



VESSEL TRAFFIC REGULATIONS  
TO PROTECT KILLER WHALES  
IN PUGET SOUND

Draft Regulatory Impact  
Review

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## CHAPTER 1 | INTRODUCTION AND BACKGROUND

1. The National Marine Fisheries Service (NMFS) is currently proposing vessel traffic regulations under the Federal Endangered Species Act (ESA) and the Marine Mammal Protection Act for killer whales in the Puget Sound region. This Draft Regulatory Impact Review (Draft RIR) is conducted in accordance with Presidential Executive Order (E.O.) 12866 (58 FR 51735, October 4, 1993), providing a comparative analysis of the costs and benefits of the alternatives under consideration for the proposed action.
2. The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following statement from the order:

In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nonetheless essential to consider. Further, in choosing among alternative regulatory approaches agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

3. E.O. 12866 requires that the Office of Management and Budget review proposed regulatory programs that are considered to be “significant.” E.O. 12866 defines “significant regulatory action” as an action that is likely to:
  1. Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, local or tribal governments or communities;
  2. Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
  3. Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
  4. Raise novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in this Executive Order.

The Regulatory Impact Review is intended to assist NMFS in selecting the regulatory approach that maximizes net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity).

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4. Chapter 1 of this report summarizes the management history of the killer whales in Puget Sound, describes the vessel traffic management options being considered by NMFS, details the types and volumes of vessels currently trafficking Puget Sound, and provides an overview of the regional whale watching industry. Chapter 2 then characterizes the parties likely to be affected by the vessel traffic management options and Chapter 3 contemplates how these parties may be affected by the potential regulations. Chapter 4 describes the extent to which the potentially affected parties may be small entities.

#### 1.1 INTRODUCTION

5. NMFS listed the Southern Resident killer whale distinct population segment (DPS) as endangered under the ESA in November 2005, and identified vessel effects, including direct interference and sound, as potential contributing factors to the population decline.<sup>1</sup> The following year, in November 2006, NMFS published a final critical habitat designation for the killer whales.<sup>2</sup>
6. The Final Recovery Plan for the DPS, published in January of 2008, identifies the need to evaluate current guidelines and the need for regulations or protected areas for the killer whales.<sup>3</sup> In March 2007, NMFS published an Advanced Notice of Proposed Rulemaking describing its intent to consider whether to propose regulations governing vessel traffic in the proximity of killer whales.<sup>4</sup>
7. The information contained within this Draft RIR, along with the information provided during the scoping and public comment period announced in the Advanced Notice of Proposed Rulemaking, inform NMFS of the potential effects of alternative vessel traffic regulations designed to protect the killer whales.

#### 1.2 VESSEL TRAFFIC MANAGEMENT OPTIONS

8. NMFS developed a preliminary list of potential options for vessel traffic regulations, including codifying the current whale watching guidelines, establishing a minimum approach rule, prohibiting vessel activities of concern, establishing time-area closures, and developing an operator permit or certification program. The options specifically considered in Chapters 2 and 3 of this report are:

- **Vessel approach regulations:**

Scenario 1 - Avoid approaching closer than 100 yards/meters to any whale.

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<sup>1</sup> National Marine Fisheries Service, "Endangered and Threatened Wildlife and Plants: Endangered Status for Southern Resident Killer Whales," 50 CFR Part 224, November 18, 2005.

<sup>2</sup> National Marine Fisheries Service, "Endangered and Threatened Species: Designation of Critical Habitat for the Southern Resident Killer Whales," 50 CFR Part 226, November 29, 2006.

<sup>3</sup> National Marine Fisheries Service, Northwest Regional Office. January 2008. Final Recovery Plan for the Southern Resident Killer Whales (*Orcinus orca*).

<sup>4</sup> National Marine Fisheries Service, "Protective Regulations for Killer Whales in the Northwest Region Under the Endangered Species Act and Marine Mammal Protection Act: Advance Notice of Proposed Rulemaking," 50 CFR Part 216, March 22, 2007.

Scenario 2 - Avoid approaching closer than 200 yards/meters to any whale.<sup>5</sup>

- **Vessel path regulations**

Avoid positioning vessels within the 400 yard/meter area in the path of the whales.

- **Vessel speed regulations**

Reduce speed to less than seven knots when within 400 yards/meters of the nearest whale.

- **Established Protected Areas when whales are present:**

Scenario 1 - Preclude boats from occupying areas within a quarter mile of the west coast of San Juan Island from Eagle Point to Mitchell Point, and within a half mile of a three kilometer stretch of shore centered on the Lime Kiln lighthouse.

Scenario 2 - Preclude boats from occupying areas within a half mile of the west coast of San Juan Island from Eagle Point to Mitchell Point.

### 1.3 PROFILE OF VESSEL TRAFFIC IN PUGET SOUND, WASHINGTON

9. This section describes: 1) the types of vessels in the Puget Sound area by industry type; 2) overall vessel traffic patterns in Puget Sound; and 3) the U.S. and Canadian commercial and private whale watching industries, including background information on the current demand for whale watching in Washington.
10. Puget Sound connects to the Pacific Ocean to the west through the Strait of Juan de Fuca, and to the north through the Strait of Georgia. Haro Strait, which lies to the west of San Juan Island, is the main navigable channel that allows vessels to move between the Strait of Juan de Fuca and the Strait of Georgia.
11. The two largest and busiest ports in Puget Sound are the Ports of Seattle and Tacoma, which, combined, represent the second largest port in terms of volume of container traffic in North America, after Los Angeles/Long Beach.<sup>6</sup> Moreover, the Port of Vancouver, situated to the north of the greater Puget Sound area, ranks number one on the west coast of North America in terms of total cargo volume.<sup>7</sup> Thus, the Puget Sound waterways are some of the busiest in the world.
12. Most vessels found in the Puget Sound area can be grouped into five industry categories: shipping, fishing (both commercial and recreational), tourism (e.g., cruises, wildlife tours,

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<sup>5</sup> NMFS' "Be Whale Wise Guidelines" use the terms "yards" and "meters" interchangeably. This report therefore conflates these units of measure absent information on which is the specific standard.

<sup>6</sup> Committee on Maritime Advanced Information Systems, National Research Council. 1999. Applying Advanced Information Systems to Ports and Waterways Management, Appendix C: Maritime Advanced Information Systems Puget Sound Region. National Academies Press.

<sup>7</sup> Vancouver Port Authority. The Port of Vancouver. Accessed at [http://www.portvancouver.com/trade\\_shipping/](http://www.portvancouver.com/trade_shipping/) on January 14, 2008.

Sound tours, whale watching), research, and recreation. The vessels contained in these industry categories vary from large container ships to small recreational vessels.

