



# **Improving Catch-and-Release Regulations in BC: Prohibiting Air Exposure**

An ELC Clinic report prepared for:  
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July 2020

# Acknowledgments

The authors appreciate the assistance of:

- Allison Oliver, Skeena Fisheries Commission
- Misty MacDuffee, Raincoast Conservation Foundation
- Daniel Moltke Mogtaderi, Environmental Law Alliance Worldwide
- Jennifer Gleason, Environmental Law Alliance Worldwide

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Copyediting and layout: Holly Pattison, Environmental Law Centre

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# Introduction

Catch-and-release fishing is a popular form of recreational fishing and is often considered a conservation technique. The theory behind catch-and-release fishing is that fish survive and experience few to no negative effects from being caught and subsequently released – however, current scientific evidence shows flaws in this fundamental premise. The vast majority of scientific studies show that air exposure, which commonly occurs during catch-and-release fishing, causes significant harm to fish and fish populations. Fish cannot breathe out of water, and exposing a fish to air can cause death or other sublethal changes affecting overall viability of a fish population. Air exposure is also the easiest factor to control during catch-and-release fishing: unlike swimming time or deep hooking, over which there is little control, an angler can simply choose not to take a fish out of the water.

Other jurisdictions have regulations prohibiting the removal of fish from water during catch-and-release, yet there is no legal instrument in BC that explicitly prohibits the removal of fish water during catch-and-release. The general fish protection provisions in BC sport fishing regulations are unlikely to support a prosecution for exposing a fish to air. At the same time, BC's closest neighbours, Alaska and Washington, passed laws to prevent anglers from removing certain species from the water in certain locations – in order to limit the impacts of air exposure from catch-and-release fishing on those fish populations. A total ban on catch-and-release would be politically unpopular and economically damaging to certain communities, but a prohibition on removing fish from water during catch-and-release fishing is supported by many anglers and would not have the same consequences. This report makes the case for prohibiting the removal of fish from water during catch-and-release fishing.

The report is divided into five parts. [Part I](#) offers some background information on freshwater sport fishing in BC. [Part II](#) reviews the Constitutional division of federal/provincial powers as it applies to freshwater sport fishing in BC. [Part III](#) summarizes the scientific information showing the negative impacts of air exposure on fish. [Part IV](#) analyzes the current regulations applicable to freshwater sport fishing in BC, and explains the challenges in enforcing those regulations to keep fish in the water during sport fishing. [Part V](#) assesses the regulatory and policy approaches used in other jurisdictions to prevent the removal of fish from water during sport fishing.

In sum, enforceable regulations to protect fish from the avoidable harm of air exposure are lacking. It is time to act on the best available science and laws in neighbouring jurisdictions – and reel in the widespread practice of unnecessarily exposing fish to air.

## PART I: BACKGROUND CONTEXT

Sport fishing in BC provides cultural and economic value to local communities, residents of BC, and visitors from other jurisdictions. A survey of recreational fishing in Canada by the Department of Fisheries and Oceans in 2015 (the most recent data – the survey is done every five years) gauges the importance of sport fishing to BC's economy. In 2015, anglers spent \$498 million on fishing-related expenses within the province of BC, primarily on vehicle travel and food.<sup>1</sup> In Canada overall, recreational fishing expenses tallied to \$7.9 billion in 2015.<sup>2</sup> In total, 299,982 anglers fished in BC in that year, the vast majority being BC residents (247,582 residents, compared to 52,400 non-residents).<sup>3</sup> A total of 8.8 million fish were caught in BC in 2015, though it is not entirely clear how many of those fish were subsequently released.<sup>4</sup> BC is popular for sport fishing both with residents and with non-residents; around 5.2% of BC's total population participated in angling in 2015, and BC is the second most popular destination for recreational fishing in Canada (after Ontario).<sup>5</sup> Anglers most enjoy catching rainbow trout, according to reported preferences, followed by freshwater salmon, then steelhead, cutthroat trout and kokanee.<sup>6</sup>

Individual anglers also experience significant non-monetary benefits through sport fishing. The 2015 DFO survey assessed those non-monetary benefits and values by asking anglers about their motivations for sport fishing. The opportunity to be close to nature ranked as the most common motivator among all respondents, followed closely by “for relaxation” and “to get away from the routine.”<sup>7</sup> Non-resident anglers were primarily drawn by the challenge of sport fishing, where catching a large fish or many fish serves as the reward.<sup>8</sup> Resident anglers were “relatively more motivated by the opportunity to catch fish for food.”<sup>9</sup> Many anglers are avid conservationists, motivated to protect the natural resources that they love, and sport fishing can be an opportunity to learn about the inherent value of BC's fish populations.<sup>10</sup>

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<sup>1</sup> See Freshwater Fisheries Society of British Columbia, “2019 BC Freshwater Fishing Economic Impact Report” (2019) at 3, online (pdf): *Freshwater Fisheries Society of BC* <[www.gofishBC.com/PDFs/Footer/2013\\_BC\\_freshwater\\_sport\\_fishing\\_economic\\_impact\\_r.aspx](http://www.gofishBC.com/PDFs/Footer/2013_BC_freshwater_sport_fishing_economic_impact_r.aspx)>. This report relied on data from the 2015 DFO survey – see note 2 for more on that survey.

<sup>2</sup> See Canada, Fisheries and Oceans Canada, *Survey of Recreational Fishing in Canada, 2015* (Ottawa: Fisheries and Oceans Canada, 2015) at 1, online: <[www.dfo-mpo.gc.ca/stats/rec/canada-rec-eng.htm](http://www.dfo-mpo.gc.ca/stats/rec/canada-rec-eng.htm)>.

<sup>3</sup> Canada, Fisheries and Oceans Canada, *Survey of Recreational Fishing in Canada, 2015* (Ottawa: Fisheries and Oceans Canada, 2019) at 4–5.

<sup>4</sup> *Supra* note 1 at 6.

<sup>5</sup> *Supra* note 2 at 4.

<sup>6</sup> *Supra* note 1 at 6.

<sup>7</sup> Freshwater Fisheries Society of BC, “2019 BC Freshwater Fishing Economic Impact Report” (2019) at 5, online (pdf): *Freshwater Fisheries Society of BC* <[www.gofishBC.com/PDFs/Footer/2013\\_BC\\_freshwater\\_sport\\_fishing\\_economic\\_impact\\_r.aspx](http://www.gofishBC.com/PDFs/Footer/2013_BC_freshwater_sport_fishing_economic_impact_r.aspx)>.

<sup>8</sup> Freshwater Fisheries Society of BC, “2019 BC Freshwater Fishing Economic Impact Report” (2019) at 5, online (pdf): *Freshwater Fisheries Society of BC* <[www.gofishBC.com/PDFs/Footer/2013\\_BC\\_freshwater\\_sport\\_fishing\\_economic\\_impact\\_r.aspx](http://www.gofishBC.com/PDFs/Footer/2013_BC_freshwater_sport_fishing_economic_impact_r.aspx)>.

<sup>9</sup> Freshwater Fisheries Society of BC, “2019 BC Freshwater Fishing Economic Impact Report” (2019) at 5, online (pdf): *Freshwater Fisheries Society of BC* <[www.gofishBC.com/PDFs/Footer/2013\\_BC\\_freshwater\\_sport\\_fishing\\_economic\\_impact\\_r.aspx](http://www.gofishBC.com/PDFs/Footer/2013_BC_freshwater_sport_fishing_economic_impact_r.aspx)>.

<sup>10</sup> See for example Keepemwet, “Keep Fish Wet Principles” (2020), online: *Keepemwet* <[www.keepemwet.org/principles-2#principles](http://www.keepemwet.org/principles-2#principles)>, a non-profit devoted to encouraging and improving angling practices.

Despite its popularity, sport fishing has its critics. The Union of BC Indian Chiefs (UBCIC) recently called for a ban on catch-and-release salmon fishing and increased monitoring of sport fishing in BC.<sup>11</sup> In a February 2020 letter to government officials on catch-and-release fishing, the UBCIC stated that “First Nations commonly view this practice to be akin to torture, traumatizing the fish and returning it to the water unable to thrive.”<sup>12</sup> They claim that catch-and-release fishing injures fish and, in marine environments, makes them more vulnerable to predation by seals and orcas. First Nations reliant on salmon fishing for food notice the direct impacts of declining population rates, and according to the UBCIC, allowing catch-and-release fishing for salmon undermines Indigenous rights.

Sport fishing also has negative consequences for fish, including populations that have diminished dramatically from historical levels. Many popular angling species are listed as threatened, endangered or at risk under the *Species at Risk Act* (SARA) or by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).<sup>13</sup> For example, steelhead in the Thompson River and Chilcotin River are assessed as endangered by COSEWIC.<sup>14</sup> COSEWIC also considers white sturgeon in the Lower Fraser River, Upper Fraser, Upper Kootenay, and Upper Columbia Rivers as either threatened or endangered.<sup>15</sup> Interior Fraser coho salmon are listed as threatened by COSEWIC, and green sturgeon are listed under SARA as a species of special concern.<sup>16</sup> Clearly, any impact of catch-and-release fishing on these species should be minimized as part of efforts to ensure the continued existence of those species.

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<sup>11</sup> See Nelson Bennett, “UBCIC calls for salmon catch-and-release ban”, *Business in Vancouver* (20 February 2020), online: <[biv.com/article/2020/02/uBCic-calls-salmon-catch-and-release-ban#:~:text=The%20Union%20of%20BC%20Indian,release%20for%20salmon%20in%20BC](https://www.biv.com/article/2020/02/uBCic-calls-salmon-catch-and-release-ban#:~:text=The%20Union%20of%20BC%20Indian,release%20for%20salmon%20in%20BC)>

<sup>12</sup> Nelson Bennett, “UBCIC calls for salmon catch-and-release ban”, *Business in Vancouver* (20 February 2020), online: <[www.biv.com/article/2020/02/uBCic-calls-salmon-catch-and-release-ban#:~:text=The%20Union%20of%20BC%20Indian,release%20for%20salmon%20in%20BC](https://www.biv.com/article/2020/02/uBCic-calls-salmon-catch-and-release-ban#:~:text=The%20Union%20of%20BC%20Indian,release%20for%20salmon%20in%20BC)>

<sup>13</sup> SC 2002, c. 29.

<sup>14</sup> See Fisheries and Oceans Canada, “Steelhead Trout (*Oncorhynchus mykiss*), Thompson River Population (6 December 2019), online: *Species at Risk Public Registry* <[https://species-registry.canada.ca/index-en.html#/species/1399-1010#legal\\_list](https://species-registry.canada.ca/index-en.html#/species/1399-1010#legal_list)>; Fisheries and Oceans Canada, “Steelhead Trout (*Oncorhynchus mykiss*), Chilcotin River Population (6 December 2019), online: *Species at Risk Public Registry* <<https://species-registry.canada.ca/index-en.html#/species/1400-1009>>.

<sup>15</sup> See Government of Canada. “White Sturgeon Lower Fraser River population Species Profile” (2011). ([https://wildlife-species.canada.ca/species-risk-registry/species/speciesDetails\\_e.cfm?sid=1217](https://wildlife-species.canada.ca/species-risk-registry/species/speciesDetails_e.cfm?sid=1217)); Government of Canada. “White Sturgeon in the Upper Fraser population Species Profile” (2011). ([https://wildlife-species.canada.ca/species-risk-registry/species/speciesDetails\\_e.cfm?sid=1218](https://wildlife-species.canada.ca/species-risk-registry/species/speciesDetails_e.cfm?sid=1218)); Government of Canada. “White Sturgeon Upper Columbia River population Species Profile” (2011). ([https://wildlife-species.canada.ca/species-risk-registry/species/speciesDetails\\_e.cfm?sid=1219](https://wildlife-species.canada.ca/species-risk-registry/species/speciesDetails_e.cfm?sid=1219)); Government of Canada. “White Sturgeon Upper Kootenay River population Species Profile” (2011). ([https://wildlife-species.canada.ca/species-risk-registry/species/speciesDetails\\_e.cfm?sid=1216](https://wildlife-species.canada.ca/species-risk-registry/species/speciesDetails_e.cfm?sid=1216)). Also see Fisheries and Oceans Canada, “White Sturgeon (*Acipenser transmontanus*), Kootenay River population” (6 December 2019), online: *Species at Risk Public Registry* <[https://species-registry.canada.ca/index-en.html#/species/123-685#legal\\_list](https://species-registry.canada.ca/index-en.html#/species/123-685#legal_list)>.

