disperses northward from the Baja Peninsula, arriving in BC as early as mid-June and departing by early November. The south coast of BC encompasses the entire Canadian range (Islam and Velarde 2020). Other species that do not breed in the area, but may be seen year-round, include short-billed and western gulls. The short-billed gull is often one of the most numerous gulls throughout the fall through spring.

Caspian terns are present from April through September. Though they do not breed in the Victoria MBSs, they occasionally roost with gulls on gravel bars, such as near the bridge at Esquimalt Lagoon, where they are susceptible to disturbance by dogs.

7.7 HERONS (ORDER *PELECANIFORMES*)

Great Blue Heron (*Ardea herodias fannini*), resident, breeds; Species At Risk Act: Special Concern

The great blue heron is a conspicuous and year-round resident in all areas of the Victoria MBSs. Great blue herons typically forage in shallow waters in the ocean or in estuaries, rivers, marshes, lakes or ditches. This is where they find small fish, crayfish, crabs, frogs, salamanders, snakes and large insects. Herons are colonial nesting birds, typically building stick nests in woodlands and forests in BC. Great blue herons, by virtue of their size and conspicuousness, have been reported to be harassed frequently by dogs within the MBSs. Harassment would be of higher consequence during the breeding season, typically from April to August, when adults are provisioning chicks.

7.8 PASSERINES (ORDER *PASSERIFORMES*)

American Crow (*Corvus brachyrhynchos*) – resident, breeds
Common Raven (*Corvus corax*) – resident, breeds
Savannah Sparrow (*Passerculus sandwichensis*) –summers, breeds
Song Sparrow (*Melospiza melodia*) – resident, breeds
White-crowned Sparrow (*Zonotrichia leucophrys*) – resident, breeds

Golden-crowned Sparrow (*Zonotrichia atricapilla*) - winters
Brewer's Blackbird (*Euphagus cyanocephalus*) – resident, breeds

Passerines, also called "songbirds", "perching" birds and/or "landbirds", are a large order of species, many of which occur in the MBSs. American crow is common in all MBS areas year-round. While they may be disturbed by dogs on occasion, they are unlikely to be strongly negatively impacted given their omnivorous diet and strong adaptability to urban environments. Recently fledged young are likely most at risk.

Some passerines spend much of their time foraging on the ground, including Brewer's blackbird and savannah, white-crowned and golden-crowned sparrows. Brewer's blackbird are present year-round and common along the Coburg Peninsula. Savannah sparrow is most abundant during September and October but is found through most months from March to December. Song sparrow is present and common year-round. Due to their smaller size, foraging habits that are not tidally dependent, and being generally inconspicuous, songbirds are less likely to be targeted by dogs, though may be incidentally disturbed by them. In areas with greater vegetation structure (e.g., the Royal Roads side of Esquimalt Lagoon) dogs have the potential to impact nests and chicks. These incidents may go unnoticed due to the inconspicuous habits of nesting birds.

8. CONCLUSION

The Greater Victoria Area MBSs are of significant importance to migratory and resident birds on regional and national levels. Since the MBSs were established, the region has undergone extensive change. Large population centres surround the MBSs, and human usage of these areas is frequent and in high numbers. Many of the MBS visitors bring their dogs, which provides benefits to both the dogs and their owners, but can also have significant negative consequences on wildlife, in particular on shoreline-associated migratory bird species.

Different bird species use areas of the MBSs differently and vary in the period of time that they are most at risk of disturbance. Shoreline-associated birds are at greatest risk of disturbance by dogs based on habitat availability and co-occurrence with dogs. Some shoreline-associated species are also species of conservation concern (e.g., red knot, lesser yellowlegs, and great blue heron). Direct linkages of dog disturbance on fitness consequences are not generally represented in the literature (Weston *et al.* 2014), and further research is needed on this topic.

The levels of bird activity and reports of dog activity are not even among MBSs or among study areas. The study areas which received the most responses from the public survey were the Lagoon study area (Esquimalt Lagoon), the Roberts Bay study area (Shoal Harbour), the Cadboro Bay / Gyro Beach and Willows Beach study areas (Victoria Harbour). Reports of dog disturbance to migratory birds were noted in all 28 study areas, but the frequency and prevalence of off-leash dogs and dogs chasing birds observations varied. The public survey identified confusion about regulations in certain areas where municipal bylaws permit off leash-dog activity.

This report provides sound evidence on human, dog, and bird usage within the MBSs in order to support informed management decisions focussed on achieving greater compliance with the MBCA and the MBSRs. Collaboration with municipalities to ensure municipal practices, bylaws, communications, and signage align with the MBCA and the MBSRs, could help alleviate the confusion reported by some members of the public and, in turn, promote compliance with federal regulations. Enforcement actions (e.g., patrols, warnings, and/or Administrative Monetary Penalties) are options that could be pursued by federal agencies and/or by municipal officers for enforcing relevant municipal bylaws. Compliance promotion opportunities (e.g., increased signage and outreach activities) can be pursued to help educate the public on the importance of conservation for migratory birds.

A collaborative management approach with municipalities, provincial governments, First Nations, private landowners, local stewardship groups, and stakeholders is needed to achieve meaningful conservation outcomes for migratory birds in the Greater Victoria Area MBSs.

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10. APPENDICES

APPENDIX A: SURVEY QUESTIONS FOR MBS KNOWLEDGE HOLDERS, AS POSTED ONLINE FOR PUBLIC FEEDBACK

Preamble: Environment and Climate Change Canada is initiating a study to investigate interactions between birds and dogs within the Shoal Harbour, Victoria Harbour, and Esquimalt Lagoon Migratory Bird Sanctuaries. This survey is one component of that study.

For details on each of the three Migratory Bird Sanctuaries within the Greater Victoria region, please visit the following Environment and Climate Change Canada links.
Shoal Harbour: https://www.canada.ca/en/environment-climate-change/services/migratory-bird-sanctuaries/locations/shoal-harbour.html

Victoria Harbour: https://www.canada.ca/en/environment-climate-change/services/migratory-bird-sanctuaries/locations/victoria-harbour.html

Esquimalt Lagoon: https://www.canada.ca/en/environment-climate-change/services/migratory-bird-sanctuaries/locations/esquimalt-lagoon.html

Please submit one survey for each of the three Migratory Bird Sanctuaries that you are familiar with.

1) **Please select the MBS that you are most familiar with. If you are familiar with more than one MBS, please complete a separate questionnaire for each.**

    a. Shoal Harbour MBS (including all intertidal areas in Tsehum Harbour and Roberts Bay)

    b. Victoria Harbour MBS (all marine and estuarine water below the high-water mark in Portage Inlet, the Gorge Waterway, the Selkirk Water, Victoria Harbour, and in coastal waters from Macaulay Point to the Trial Islands and Ten Mile Point. Includes the shores of Holland, Finlayson, Clover, Harling, Gonzales and Cattle points, and Ross, Gonzales, McNeill, Oak and Cadboro bays).

    c. Esquimalt Lagoon MBS (the entirety of the lagoon and ocean-side shoreline areas from the bridge on Ocean Boulevard to Coburg Peninsula west of the toe of the lagoon and including 100 m of the surrounding land).