#### 1.3.1 PUGET SOUND VESSEL TRAFFIC SYSTEM

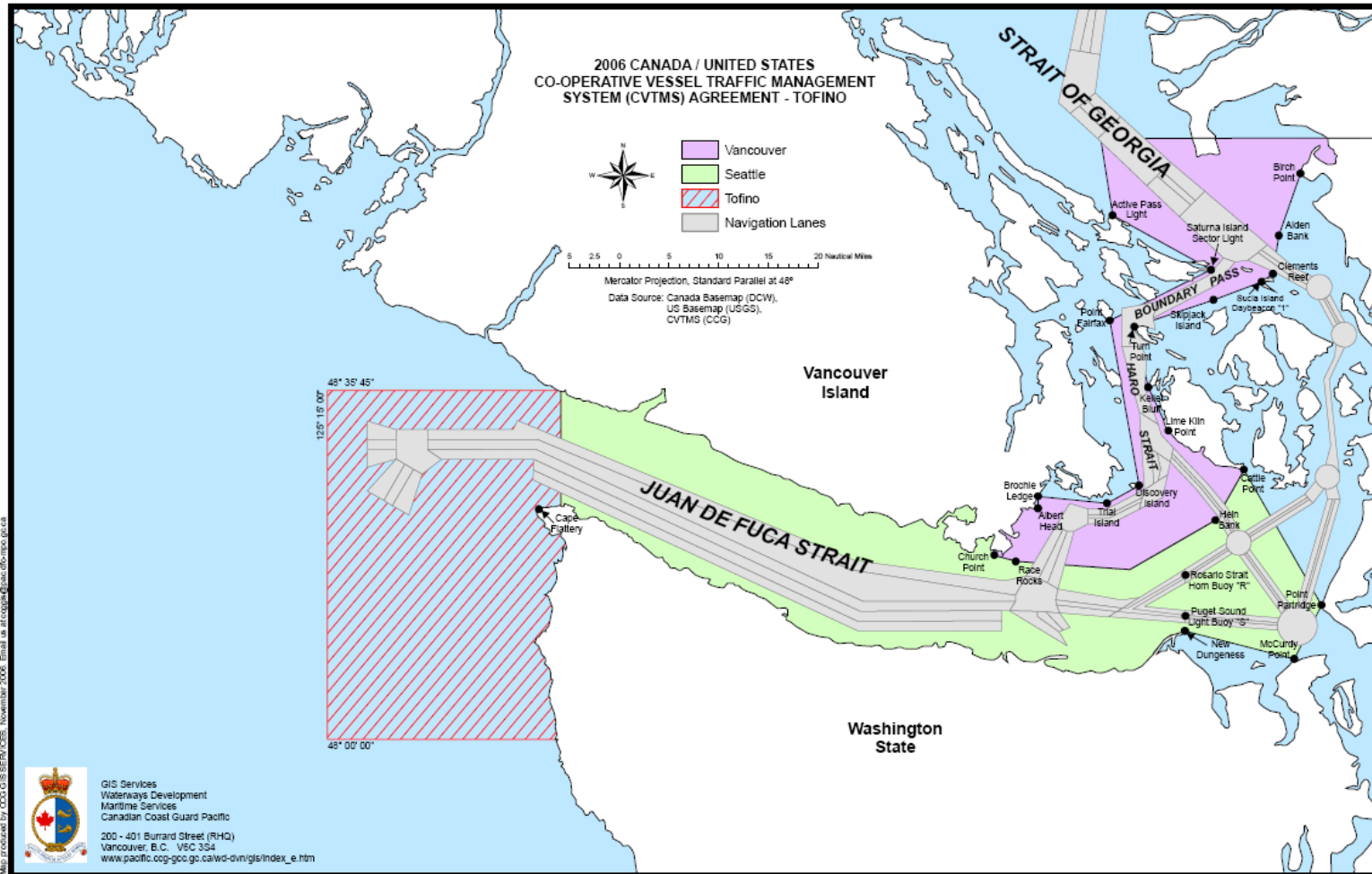
13. Because Puget Sound is a water system that is important to the economies of both the United States and Canada, which share ownership of Puget Sound waters, vessel traffic is monitored at all times by the U.S. Coast Guard (USCG) and the Canadian Coast Guard (CCG). In 1979, the USCG and CCG established the Co-operative Vessel Traffic System (CVTS) by formal agreement to manage the movement of vessels in the shared waters of the two countries. The purpose of the CVTS is to manage vessel movements more efficiently, to promote the safety of vessels, and to minimize the risk of marine pollution.<sup>8</sup> The commercial vessels that participate in the system generally follow a series of well-defined navigation lanes called the Traffic Separation Scheme (TSS) established by the Vessel Traffic Services Puget Sound (VTSPS). The TSS comprises two traffic lanes with a separation zone in between.
14. The coverage area of the CVTS is split into several zones, which are managed by three Vessel Traffic Centers (VTCs): Seattle (United States), Tofino (Canada), and Victoria (Canada). Exhibit 1-1 maps the coverage of the VTCs and also shows the navigation lanes within which the vessels operate.
15. The VTC in Seattle is responsible for managing and monitoring vessels that move through the Strait of Juan de Fuca, Admiralty Inlet, Puget Sound and the San Juan Islands (including Rosario Strait but excluding Haro Strait, Boundary Pass). The Victoria VTC manages all traffic that is headed to Canadian ports through the Haro Strait, Boundary Pass and the Strait of Georgia.

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<sup>8</sup> United States Coast Guard (USCG). Cooperative Vessel Traffic Service (CVTS) website. Accessed at [http://www.uscg.mil/D13/publicaffairs/news/cooperative\\_vessel\\_traffic\\_servi.htm](http://www.uscg.mil/D13/publicaffairs/news/cooperative_vessel_traffic_servi.htm) on January 5, 2008.



EXHIBIT 1-1 MAP OF CVTS AREAS MANAGED BY THE SEATTLE, TOFINO AND VICTORIA VESSEL TRAFFIC CENTERS<sup>9</sup>



<sup>9</sup> Map provided by Ian Wade, Regional Program Specialist Marine Communications and Traffic Services (MCTS), Canadian Coast Guard, Pacific Region. 2006 Canada/United States Cooperative Vessel Traffic Management System (CVTMS) Agreement - Tofino.

16. U.S. and Canadian regulations mandate that powered vessels more than 40 meters in length, tugs that are more than eight meters in length, and vessels carrying 50 or more passengers all participate in the monitoring and reporting system set in place by the CVTS. Thus, the VTC databases are a useful source of information on the types of vessels and the number of vessel transits through the region. Exhibit 1-2 summarizes the major types of vessels that operate in the Puget Sound region.

**EXHIBIT 1-2 TYPES OF VESSELS OPERATING IN THE PUGET SOUND REGION**

VESSEL TYPE	DESCRIPTION
Tanker	Ships in which the greater part of the cargo space is constructed or adapted for the carriage of liquid cargoes (oil, liquid petroleum or liquid chemicals).
Cargo / Freighter	Vessels utilized for the carriage of general cargo (e.g., locomotives, farm machinery, market goods), bulk cargo (e.g., grain, iron ore, coal), and containerized cargo.
Government	Any vessel owned by the Government of any country and not engaged in commercial trade.
Fishing	Any vessel used, outfitted, or designed for the purpose of catching, processing or transporting of fish.
Passenger Vessels	A ship utilized primarily for the carriage of human passengers. This does not include a ship identified as a "ferry" but includes recreational vessels.
Tugs	A vessel specifically designed for towing purposes.
Ferry	A vessel specifically designed for the carriage of passengers and/or vehicles (including trains) which transits between two ports on a regular schedule.