<sup>16</sup> See Fisheries and Oceans Canada, “Green Sturgeon (*Acipenser medirostris*)” (6 December 2019), online: *Species at Risk Public Registry* <<https://species-registry.canada.ca/index-en.html#/species/98-417>>; Fisheries and Oceans Canada, “Green Sturgeon (*Acipenser medirostris*)” (6 December 2019), online: *Species at Risk Public Registry* <<https://species-registry.canada.ca/index-en.html#/species/98-417>>; Fisheries and Oceans Canada, “Coho Salmon (*Oncorhynchus kisutch*), Interior Fraser population” (6 December 2019), online: *Species at Risk Public Registry* <<https://species-registry.canada.ca/index-en.html#/species/716-98>>.



## PART II: DIVISION OF POWERS, LEGISLATION, AND REGULATION OF SPORT FISHING IN BC

The federal government has primary responsibility over fisheries regulation, but management of BC's non-tidal recreational fisheries involves a complex web of federal and provincial legislation, delegated authority, and agreements. A prohibition on removing fish from water during catch-and-release would require the federal government to amend the *British Columbia Sport Fishing Regulations (BCSFR)*.<sup>17</sup> The *BCSFR* is a federal regulation under the *Fisheries Act*<sup>18</sup> that applies to sport fishing on non-tidal waters as well as the Pacific Ocean<sup>19</sup> and is amended every three years.

In essence, the federal government regulates and manages non-tidal recreational fisheries in BC, with substantial input from provincial authorities, although the province administers the licensing of those fisheries. The constitutional power to regulate fisheries is divided between the provincial and federal governments as a result of federal powers under sections 91(12), "Sea Coast and Inland Fisheries," 91(24), "Indians and Lands reserved for the Indians," and 92(13), the provincial power over "Property and Civil Rights in the Province."<sup>20</sup> The federal power has been interpreted to include the power to regulate the manner of fishing and conserve fisheries resources.<sup>21</sup> The provincial power includes the power over leases and conveyancing of private fisheries,<sup>22</sup> but the provincial government cannot control or limit the right of the public to fish.<sup>23</sup>

The *Fisheries Act* is the cornerstone of fisheries legislation in Canada. Its purpose is to provide a framework for the proper management and control of fisheries and the conservation and protection of fish and fish habitat, including by preventing pollution.<sup>24</sup> Two regulations under that act are relevant to freshwater fishing in BC. The *BCSFR*, as the title suggests, specific to sport fishing and apply only within BC,<sup>25</sup> whereas the *Fishery (General) Regulations* apply to nearly all Canadian waters (including tidal and non-tidal waters in BC), with some exceptions.<sup>26</sup> Both regulations contain general provisions against harming fish, discussed in more detail in [Part III](#) of this report. Authority to manage non-tidal sport fisheries (except salmon) is effectively delegated to a provincial official in section 6(3) of the *Fishery (General) Regulations*, by giving that official the power to vary any close time, limit or quota for a non-tidal fishery.<sup>27</sup> The *BCSFR* sets out close

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<sup>17</sup> SOR/96-137 ["BCSFR"].

<sup>18</sup> RSC 1985, c. F-14.

<sup>19</sup> *Supra* note 17 at s 3.

<sup>20</sup> *Constitution Act, 1867*.

<sup>21</sup> See *Reference as to constitutional validity of certain sections of The Fisheries Act, 1914*, [1928] SCR 457. The power to regulate fish canneries is provincial, effectively because fish become property once they are removed from water, thus falling under the provincial power in s 92(13) over property and civil rights.

<sup>22</sup> See CED 4th (online) *Fish and Wildlife (Western)*, "Fisheries: Provincial Jurisdiction: Provincial Regulation" (II.1.(c)) at §79 (referring to *R v Wagner*, [1932] 2 WWR 162 (Man. C.A.)).

<sup>23</sup> See CED 4th (online) *Fish and Wildlife (Western)*, "Fisheries: Federal Jurisdiction: Introductory" (II.2.(a)) at §89 (referring to *Gulf Trollers Assn v Canada (Minister of Fisheries & Oceans)* (1986) [1987] 2 WWR 727 (Fed. C.A.); leave to appeal refused [1987] 2 WWR 1xx (SCC)).

<sup>24</sup> *Supra* note 18 at s 2.1.

<sup>25</sup> *Supra* note 17 at s 3.

<sup>26</sup> SOR/93-53 at s 3 ["FGR"].

<sup>27</sup> *Fishery (General) Regulations*, SOR/93-53 at s 6. "Where a close time, fishing quota or limit on the size or weight of fish is fixed in respect of an area of non-tidal waters for any species of fish other than salmon under the *British Columbia*



times, fishing quotas, size limits, gear, methods, and permissible bait.<sup>28</sup> The General Fisheries Agreement (1985) states that the province has delegated responsibility for the administration of freshwater fisheries.<sup>29</sup> Licensing for angling in non-tidal waters is administered under the *BC Wildlife Act*, including salmon in non-tidal waters, although the federal government retains responsibility for management of salmon resources in non-tidal waters.<sup>30</sup> However, despite the authority to issue licenses and manage many aspects of freshwater fishing, the key power to create regulations regarding freshwater fishing remains with the federal government.

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*Sport Fishing Regulations, 1996*, the director responsible for fisheries management in the Ministry responsible for fisheries in the government of British Columbia may, by order, vary that close time, fishing quota or limit in respect of that area or any portion of that area.”

<sup>28</sup> *Supra* note 17, e.g. ss 33–38.

<sup>29</sup> Personal communication, Sue Pollard, Freshwater Fisheries Society.

<sup>30</sup> RSBC 1996, c. 488 at s 12. See also the *Freshwater Fish Regulation*, BC Reg 261/83, setting out authority to issue licenses and relevant fees.

## PART III: SUMMARY OF SCIENTIFIC ARTICLES SHOWING THE IMPACTS OF CATCH AND RELEASE ON FISH

### Introduction

Catch-and-release fishing is considered a conservation technique. The fundamental premise of catch-and-release fishing is that fish suffer little to no harm from being caught and then released, and that fish generally survive after being released.<sup>31</sup> In theory, recreational catch-and-release fishers can enjoy the thrill of angling without affecting the overall well-being of a fish population. However, scientific studies overwhelmingly show that the impacts of air exposure during catch-and-release are far from negligible and can have serious impacts on fish populations. At the same time, air exposure is one of the easiest factors to control during catch-and-release fishing, since the angler can choose to keep the fish in the water. Air exposure commonly occurs when fish are removed from water by an angler for a variety of reasons including photography, measuring, hook removal, or admiration.<sup>32</sup> When exposed to air, fish are unable to absorb oxygen, leading to a cascade of sublethal and potentially lethal impacts.

### Physical effects on fish from air exposure

Fish absorb oxygen through their gills. Gills are made up of delicate structures called lamellae, and water flowing through the gills supports the lamellae and prevents them from sticking together.<sup>33</sup> If a fish is removed from water, then lamellae are no longer supported by water and they collapse into each other – resulting in little to no surface area for oxygen exchange to take place and “almost complete inhibition of gas transfer across the gills.”<sup>34</sup> Therefore, a fish out of water is unable to breathe, leading to further physiological effects, like the accumulation of carbon dioxide

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<sup>31</sup> See Christine Pelletier, Kyle C Hanson, & Steven J Cooke, “Do catch and release guidelines from state and provincial fisheries agencies in North America conform to scientifically based best practices?” (2007) 39:6 *Environmental Management* 760 at 760.

<sup>32</sup> Christine Pelletier, Kyle Hanson, and Steven J Cooke, “Do catch and release guidelines from state and provincial fisheries agencies in North America conform to scientifically based best practices?” (2007) 39:6 *Environmental Management* 760-773.

<sup>33</sup> See KM Gilmour “Gas exchange” in David Evans, ed, 2nd ed, *The physiology of fishes* (Boca Raton: CRC Press, 1997) 101-127. Water must flow in the opposite direction from blood to produce a gradient that drives oxygen transfer. Water has to flow from front to back (enter the mouth and exit through the opercula). This has implications for resuscitating a fish after capture – moving a fish back and forth does not optimize oxygen uptake. Most fish species essentially pump water over their gills continuously in order to meet the oxygen demands of their bodies, referred to as ventilation. Other species (such as tuna) move forward in the water continuously, ensuring constant movement of water – referred to as ram ventilation. Sturgeon can maintain gill ventilation even when their mouth is submerged in mud by moving water over their gills without the use of their mouth.

<sup>34</sup> See RA Ferguson & BL Tufts, “Physiological effects of brief air exposure in exhaustively exercised rainbow trout (*Oncorhynchus mykiss*): implications for ‘catch and release’ fisheries” (1992) 49:6 *Can J Fisheries & Aquatic Sciences* 1157. This study compared three groups of fish, which were all swum until exhaustion. One group was not exposed to air, one group was exposed to air for 30 seconds, and one was exposed to air for 60 seconds. Mortality was 12% in the group not exposed to air but 72% in the group exposed to air (measured 12 hours later).

and lactic acid in the fish's blood, which lowers blood pH and negatively impacts physiological function.<sup>35</sup>

## Mortality in fish due to air exposure

The most severe consequence of air exposure during catch-and-release for fish is death, although mortality rates vary significantly depending on the fish species and other environmental factors. Mortality can be as high as 72% for fish caught and then exposed to air for 60 seconds.<sup>36</sup> A study tracking sockeye salmon (by telemetry) in the lower Fraser River measured post-release mortality at 40% for fish that were caught by angling, exposed to air for one minute, and then released.<sup>37</sup> Another study of sockeye salmon found a mortality rate of 5% after 24 hours, but only 36.3% of fish exposed to air ultimately reached their spawning grounds.<sup>38</sup> The authors estimated that normally 70% of sockeye salmon reach their spawning grounds, suggesting that the treatment of catch-and-release angling plus air exposure was potentially associated with a maximum of 35% mortality over the long term.<sup>39</sup> A study of steelhead in the Bulkley River, British Columbia, found that 4.5% of steelhead captured and exposed to air died within three days. Based on those results, the authors of that study recommend that anglers limit exposure time to <10 s, and to consider water temperatures while fishing, but that fisheries managers should consider a ban on air exposure for catch-and-release of wild steelhead and salmon.<sup>40</sup>

## Other sublethal effects including physical, physiological, and behavioural changes

Air exposure causes physical, physiological, and behavioural changes that may not necessarily result in direct mortality in the short term, but can potentially have other consequences for fish survival and reproduction. Catch-and-release is one of the most “severe acute stressors imposed

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<sup>35</sup> RA Ferguson & BL Tufts, “Physiological effects of brief air exposure in exhaustively exercised rainbow trout (*Oncorhynchus mykiss*): implications for ‘catch and release’ fisheries” (1992) 49:6 *Can J Fisheries & Aquatic Sciences* 1157.

<sup>36</sup> RA Ferguson & BL Tufts, “Physiological effects of brief air exposure in exhaustively exercised rainbow trout (*Oncorhynchus mykiss*): implications for ‘catch and release’ fisheries” (1992) 49:6 *Can J Fisheries & Aquatic Sciences* 1157.

<sup>37</sup> See Michael R Donaldson *et al*, “Evaluation of a simple technique for recovering fish from capture stress: integrating physiology, biotelemetry, and social science to solve a conservation problem” (2013) 70:1 *Canadian Journal of Fisheries and Aquatic Sciences* 90.

<sup>38</sup> See Michael R Donaldson *et al*, “The consequences of angling, beach seining, and confinement on the physiology, post-release behaviour and survival of adult sockeye salmon during upriver migration” (2011) 108:1 *Fisheries Research* 133 at 138.