2) **Please indicate the location(s) in the MBS that you are most familiar with (spend the most time in). The following questions will be based on your selected location. If you are familiar with more than one location please complete a separate questionnaire for each.**

    IF Shoal Harbour: a) Roberts Bay (b) All Bay/Resthaven Park (c) Marina Park Marina shoreline (d) Blue Heron Basin/marinas between Marina Way and Blue Heron Rd (e) Shoreline between Tsehum Harbour Park and Westport Marina

    IF Victoria Harbour MBS: a) Cadboro/Gyro Beach (b) Cattle Point (c)Willows Beach (d) Bowker Creek estuary (e) shoreline between Willows Beach and Rattenbury Beach (f) Rattenbury Beach (g) McNeill Beach (h) McNeill Bay (i) Gonzales Beach (j) Ross Bay Beach (k) Ross Bay Walkway (l) Clover Point shoreline (m) Beaches below Dallas Bluffs (n) West Bay mudflats and pocket beaches (o) West Bay Walkway (p) Esquimalt Gorge Park/Gorge Creek Beach (q) Shores of Saanich Gorge Park/Curtis Point (r) Beach at Craigflower/Kosapsom Park (s) Portage Inlet East (shores and waters east of Craigowan Rd) (t) Portage Inlet North (parallel to Hwy 1) (u) Portage Inlet West (shores and waters west of Craigowan Rd)

    IF Esquimalt Lagoon MBS: a) Royal Roads/north end of Esquimalt Lagoon (b) Esquimalt Lagoon (c) Shoreline on ocean-side of Lagoon Rd (d) Coburg Peninsula

3) **How often do you visit this location?**
    a. Daily
    b. Weekly
    c. Monthly
    d. Other_____

4) **When you visit this location, what is your primary reason for visiting?**
    a. Birding
    b. Dog walking/dog exercise
    c. Physical recreation (e.g., kayaking, swimming, biking, surfing, sports, exercise)
    d. Power boating
    e. Relaxing on beach
    f. Social outing
    g. Spending time in nature/outside
    h. Other_____

5) **Why do you visit this location over other locations within this MBS?**
    a. Easier access
    b. Ability to remain in vehicle
    c. More birds
    d. Fewer dogs
    e. Greater ability to complete purpose of visiting (e.g., sandier beach, boat launch, paved pathways)
    f. Closest to residence
    g. Other_____

6) **When you visit, how often do you see dogs?**
    a. Every visit
    b. Frequently, but not every visit
    c. Occasionally (every few visits)
    d. Rarely
    e. Never

7) **When you see dogs, what proportion do you estimate are active off-leash, even if accompanied closely by its owner?**
    a. 0%
    b. 1-25%
    c. 26-50%
    d. 51-75%
    e. 76-99%
    f. 100%

8) **Do you ever see dogs chasing/harassing birds at this location?**
    a. Yes
    b. No

9) **[If answered "yes" to Q8] What species or species groups (e.g., shorebirds) do you see dogs chasing/harassing?**

10) **Are there specific areas of this location that you see noticeably greater dog activity compared to other parts of this location?**
    a. Yes
    b. No

11) **If yes, where (e.g., street name, access point, beach name, etc.)**

12) **If yes, in your experience do these areas correspond with greater instances of witnessed bird disturbance?**
    a. Yes
    b. No
    c. Uncertain

13) **Are there specific times of year when you see more interactions between dogs and birds within the MBS?**
    a. Yes
    b. No

14) **If yes, what time(s) of year?**

15) **Do you believe that dogs (including off-leash and on-leash dogs) are the biggest threat or cause of disturbances to birds within the Migratory Bird Sanctuary?**

16) **If not, please indicate what you believe the biggest threat/disturbance is:**

17) **Please feel free to provide any additional comments regarding dogs and birds at this location and/or in the MBS in general.**

18) **Any other comments:**

19) **Please provide your name.**

20) **If you are willing to be contacted for more information or discussion, please provide your contact phone number and/or email address.**

Thank you very much for participating in this survey.

APPENDIX B: LIST OF PROVINCIAL AND FEDERAL SPECIES OF CONSERVATION CONCERN WITHIN THE ESQUIMALT LAGOON, SHOAL HARBOUR, AND VICTORIA HARBOUR MBSS.

Common Name	Scientific Name	Shoreline-associated Species	Migratory Bird Sanctuary			BC List[1]	SARA[2]	MBCA[3]	IUCN[4]
			Esquimalt Lagoon	Shoal Harbour	Victoria Harbour				
Tundra Swan	*Cygnus columbianus*	✓	✓			Blue		✓	LC
Horned Grebe	*Podiceps auritus*		✓	✓	✓	Yellow	SC	✓	VU
Western Grebe	*Aechmophorus occidentalis*		✓	✓	✓	Red	SC	✓	LC
Band-tailed Pigeon	*Patagioenas fasciata*		✓		✓	Blue	SC	✓	LC
Common Nighthawk	*Chordeiles minor*	✓	✓		✓	Yellow	T	✓	LC
American Avocet	*Recurvirostra americana*	✓			✓	Blue		✓	LC
American Golden-Plover	*Pluvialis dominica*	✓	✓		✓	Blue		✓	LC
Long-billed Curlew	*Numenius americanus*	✓	✓			Blue	SC	✓	LC
Red Knot	*Calidris canutus*	✓	✓		✓	Red	T	✓	NT
Short-billed Dowitcher	*Limnodromus griseus*	✓	✓	✓	✓	Blue		✓	LC
Wandering Tattler	*Tringa incana*	✓			✓	Blue		✓	LC
Lesser Yellowlegs	*Tringa flavipes*	✓	✓	✓	✓	Yellow	T	✓	LC

Common Name	Scientific Name	Shoreline-associated Species	Migratory Bird Sanctuary			BC List[1]	SARA[2]	MBCA[3]	IUCN[4]
			Esquimalt Lagoon	Shoal Harbour	Victoria Harbour				
Red-necked Phalarope	*Phalaropus lobatus*		✓		✓	Blue	.	✓	LC
Parasitic Jaeger	*Stercorarius parasiticus*		✓		✓	Red	.	✓	LC
Common Murre	*Uria aalge*		✓	✓	✓	Red	.	✓	LC
Marbled Murrelet	*Brachyramphus marmoratus*		✓	✓	✓	Blue	T	✓	EN
Ancient Murrelet	*Synthliboramphus antiquus*		✓	✓	✓	Blue	SC	✓	LC
Cassin's Auklet	*Ptychoramphus aleuticus*		✓		✓	Red	.	✓	NT
Horned Puffin	*Fratercula corniculata*				✓	Red	.	✓	LC
Tufted Puffin	*Fratercula cirrhata*				✓	Blue	.	✓	LC
Black-legged Kittiwake	*Rissa tridactyla*		✓		✓	Red	.	✓	VU
California Gull	*Larus californicus*	✓	✓	✓	✓	Blue	.	✓	LC
Caspian Tern	*Hydroprogne caspia*	✓	✓	✓	✓	Blue	.	✓	LC
Forster's Tern	*Sterna forsteri*				✓	Red		✓	LC
Yellow-billed Loon	*Gavia adamsii*		✓		✓	Blue	.	✓	NT
Northern Fulmar	*Fulmarus glacialis*				✓	Red	.	✓	LC
Brandt's Cormorant	*Phalacrocorax penicillatus*		✓	✓	✓	Red	.		LC