17. The Seattle and Victoria Vessel Traffic Centers record the number of transits made by these different vessel types. Exhibit 1-3 provides an average annual estimate of vessel transits in the area managed by the Seattle center outside of the Haro Strait, Boundary Pass, and Strait of Georgia.<sup>10</sup> Exhibit 1-4 provides a more detailed estimate of the vessel transits as monitored and recorded by the Victoria center specifically for Haro Strait, Boundary Pass and Strait of Georgia specifically during months whales are present. Because of the limitations of the electronic data collection system, it is not possible to describe the transit counts by the individual waterways. For comparison, vessel transits during the winter months of October through March are also provided in Exhibit 1-5.
18. In order to relate these transit counts to vessel counts, it is reasonable to assume that for the larger vessels (e.g., tankers, cargo vessels, and freighters), the ratio of the number of transits per vessel is considerably smaller when compared to the number of transits made by smaller vessels, such as tugs and ferries. Tugs are servicing vessels that make many

<sup>10</sup> Personal communication with Mark Ashley, Operations Director, Puget Sound Vessel Traffic Service, U.S. Coast Guard Sector Seattle U.S. Coast Guard Puget Sound Vessel Traffic System (PSVTS).

more transits to assist the primary vessels transporting goods. Ferries are engaged in shipping of daily passengers to and from the metropolitan areas of Vancouver and Seattle. Given the nature of service provided by tugs and ferries, the number of transits made by each tug and ferry will be substantially higher than the number of transits made by other vessel types. Hence, Exhibits 1-3 and 1-4 also provide vessel transit subtotals that exclude the transits made by tugs and ferries.

19. Although data on the actual number of vessels by type that operate in the area are not available, the Victoria VTC has recently started tracking the number of vessels, in addition to the number of transits.<sup>11</sup> CVTS data contains total vessel counts beginning in April 2007. Exhibit 1-6 lists the monthly vessel counts for April to December 2007 for the areas managed by the Victoria center.<sup>12</sup> The data suggest that on an average, 146 individual vessels daily use the waterways of Haro Strait, Boundary Pass and Strait of Georgia waterways. The daily average number of participating vessels appears to decrease seasonally, with more vessels operating in the area in summer, as compared to the winter months. As noted above, these vessel count statistics do not include the smaller recreational passenger and fishing vessels that are not required to participate in the CVTS system.

**EXHIBIT 1-3 ESTIMATED ANNUAL TRANSITS IN THE PUGET SOUND AREA OUTSIDE OF HARO STRAIT, BOUNDARY PASS, AND STRAIT OF GEORGIA**

VESSEL TYPE	AVERAGE ANNUAL TRANSITS
Tanker	636
Freighter	3,702
Public	1,488
Other	1,740
<b>Subtotal</b>	<b>7,566</b>
Tug	19,302
Ferry	153,360
<b>Grand Total</b>	<b>180,228</b>
Source: Mark Ashley, Operations Director, Puget Sound Vessel Traffic Service, U.S. Coast Guard Sector Seattle US Coast Guard Puget Sound Vessel Traffic System (PSVTS).	

<sup>11</sup> The Puget Sound Marine Exchange is a non-profit membership association that maintains a comprehensive database about all *piloted* vessels arriving in Puget Sound and coastal ports of Washington. Data on vessel movements from the Puget Sound Marine Exchange were not available as of the writing of this analysis; these data may, however, supplement the information on transit counts provided by the U.S. and Canadian Vessel Traffic Centers.

<sup>12</sup> Personal communication with Ian Wade, Regional Program Specialist, Marine Communications and Traffic Services (MCTS), Canadian Coast Guard, Pacific Region. 2003 - 2007 summary statistics for Victoria MCTSC (VAK).

**EXHIBIT 1-4 ESTIMATED TRANSITS THROUGH HARO STRAIT, BOUNDARY PASS, AND STRAIT OF GEORGIA WATERWAYS (APRIL - SEPTEMBER)**

VESSEL TYPE	2007	2006	2005	2004	2003	AVERAGE
Tanker	306	363	405	321	321	343
Cargo	3,125	4,037	4,190	4,549	4,523	4,085
Government	2,126	2,689	2,728	2,474	2,351	2,474
Fishing	875	1,301	1,571	1,865	1,418	1,406
Passenger Vessels	1,065	1,416	1,600	1,492	2,461	1,607
Other Vessels <sup>1</sup>	3,841	3,981	4,182	4,163	3,672	3,968
<b>Subtotal Movements</b>	<b>11,338</b>	<b>13,787</b>	<b>14,676</b>	<b>14,864</b>	<b>14,746</b>	<b>13,882</b>
Tug	22,858	29,525	29,773	28,877	25,876	27,382
Ferry	48,968	50,211	51,447	51,201	49,570	50,279
<b>Grand Total Movements</b>	<b>83,164</b>	<b>93,523</b>	<b>95,896</b>	<b>94,942</b>	<b>90,192</b>	<b>91,543</b>

<sup>1</sup> "Other vessels" includes all vessels which participate in the VTS System in addition to vessel types defined in this table, including charter vessels, whale watching vessels or other kinds of recreation or private vessels. These vessel types are not tracked uniquely and this analysis can not further break down this category.  
Source: Ian Wade, Regional Program Specialist Marine Communications and Traffic Services (MCTS), Canadian Coast Guard, Pacific Region.

**EXHIBIT 1-5 ESTIMATED TRANSITS THROUGH HARO STRAIT, BOUNDARY PASS, AND STRAIT OF GEORGIA WATERWAYS (OCTOBER - MARCH)**

VESSEL TYPE	2007-08 <sup>1</sup>	2006-07	2005-06	2004-05	2003-04	AVERAGE
Tanker	136	316	287	290	266	259
Cargo	1,536	3,615	4,177	4,178	4,347	3,571
Government	902	2,174	2,261	2,092	1,939	1,874
Fishing	323	935	1,146	1,523	1,731	1,132
Passenger Vessels	91	95	121	158	306	154
Other Vessels <sup>2</sup>	1,816	3,471	3,454	3,722	3,782	3,249
<b>Subtotal Movements</b>	<b>4,804</b>	<b>10,606</b>	<b>11,446</b>	<b>11,963</b>	<b>12,371</b>	<b>10,238</b>
Tug	10,528	25,348	28,934	27,130	24,775	23,343
Ferry	22,412	44,111	45,664	45,846	45,314	40,669
<b>Grand Total Movements</b>	<b>37,744</b>	<b>80,065</b>	<b>86,044</b>	<b>84,939</b>	<b>82,460</b>	<b>74,250</b>

<sup>1</sup> For 2007-2008 data were only available on vessel counts for October, November and December 2007.  
<sup>2</sup> "Other vessels" includes all vessels which participate in the VTS System in addition to vessel types defined in this table, including charter vessels, whale watching vessels or other kinds of recreation or private vessels. These vessel types are not tracked uniquely and this analysis can not further break down this category.  
Source: Ian Wade, Regional Program Specialist Marine Communications and Traffic Services (MCTS), Canadian Coast Guard, Pacific Region.