<sup>39</sup> Michael R Donaldson *et al*, “The consequences of angling, beach seining, and confinement on the physiology, post-release behaviour and survival of adult sockeye salmon during upriver migration” (2011) 108:1 *Fisheries Research* 133. The estimate of 70% is based on telemetry studies of marine-tagged fish, which the authors estimate is the study that most closely captures baseline survival since it excludes any effects of capture and handling that occurs in freshwater. The authors also looked at beach seining, which had a slightly lower mortality rate: 52.2% of fish caught by beach seine and then released eventually reached their spawning grounds, suggesting a 20% increase in mortality as a result of beach seining when compared to baseline survival.

<sup>40</sup> See Will M Twardek *et al*, “Consequences of catch-and-release angling on the physiology, behaviour and survival of wild steelhead *Oncorhynchus mykiss* in the Bulkley River, British Columbia” (2018) 206 *Fisheries Research* 235 at 246.

on fish throughout their lives,” and if it does not cause death, then the cumulative effects of air exposure and other stressors associated with catch-and-release can result in other negative impacts.<sup>41</sup> Mortality rates do not measure the total effect of air exposure during catch-and-release angling on fish populations because they do not capture sublethal effects.<sup>42</sup> Sublethal effects can be physical (causing visible change or injury to the fish’s physical structures), physiological (affecting metabolic, cardiovascular and other systems), and behavioural (changing how the fish reacts to its environment, including its ability to maintain equilibrium and swim).<sup>43</sup>

Air exposure is additionally harmful to large-bodied fish like sturgeon. The internal organs and body structures of large sturgeon collapse and suffer damage when the sturgeon is removed from water. Damage to large fish as a result of removal from water is so well-known that very few scientists even study the phenomenon, and several jurisdictions have banned the practice.<sup>44</sup> In contrast, BC merely makes a policy recommendation that sturgeon not be removed from water since they “are at risk of internal injuries due to their own weight.”<sup>45</sup> In addition to internal organ damage, air exposure causes reflex impairment and a physiological stress response in sturgeon, and in some cases mortality.<sup>46</sup>

Other physiological changes occur due to the stress response that occurs when fish are caught and removed from water.<sup>47</sup> Plasma cortisol levels indicate fish stress and recovery from stress<sup>48</sup> – and air exposure is linked with a strong and rapid increase in cortisol, as well as glucose and lactate.<sup>49</sup> Steelhead landed by tail-grab (instead of by netting) had higher blood glucose levels, suggesting that increased handling stress resulted in the elevated glucose.<sup>50</sup> The greater the stress, the higher the levels of lactate, cortisol and glucose.<sup>51</sup> A greater stress response has been linked to higher

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<sup>41</sup> Will M Twardek *et al*, “Consequences of catch-and-release angling on the physiology, behaviour and survival of wild steelhead *Oncorhynchus mykiss* in the Bulkley River, British Columbia” (2018) 206 Fisheries Research 235 at 246.

<sup>42</sup> See Katrina Cook *et al*, “The stress response predicts migration failure but not migration rate in a semelparous fish” (2014) 202 General & Comparative Endocrinology 44.

<sup>43</sup> See White *et al*, 2008, measured the lack of equilibrium in smallmouth and largemouth bass following air exposure. Ferguson & Tufts, 1992, discuss the physical & physiological effects of air exposure.

<sup>44</sup> Idaho, Washington, and California prohibit removing sturgeon of a certain size from water, for example. See Part V of this report for more details.

<sup>45</sup> See British Columbia, Ministry of Forests, Lands & Natural Resource Operations, *Guidelines for Angling White Sturgeon in BC* (Vancouver: Ministry of Forests, Lands & Natural Resource Operations, 2013). Note, now called the Ministry of Forests, Lands, Natural Resource Operations & Rural Development.

<sup>46</sup> See McLean *et al*, “Physiological stress response, reflex impairment and delayed mortality of white sturgeon *Acipenser transmontanus* exposed to simulated fisheries stressors” (2016) 4:1 Conservation Physiology 1.

<sup>47</sup> See FS Chopin, T Arimoto, & Y Inoue, “A comparison of the stress response and mortality of Sea Bream, *Pagrus major*, captured by hook and line and trammel net” (1996) 28:3 Fisheries Research 277 at 279. Stress, for fish, is defined as “the effect of any environmental alteration or force that extends homeostatic or stabilizing processes beyond their normal stasis, at any level of biological organization.” The stress response allows fish to overcome threatening or harmful situations, and the stress factors associated with catch and release fishing include fatigue, damage, confinement and overcrowding and barotrauma (damage due to changes in barometric pressure).

<sup>48</sup> FS Chopin, T Arimoto, & Y Inoue, “A comparison of the stress response and mortality of Sea Bream, *Pagrus major*, captured by hook and line and trammel net” (1996) 28:3 Fisheries Research 277. Sea bream showed increased cortisol levels after being caught by hook and line, and cortisol levels increased as the length of capture time increased.

<sup>49</sup> See RJ Arends *et al*, “The stress response of the Gilthead Sea Bream (*Sparus aurata* L.) to air exposure and confinement” (1999) 163:1 Journal of Endocrinology 149.

<sup>50</sup> See W.M. Twardek *et al*, Consequences of catch-and-release angling on the physiology, behaviour and survival of wild steelhead *Oncorhynchus mykiss* in the Bulkley River, British Columbia, Fish. Res., 206 (2018) 235.

<sup>51</sup> *Supra*, note 42.

mortality in sockeye salmon, and greater levels of stress and physical injury lead to a greater likelihood of post-release mortality.<sup>52</sup> It takes time for a fish to recover from these physical and physiological changes, and the longer they are exposed to air, the greater that recovery time.<sup>53</sup> Released fish are vulnerable to predation if they have been exhaustively angled and exposed to air because they experience a loss of balance and are fatigued.<sup>54</sup> Minimizing angling time and air exposure and releasing a fish quickly are keys to limiting predation following release.<sup>55</sup>

## How and why do scientific studies vary on the effects of air exposure?

Factors like measuring techniques, species or population, sex, age, location, environmental conditions and laboratory versus wild settings all influence the outcome of a study on the effects of air exposure.<sup>56</sup> Complexity arises as a result of environmental conditions and variability (between individuals, populations, and species), resulting in widely varying results from one study to another.<sup>57</sup> For instance, there are over 100 genetically distinct salmon populations in the Fraser River watershed, each adapted to its own spawning run.<sup>58</sup> Challenges also arise both with collecting data from wild populations and in interpreting that data.<sup>59</sup> However, according to a

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<sup>52</sup> Katrina Cook *et al*, “The stress response predicts migration failure but not migration rate in a semelparous fish” (2014) 202 *General & Comparative Endocrinology* 44. See as well, Graham D Raby *et al*, “Fishing for effective conservation: Context and biotic variation are keys to understanding the survival of Pacific salmon after catch-and-release” (2015) 55:4 *Integrative & Comparative Biology* 554.

<sup>53</sup> See Steven J Cooke *et al*, “The influence of terminal tackle on physical injury, handling time and cardiac disturbance of rock bass” (2001) 21:2 *North American Journal of Fisheries Management* 333. Fish exposed to air for 30 seconds required 2 hours for full recovery, whereas fish exposed to air for 180 seconds required 4 hours for recovery. The authors recommend that anglers minimize handling and air exposure of angled fish, and keep pliers or other tools close at hand so that hooks can be removed and fish released, as quickly as possible. No mortality was observed in the study. In terms of cardiovascular function, the fish’s heart rate is slow while out of water (bradycardia, in scientific terms), then increases beyond its normal range once the fish is returned to the water (tachycardia).

<sup>54</sup> See Christine Pelletier, Kyle C Hanson, & Steven J Cooke, “Do catch and release guidelines from state and provincial fisheries agencies in North America conform to scientifically based best practices?” (2007) 39:6 *Environmental Management* 760. In a study on bonefish, 39% were consumed by predators within 30 minutes of release in areas of high shark density, but zero predation occurred in areas of low shark density after angling.

<sup>55</sup> Christine Pelletier, Kyle C Hanson, & Steven J Cooke, “Do catch and release guidelines from state and provincial fisheries agencies in North America conform to scientifically based best practices?” (2007) 39:6 *Environmental Management* 760.

<sup>56</sup> Katrina Cook *et al*, “Fish out of water: How much air is too much?” (2015) 40:9 *Fisheries*, 452. Even in lab settings, effects can be difficult to measure. In reviewing the 1992 study by RA Ferguson & BL Tufts (*supra* note 36), Cook *et al* hypothesized that a tube inserted in the roof of each fish’s mouth might have dislodged from fish that were removed from the water due to thrashing. This may have exacerbated the effects of air exposure and influenced the results.

<sup>57</sup> *Supra* note 52 (Raby *et al*).

<sup>58</sup> Graham D Raby *et al*, “Fishing for effective conservation: Context and biotic variation are keys to understanding the survival of Pacific salmon after catch-and-release” (2015) 55:4 *Integrative & Comparative Biology* 554. These populations are adapted to their unique migration paths, which vary from 100 km to over 1,000 km; in river temperatures that vary from 6 °C to 22 °C; gaining up to 1100 m in elevation; and in a wide range of river flows. Species with shorter spawning routes might be less vulnerable to stressors that occur when tangled in gill nets or tangle nets. Variation between population also makes it difficult to assess the interactions between air exposure and other factors like disease, maturation, energy states, adaptation to environmental conditions and sex.

<sup>59</sup> Graham D Raby *et al*, “Fishing for effective conservation: Context and biotic variation are keys to understanding the survival of Pacific salmon after catch-and-release” (2015) 55:4 *Integrative & Comparative Biology* 554. The surgery to implant transmitters can cause injury, there may not be enough receivers along the migration path to understand the results, and assumptions are required in order to convert fish movement data into survival rates. Characteristics unique

2015 study, “capture and handling techniques employed by fishers are the most widely recognized factors affecting post-release rates of mortality.”<sup>60</sup> Warmer temperatures increase recovery time and cause higher rates of mortality.<sup>61</sup>

## How can these scientific results be used to form rules and guidelines for air exposure?

These differing results have implications for applying the precautionary principle in fisheries management. The precautionary principle requires taking the least harmful course of action in the face of scientific uncertainty. For example, fisheries managers, including the DFO, assume a specific mortality rate when making catch and release decisions.<sup>62</sup> One researcher, who observed higher mortality in female salmon following catch and release, recommended that fisheries managers take a conservative approach and apply the *female mortality rate* when assuming the mortality rate from catch and release.<sup>63</sup> As well, it should be remembered that the post-release mortality rates applied for one area and species, or one population, are likely not applicable across all areas, species and populations, or for all scenarios, including variations in environmental conditions, life-history of fish, previous angling encounters, disease, etc.<sup>64</sup>

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to Wild Pacific salmon can make their movements easier to track by implanted transmitters than other populations, and easier to interpret. Transmitters can be implanted gastrically in Wild Pacific salmon, which is more rapid, does not require anaesthetic, and creates little drag when swimming. Wild Pacific salmon only reproduce once, so researchers know that if they do not reach their spawning grounds then they will not reproduce (and are likely dead). They have known migration paths so receiving towers can be set up along those paths. All these factors suggest that data collected by transmitters implanted in Pacific Wild salmon is quite reliable.

<sup>60</sup> Graham D Raby *et al*, “Fishing for effective conservation: Context and biotic variation are keys to understanding the survival of Pacific salmon after catch-and-release” (2015) 55:4 Integrative & Comparative Biology 554.

<sup>61</sup> Graham D Raby *et al*, “Fishing for effective conservation: Context and biotic variation are keys to understanding the survival of Pacific salmon after catch-and-release” (2015) 55:4 Integrative & Comparative Biology 554.

<sup>62</sup> Graham D Raby *et al*, “Fishing for effective conservation: Context and biotic variation are keys to understanding the survival of Pacific salmon after catch-and-release” (2015) 55:4 Integrative & Comparative Biology 554 at 557. In BC, a 10% mortality rate is applied to salmon released from most recreational fisheries for the purposes of fisheries management.

<sup>63</sup> *Supra* note 52 at 15 (Cook *et al*).

<sup>64</sup> *Supra* note 52 (Raby *et al*).