Common Name	Scientific Name	Shoreline-associated Species	Migratory Bird Sanctuary			BC List[1]	SARA[2]	MBCA[3]	IUCN[4]
			Esquimalt Lagoon	Shoal Harbour	Victoria Harbour				
Double-crested Cormorant	*Phalacrocorax auritus*		✓	✓	✓	Blue	.		LC
American White Pelican	*Pelecanus erythrorhynchos*		✓		✓	Red	.		LC
Great Blue Heron	*Ardea herodias*	✓	✓	✓	✓	Blue	SC	✓	LC
Rough-legged Hawk	*Buteo lagopus*		✓		✓	Blue	.	✓	LC
Short-eared Owl	*Asio flammeus*	✓		✓	✓	Blue	SC	✓	LC
Lewis's Woodpecker	*Melanerpes lewis*		✓			Blue	T	✓	LC
Peregrine Falcon	*Falco peregrinus*		✓	✓	✓		SC	✓	LC
Olive-sided Flycatcher	*Contopus cooperi*				✓	Blue	T	✓	NT
Purple Martin	*Progne subis*		✓	✓	✓	Blue	.	✓	LC
Barn Swallow	*Hirundo rustica*		✓	✓	✓	Blue	T	✓	LC
Evening Grosbeak	*Coccothraustes vespertinus*				✓	Yellow	SC	✓	LC
Rusty Blackbird	*Euphagus carolinus*		✓			Blue	SC		VU

[1]BC List Status definitions are as follows: Red = any indigenous species or subspecies that have, or are candidates for, Extirpated, Endangered, or Threatened status in BC; Blue = any indigenous species or subspecies considered to be of Special Concern in BC; Yellow = any species that are apparently secure and not at risk of extinction.

[2]Species designated under the Species at Risk Act. T = Threatened; SC = Special Concern.

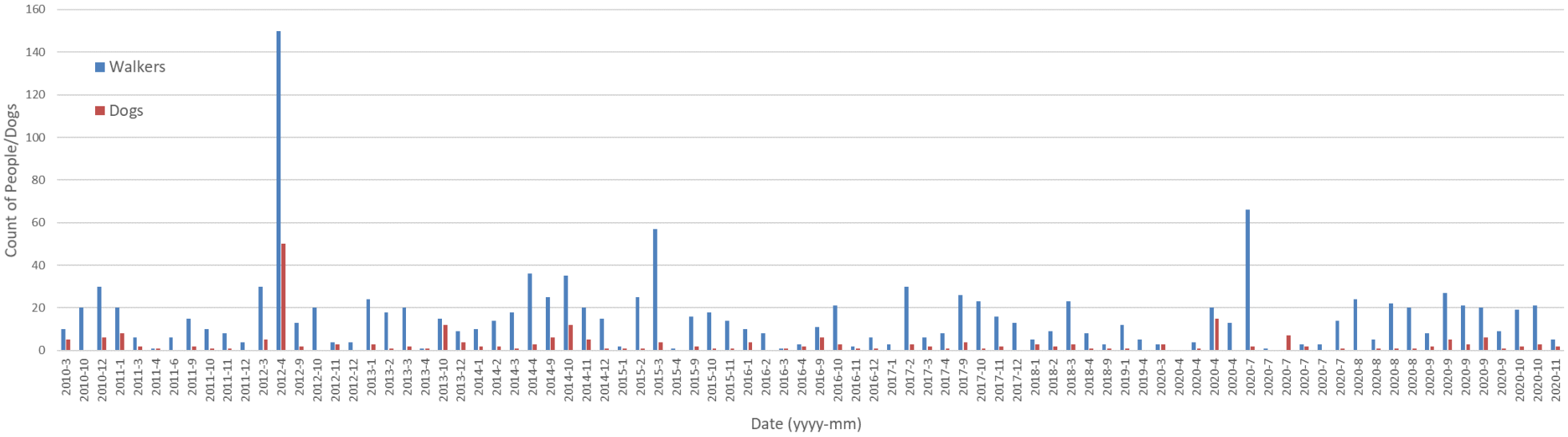
[3]Species protected under the *Migratory Birds Convention Act, 1994*

[4]Global conservation status as determined by the International Union for Conservation of Nature's Red List of Threatened Species. LC = Least Concern; NT = Near Threatened; VU = Vulnerable; EN = Endangered

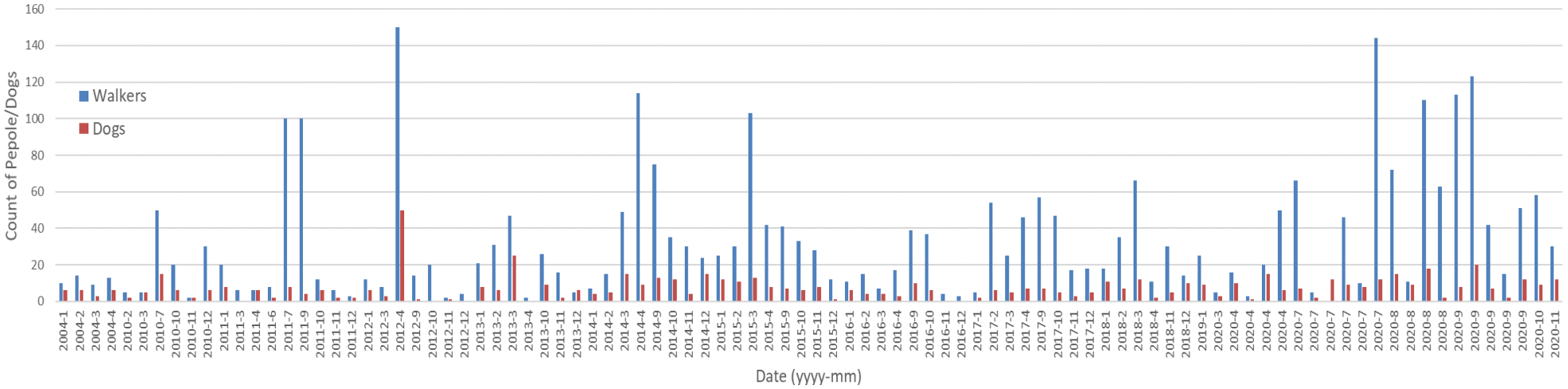
APPENDIX C: GRAPHS OF COUNTS OF PEOPLE AND DOGS DETECTED FROM APPLICABLE STUDY AREAS DURING BCCWS SESSIONS WHEN RECORDED. DATA COURTESY BIRDS CANADA.