EXHIBIT 1-6 DAILY AVERAGE NUMBER OF VESSELS PARTICIPATING IN CVTS FOR THE HARO STRAIT, BOUNDARY PASS, AND STRAIT OF GEORGIA WATERWAYS IN 2007

MONTH	DAILY AVERAGE NUMBER OF PARTICIPATING VESSELS
April	143
May	153
June	158
July	159
August	159
September	151
October	140
November	132
December	115
<b>AVERAGE</b>	<b>146</b>
Source: Ian Wade, Regional Program Specialist Marine Communications and Traffic Services (MCTS), Canadian Coast Guard, Pacific Region.	

Tankers, Freighters, and Cargo Vessels

20. Oil tankers provide an important service to the major oil terminals located in the northern section of Puget Sound, which receive shipments from Alaska and elsewhere.<sup>13</sup> Vessels transporting containerized cargo and loose and other bulk goods are the most frequent large vessel types in the region. In addition, the Puget Sound region is also home to a large deep-sea and local fishing fleet, a substantial coastal freighter fleet, and several major U.S. Navy installations.<sup>14</sup>

Ferries

21. As indicated by the large number of ferry transits in Exhibits 1-3 and 1-4, many passenger and car ferries operate throughout the region. While ferry systems in the Sound are both publicly and privately owned, the largest is the Washington State Ferry system, which is the third largest system in the world, serving eight counties in the Puget Sound and San Juan Islands area in Washington, as well as the Province of British Columbia in Canada. Washington State Ferries maintains a fleet of 28 vessels, making 500 trips per day to serve 20 terminal points along ten ferry routes.<sup>15</sup> Depending on their

<sup>13</sup> Committee on Maritime Advanced Information Systems, National Research Council, 1999. Applying Advanced Information Systems to Ports and Waterways Management, Appendix C: Maritime Advanced Information Systems Puget Sound Region. National Academies Press.

<sup>14</sup> Ibid.

<sup>15</sup> Washington State Department of Transportation, 2002. Washington's Transportation Plan 2003 - 2022, Chapter 2.

design, the ferries may carry between 100 to 200 vehicles, and between 1000 to 2500 passengers.<sup>16</sup>

#### Whale Watching Vessels

22. Puget Sound attracts all manner of recreational boating activities. Whale watching is particularly popular, especially near the western shores of San Juan Islands where most whale sightings are known to occur. Exhibit 1-7 maps the frequency of whale sightings in the Puget Sound and adjacent waters. Killer whales frequent the inland waterways of Puget Sound, Strait of Juan de Fuca, Haro Strait, and Strait of Georgia mostly between April and September. The whales start leaving in November and December for the open waters of the Pacific Ocean. The whale watching vessels are therefore most active between April and September in Haro Strait near the San Juan Islands, with the highest densities occurring June through August.<sup>17</sup>

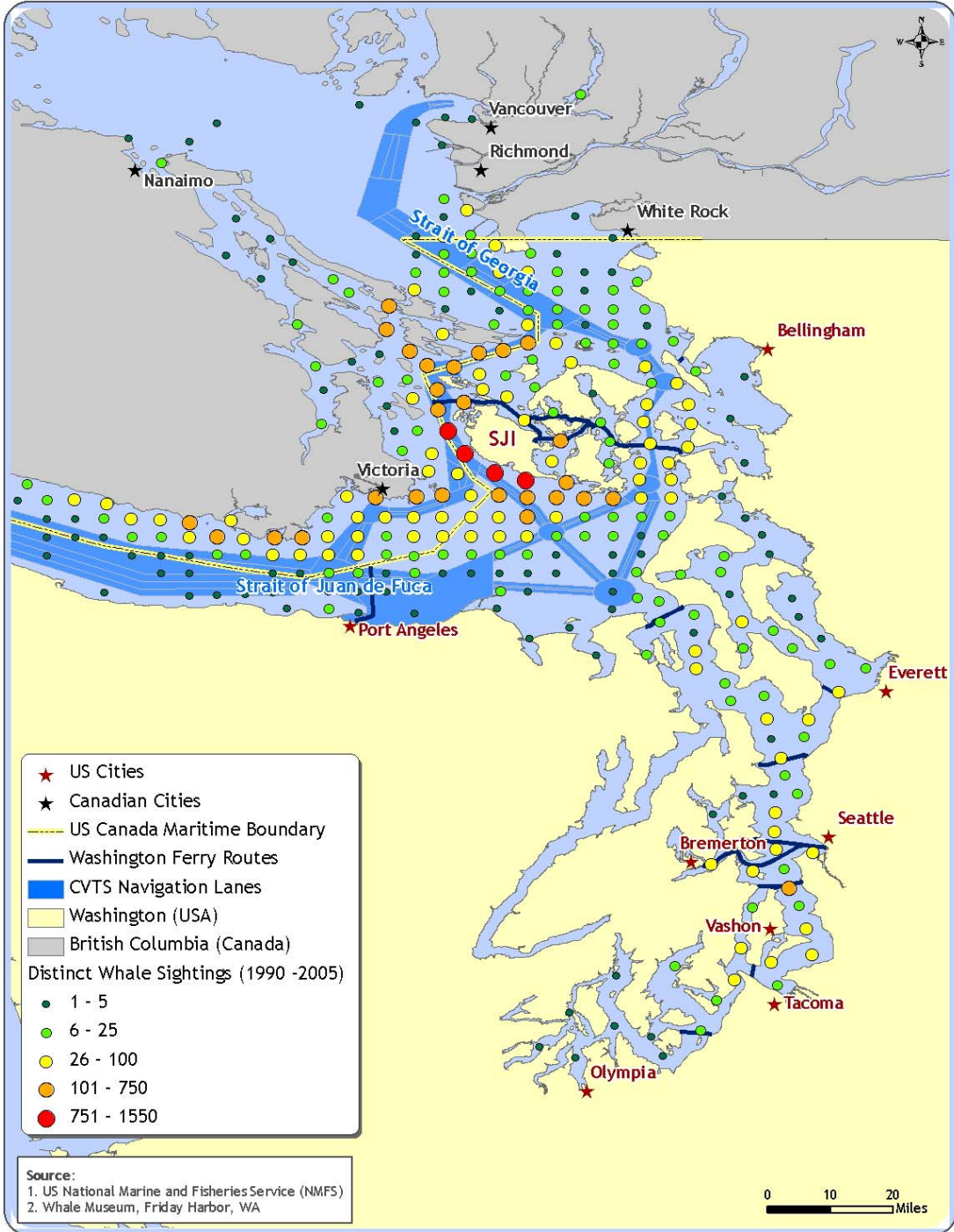
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<sup>16</sup> Washington State Department of Transportation. Washington State Ferries: History. Accessed at [http://www.wsdot.wa.gov/ferries/your\\_wsf/index.cfm?fuseaction=our\\_history](http://www.wsdot.wa.gov/ferries/your_wsf/index.cfm?fuseaction=our_history) on January 5, 2008.

<sup>17</sup> Kari Koski, Soundwatch Coordinator, The Whale Museum. 2006. 2004 - 2005 Final Program Report: Soundwatch Public Outreach/Boater Education Project. The Whale Museum, Friday Harbor, Washington.