## PART IV: THE EXISTING LAW IN BC

A law that expressly prohibits the removal of fish from water during sport fishing is only necessary because the current law in BC does not prohibit that removal. Two provisions of two different regulations under the *Fisheries Act* – section 4 of the *British Columbia Sport Fishing Regulations* (“BCSFR”) and section 33(2)(b) of the *Fishery (General) Regulations* (“FGR”) – could theoretically be applied to prohibit the removal of fish from water during sport fishing, though neither expressly prohibits that removal. As a result, it is still a question of statutory interpretation as to whether either of those provisions actually prohibits the removal of fish from water. Additionally, expert evidence would be required to secure a conviction under either provision – making such provisions substantially more difficult to actually enforce.

### The British Columbia Sport Fishing Regulations

The *BCSFR*, section 4, states that “Subject to these Regulations, no person shall molest or injure fish.”<sup>65</sup> The exact meaning of the terms “molest” and “injure,” in the context of fish and wildlife, is not clear from the existing case law. The first obstacle to applying the *BCSFR* to a case of air exposure would be the statutory interpretation hurdle: convincing a court that the terms “molest” or “injure” can include air exposure. The second obstacle would be procuring the required expert evidence.

There are no reported cases citing section 4 of the *BCSFR*, so the terms “molest” and “injure” have yet to be interpreted in the context of sport fishing.<sup>66</sup> There has been little to no judicial consideration of the terms “molest” or “injure” in the context of the *Fisheries Act* and regulations under that act, or other wildlife statutes in Canada. The meagre case law that exists suggests that the terms “molest” and “injure” refer to direct, physical and obvious injury.<sup>67</sup>

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<sup>65</sup> 1996, SOR/96-137 (“*BCSFR*”).

<sup>66</sup> No cases citing s 4 of the *BCSFR* were found on CanLII, Quicklaw, or Westlaw – the three major legal databases in Canada. Search methods included both noting up tools (where available) and keyword searching. No print resources were consulted for the caselaw research due to Covid-19.

<sup>67</sup> Several regulations under the *Fisheries Act* include a general prohibition that, subject to the regulations, no person shall molest or injure fish – similar to s 4 of the *BCSFR*. In brief, there is no clear legal definition for either “molest” or “injure” within the context of the *Fisheries Act*. All regulations under the *Fisheries Act* containing the terms “molest” or “injure” were noted up on CanLII, Quicklaw, and Westlaw to search for judicial interpretation of those terms. No cases discussed the meaning of those terms as used in any of the following regulations: *Pacific Fishery Regulations*, 1993 (SOR/93-54), s 7 (containing identical wording to s 4 of the *BCSFR*); *Yukon Territory Fishery Regulations*, CRC 1978, c. 854, s 9; *Newfoundland and Labrador Fishery Regulations*, SOR/78-443, s 24.1; *Northwest Territories Fishery Regulations*, CRC 1978, c. 847, s 7; *Alberta Fishery Regulations*, SOR/98-246, s 1; and s 23.1(2) of the *Fisheries Act* which uses the term “injured” in reference to Ministerial discretion to allow capture of injured cetaceans. The term “molest” does not appear anywhere else in the *Fisheries Act*. Interpretation of the word molest in the context of the *Wildlife Act*, RSBC 1996, c. 48, suggests a broad definition based on any kind of physical interference: in *R v Keefer*, 2017 BCPC 142, [2017] BCWLD 4238, throwing a bird was considered molesting under s 34 of the *Wildlife Act*, though note this is the only case interpreting the term “molest” in the *Wildlife Act*. Many more cases refer to the term “injure” in the context of the *Wildlife Act*, but few to none include a discussion of the meaning of the word. *R v Leveque*, 2002 BCPC 177, 2017 CarswellBC 1366, suggests there must be a direct element to the “injury”, as a hunting guide who led hunters to a bear did not “injure” that bear. More often the cases refer to obvious and severe physical injury – for example, shooting an animal – where there is no room for debate over whether the animal was “injured” (for example, *R v Klem*, 2013 BCSC 982, [2013] BCWLD 5261).



As a result, if a fisher were to be charged with molesting or injuring a fish by exposing it to air during angling and dispute the charge, the deciding judge would have to undertake an exercise in statutory analysis and determine whether Parliament intended the terms “molest” or “injure” to include exposing a fish to air. Catch and release fishing invariably involves some degree of interference, molestation, or injury to a fish, and an angling license gives a person permission to undertake those activities. What, then, is the meaning of “molest” or “injure” beyond what occurs normally during sport fishing? Without going into detail on the arguments that could be made in favour of competing interpretations, it is fairly clear that this provision was not designed around prohibiting the removal of fish from water. Cases citing other sections of the *BCSFR* show that issues of interpretation have acted as obstacles under other sections of the regulations.<sup>68</sup> While these cases do little to predict the outcome of a prosecution under section 4 of the *BCSFR*, they do show a tendency to interpret ambiguity in the *BCSFR* favourably towards the accused.

An interpretation issue regarding the mental element of an offence under section 4 of the *BCSFR* might also conceivably arise in its application to air exposure. Most offences under the *Fisheries Act* are public welfare offences and are *prima facie* strict liability offences, but the presumption of strict liability is rebuttable.<sup>69</sup> At first glance, section 4 appears to be a strict liability offence, in that the words do not require a mental element – a person commits the offence simply by doing the *actus reus* of “molesting” or “injuring” a fish. However, there may be room for a legalistic argument on the required mental element, especially given that a person has permission to molest or injure fish to some degree if they have a license to sport fish. In comparison, a clear and simple legislated threshold for air exposure – either an outright prohibition, or a number of seconds – would be easier to apply as a strict liability offence.

The second step to applying the current law in BC to air exposure cases would be tendering expert evidence to show that air exposure harms fish, and more specifically that air exposure likely harmed the particular fish in question in that instance. While a Conservation Officer could be qualified as an expert witness at trial, there would still be significant obstacles to showing that the fisher in that particular instance “molested” or “injured” a fish unlawfully. In a prosecution based on a clear rule against *removing fish from water*, all the Crown would have to prove would be the simple act of removing the fish from the water. In contrast, a prosecution based on “molesting” or “injuring” could require days of expert evidence on what acts constitute “molesting” and what, in fact, constitutes “injury.” It is likely that the prospects of such a complex proceeding powerfully inhibits enforcement.

Similar criticisms levelled at the *Species at Risk Act* and the *Marine Mammal Regulations* resulted in legislative reform, and further illustrate the need for law reform of these vague provisions in the

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<sup>68</sup> Cases citing the *BCSFR* shed very little light on s 4 might be interpreted, though they do illustrate problems with enforcing the *BCSFR* more generally. In *R v Dicesare*, 2016 BCPC 409, [2017] BCWLD 402, the accused was acquitted on charges of fishing for salmon with prohibited gear (a barbed hook) because the Crown could not prove beyond a reasonable doubt that he intended to catch salmon, and not for some other species.

<sup>69</sup> See *R v Rupp*, 2015 BCPC 301, [2016] BCWLD 195, where uncertainty on the required mental element of an offence presented an obstacle to enforcing a particular provision. The accused was charged with fishing for salmon with a barbed hook (prohibited under s 49 of the *BCSFR*) but claimed he was not fishing for salmon because his intent was to catch rockfish. Most offences under the *Fisheries Act* are public welfare offences and are thus *prima facie* strict liability offences (para 13), but at para 17 the judge stated that section 49 incorporated a mental element because of the words “fish for salmon” in that provision. However, the standard for proving the required *mens rea* was low. The Crown did not have to prove that the accused *intended* to catch a salmon, only that catching a salmon was a probable result of his conduct, and that he deliberately took the risk of catching a salmon with a barbed hook. See as well *R v Sault Ste Marie (City)*, [1978] 2 SCR 1299, 2 WCB 321 (SCC), for a discussion of *mens rea*, strict liability, and absolute liability offences.

*BCSFR*. Prior to 2018, section 7 of the *Marine Mammal Regulations* contained a ban on “disturbing” a marine mammal, and the term “disturb” was not defined anywhere in the legislation.<sup>70</sup> Showing that a vessel on the water “disturbed” a marine mammal sets a very high standard and would require expert evidence on the exact level of disturbance caused by the vessel. The *Marine Mammal Regulations* now contain specific approach distances for different species of marine mammals, including an approach limit of 200m for killer whales.<sup>71</sup> These approach distances provide a concrete way of measuring tour operator behaviour, and one that does not require expert evidence in court. Similarly, the *Species at Risk Act* contains a similar provision in section 32, which states that no person shall “kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species.”<sup>72</sup> The term “harass” is not defined in the legislation, but in *R v Peterson*, the court held that repeatedly approaching whales at a distance of 15 to 25 metres constituted harassment, contrary to DFO guidelines recommending a distance of 100 metres.<sup>73</sup> “Harass” was defined by the BC Provincial Court as “any act or series of acts which tends to disturb, alarm or molest whales.”<sup>74</sup> In *R v Smith*, “disturbance” was held to refer to one or two events that would disturb an animal, whereas “harass” in section 32 was defined as “repetition of a disturbance effect, persistence of the disturbing influence, and at a certain point where it could lead to more significant changes in the animal’s behaviour state.”<sup>75</sup> Although these cases were successful under the *SARA*, they illustrate the difficulties of pursuing a prosecution under a general and vague provision, requiring both statutory interpretation and sometimes extensive expert evidence.

## The Fishery (General) Regulations

Section 33(2)(b) of the *Fishery (General) Regulations* contains a specific provision requiring the release of incidental catch in a manner that causes the least harm, and could theoretically be applied to instances where a fish is exposed to air.<sup>76</sup> Again, obstacles of statutory interpretation and expert evidence arise, although it is more likely that this provision could be applied to prohibit air exposure than section 4 of the *BCSFR*. Section 33(2) states that if a person catches a fish that they are not allowed to retain (referred to as incidental catch), then they must “forthwith return it (a) to the place from which it was taken; and (b) where it is alive, in a manner that causes it the least harm.”<sup>77</sup> There is considerable uncertainty as to whether the requirements to return a fish “forthwith” and “in a manner that causes it the least harm” are intended to prohibit air exposure, and typically this provision is applied where a person unlawfully retains incidentally caught fish that are already dead.<sup>78</sup> Indeed, the word “return” in s. 33 (2) clearly contemplates that removal

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<sup>70</sup> SOR/93-56 as it appeared on 21 June 2018.

<sup>71</sup> SOR/93-56, s 7 and Schedule VI.

<sup>72</sup> SC 2002, c. 39.

<sup>73</sup> See Janice Walton, *Blakes’ Canadian Law of Endangered Species: Volume 1* (Toronto: Thomson Reuters, 2014) at 2-82, discussing *R v Peterson*, [2012] unreported (BCPC) Campbell River.

<sup>74</sup> See Larry Reynolds, “Watching a Whales Tale: The Protection of *Cetaceans* in Canada” (2016) 28 JELP 3 at 294.

<sup>75</sup> Larry Reynolds, “Watching a Whales Tale: The Protection of *Cetaceans* in Canada” (2016) 28 JELP 3 at 295.

<sup>76</sup> *Supra* note 26.

<sup>77</sup> *Fishery (General) Regulations*, SOR/93-53.

<sup>78</sup> See *R v Rondeau*, 2001 YKTC 47, holding at para 19 that s 33 of the *FGR* is very specific, and incidentally caught fish (no matter if dead, alive or injured) must be returned to the place from where they were taken. S 34(3), which prohibits wasting any fish for human consumption, does not override s 33, as s 33 is more specific (paras 20-21).

from water is acceptable if the fish is “returned” properly. Although the term “forthwith” means “immediately” or “as soon as possible in the circumstances,” it is very context-specific and courts will consider what was reasonable in the circumstances.<sup>79</sup> If the accused offers a plausible explanation as to why they did not immediately return the fish to the water, then they will not have violated the requirement to return the fish “forthwith”.<sup>80</sup> In *R v O’Donnell*, the phrase “in a manner that causes it the least harm” was interpreted to mean that the fish should be quickly returned to the water, cradled, and resuscitated until it swims away, based on the expert witness testimony of a conservation officer.<sup>81</sup> Building on *O’Donnell*, and the emphasis in other cases on taking into account the particular circumstances when applying section 33, it seems theoretically plausible that this provision could sometimes be applied where an angler removes a fish from water for a period of time. Again, however, a prosecution would likely require expert evidence to prove that the method of returning a fish that causes “least harm” is to not remove it from the water in the first place. Most of the time, this complexity would deter a Crown prosecutor from proceeding with a charge for such a minor violation.