1. <u>Esquimalt Lagoon MBS</u>

a. Lagoon Study Area

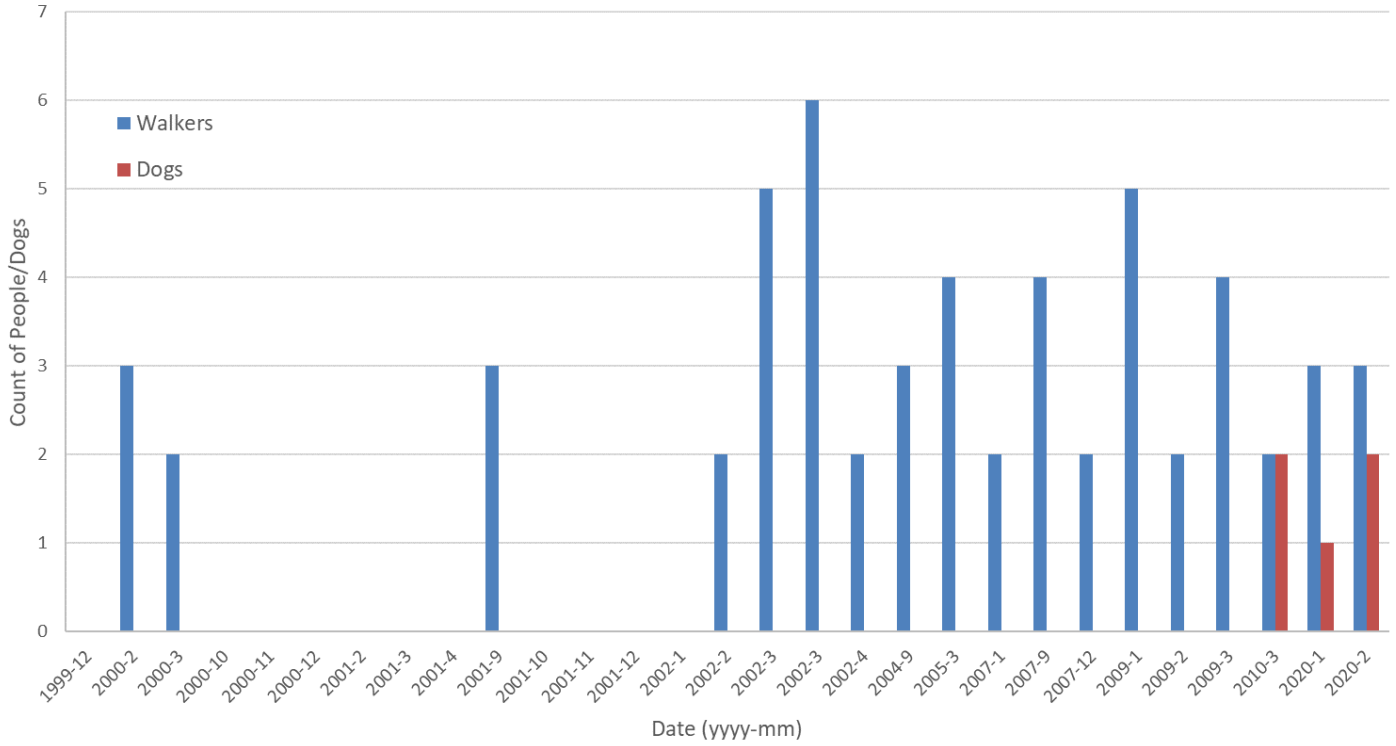


b. **Shoreline on Ocean-Side of Lagoon Road Study Area**

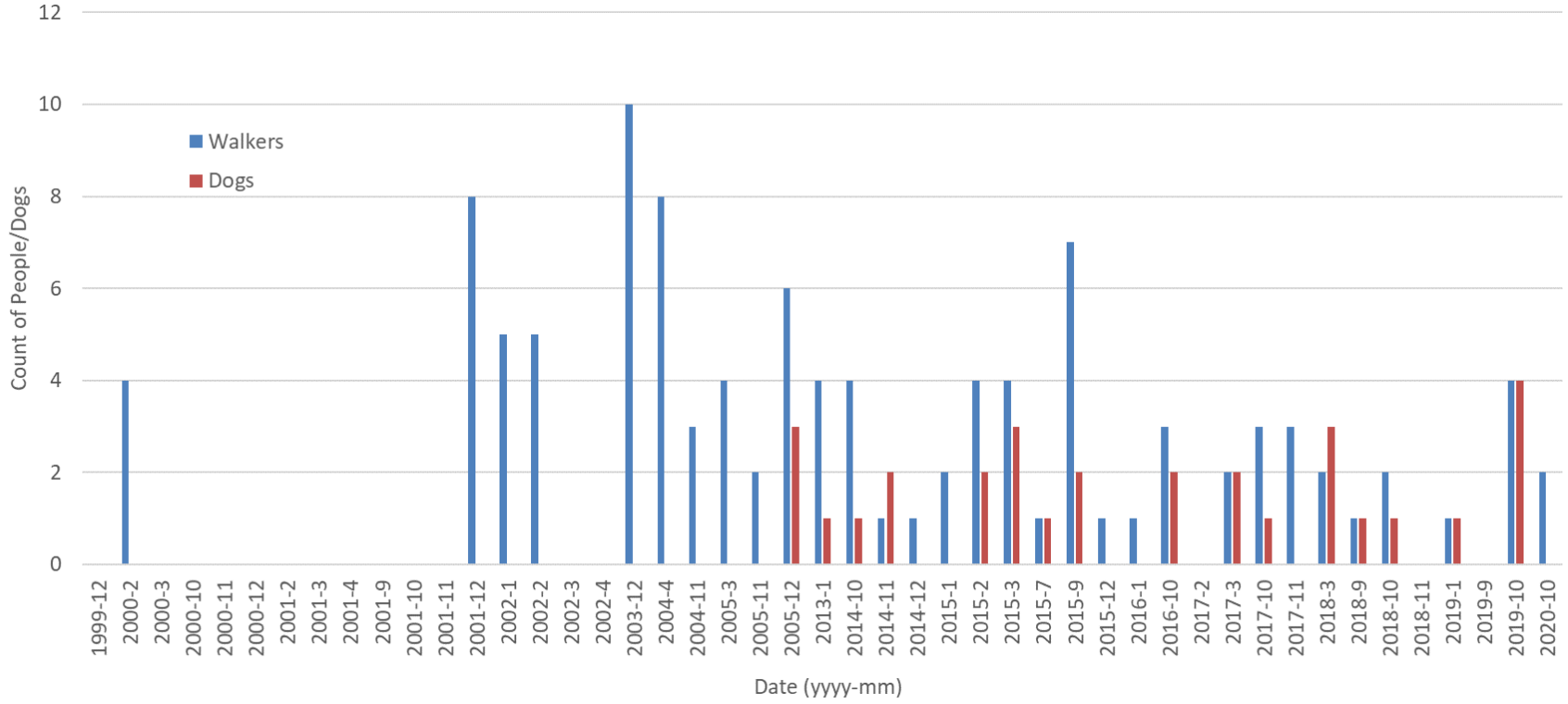


2. Shoal Harbour MBS

a. Roberts Bay Study Area