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EXHIBIT 1-7 WHALE SIGHTINGS IN PUGET SOUND AND ADJACENT WATERS



## 1.4 PROFILE OF THE REGIONAL WHALE WATCHING INDUSTRY

### 1.4.1 ECONOMIC PROFILE OF THE WHALE WATCHING INDUSTRY IN WASHINGTON STATE

23. Most whale watching in the Puget Sound area occurs between April and September. The U.S. Fish and Wildlife Service estimated that in 2001, approximately 208,000 U.S. residents over the age of 16 engaged in marine mammal wildlife viewing activities in Washington State that required travel.<sup>18</sup> Currently, Soundwatch, a program of The Whale Museum that monitors whale watching activity in the Sound, estimates that over 500,000 people annually engage in whale watching from commercial vessel and kayaks from both U.S. and Canadian ports. Additionally, shore-based whale watching at Lime Kiln Point/Whale Watch State Park has increased in recent years to nearly 200,000 visitors annually; a slight reduction in the number of shore-based viewers in recent years is likely due to the establishment of a parking fee/permit structure that was introduced in 2004.<sup>19</sup>
24. The nature of the tours offered by different U.S.-based whale watching companies varies. Specifically, there are short (three to four hours) wildlife tours focused primarily on whale watching, similarly short wildlife tours on-board a high-speed boat or zodiac,<sup>20</sup> and full-day or multiple-day harbor cruises with multiple ports-of-call for lunch and shopping.<sup>21</sup> The price of whale watching tours varies with the nature of the tour. The price of a short wildlife tour on a generic boat ranges from approximately \$60 to \$80; the price of a short wildlife tour on a high-speed boat or zodiac ranges from approximately \$99 to \$115; the price of a full-day or multiple-day harbor cruise ranges from \$250 to \$500 depending on the length of the cruise. Private whale watching tours for small groups range in price from \$400 to \$625 depending on the length of the tour and the size of the group.<sup>22</sup>
25. Whale watching has been increasingly popular since the 1980's in the Haro Strait region.<sup>23</sup> Ticket sales first reached one million dollars in 1991, and reached \$5.7 million

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<sup>18</sup> U.S. Department of the Interior, Fish and Wildlife Service and U.S. Department of Commerce, U.S. Census Bureau. 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation.

<sup>19</sup> The Whale Museum. 2006. Soundwatch Public Outreach/Boater Education Project Final Program Report.

<sup>20</sup> A zodiac is a rigid-hulled inflatable boat. Information on zodiacs was accessed at <http://www.zodiacmarineusa.com> on January 3, 2008.

<sup>21</sup> Descriptions of the types of tours offered and the respective price ranges of each type of tour are based on a review of all Whale Watch Operators Association Northwest (WWOANW) member websites accessed at <http://www.nwwhalewatchers.org/members.html> on January 2, 2008.

<sup>22</sup> Descriptions of the types of tours offered and the respective price ranges of each type of tour are based on a review of all Whale Watch Operators Association Northwest (WWOANW) member websites found accessed at <http://www.nwwhalewatchers.org/members.html> on January 2, 2008.

<sup>23</sup> Data for the analysis presented in this section is courtesy of the Whale Museum that has maintained databases of whale sightings since 1990 and as part of its Soundwatch Program has been tracking commercial whale watch operators, recreational boaters and other vessels to record compliance with current best practice guidelines, especially in the Haro Strait region.



by 1997.<sup>24</sup> Hoyt (2001) estimated that 52,000 (boat-based) participants in commercial whale watching tours in Washington State spent a total of \$9.59 million in 1998; \$3.31 million in tickets for whale watching, and the remainder on indirect expenditures such as food, travel, lodging, and souvenirs.<sup>25</sup> Approximately 30 percent of the 52,000 participants were from Washington, while 70 percent were from out of state. Of the total whale watching tour expenditures in Washington State in 1998, 80 percent were estimated to be spent in Puget Sound and Georgia Basin.<sup>26</sup>

26. IMPLAN, a regional economic model, was applied to quantify the dollar value of goods and services produced, and employment generated, by consumer expenditures in the whale watching industry. Regional economic modeling accounts for the interconnectedness of industries within a geographic area -- that is, industries not only supply goods and services to consumers, but also to each other. Thus, spending in one economic sector tends to have a larger impact on the regional economy as a whole. This concept is commonly referred to as the "multiplier" effect. IMPLAN is a regional economic model frequently used by state and Federal agencies for policy planning and evaluation purposes. For this analysis, IMPLAN translates estimates of whale watching trip expenditures (e.g., food, lodging, equipment, and gas) into changes in demand for inputs to affected industries within the Washington State counties adjacent to Puget Sound. Expenditure estimates from the 2001 whale watching study were used as inputs to IMPLAN.<sup>27</sup> The current whale watching industry in Puget Sound is estimated to contribute approximately \$18.4 million annually and 205 jobs to the 19 counties adjacent to the whales' habitat area through direct, indirect, and induced expenditures related to the industry.<sup>28</sup>

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<sup>24</sup> Kari Koski, Soundwatch Coordinator, The Whale Museum. 2006. The Soundwatch Boater Education Program: Trends in vessel traffic with southern resident killer whales; The Whale Museum, Friday Harbor, Washington.

<sup>25</sup> Hoyt, Erich. 2001. "Whale Watching 2001: Worldwide Tourism Numbers, Expenditures and Expanding Socioeconomic Benefits," A Special Report from the International Fund for Animal Welfare.

<sup>26</sup> National Marine Fisheries Service. March 2005. "Conservation Plan for Southern Resident Killer Whales (Preliminary Draft)."

<sup>27</sup> Expenditure estimates are from Hoyt, 2001.

<sup>28</sup> IEC performed an IMPLAN Analysis to generate this information using: IMPLAN Professional, Social Accounting, and Impact Analysis Software, User's Guide, Analysis Guide, Data Guide, Minnesota IMPLAN Group, Inc., 2002.

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**1.4.2 NUMBERS AND TYPES OF U.S.-BASED COMMERCIAL WHALE WATCHING VESSELS**

- 27. Currently, 28 to 29 commercial whale watching companies are based in the Puget Sound area of the U.S. Of these, approximately 17 operate motorized whale watching vessels, nine operate sea kayaks, and two offer land-based whale watching. The motorized vessel operating companies are based in eight different U.S. ports: Seattle, Bellingham, Everett, Anacortes, La Conner, Port Townsend, San Juan Island, and Orcas Island (multiple ports are contained on San Juan Island and Orcas Island).<sup>29, 30</sup>
- 28. Each company operates one to three vessels and offers one to five whale watching tours per day. During the prime whale watching season (May through September), a total of 22 to 24 U.S.-based vessels offer 37 whale watching trips each day in the Puget Sound area. The distributions of the number of vessels operated and the number of trips offered per day by each U.S. company in the Puget Sound area are presented in Exhibits 1-8 and 1-9.<sup>31, 32</sup>

**EXHIBIT 1-8 DISTRIBUTION OF THE NUMBER OF VESSELS OPERATED BY U.S.-BASED WHALE WATCHING COMPANIES IN THE PUGET SOUND AREA**

NUMBER OF VESSELS OPERATED	NUMBER OF COMPANIES
1	12
2	4
3	1
<b>Total</b>	<b>17</b>

Source: Russell, S., and M. Schneider. IN prep as of September 2008. A Sociocultural Description of the U.S. Whale Watching Industry in the Puget Sound, WA. NOAA Technical Memorandum-NMFS-NWFSC. (Available from S. Russell, Conservation Biology Division, NWFSC 2725 Montlake Blvd. E., Seattle, WA 98112.)