## Current Policy Approach in BC

BC currently *recommends* that fish not be removed from water during catch and release fishing, in a brief note in its plain language summary of *BCSFR* as a best practice.<sup>82</sup> This is a policy recommendation, but not a legal requirement, and could not be enforced in its own right. A government publication from 2016 shows that the impacts of removing steelhead from water during sport fishing have not gone unnoticed. In that report, the BC Ministry of Forests, Lands and Natural Resource Operations noted that catch and release regulations should be administered in a

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<sup>79</sup> See *R v Norman*, [2001] NJ No. 277, 51 WCB (2d) 334, at paras 14, 26 and 33. The accused pulled up a gillnet (that was lawfully set), removed dead salmon from the net (that he was not allowed to retain), and placed the salmon in a bag at which point fisheries officers alerted him to their presence. He claimed that he intended to dispose of the salmon further from his lobster traps. The trial judge accepted his evidence, and held that “The interpretation of “forthwith” should not be so restrictive as to mean immediately if the explanation given as to why they were not thrown over is reasonable under all the circumstances of the case.” The acquittal was upheld on appeal.

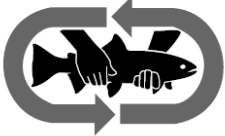
<sup>80</sup> See *R v Flynn*, 138 Nfld & PEIR 109, 431 APR 109, a case illustrating that “forthwith” refers to the period of time a reasonable person would take in the circumstances. The accused was charged with retaining incidentally caught salmon, contrary to section 33 of the *FGR*. The trial judge rejected the accused’s evidence that he intended to travel 300 – 400 yards from his net before disposing of the salmon, noting at para 43 that a reasonable fisher would not travel so far.

<sup>81</sup> 2009 BCSC 1193, [2009] BCWLD 8160 (*O’Donnell*), where the accused foul hooked a fish, dragged it 20 – 40 ft onto the rocks, watched it flip about, then picked it up and threw it back into the river. Other examples of the context-specific application of 33 include *R v Burge*, 287 Nfld & PEIR 291, 84 WCB (2d) 973, where the accused did not have a reasonable opportunity to tag salmon before conservation officers inspected his boat and so did not violate the requirement to tag salmon immediately; *R v Ross*, [2001] NSJ No. 216, 2001 CanLII 21436 (NS SC), where the accused retained undersized scallops on his boat for several hours but did not violate the requirement to return incidental catch forthwith since the scallops were still alive and in good condition after those hours, and he acted reasonably in waiting until he had enough scallops that it was economically viable to sort them; and *R v Rumboldt*, 2008 NJ No 391, where the interpretation of “forthwith” and in a manner that causes the “least harm” turned on what a reasonable person would have done in the circumstances, and whether a person exercised all due diligence to return the fish to the water.

<sup>82</sup> See British Columbia, Ministry of Forests, Lands, Natural Resource Operations and Rural Development, Fish and Wildlife Branch, *2019-2021 Freshwater Fishing Regulations Synopsis* (Victoria: Ministry of Forests, Lands, Natural Resource Operations and Rural Development, 1 April 2019) at 5.

“responsible way” in order to conserve steelhead populations.<sup>83</sup> The report recommended regulatory measures to “Foster improved handling practices including the discouragement of complete removal of wild steelhead from the water.”<sup>84</sup> While the terms of this recommendation are vague enough that the brief note (see Fig.1 below) recommending that anglers keep fish in the water might fulfill the requirements, it is clear that fishing rules in BC lag behind other jurisdictions that have already taken concrete legal steps to prohibit the removal of certain fish from water.

**RELEASING FISH  
THE GENTLE WAY**



There is a growing trend among anglers to release, unharmed, the fish they catch (catch and release). A fish that appears unharmed may not survive if carelessly handled, so please abide by the following:

- Play and release fish as rapidly as possible. A fish played for too long may not recover. Keep fish immersed in water unless you have chosen to legally harvest the fish. A fish out of water is suffocating. Every second a fish is out of the water decreases its chance of survival by 1%. Also, internal injuries and scale loss are much more likely to occur when a fish is out of the water.
- Keep the eyes of a fish covered, if possible, when unhooking it. Fish don't have eyelids or pupils that constrict; therefore, their eyes cannot adjust to an increase in light intensity. Covering a fish's eyes in shallow water (without touching the eyes or pushing down on

the gills) can reduce the amount they struggle and minimize stress.

- Carry needle-nose pliers. Grab the bend or round portion of the hook with your pliers, twist pliers upside down, and the hook will dislodge. Be quick, but gentle. Single barbless hooks are recommended, if not already stipulated in the regulations.
- Any legal fish that is deeply hooked, hooked around the gills or bleeding should be retained as part of your quota. If the fish cannot be retained legally, you can improve its chances for survival by cutting the leader and releasing it with the hook left in.
- Nets used for landing your catch, should have fine mesh and a knotless webbing to protect fish from abrasion and possible injury.
- If you must handle the fish, do so with your bare, wet hands (not with gloves). Gloves can remove the protective slime that aids in their survival. Keep your fingers out of the gills, and don't squeeze the fish or cause scales to be lost or damaged. Leave fish in the water for photos. If you must lift a fish that will be subsequently released, then provide support

by cradling one hand behind the front fins and your other hand just forward of the tail fin. Minimize the time out of the water. If the fish cannot remain upright on its own, hold the fish in the water to recover. If fishing in a river, point the fish upstream; when it begins to struggle and can remain upright let it go.

- Fish out of water. Taking a fish out of water can harm fish. If you plan on releasing the fish you catch make every effort to keep it in the water.



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Fig 1: The BC Freshwater Fishing Regulations Synopsis merely recommends keeping a fish in the water, at p 11.

<sup>83</sup> See British Columbia, Ministry of Forests, Lands, Natural Resource Operations and Rural Development, Fish and Wildlife Branch, *Provincial Framework for Steelhead Management in British Columbia* (Victoria: Ministry of Forests, Lands, Natural Resource Operations and Rural Development, April 2016) at 12.

<sup>84</sup> British Columbia, Ministry of Forests, Lands, Natural Resource Operations and Rural Development, Fish and Wildlife Branch, *Provincial Framework for Steelhead Management in British Columbia* (Victoria: Ministry of Forests, Lands, Natural Resource Operations and Rural Development, April 2016) at 12.

## PART V: COMPARISON OF REGULATIONS IN OTHER JURISDICTIONS

### Introduction

Policy approaches for encouraging anglers to keep fish in the water vary by jurisdiction. At one end of the spectrum, some jurisdictions ban the practice for certain species and in certain locations, while jurisdictions at the other end of the spectrum do not mention air exposure at all. Nearly all of the American states and Canadian provinces and territories publish a plain language summary of their freshwater sport fishing laws regulations. Others make the information available somewhere online. This section of the report examines the most recent plain language summaries of freshwater sport fishing regulations in all 50 American states and 13 Canadian provinces and territories, or the jurisdiction's website on sport fishing regulations if no plain language summary was available. Three broad categories emerged from this research. A few jurisdictions have regulations or laws in place to prohibit the practice of removing fish from water. The majority recommend keeping fish in water as a best practice. A minority of jurisdictions do not mention air exposure at all. As mentioned above, BC falls into the middle category as its sport fishing synopsis includes a brief note on keeping fish in water as a best practice.

A 2007 study undertook a similar comparison and recommended that jurisdictions adopt a clear threshold on air exposure – either no air exposure whatsoever, or a number of seconds – rather than relying on vague and inconsistent language.<sup>85</sup> The authors reasoned that anglers are less likely to take vague and inconsistent recommendations seriously.<sup>86</sup> Some 13 years later, it is apparent that many jurisdictions (including BC) continue to rely on general recommendations such as “make every effort to keep [fish] in the water”<sup>87</sup> rather than implementing a clear threshold that anglers can put into practice. The 2007 study found that 64% of the 49 agencies examined recommended keeping fish in the water at all times and that “air exposure was the most widely discussed catch-and-release issue among agencies.”<sup>88</sup> Given the strong connection between air exposure and hook removal, they also recommended detailed guidelines and illustrations on how to remove a hook while minimizing air exposure, as well as a list of appropriate tools for hook removal.<sup>89</sup> The authors also recommended simplified guidelines supplemented by detailed

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<sup>85</sup> See Christine Pelletier, Kyle Hanson, and Steven J Cooke, “Do catch-and-release guidelines from state and provincial fisheries agencies in North America conform to scientifically based best practices?” (2007) 39 *Environmental Management* 760

<sup>86</sup> Christine Pelletier, Kyle Hanson, and Steven J Cooke, “Do catch-and-release guidelines from state and provincial fisheries agencies in North America conform to scientifically based best practices?” (2007) 39 *Environmental Management* 760.

<sup>87</sup> *Supra* note 82 at 11.

<sup>88</sup> *Supra* note 85. Other findings by Pelletier *et al*: 89% of agencies surveyed provided advice on air exposure. Some had more objective guidelines: 25% recommended “as little as possible”, 1% recommended “no longer than you can hold your breath” and Maine recommended a maximum of 15 seconds. Some agencies recommend holding the fish gently on the surface of the water, or in the water, to take a picture.

<sup>89</sup> Christine Pelletier, Kyle Hanson, and Steven J Cooke, “Do catch-and-release guidelines from state and provincial fisheries agencies in North America conform to scientifically based best practices?” (2007) 39 *Environmental Management* 760. Most agencies (90%) recommended cutting the line when a fish is deeply hooked, consistent with studies showing that removing deep hooks often results in mortality because of increased handling and air exposure.

scientific information, so that anglers (if interested) can learn about the justifications and rationales for particular angling rules and guidelines.<sup>90</sup>

## Jurisdictions that prohibit removal in some form

No Canadian provinces prohibit removing fish from water during catch-and-release fishing. Newfoundland and Labrador moderate the impacts of catch-and-release fishing by placing daily catch-and-release limits on salmon in certain tributaries, and closing certain rivers and tributaries when water temperatures reach a certain threshold.<sup>91</sup> Although not a prohibition on removing salmon from the water, limiting or closing catch-and-release effectively limits the number of fish that are removed from water or prevents removal altogether. Adopting a similar policy in BC could prevent some of the negative impacts of sport fishing on species that are dwindling in numbers, though it may also be hugely unpopular. Anglers would likely prefer a prohibition on removing fish from water instead of outright closures based on water temperature or limits on catch-and-release. Guides, lodges, and communities that depend on recreational fishers would also probably oppose such a policy, as it might decrease the number of anglers relying on their services.

It is important to note that Washington and Alaska both prohibit the removal of certain species from the water during catch and release fishing. In Washington, fishers are not allowed to remove salmon, steelhead or Dolly Varden/bull trout from the water if they intend to release that fish, or are not allowed to retain it.<sup>92</sup> There are some exceptions for parts of the Columbia River.<sup>93</sup> In marine areas, the regulations prohibit removing salmon from water for all marine areas west, north and inland of Sekiu (just west of the tip of the Olympic peninsula).<sup>94</sup> Otherwise, the prohibition does not apply along Washington's coast, south of the Olympic peninsula, with the exception of a small area around Aberdeen.<sup>95</sup>

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<sup>90</sup> Christine Pelletier, Kyle Hanson, and Steven J Cooke, "Do catch-and-release guidelines from state and provincial fisheries agencies in North America conform to scientifically based best practices?" (2007) 39 *Environmental Management* 760.

<sup>91</sup> See Canada, Fisheries and Oceans Canada, Communications Branch, *Newfoundland and Labrador Angler's Guide 2020-2021* (St John's: Fisheries and Oceans Canada, 2020) at 5-6 regarding catch-and-release limits in different tributaries. When water temperature rises above 20°C over two to three days, the department will consider closing the river to angling from 10:01 am until an hour before sunrise the following day, depending on the river's class. General tips recommend keeping fish in the water as much as possible, at 7.

<sup>92</sup> See Washington Administrative Code ch. 220-310§100. The code states that "It is unlawful to totally remove salmon, steelhead, or Dolly Varden/bull trout from water if it is unlawful to retain those fish, or if the angler subsequently releases the salmon, steelhead, Dolly Varden/bull trout."