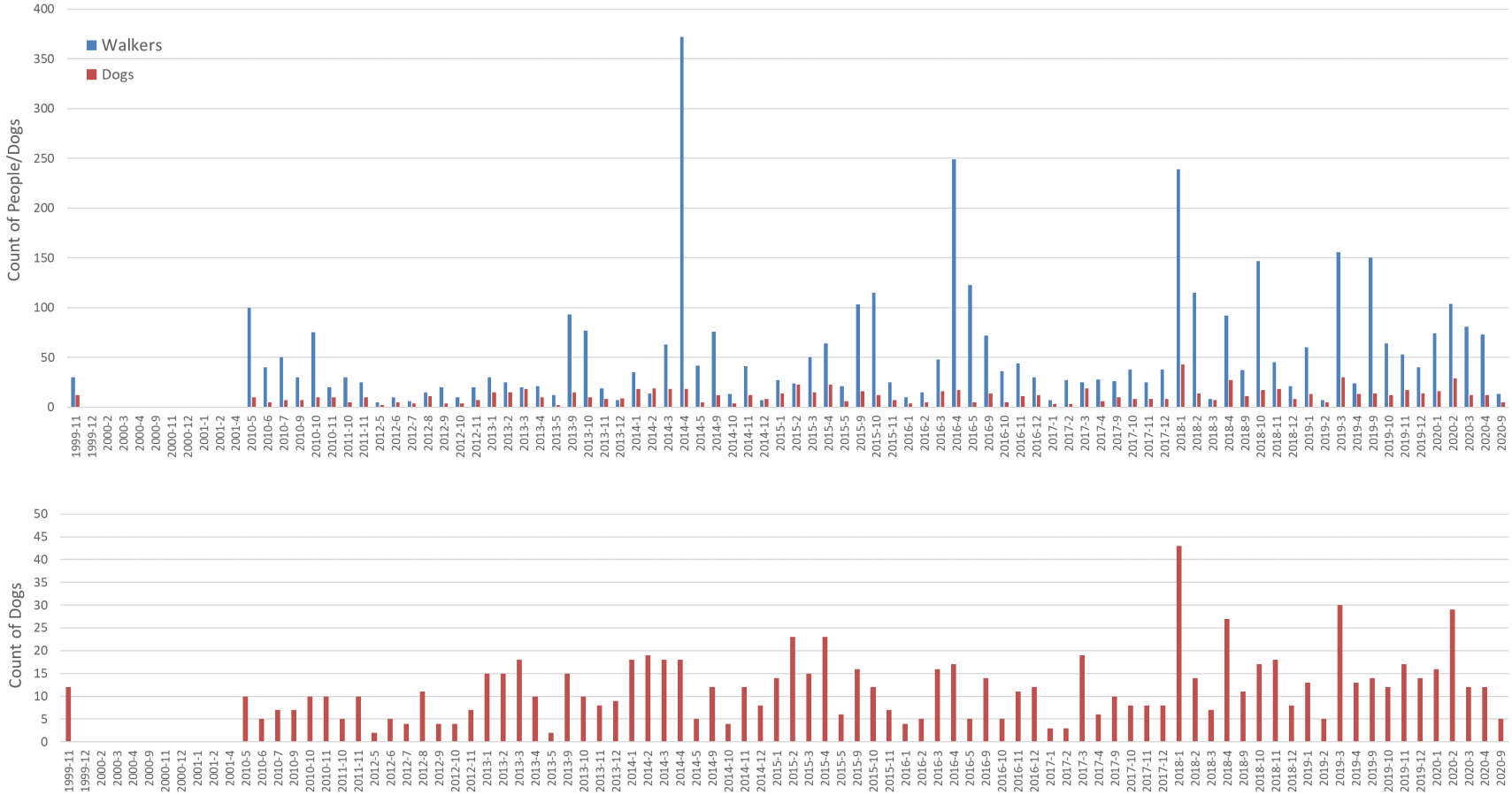


b. **Tsehum Harbour (including All Bay / Resthaven Park, Marina Park Marina Shoreline, Blue Heron Basin / Marinas between Marina Way and Blue Heron Road and Tsehum Harbour Park to Westport Marina shoreline study areas in part)**