<sup>29</sup> A recent survey of the whale watching industry indicates that 18 U.S. companies may be operating motorized vehicles as of 2006; however, data are only available on 17 of those companies. Source: Russell, S., and M. Schneider. IN prep as of September 2008. A Sociocultural Description of the U.S. Whale Watching Industry in the Puget Sound, WA. NOAA Technical Memorandum-NMFS-NWFSC. (Available from S. Russell, Conservation Biology Division, NWFSC 2725 Montlake Blvd. E., Seattle, WA 98112.)

<sup>30</sup> The Whale Museum. 2006. Soundwatch Public Outreach/Boater Education Project Final Program Report. The range of numbers for total whale watching vessels in the region reflects slight discrepancies in the two data sources.

<sup>31</sup> National Marine Fisheries Service: Russell, S., and M. Schneider. IN prep as of September 2008. A Sociocultural Description of the U.S. Whale Watching Industry in the Puget Sound, WA. NOAA Technical Memorandum-NMFS-NWFSC. (Available from S. Russell, Conservation Biology Division, NWFSC 2725 Montlake Blvd. E., Seattle, WA 98112.)

<sup>32</sup> The Whale Museum. 2006. Soundwatch Public Outreach/Boater Education Project Final Program Report.

**EXHIBIT 1-9 DISTRIBUTION OF THE NUMBER OF TRIPS OFFERED BY U.S.-BASED WHALE WATCHING COMPANIES IN THE PUGET SOUND AREA**

NUMBER OF TRIPS OFFERED BY COMPANY PER DAY	PERCENT OF COMPANIES OFFERING RESPECTIVE NUMBER OF TRIPS	NUMBER OF COMPANIES OFFERING RESPECTIVE NUMBER OF TRIPS <sup>1</sup>
1	41.2%	7
2	29.4%	5
3	11.8%	2
4	5.9%	1
5	11.8%	2

<sup>1</sup> The "number of companies" values are calculated by taking the respective percent of companies out of the 17 total companies and rounding to the nearest integer.  
Source: Russell, S., and M. Schneidler. IN prep as of September 2008. A Sociocultural Description of the U.S. Whale Watching Industry in the Puget Sound, WA. NOAA Technical Memorandum-NMFS-NWFSC. (Available from S. Russell, Conservation Biology Division, NWFSC 2725 Montlake Blvd. E., Seattle, WA 98112.)

29. The size of the vessels operated by U.S.-based whale watching companies varies from large ferries, such as the fleet of "Victoria Clippers," operated by Victoria Navigation, Inc. with an operating passenger capacity of 200 people, to small recreational style boats, such as the 25-foot long, 2005 Glacier Bay 2270 Isle Runner owned by PrivateWhaleWatching.com and used to provide private tours to small parties no larger than six people.<sup>33,34,35</sup> The average operational passenger capacity of a U.S.-based, commercial whale watching vessel is approximately 55 people.<sup>36</sup> Thus, the maximum number of people participating in U.S.-based commercial whale watching in the Puget Sound area during the whale watching season is approximately 2,305 people per day.<sup>37</sup>

<sup>33</sup> Information on "Victoria Clippers" accessed at <http://www.clippervacations.com> on January 3, 2008.

<sup>34</sup> Vessel capacity information found in: Russell, S., and M. Schneidler. IN prep as of September 2008. A Sociocultural Description of the U.S. Whale Watching Industry in the Puget Sound, WA. NOAA Technical Memorandum-NMFS-NWFSC. (Available from S. Russell, Conservation Biology Division, NWFSC 2725 Montlake Blvd. E., Seattle, WA 98112.)

<sup>35</sup> Vessel size, capacity, and tour description accessed at <http://www.privatewhalewatching.com> on January 3, 2008.

<sup>36</sup> Vessel capacity information found in: Russell, S., and M. Schneidler. IN prep as of September 2008. A Sociocultural Description of the U.S. Whale Watching Industry in the Puget Sound, WA. NOAA Technical Memorandum-NMFS-NWFSC. (Available from S. Russell, Conservation Biology Division, NWFSC 2725 Montlake Blvd. E., Seattle, WA 98112.)

<sup>37</sup> (37 trips offered per day) x (average maximum operating capacity of 55 people) = 2,035 people.

#### 1.4.3 CANADIAN COMMERCIAL WHALE WATCHING INDUSTRY

30. Currently, 22 Canadian-based, motorized vessel operating whale watching companies exist in the Puget Sound area.<sup>38</sup> Canadian whale watching companies are based in Canadian ports, such as, Victoria, Vancouver, Sooke, Sidney, Richmond, and Duncan.<sup>39</sup>
31. The types of whale watching tours offered by the 22 Canadian-based whale watching companies are similar to those offered by U.S. companies in the Puget Sound area.<sup>40</sup> Further, the prices charged by the 22 Canadian-based whale watching companies are comparable to the prices charged by U.S. companies in the Puget Sound area for the same type of tour.<sup>41</sup> Although detailed information is not readily available for Canadian whale watching companies in the Puget Sound area (i.e., vessel size, number of vessels operated, number of trips offered per day), this analysis assumes that Canadian whale watching companies operate similarly to U.S. whale watching companies in the Puget Sound area. To the extent that these vessels accommodate more or less passengers than the U.S. vessels, this analysis underestimates or overestimates the number of individuals affected on Canadian whale watching trips.

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<sup>38</sup> The Whale Museum. 2006. Soundwatch Public Outreach/Boater Education Project Final Program Report.

<sup>39</sup> Based on a review of all Whale Watch Operators Association Northwest (WWOANW) member websites accessed at <http://www.nwwhalewatchers.org/members.html> on January 2, 2008.

<sup>40</sup> Based on a review of all Whale Watch Operators Association Northwest (WWOANW) member websites accessed at <http://www.nwwhalewatchers.org/members.html> on January 2, 2008.

<sup>41</sup> Kari Koski, Soundwatch Coordinator, The Whale Museum. 2006. 2004 - 2005 Final Program Report: Soundwatch Public Outreach/Boater Education Project. The Whale Museum, Friday Harbor, Washington.