<sup>93</sup> See Washington, Washington Department of Fish and Wildlife, *Washington Sport Fishing Rules (effective July 1, 2019 - June 30, 2020)* (Olympia: Washington Department of Fish and Wildlife, 1 July 2019, last updated 19 May 2020) at 5. In effect, the rules do not apply to a 20km stretch of the Columbia River around Astoria (marked by the Buoy 10 line and the Rocky Point/Tongue Point line). For the 450 km stretch from Astoria to Kennewick, the rules only apply to persons fishing from a vessel less than 30 feet in length during Feb. 15 to June 15 (marked by the Buoy 10 line and the Rocky Point/Tongue Point line).

<sup>94</sup> See Washington Administrative Code ch. 220-310§100. The regulations state that in Marine Areas 5 through 13, it is "unlawful to bring wild salmon or a species of salmon aboard a vessel if it is unlawful to retain that salmon," where "aboard" means inside the gunwale of the boat. This includes the marine areas around Seattle, Bellingham and Port Angeles.

<sup>95</sup> *Supra* note 93 at 5. In Marine Area 2-2, it is unlawful to remove a salmon from water unless the fisher is keeping the salmon, unless the fisher is on a boat 30 feet or more in length. The vessel has to be listed as 30 feet or longer on its state or Coast Guard registration.



Alaska takes a patchwork approach to prohibiting the removal of fish from water, both at the species level and at the geographic level. This likely reflects the wide range of sport fishing pressures that different salmon and trout populations experience, based on accessibility and popularity of specific rivers and species. Removing king salmon, coho salmon, rainbow trout and steelhead is illegal in a range of rivers, though the rules are very region-specific. For example, king salmon fishing in the King Salmon River is only open to catch and release fishing, and king salmon must not be removed from the water (see [Appendix A](#) for more details).<sup>96</sup>

Washington Sport Fishing Rules: Effective July 1, 2019 - June 30, 2020

## Salmon, Trout, and Steelhead Handling Rules

General Information

**FRESHWATER:** "It is unlawful to totally remove salmon, steelhead, or Dolly Varden/bull trout from the water if it is unlawful to retain those fish, or if the angler subsequently releases the salmon, steelhead, Dolly Varden/bull trout."

**EXCEPTIONS:**

- The Columbia River between the Buoy 10 line and the Rocky Point/Tongue Point line
- The Columbia River from the Rocky Point/Tongue Point line upstream to Hwy. 730 OR/WA border the rules apply only when fishing from vessels less than 30 feet in length during Feb. 15-June 15.

**MARINE AREAS 5 through 13:** "It is unlawful to bring wild salmon or a species of salmon aboard a vessel if it is unlawful to retain that salmon" ("aboard" means inside the gunwale of a vessel).

**MARINE AREA 2-2:** "It is unlawful to totally remove salmon from the water if it is illegal to retain those fish, except anglers fishing from boats 30 feet or longer as listed on either their state or Coast Guard registration, are exempt."

### How to Release Fish

When you need to release a fish, there are some special precautions you can take to give it the best chance of surviving:

- Minimize handling by leaving the fish in the water.
- Do not net your fish – but if you must, use a soft, knotless net or rubber mesh net. Knotless nets are now required in fly-fishing only areas and freshwater areas with selective gear rules.
- Use a hook remover (dehooker) when hooks are imbedded in the mouth or jaw.
- If a fish has swallowed the hook, cut the leader.
- Keep fingers away from the eyes and gills of the fish.

### Selective Fishing

Selective fisheries for hatchery-produced fish and catch-and-release fisheries are increasingly important to providing recreational fishing opportunities in Washington. To ensure these fisheries are successful, it is absolutely essential that participating anglers comply with all regulations and take great care in releasing unmarked fish to ensure the greatest chance for survival.

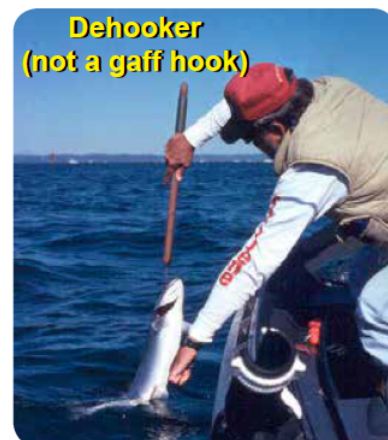


Photo shows the proper technique of releasing a fish with a dehooker without bringing the fish aboard the vessel.

Fig. 2 – Washington's sport fishing regulations synopsis explains the law on keeping fish in the water with bright colours, at p 5.

<sup>96</sup> See Alaska, Alaska Department of Fish and Game, Division of Sport Fish, *Southwest Alaska Sport Fishing Regulations Summary (effective until the 2021 Summary is issued)* (Juneau: Alaska Department of Fish and Game, 2020) at 23.



## Sturgeon-specific rules

Several American states prohibit the removal of sturgeon over a certain size from the water, although no Canadian jurisdictions have taken this step. California prohibits removing white sturgeon with a fork length greater than 68” from the water, and Green Sturgeon cannot be removed from the water at all.<sup>97</sup> Note that removing trout and salmon in California is discouraged, but not prohibited.<sup>98</sup> Oregon expressly prohibits removing a sturgeon of over 54” from water, though for all other species it only encourages keeping fish in the water, particularly when taking photos.<sup>99</sup> Idaho, going one step further, made it illegal to remove a sturgeon from the water anywhere within the state.<sup>100</sup> For other species, Idaho only recommends keeping fish in the water.<sup>101</sup> Likewise, partial or total removal of sturgeon longer than 55” in fork length from water is prohibited everywhere in Washington.<sup>102</sup>

## Jurisdictions that discourage air exposure

The vast majority of Canadian and American jurisdictions recommend keeping a fish in the water, but do not prohibit removal, and do not suggest a threshold for air exposure. Most also require immediately returning any fish that cannot be retained in good condition, unharmed, or in the manner that causes the least harm. In addition to BC, the six other Canadian provinces that

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<sup>97</sup> See California, Department of Fish and Wildlife, *California Freshwater Sport Fishing Regulations* (Sacramento: Department of Fish and Wildlife, 1 March 2020) defines fork length as the distance from the nose of the sturgeon to the fork of its tail at 26; codified in California Code of Regulations, tit 14, §5.80 prohibits removal of sturgeon from water if fork length is over 68” and §27.91 prohibits the removal of green sturgeon from water.

<sup>98</sup> California, Department of Fish and Wildlife, *California Freshwater Sport Fishing Regulations* (Sacramento: Department of Fish and Wildlife, 1 March 2020) at 29: “In waters where the bag limit for trout or salmon is zero, fish for which the bag limit is zero must be released unharmed, and should not be removed from the water.” Guidelines at 33 generally recommend removing a hook underwater and keeping a fish underwater.

<sup>99</sup> See Oregon, Oregon Department of Fish and Wildlife, *2020 Oregon Sport Fishing Regulations* (Bend: Oregon Department of Fish and Wildlife, 2020), sturgeon removal prohibited at 20. Codified in Oregon Administrative Rules, ch 635 div 042 §0133.

<sup>100</sup> See Idaho, Idaho Department of Fish and Game, *Idaho Fishing 2019-2021 Seasons & Rules*, 2nd ed 2020, (Boise: Idaho Department of Fish and Game, 2020) at 54. Other recommendations (but not regulations) include catching sturgeon quickly, not swimming them until exhaustion, and releasing them gently. Codified in Idaho Administrative Code IDAPA 13 tit 01 §11.102.

<sup>101</sup> Idaho, Idaho Department of Fish and Game, *Idaho Fishing 2019-2021 Seasons & Rules*, 2nd ed 2020, (Boise: Idaho Department of Fish and Game, 2020) at 51. Recommendations include having the camera ready and the shot framed before removing from water, wetting your hands before touching the fish and gently supporting with both hands, only remove the fish briefly to take a picture, and hold the fish over the water so it falls back into the water if it slips out of your hands. Note there is no prohibition, only a guideline.

<sup>102</sup> See Washington Administrative Code tit 220 §316-010(4): “It is unlawful to totally or partially remove oversized sturgeon from the water. Oversized sturgeon are defined as: Any sturgeon larger than 55 inches fork length,” and §316-010(10) to (17) for seasonal closures. See *supra* note 93, amendment of 19 May 2020 at 1, clarifying that sturgeon over 55” may not be removed partially or totally from the water, and at 15 for seasonal closures.

recommend keeping fish in the water as a best practice are Manitoba,<sup>103</sup> New Brunswick,<sup>104</sup> Prince Edward Island,<sup>105</sup> Nova Scotia,<sup>106</sup> Nunavut,<sup>107</sup> and the Northwest Territories.<sup>108</sup> Variations in terms of linguistic choice, font size, colour, and placement within the overall fishing guide likely affect readability and compliance amongst fishers.<sup>109</sup> Thirteen states follow this same model, including Colorado,<sup>110</sup> Louisiana,<sup>111</sup> Missouri,<sup>112</sup> New Mexico,<sup>113</sup> Vermont,<sup>114</sup> New York,<sup>115</sup>

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<sup>103</sup> See Manitoba, Sustainable Development, Fish and Wildlife, *Manitoba Anglers' Guide 2020* (publication information not available) at 5: "Return it to the water quickly."

<sup>104</sup> See New Brunswick, Ministry of Natural Resources and Energy Development, *Fish 2020* (Fredericton: Ministry of Natural Resources and Energy Development, 2020) at 9: "Keep the fish in the water as much as possible."

<sup>105</sup> See Prince Edward Island, Ministry of Environment, Water and Climate Change – Forests, Fish and Wildlife Division, *2020 Angling Summary* (Prince Edward Island: Ministry of Environment, Water and Climate Change, 2020) at 49: keep fish in the water, under "Handling Fish With Respect."

<sup>106</sup> See Nova Scotia, Ministry of Fisheries and Aquaculture, *Nova Scotia Anglers' Handbook and 2020 Summary of Regulations* (Nova Scotia: Ministry of Fisheries and Aquaculture, 2020) at 4: keep air exposure to a minimum, don't hold the fish by its tail, avoid beaching the fish.

<sup>107</sup> See Nunavut, *Sport Fishing Guide Nunavut April 1, 2020 to March 31, 2021* (Nunavut, 1 April 2020) at 8: keep the fish in the water as much as possible when removing the hook.

<sup>108</sup> See Northwest Territories, Environment and Natural Resources, *Northwest Territories Sport Fishing Regulations Guide* (Northwest Territories, Environment and Natural Resources, 1 April 2019) at 4: minimize handling, keep the fish in the water if possible, and release a fish with care and respect.

<sup>109</sup> See Nunavut (*supra* note 107) compared to Manitoba (*supra* note 103): Nunavut's summary has a full page of catch-and-release tips at 8, complete with diagrams, whereas Manitoba at 5 has a brief note on catch-and-release tips at the bottom of the page in a very small font.

<sup>110</sup> See Colorado, Colorado Parks and Wildlife, *2020 Colorado Fishing* (Denver: Colorado Parks and Wildlife, 1 March 2020) at 8: any fish caught and then released must be released alive and into the same water from which it was taken.

<sup>111</sup> See Louisiana, Department of Wildlife and Fisheries, *Louisiana 2020 Fishing Regulations* (Baton Rouge: Department of Wildlife and Fisheries, 2020) at 16.

<sup>112</sup> See Missouri, Conservation Department Missouri, *A summary of Missouri Fishing Regulations* (Jefferson City: Department of Conservation, 1 March 2020) at 6, 38 and 40: any fish not returned is part of the angler's limit for the day.

<sup>113</sup> See New Mexico, Department of Game and Fish, *2020-2021 New Mexico Fishing* (Santa Fe: Department of Fish and Game, 2020) at 19.

<sup>114</sup> See Vermont, Vermont Fish & Wildlife Department, *Vermont 2020 Fishing Guide & Regulations* (Vermont: Department of Fish & Wildlife, 2020) at 16, and at 17 (anglers are not to target sturgeon and must immediately release them if caught).