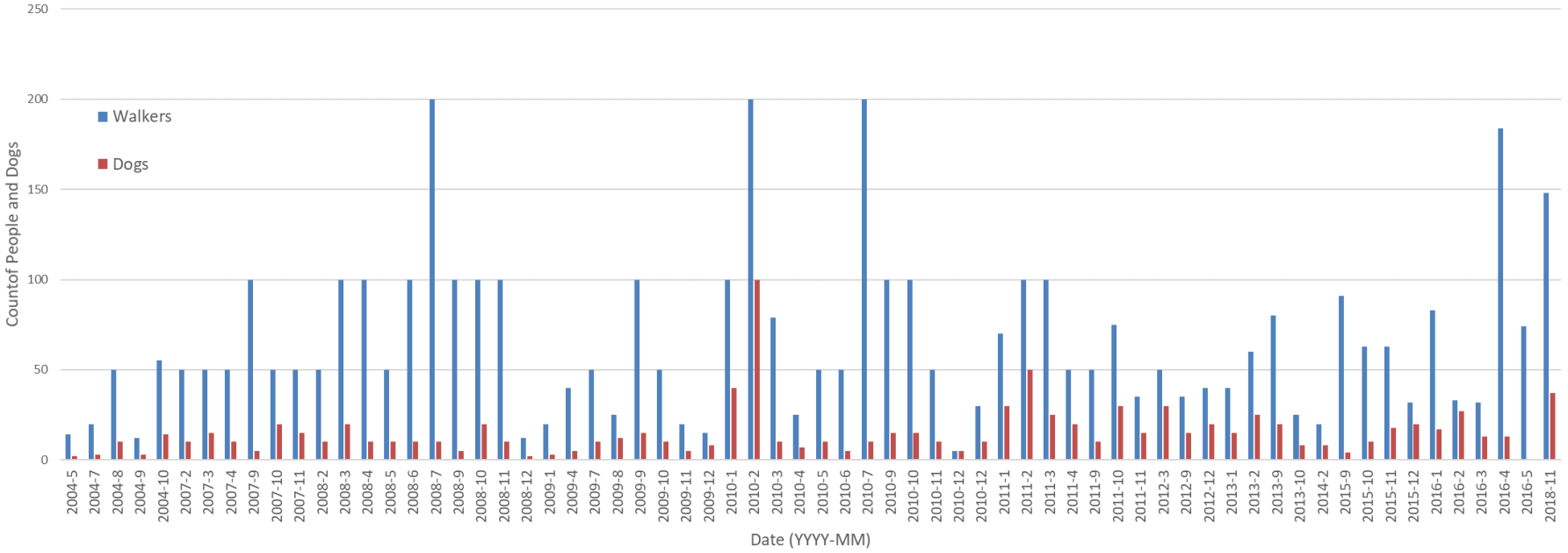


3. Victoria Harbour MBS

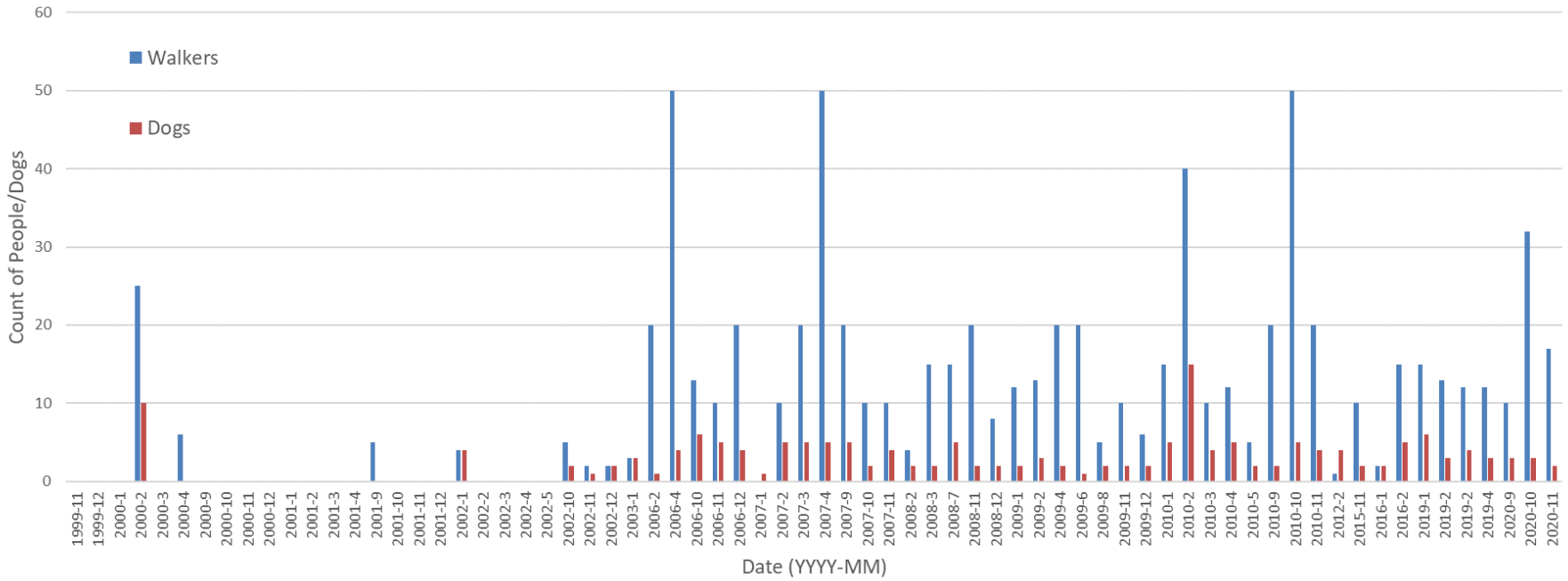
a. Cattle Point to Flower Island (Cadboro Bay / Gyro Beach and Cattle Point study areas)



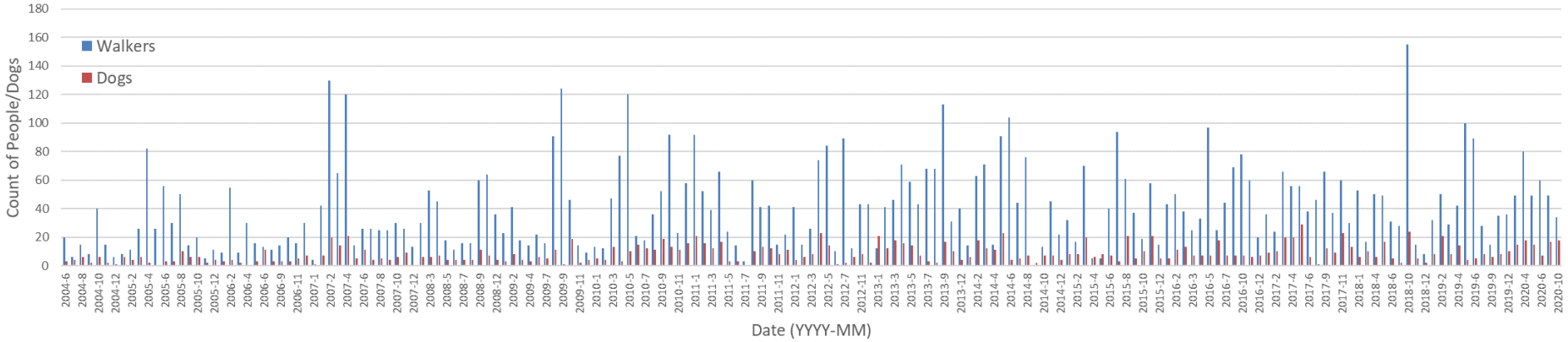
b. **Mary Tod Island to Cattle Point (Willows Beach, Bowker Creek Estuary, and Haynes Park to Queens' Park study areas)**