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## CHAPTER 2 | PARTIES POTENTIALLY AFFECTED BY VESSEL TRAFFIC REGULATIONS

32. In order to provide greater protection to the Puget Sound population of southern resident killer whales, NMFS is considering alternatives for the regulation of vessel traffic in the Sound. This section provides a brief description of the parties that are most likely to be affected by alternatives for four potential regulations:
- **Vessel approach regulations:**
    - Scenario 1 - Avoid approaching closer than 100 yards/meters to any whale.
    - Scenario 2 - Avoid approaching closer than 200 yards/meters to any whale.<sup>40</sup>
  - **Vessel path regulations**
    - Avoid positioning vessels within the 400 yard/meter area in the path of the whales.
  - **Vessel speed regulations**
    - Reduce speed to less than seven knots when within 400 yards/meters of the nearest whale.
  - **Establish a Protection Area:**
    - Scenario 1 - Preclude boats from occupying areas within a quarter mile of the west coast of San Juan Island from Eagle Point to Mitchell Point, and within a half mile of a three kilometer stretch of shore centered on the Lime Kiln lighthouse.
    - Scenario 2 - Preclude boats from occupying areas within 0.5 miles of the west coast of San Juan Island from Eagle Point to Mitchell Point.
33. Results of this analysis indicate that the parties expected to be affected by potential vessel traffic regulations are individuals engaged in commercial whale watching tours, private vessel-based whale watching activities, kayakers, and, to a lesser extent, commercial fishing vessels traversing these areas of the Sound. Exhibit 2-1 summarizes the results of this analysis.
- This analysis forecasts that Scenario 1 of the potential approach regulation may affect 15 commercial whale watching trips (carrying 825 passengers), 55 private whale watching trips (carrying 188 passengers), 20 private fishing trips (carrying 68 passengers), seven kayaks (carrying 14 passengers), and four other vessel trips (potentially commercial fishing or shipping vessels) annually. For perspective, 1,027

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<sup>40</sup> NMFS' "Be Whale Wise Guidelines" use the terms "yards" and "meters" interchangeably. This report therefore conflates these units of measure absent information on which is the specific standard.

whale watchers affected (the sum of 825, 188, and 14) is significantly less than one percent (0.2 percent) of the estimated 500,000 individuals participating in whale watching activities in Washington State annually. Data are not available on the distance of vessels from whales beyond the 100 meters/yards mark identified in the existing guidelines. This analysis is therefore not able to quantify parties potentially affected by Scenario 2 of the approach regulation.

- This analysis estimates that the potential vessel path regulation may affect 137 commercial whale watching trips (carrying 7,535 people), 38 private whale watching trips (carrying 130 people), 12 private fishing trips (carrying 41 people), five kayak trips (carrying ten passengers), and two other vessel trips annually. The 7,675 potentially affected whale watch participants (the sum of 7,535, 130, and ten) represent approximately 1.5 percent of the estimated 500,000 individuals participating in whale watching activities in Washington State.
- This analysis forecasts that 13 commercial whale watching trips (carrying 715 people), 46 private whale watching trips (carrying 157 people), 16 private fishing trips (carrying 55 people), and four “other” vessel trips may be affected annually if the NMFS implements a vessel speed regulation in the vicinity of whales. The 872 potentially affected whale watch participants (the sum of 715 and 157) represent less than one percent (0.2 percent) of the 500,000 individuals participating in whale watching activities in Washington State.
- For Scenario 1 of the Protected Area regulation, this analysis estimates that 3,417 whale watchers (3,355 on commercial tours and 62 on private vessels) may be affected if the existing voluntary Protected Areas are codified. The potentially affected whale watchers represent 0.7 percent of whale watchers in Washington State. Scenario 2 of this analysis may affect up to 1.3 percent of all whale watchers (6,545 commercial whale watch passengers and 154 on private vessels) if the Protected Area off the west coast of San Juan Island is increased to a half mile. Some commercial fishing vessels may also be affected by the establishment of Protected Areas. Less than 86 gillnet vessels, 17 purse seine vessels, and three reef net sets, both Tribal and commercial may be fishing within the general region of the Protected Areas. Information is not available to determine how many of these vessels may be operating specifically within the Protected Area alternatives and when, however. No other vessel-related activities occurring in the Sound are expected to be measurably affected by these potential regulations as described in Section 2.3.2.

**EXHIBIT 2-1 ESTIMATED NUMBER OF TRIPS/INDIVIDUALS POTENTIALLY AFFECTED BY VESSEL TRAFFIC REGULATIONS PER WHALE WATCHING SEASON**

SCENARIO	VESSEL TYPE AFFECTED	A: NUMBER OF TRIPS AFFECTED <sup>1</sup>	B: AVERAGE NUMBER OF PARTICIPANTS PER TRIP <sup>2</sup>	C = (A * B): NUMBER OF INDIVIDUALS AFFECTED <sup>a</sup>
<b>APPROACH REGULATION ALTERNATIVES</b>				
Scenario 1: 100 yard/meter approach	Private whale watching	55	3.42	188
	Private recreational fishing	20	3.42	68
	Commercial whale watching	15	55	825
	Individual kayaks	7	2	14
	Other	4	Unknown	Unknown
Scenario 2: 200 yard/meter approach	Data are not available to forecast specific numbers though totals assumed to be greater than Scenario 1.			
<b>PATH REGULATION</b>				
400 yard/meter buffer area around whales' path	Private whale watching	38	3.42	130
	Private recreational fishing	12	3.42	41
	Commercial whale watching	137	55	7,535
	Individual kayaks	5	2	10
	Other	2	Unknown	Unknown
<b>SPEED REGULATION</b>				
Reduce speed to less than 7 knots within 400 meters	Private whale watching	46	3.42	157
	Private recreational fishing	16	3.42	55
	Commercial whale watching	13	55	715
	Other	4	Unknown	Unknown
<b>PROTECTED AREA ALTERNATIVES</b>				
Scenario 1	Commercial whale watching	61	55	3,355
	Individual private vessels	18	3.42	62
	Individual kayaks <sup>b</sup>	Unknown	2	Unknown
	Commercial fishing	Unknown	Unknown	Unknown
Scenario 2	Commercial whale watching	119	55	6,545
	Individual private vessels	45	3.42	154
	Individual kayaks <sup>b</sup>	Unknown	2	Unknown
	Commercial fishing	Unknown	Unknown	Unknown
Notes:				
a) The number of individuals affected is estimated by multiplying the number of trips affected by the average number of participants per trip for each vessel type and rounding to the nearest whole.				
b) As described in Section 2.5.2, the number of kayak trips affected by the protected area alternatives varies depending on the data source. Using Soundwatch data, this analysis estimates that less than one kayak trip per year (less than 2 individuals) will be affected by Scenario 1 of the Protected Area Alternatives and no kayak trips will be affected by Scenario 2. However, San Juan County estimates that approximately 10,500 kayakers would be affected by Scenario 1 of the Protected Area Alternatives due to the closure of a boat launch on San Juan Island. As a result, significant uncertainty exists regarding the number of potentially affected kayakers.				
Sources:				
1) Based on data provided by Kari Koski, Soundwatch Coordinator, The Whale Museum: Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006. The estimated number of trips affected is rounded to the nearest whole.				
2) The average number of private vessel (both whale watching and recreational) trip participants is based on written communication with Kari Koski, Soundwatch Coordinator, The Whale Museum, August 1, 2008. The average number of commercial whale watching trip participants is based on written communication with Suzanne Russell, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Northwest Fisheries Science Center, July 29, 2008. The average number of individuals per kayak is assumed to be two.				

34. While some parties may be negatively affected by the proposed regulations, others stand to benefit. For example, shore-based whale watching at Lime Kiln Point/Whale Watch State Park has increased in recent years to nearly 200,000 visitors annually.<sup>41</sup> These 200,000 shore-based viewers may be positively affected by the reduced density of vessels occupying the Sound.