<sup>115</sup> See New York, Department of Environmental Conservation, Bureau of Fisheries, *Freshwater Fishing Digest* (Albany: Department of Environmental Conservation, April 2020) at 54, and at 65: avoid catch-and-release fishing for thermally stressed fish, catch-and-release is prohibited during the closed season, weighing and photographing are acceptable as long as "the fish is not removed from the water for an extended period of time" or harmed.

Wyoming,<sup>116</sup> Massachusetts,<sup>117</sup> Georgia,<sup>118</sup> Michigan,<sup>119</sup> West Virginia,<sup>120</sup> Virginia,<sup>121</sup> New Hampshire,<sup>122</sup> and Hawaii,<sup>123</sup> with only a few minor deviations. New York<sup>124</sup> and Massachusetts<sup>125</sup> take the additional step of prohibiting catch and release for endangered or threatened species, and catch and release of “thermally stressed trout” should be avoided in New York.

Other jurisdictions aim to persuade through education by including some information on the effects of air exposure on fish, in addition to recommending that anglers keep fish in the water. Yukon Territory leads this group in terms of quantity, quality, and persuasiveness of information. In its plain language summary of the regulations, the Government of Yukon Territory points out that even with a catch and release survival rate of 90%, an angler who catches 20 fish in a day will still cause two fish to die, which is the same as harvesting two fish—the daily catch limit.<sup>126</sup> Alberta also explains that air exposure, warm water, depth of water, and swallowed hooks are the factors that determine fish survival following release.<sup>127</sup>

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<sup>116</sup> See Wyoming, Wyoming Game and Fish Commission, *Wyoming Fishing Regulations 2020* (Wyoming: Game and Fish Commission, December 2020) at 33: recommends keeping fish in the water when temperatures are high, and any fish not released immediately is considered part of the angler’s catch limit.

<sup>117</sup> See Massachusetts Division of Fisheries and Wildlife, “Massachusetts freshwater fishing regulations” (2020), online: *Commonwealth of Massachusetts* <<https://www.mass.gov/guides/massachusetts-freshwater-fishing-regulations>>.

<sup>118</sup> See Georgia, Department of Natural Resources, Wildlife Resources and Coastal Resources Divisions, *2020 Georgia Sport Fishing Regulations* (Georgia: Department of Natural Resources, 2020) at 48: recommends having your camera at the ready to minimize handling time.

<sup>119</sup> See Michigan, Department of Natural Resources, *2020 Michigan Fishing Guide* (Michigan: Department of Natural Resources, 13 April 2020) at 34: keep the fish in the water to remove the hook.

<sup>120</sup> See West Virginia, Department of Natural Resources, *Fishing Regulations Summary 2020* (South Charleston: Department of Natural Resources, 2020) at 4.

<sup>121</sup> See Virginia, Department of Game and Inland Fisheries *Freshwater Fishing & Boating in Virginia* (Henrico: Department of Game and Inland Fisheries, 1 January 2020) at 18.

<sup>122</sup> See 2020 New Hampshire Freshwater Fishing Digest, p 10. The saltwater fishing regulations also recommend keeping a fish in the water as much as possible. “A fish out of water is suffocating and cannot breathe”

<sup>123</sup> See Hawaii, Board of Land and Natural Resources, Division of Aquatic Resources, *Hawai’i Fishing Regulations* (Honolulu: Department of Land and Natural Resources, July 2019) at 50.

<sup>124</sup> *Supra* note 115 at 54 (catch-and-release prohibited for endangered/threatened species or during the close season) and 65 (avoid catch-and-release fishing for thermally stressed trout).

<sup>125</sup> *Supra* note 117 (if any sturgeon, American Brook Lamprey, Atlantic Salmon, Bridle Shiner, Burbot, Eastern Silvery Minnow, Lake Chub, Longnose Sucker, or Northern Redbelly Dace are caught then they must be returned immediately, and the fisher is not to pose for a photo, place on a stringer, hold in a net, or “delay in any way the immediate return and release of these rare fish to the water”).

<sup>126</sup> See Yukon Territory, Department of Environment, *Yukon Fishing Regulations Summary 2020-2021* (Whitehorse: Department of Environment, 20 February 2020) at 40-41. The pamphlet *also* explains that survival rates for released fish can be very high when done properly. Studies suggest that about 94 per cent of released pike and about 90 per cent of grayling survive; and for lake trout, ranges from 93 per cent for lightly handled fish to 76 per cent for deep-hooked fish. Other recommendations include gently holding the fish with one hand on the tail and one under the belly, releasing the fish into water as cold as where you caught it, and to revive the fish by holding it upright in the water and allowing it to recover. The guide asks anglers to stop fishing when they reach their legal limit, not to practice catch-and-release in schools of spawning fish or in hot/warm weather, and to release large lake trout in order to protect future fish stocks. Any fish that cannot be kept must be returned to the water, even if they look fatally injured, otherwise the regulations would be unenforceable, at 13.

<sup>127</sup> See Alberta Government, Ministry of Environment and Parks, *2020 Alberta Guide to Sportfishing Regulations* (Alberta: Ministry of Environment and Parks, 29 April 2020) at 22: “Fishing during cooler times of the day, in shallower water, releasing fish quickly, and using methods that result in being hooked around the mouth are the best ways to reduce post-release hooking mortality.”

Some American states do not mention air exposure in their general publications on fishing regulations but they refer to it elsewhere. For instance, regulations specific to bull trout in Montana explain that released fish may die for a variety of reasons, including “lack of oxygen from being held in warm or poorly oxygenated water.”<sup>128</sup> Tennessee only discusses air exposure for sturgeon, reminding anglers that sturgeon cannot breathe out of water, but does not mention keeping other species in the water.<sup>129</sup>

A few jurisdictions provide somewhat more specific thresholds for air exposure: “no longer than you can hold your breath” in Texas;<sup>130</sup> “no more than a few seconds” in Arizona;<sup>131</sup> 20-30 seconds if absolutely necessary to dehook in South Carolina;<sup>132</sup> no more than 30 seconds in Saskatchewan<sup>133</sup> and Maryland;<sup>134</sup> and no longer than necessary to remove hooks, take a photograph, or measure the fish in Wisconsin.<sup>135</sup>

## Jurisdictions that do not mention keeping fish in the water

Very few Canadian provinces offer no guidance whatsoever on keeping fish in water, but a large number of American states are notably silent on the issue. Ontario<sup>136</sup> and Quebec<sup>137</sup> are the only Canadian provinces that do not mention keeping fish in the water anywhere in their publications on fishing regulations, though both require immediately releasing any fish that cannot be retained.

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<sup>128</sup> See Montana, Montana Fish, Wildlife and Parks, *Bull Trout Identification Guide* (Montana: Montana Fish, Wildlife and Parks, 10 January 2010) at 2: “While photographing a fish, “it is essential that you minimize or eliminate the need to take the fish out of water.” See as well Montana, Montana Fish, Wildlife and Parks, *2020 Montana FWP Fishing Regulations* (Helena: Montana Fish, Wildlife and Parks, 13 January 2020) at 14-15 recommends keeping fish in the water as much as possible, and all catch-and-release fish must be immediately released alive.

South Carolina p 72 (specific to trout). Maryland p 14 (also includes links to videos on techniques).

<sup>129</sup> See Tennessee, Tennessee Wildlife Resources Agency, *Tennessee Fishing Guide 2020-2021* (Nashville: Tennessee Wildlife Resources Agency, 26 March 2020) at 19: the guide does not mention keeping fish in the water, other than in relation to lake sturgeon.

<sup>130</sup> See Texas Parks and Wildlife, “Catch and Release Tips” (date unavailable), online: *State of Texas* <<https://tpwd.texas.gov/regulations/outdoor-annual/fishing/catch-release-tips>> (recommends keeping the fish in the water and using a tool to remove the hook).

<sup>131</sup> See Arizona, Arizona Game and Fish Department, *2019 and 2020 Fishing Regulations* (Arizona: Game and Fish Department, 15 February 2019) at 20: recommends keeping the fish in the water as much as possible, and catch-and-release fish should be immediately returned to the water (at 7).

<sup>132</sup> See South Carolina, Department of Natural Resources, *South Carolina Trout Fishing* (South Carolina: Department of Natural Resources, 20 May 2020) at 72.

<sup>133</sup> See Saskatchewan, Fish, Wildlife and Lands Branch, *Saskatchewan Anglers Guide 2020/21* (Saskatchewan: Fish, Wildlife and Lands Branch, 14 April 2020) at 30.

<sup>134</sup> See Maryland, Department of Natural Resources, *Maryland Guide to Fishing and Crabbing 2020* (Annapolis: Maryland Department of Natural Resources, 19 May 2020) at 14.

<sup>135</sup> See Wisconsin, Department of Natural Resources, *Guide to Wisconsin Hook and Line Fishing Regulations 2020-2021* (Wisconsin: Department of Natural Resources, 12 June 2020) at 29 and at 80.

<sup>136</sup> See Ontario, Ministry of Natural Resources and Forestry Services, Fish and Wildlife, *2020 Fishing Ontario Recreational Fishing Regulations Summary* (Ontario: Ministry of Natural Resources and Forestry Services, 3 December 2019), though note at 11 that all fish that are caught unlawfully or are illegal to possess must be released immediately and not injured (no mention of air exposure).

<sup>137</sup> See Quebec, Ministère des Forêts, de la Faune et des Parcs, *Sport Fishing in Québec including salmon fishing, Main Rules - Season 2018-2020* (Quebec: Ministère des Forêts, de la Faune et des Parcs, 18 February 2019), though note at 43 that fish must be released immediately and not injured (no mention of air exposure).

Fourteen states do not mention keeping fish in the water or limiting air exposure, including Oklahoma,<sup>138</sup> Nebraska,<sup>139</sup> Nevada,<sup>140</sup> North Dakota,<sup>141</sup> South Dakota,<sup>142</sup> Alabama,<sup>143</sup> Florida,<sup>144</sup> Ohio,<sup>145</sup> Delaware,<sup>146</sup> North Carolina,<sup>147</sup> Connecticut,<sup>148</sup> Rhode Island<sup>149</sup> and Kansas.<sup>150</sup>

Other jurisdictions require releasing fish unharmed, immediately, or in good condition if the fish cannot be retained, but do not mention air exposure, including Maine,<sup>151</sup> Illinois,<sup>152</sup> New

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<sup>138</sup> See Oklahoma, Department of Wildlife Conservation, *Oklahoma Fishing 2019-2020 Official Regulations Guide*, (Oklahoma: Department of Wildlife Conservation, 21 June 2019).

<sup>139</sup> See Nebraska, Nebraska Game and Parks, *Fishing Guide* (Nebraska: Nebraska Game and Parks, 23 December 2019).

<sup>140</sup> See Nevada, Department of Wildlife, *2020 Nevada Fishing Guide* (Reno: Department of Wildlife, 28 February 2020).

<sup>141</sup> See North Dakota, Game and Fish Department, *North Dakota 2020-2022 Fishing Guide* (North Dakota: Game and Fish Department, 12 February 2020).

<sup>142</sup> See South Dakota, Department of Game, Fish and Parks, *South Dakota Fishing Handbook 2020* (South Dakota: Department of Game, Fish and Parks, 2020), online:

<[https://www.flipsnack.com/SDGamefishparks/2020fishinghandbook\\_flipsnack.html](https://www.flipsnack.com/SDGamefishparks/2020fishinghandbook_flipsnack.html)>.

<sup>143</sup> See Alabama, Department of Conservation and Natural Resources, Wildlife and Freshwater Fisheries, *Alabama Hunting & Fishing Digest: 2019-2020 Requirements, Fees & Season Dates* (Alabama: Department of Conservation and Natural Resources, 15 July 2019).

<sup>144</sup> See Florida, Florida Fish and Wildlife Conservation Commission, *Florida Freshwater Fishing Regulations 2019-2020* (Tallahassee: Florida Fish and Wildlife Conservation Commission, 2 August 2019).

<sup>145</sup> See Ohio, Department of Natural Resources, Division of Wildlife, *Fishing Regulations 2020-2021* (Columbus: Division of Wildlife, 22 January 2020).

<sup>146</sup> See Delaware, Department of Natural Resources and Environmental Control, *2020 Delaware Fishing Guide* (Delaware: Department of Natural Resources and Environmental Control, 12 June 2020).