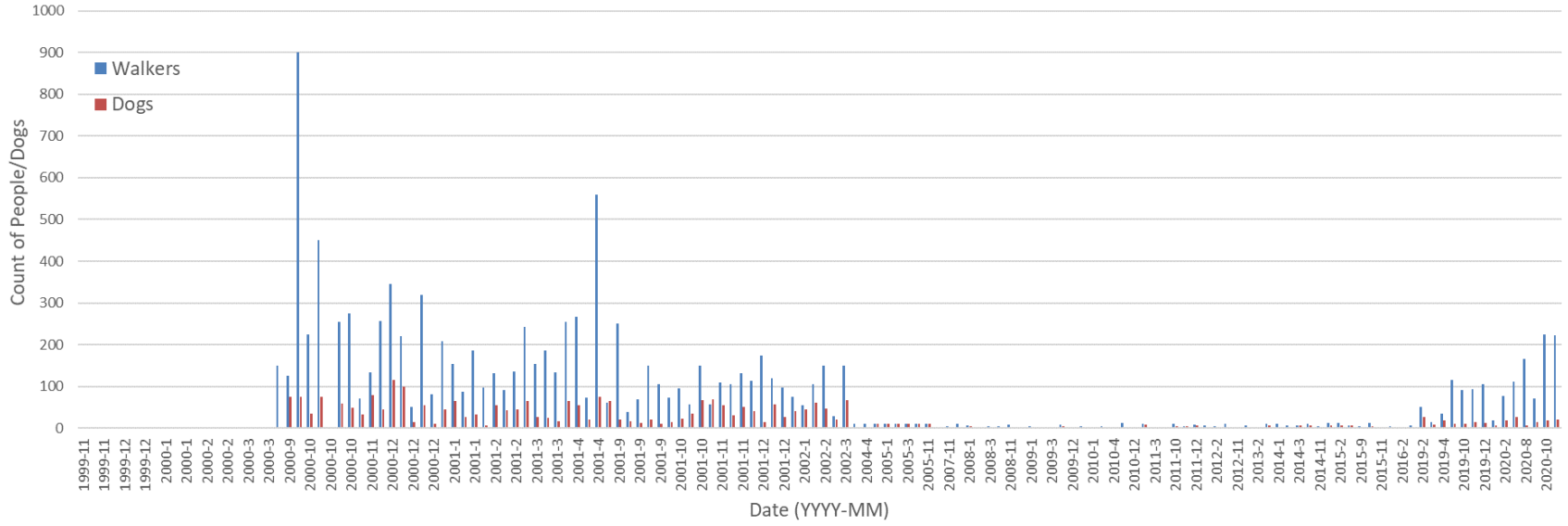
c. **Harling Point to Gonzales Point (McNeill Bay / Beach study area)**

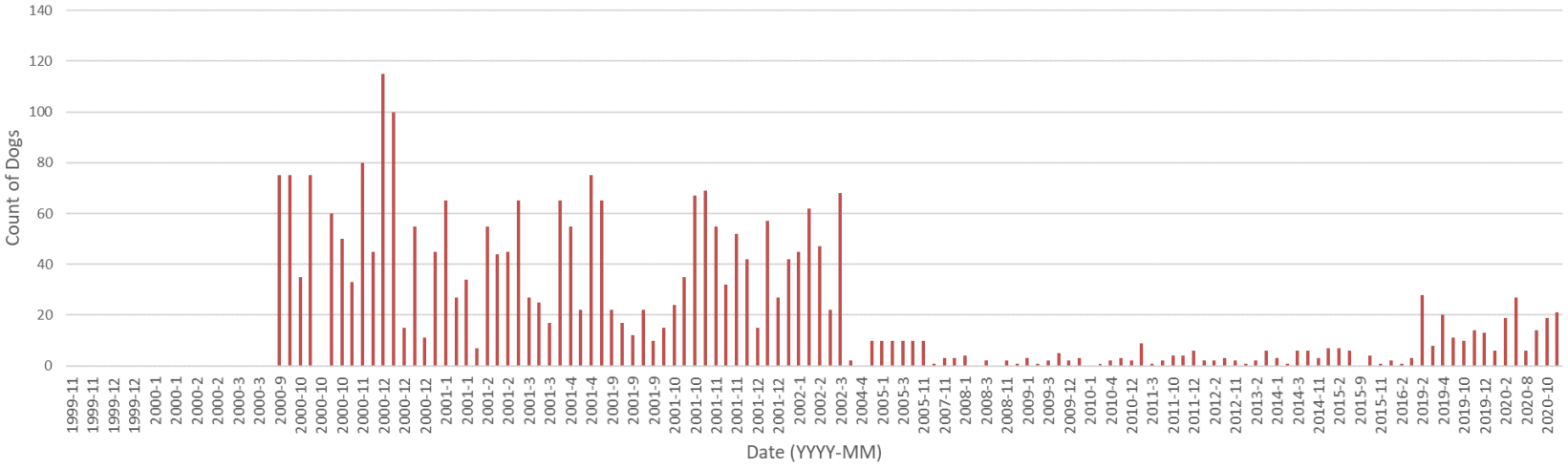


d. **Clover Point to Harling Point (Gonzales Beach, Ross Bay / Beach and Clover Point Shoreline [eastern half] study areas)**

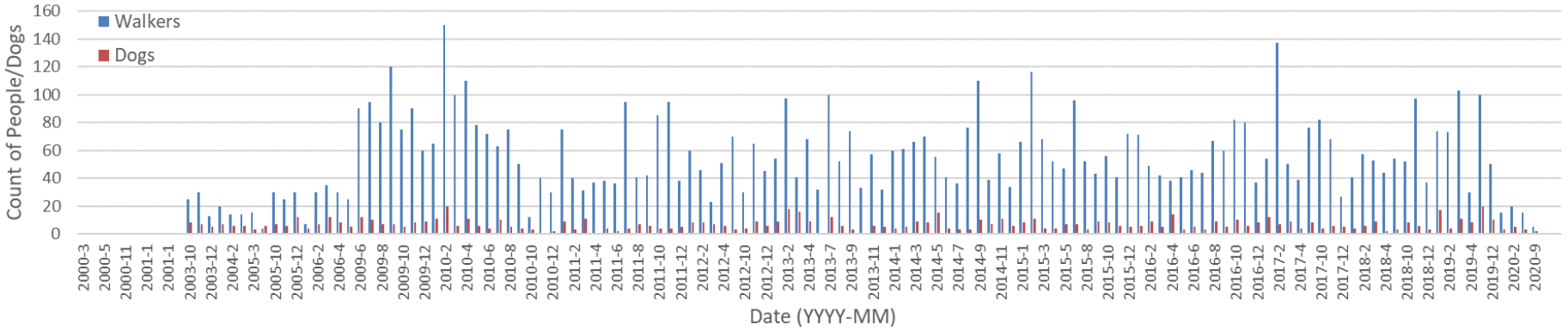


e. **Ogden Point to Clover Point (Clover Point Shoreline [western half], Dallas Bluffs beaches, and Holland Point Park to Ogden Point study areas). Only counts of dogs are shown at Gonzales Beach, Ross Bay / Beach and Clover Point Shoreline [eastern half] study areas). Count of dogs also presented separately to allow for easier interpretation of scale.**

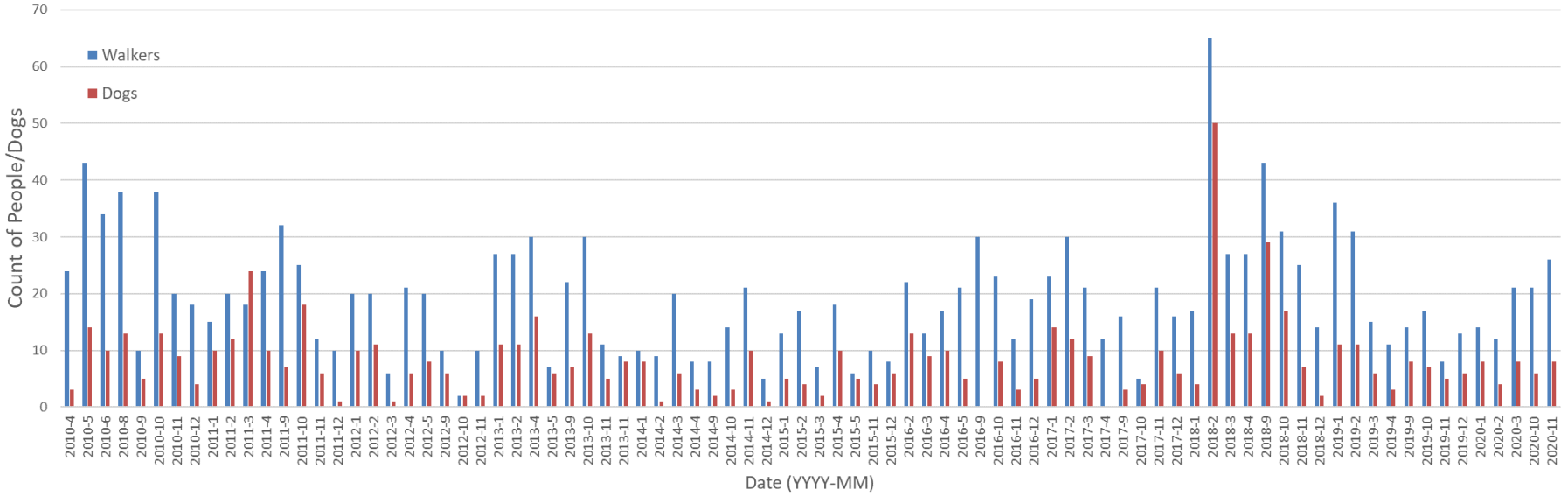




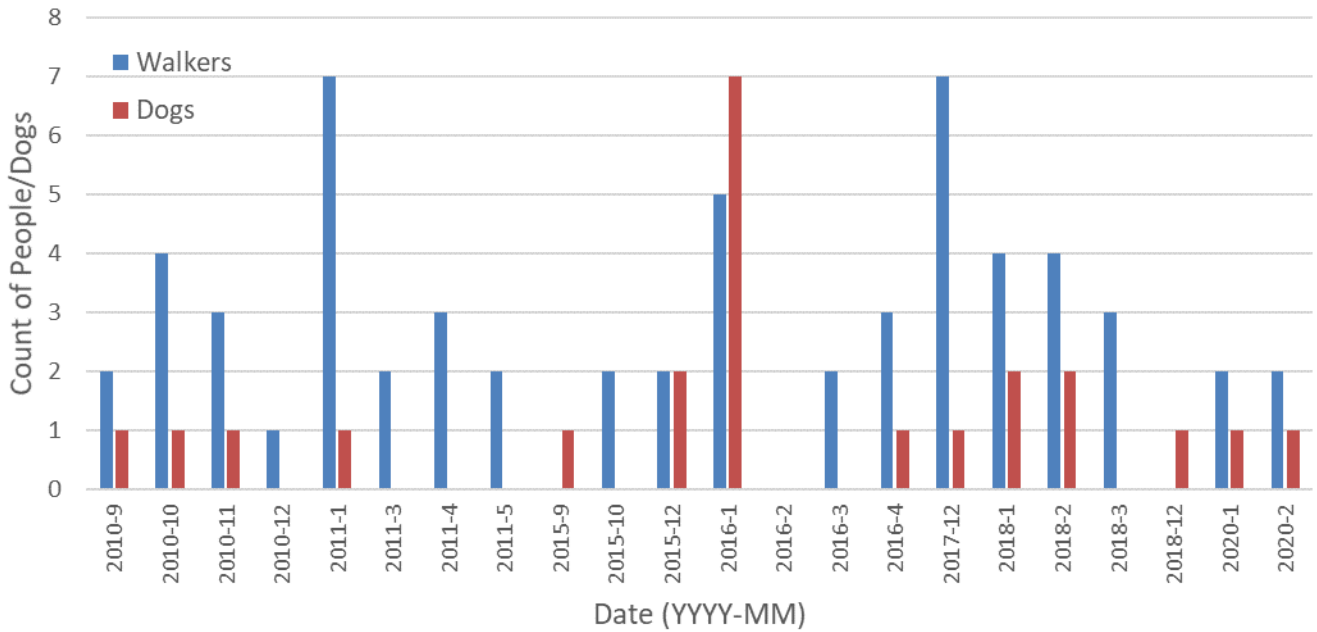
f. **Victoria Harbour (includes West Bay study area)**



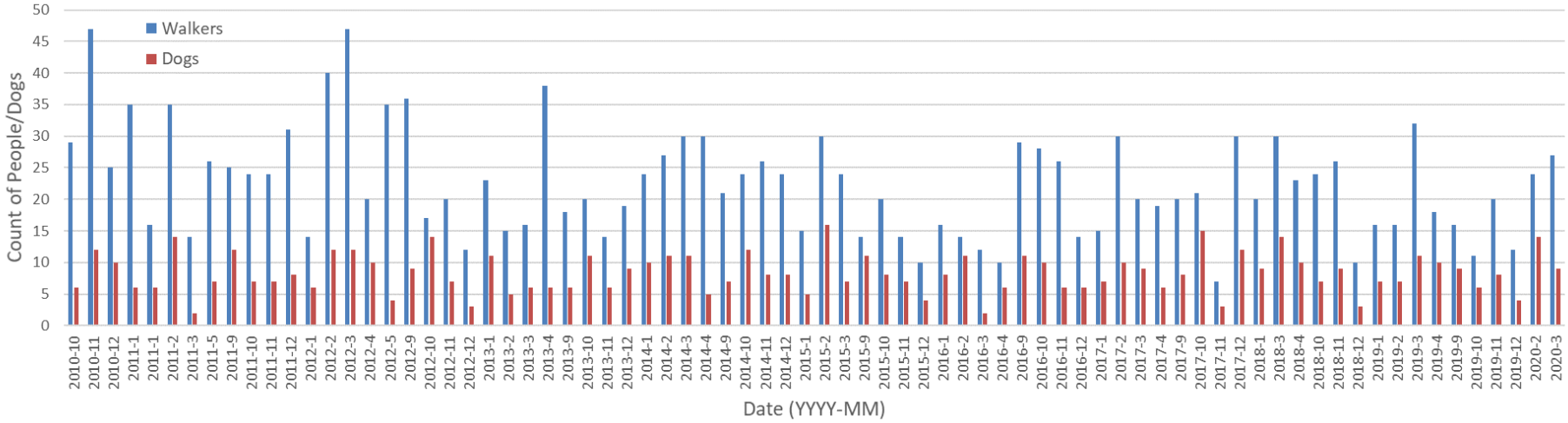
g. **Esquimalt Gorge Park / Gorge Creek Beach study area**



h. **Selkirk Arm (near Saanich Gorge Park / Curtis Point shores study area)**



i. **Gorge Road Walkway (Craigflower-Kosapsom Park beach study area)**



j. **Portage Inlet (Portage Inlet East, Portage Inlet North, and Portage Inlet West study areas)**