<sup>147</sup> See North Carolina, Wildlife Resources Commission, *Inland Fishing, Hunting and Trapping Regulations Digest 2019-2020* (North Carolina: Wildlife Resources Commission, 19 December 2019).

<sup>148</sup> See Connecticut, Department of Energy and Environmental Protection, *2020 Connecticut Fishing Guide* (Hartford: Department of Energy and Environmental Protection, 23 March 2020).

<sup>149</sup> See Rhode Island, Department of Environmental Management “Recreational Fishing” (date unavailable), online: <<http://www.dem.ri.gov/programs/marine-fisheries/recreational-fishing.php>>.

<sup>150</sup> See Kansas, Department of Wildlife, Parks and Tourism, *2020 Kansas Fishing Regulations Summary* (Kansas: Department of Wildlife, Parks and Tourism, 13 January 2020).

<sup>151</sup> See Maine, Department of Inland Fisheries and Wildlife, *Maine Fishing Laws 2020* (Augusta: Department of Inland Fisheries and Wildlife, 14 November 2019).

<sup>152</sup> See Illinois, Department of Natural Resources, Division of Fisheries, *2019 Illinois Fishing Information* (Springfield: Department of Natural Resources, 15 April 2019).

Jersey,<sup>153</sup> Indiana,<sup>154</sup> and Kentucky,<sup>155</sup> and Minnesota.<sup>156</sup> Iowa<sup>157</sup> and Arkansas<sup>158</sup> do not mention keeping fish in the water in the publications summarizing their regulations, but make reference to the practice elsewhere.

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<sup>153</sup> See New Jersey, Department of Environmental Protection, Division of Fish and Wildlife, *New Jersey Freshwater Fishing Digest* (Trenton: Department of Environmental Protection, 5 December 2019).

<sup>154</sup> See Indiana, Department of Natural Resources, Division of Fish and Wildlife, *Indiana Fishing Regulation Guide 2020-2021* (Indianapolis: Department of Natural Resources, 22 January 2020).

<sup>155</sup> See Kentucky, Department of Fish and Wildlife Resources, *Kentucky Fishing and Boating Guide* (Frankfort: Department of Fish and Wildlife, 12 May 2020).

<sup>156</sup> See Minnesota, Department of Natural Resources, *Minnesota Fishing Regulations* (St. Paul: Department of Natural Resources, 28 January 2020), though note at 13 that “Fish retained longer than is needed to unhook, measure and photograph at the site of capture are not considered immediately released and will be counted as part of an angler’s possession limit.”

<sup>157</sup> See Iowa, Department of Natural Resources, *2020 Iowa Fishing Regulations* (Des Moines: Department of Natural Resources, 30 October 2019) does not mention keeping fish in the water or limiting air exposure, but the state recommends keeping a fish in the water while unhooking: Iowa Department of Natural Resources, “6 Tips for Catch & Release” (2020), online: <<https://www.traveliowa.com/getinspiredetails/6-tips-for-catch-and-release/226/>>.

<sup>158</sup> See Arkansas, Arkansas Game and Fish Commission, *2020 Arkansas Fishing Guidebook* (Little Rock: Arkansas Game and Fish Commission, 10 January 2020) does not mention keeping fish in the water or limiting air exposure, but in its summary of the regulations and guidelines specific to trout fishing, Arkansas recommends taking the fish out of water only long enough to remove the hook and take a photo: Arkansas, Arkansas Game and Fish Commission, *2020 Arkansas Trout Fishing Guidebook* (Little Rock: Arkansas Game and Fish Commission, 2 December 2019) at 15.

# Conclusion

The scientific evidence is clear that air exposure during catch-and-release fishing harms fish. Neighbouring jurisdictions have taken steps to prohibit removing certain species of fish from water. Air exposure is mentioned by most jurisdictions in their summaries of fishing regulations, and is clearly an issue of concern for fisheries managers. The provincial government's *BC Freshwater Fishing Regulations Synopsis* clearly acknowledges the problem, stating:

***A fish out of water is suffocating. Every second a fish is out of water decreases its chance of survival by 1%.***

*[See Figure 1 above.]*

Why, then, has the federal government not taken regulatory action on this issue? One possibility is that the division of powers over sport fishing has led to confusion around which level of government would be responsible for such regulatory change, and impeded efforts to lobby for law reform. Another possibility is that a province-wide prohibition on removing any fish from water would be too politically unpopular, in which case a species-specific approach similar to Alaska may have more success. However, it is clear that fishing rules in BC lag behind in addressing the impacts of air exposure on fish during catch-and-release fishing. It is time that the federal government amend the BC Sport Fishing Regulations to prohibit the removal of fish from water during catch and release fishing.

## **RECOMMENDATION #1**

The federal government should amend the BC Sport Fishing Regulations to prohibit the removal of fish from water during catch and release fishing.

## **RECOMMENDATION #2**

The federal government should conduct public consultations to determine what species and areas should be governed by the new prohibition.



# Appendix A

This is a comprehensive list of areas in Alaska where removing salmon, trout or steelhead from water during catch-and-release is prohibited under the Alaska Administrative Code.

Area	Citation to the Alaska Administrative Code	Species	Other notes
Prince William Sound Area	Alaska Admin. Code, tit 5 §55.023(1)(A)(i)	Coho salmon – cannot remove from water if intending to release it; if removed, it becomes part of the bag limit	Applies to “in all freshwater drainages crossed by the Copper River Highway from and including Eyak River to the Million Dollar Bridge, including Clear Creek at mile 42,”
Kenai Peninsula Area	Alaska Admin. Code, tit § 56.120(1)(A)(i)	King salmon – cannot remove from water if intending to release; if removed, becomes part of bag limit	Applies to any size of King Salmon
Kenai Peninsula Area	Alaska Admin. Code, tit § 56.120(2)(A)	Coho salmon – cannot remove from water if intending to release; if removed it, becomes part of bag limit	Only applies to salmon 16” or greater
Kenai Peninsula Area	Alaska Admin. Code, tit § 56.122(a)(2)(B)	Rainbow/steelhead trout – person may not remove from water before releasing	Applies to “Anchor River drainage, except the Bridge Creek reservoir:”
Kenai Peninsula Area	Alaska Admin. Code, tit § 56.122(a)(2)(E)	King salmon – person may not remove from water before releasing; any king salmon over 20” removed from the water becomes part of that person’s bag	Applies to “Anchor River drainage, except the Bridge Creek reservoir:”
Kenai Peninsula Area	Alaska Admin. Code, tit § 56.122(a)(4)(C)	Rainbow/steelhead trout – cannot remove from water before releasing fish	Applies to Crooked Creek drainage
Kenai Peninsula Area	Alaska Admin. Code, tit § 56.122(a)(5)(B)	Rainbow/steelhead trout – cannot remove from water before releasing fish	Applies to Deep Creek drainage
Kenai Peninsula Area	Alaska Admin. Code, tit 5 § 56.122(a)(5)(D)	King salmon – cannot remove from water before releasing	Deep Creek

Kenai Peninsula Area	Alaska Admin. Code, tit 5 § 56.122(a)(6)(B)	Rainbow/steelhead trout cannot be removed from water before releasing	Ninilchik River drainage
Kenai Peninsula Area	Alaska Admin. Code, tit 5 § 56.122(a)(6)(D)(iii)(b)	King salmon cannot be removed from water before releasing	Ninilchik River drainage
Kenai Peninsula Area	Alaska Admin. Code, tit 5 § 56.122(a)(8)(A)(i)	King salmon cannot be removed from water before releasing	Kasilof River drainage
Kenai Peninsula Area	Alaska Admin. Code, tit 5 § 56.122(a)(8)(D)	Rainbow/steelhead trout cannot be removed from water before releasing	Kasilof River drainage
Kenai Peninsula Area	Alaska Admin. Code, tit 5 § 56.122(a)(10)(B)	Rainbow/steelhead trout cannot be removed from water before releasing	Stariski Creek
Kenai River Drainage Area	Alaska Admin. Code, tit 5 § 56.120(a)(2)(A)(ii)	King salmon cannot be removed from water before releasing; if 20" or more and removed it becomes part of angler's bag	Mouth of the Kenai River to outlet of Skilak Lake
Kenai River Drainage Area	Alaska Admin. Code, tit 5 § 56.120(a)(4)(A)(v)	Coho salmon cannot be removed from water before releasing; if 16" or more and removed, becomes part of angler's bag	Applies to the whole chapter (5 AAC 57.120)
Resurrection Bay Saltwater Area	Alaska Admin. Code, tit 5 § 58.022 5 AAC 58.022(a)(1)	King salmon cannot be removed from water before releasing; if 20" or more and removed it becomes part of angler's bag	Cook Inlet – Resurrection Bay Saltwater area
Resurrection Bay Saltwater Area	Alaska Admin. Code, tit 5 § 58.022(a)(3)	Rainbow/steelhead cannot be removed from water before releasing	Cook Inlet – Resurrection Bay Saltwater area
Resurrection Bay Saltwater Area	Alaska Admin. Code, tit 5 § 58.022(b)(1)(A)(i)	King salmon cannot be removed from water before releasing; if over 20" and removed becomes part of angler's bag	Cook Inlet north of Bluff Point
Anchorage Bowl Drainages Area	Alaska Admin. Code, tit 5 § 59.120(1)(A)	King salmon cannot be removed from water, and anglers not permitted to retain King Salmon at all in area	Anchorage Bowl Drainages Area
Anchorage Bowl Drainages Area	Alaska Admin. Code, tit 5 § 59.120(2)(C)	Coho salmon cannot be removed from water before releasing; if 16" or over and	

		removed, it becomes part of angler's bag	
Anchorage Bowl Drainages Area	Alaska Admin. Code, tit 5 § 59.122(a)(4)(G)	King salmon cannot be removed from water before releasing; if 20" or more and removed, becomes part of angler's bag	Eagle River Drainage
Anchorage Bowl Drainages Area	Alaska Admin. Code, tit 5 § 59.122(a)(14)(C)	King salmon cannot be removed from water before releasing; if 20" or over and removed, it becomes part of bag	Ship Creek Drainage
Knik Arm Drainages Area	Alaska Admin. Code, tit 5 § 60.120(1)(A) and (B)	King salmon cannot be removed from water before releasing; if 20" or over and removed, it becomes part of angler's bag	Knik Arm Drainage
Knik Arm Drainages Area	Alaska Admin. Code, tit 5 § 60.120(2)(A)	Coho salmon cannot be removed from water before releasing; if 16" or longer and removed, it becomes part of angler's bag	Knik Arm Drainage
Susitna River Drainage Area	Alaska Admin. Code, tit 5 § 61.110(a)(1)(A) and (B)	King salmon cannot be removed from water before releasing; if 20" or over and removed, it becomes part of angler's bag	Susitna River Drainage Area
Susitna River Drainage Area	Alaska Admin. Code, tit 5 § 61.110(a)(2)(A)	Coho salmon cannot be removed from water before releasing; if 16" or more and removed, it becomes part of angler's bag	Susitna River Drainage Area
West Cook Inlet Area	Alaska Admin. Code, tit 5 § 62.120(1)(A)	King salmon cannot be removed from water before releasing; if 20" or over and removed, becomes part of angler's bag	West Cook Inlet Area
West Cook Inlet Area	Alaska Admin. Code, tit 5 § 62.120(2)(A)	Coho salmon cannot be removed from water before releasing; if 16" or more and removed water, it becomes part of angler's bag	West Cook Inlet Area
Alaska Peninsula & Aleutian Islands Area	Alaska Admin. Code, tit 5 § 65.022(b)(1)	King salmon removed from water becomes part of anglers bag limit	King Salmon River

Alaska Peninsula & Aleutian Islands Area	Alaska Admin. Code, tit 5 § 65.022(b)(2)(B)	Not allowed to retain king salmon (catch-and-release fishing only), and king salmon cannot be removed from water before releasing	King Salmon River, downstream of an ADF&G regulatory marker located 1,000 yards upstream from its mouth
Alaska Peninsula & Aleutian Islands Area	Alaska Admin. Code, tit 5 § 65.022(d)(2)	King salmon cannot be retained; must be released immediately; cannot be removed from water before releasing	Nelson River Drainage, upstream from confluence with Caribou River