#### 2.1 GUIDELINES FOR VESSELS OPERATING IN PUGET SOUND

35. The killer whales are afforded protection from take and harassment associated with their listing as endangered according to the Endangered Species Act and depleted under the Marine Mammal Protection Act. In addition to these protections, management agencies have developed guidelines to ensure the protection of the species from vessels in the Sound.
36. As part of the Soundwatch Public Outreach/Boater Education Project, the Whale Museum developed a set of voluntary guidelines known as the “Be Whale Wise Guidelines” (hereafter “whale watching guidelines”). Currently, the U.S. and Canadian governments and the Whale Watch Operators Association Northwest (WWOANW) have adopted these guidelines as a set of best practices for whale watching in the Puget Sound area.<sup>42</sup> Related to the killer whales, the whale watching guidelines specify:

1. Be cautious and courteous: approach areas of known or suspected marine mammal activity with extreme caution. Look in all directions before planning your approach or departure.
2. Slow down: reduce speed to less than seven knots when within 400 meters/yards of the nearest whale. Avoid abrupt course changes.
3. Avoid approaching closer than 100 meters/yards to any whale.
4. If your vessel is unexpectedly within 100 meters/yards of a whale/stop immediately and allow the whale to pass.
5. Avoid approaching whales from the front or from behind. Always approach and depart whales from the side, moving in a direction parallel to the direction of the whales.
6. Keep clear of the whales' path. Avoid positioning your vessel within the 400 meter/yard area in the path of the whales.
7. Stay on the offshore side of the whales when they are traveling close to shore. Remain at least 200 meters/yards offshore at all times.
8. Limit your viewing time to a recommended maximum of 30 minutes. This will minimize the cumulative impact of many vessels and give consideration to other viewers.

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<sup>41</sup>The Whale Museum. 2005. Soundwatch Public Outreach/Boater Education Project Final Program Report.

<sup>42</sup> The Whale Museum. 2003. Soundwatch Public Outreach/Boater Education Project Final Program Report.

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9. Do not swim with or feed whales.<sup>43</sup>

37. In addition to the whale watching guidelines, two voluntary “no-go zones” (i.e., areas off limits to vessels of any kind) off of San Juan Island are recognized by San Juan County (Exhibit 2-13). A half mile wide zone is located along a three kilometer stretch of shore centered on Lime Kiln lighthouse, and a quarter mile wide zone is located off of the west coast of San Juan Island from Eagle Point to Mitchell point. The no-go zones were established to reduce vessel presence in the whales’ feeding, traveling, and resting areas, and to facilitate shore-based viewing. These areas were established in 1996 and 1999, respectively.
38. The whale watching guidelines and the no-go zones provide baseline protection to the killer whales (absent vessel traffic regulation) to the extent that vessels in the Sound abide by these standards. That is, in the case that all vessels operating in the Sound already comply with the whale watching guidelines and no-go zones, codifying the potential NMFS regulations will not affect whale watching participants nor affect the regional economy supported by the activity.
39. The Soundwatch Public Outreach/Boater Education Project includes a monitoring program designed to capture vessel activities in the Puget Sound area during the whale watching season. Specifically, the Whale Museum monitors: vessels’ compliance with the voluntary whale watching guidelines and no-go zones, the level of vessel activity in the Sound, and the distribution of vessels in the Sound (e.g., commercial whale watching, private whale watching, commercial fishing, etc). Soundwatch data is reported annually in the Soundwatch Public Outreach/Boater Education Project Final Program Report. Although the Soundwatch data accurately describes vessel activity in the Puget Sound area during the whale watching season, the data reported represents a minimum bound on the potential vessel activity given that monitoring does not occur in all areas of the Puget Sound at all times. Thus, the Soundwatch data is not expected to capture all instances of non-compliance with the whale watching guidelines and no-go zones.<sup>44</sup>
40. The following section applies the Soundwatch data from 2003 through 2006 to describe the extent to which whale watching vessels currently adhere to the voluntary whale watching guidelines and no-go zones.

#### 2.1.1 FAILURE TO FOLLOW WHALE WATCHING GUIDELINES

41. Overall, it appears that most vessels in the Sound comply with the voluntary guidelines. Nonetheless, the total number of annual incidents (non-adherence to the guidelines) observed between May and September has increased annually since 2003 (Exhibit 2-2).<sup>45</sup> Several potential explanations exist for the increase in the total number of annual

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<sup>43</sup> Fisheries and Oceans Canada and the U.S. Department of Commerce. 2006. Be Whale Wise: Guidelines for Watching Marine Wildlife.

<sup>44</sup> The Whale Museum. 2006. Soundwatch Public Outreach/Boater Education Project Final Program Report.

<sup>45</sup> The total number of annual incidents of noncompliance with the whale watching guidelines includes all incidents not just 100-yard/meter approach incidents, parked in the path of whale incidents, and fast within a quarter mile of whale incidents.

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incidents. Specifically, the increase may be due to a greater number of whale watching vessels present in the Puget Sound area (i.e., the whale watching industry has grown since 2003). Alternatively, the apparent number of annual incidents may have increased due to an increase in the number of hours that Soundwatch surveyors spent observing the Puget Sound area for incidents of ignoring the whale watching guidelines.

**EXHIBIT 2-2 THE DISTRIBUTION OF INCIDENTS BY TYPE (MAY-SEPTEMBER 2003-2006) [NUMBER OF INCIDENTS (PERCENT OF TOTAL INCIDENTS)]**

TYPE OF INCIDENT	2003	2004	2005	2006
Parked in Path of Whales	62 (16.6%)	145 (19.1%)	255 (26.6%)	330 (25.8%)
Inshore of Whales	61 (16.4%)	164 (21.6%)	169 (17.7%)	220 (17.2%)
Approaching Whales Closer than 100 meters/yards	56 (15.0%)	72 (9.5%)	105 (11.0%)	169 (13.2%)
Fast within 1/4 mile	13 (3.5%)	69 (9.1%)	99 (10.3%)	139 (10.9%)
Airplane within 1000 ft	24 (6.4%)	47 (6.2%)	35 (3.7%)	71 (5.5%)
Crossing Path of Whales	25 (6.7%)	43 (5.7%)	39 (4.1%)	67 (5.2%)
Within 440 yards of SJI No-Boat-Zone	47 (12.6%)	30 (3.9%)	81 (8.5%)	52 (4.1%)
Within 220 yards of shore; whales present	2 (0.5%)	31 (4.1%)	11 (1.1%)	28 (2.2%)
Chasing Whales	15 (4.0%)	20 (2.6%)	14 (1.5%)	23 (1.8%)
Within 880 yards of Lime Kiln	20 (5.4%)	9 (1.2%)	18 (1.9%)	17 (1.3%)
1st approach head on, behind, or inshore	8 (2.1%)	9 (1.2%)	14 (1.5%)	13 (1.0%)
Kayaks spread out	11 (2.9%)	2 (0.3%)	NA	10 (0.8%)
Kayaks with whales outside of 1/4 mile SJI zone	5 (1.3%)	NA	8 (0.8%)	8 (0.6%)
Within 200 yards of NWR	6 (1.6%)	8 (1.1%)	1 (0.1%)	5 (0.4%)
Other	18 (4.8%)	111 (14.6%)	108 (11.3%)	129 (10.1%)
<b>Total</b>	<b>373 (100.0%)</b>	<b>760 (100.0%)</b>	<b>957 (100.0%)</b>	<b>1281 (100.0%)</b>

Source: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

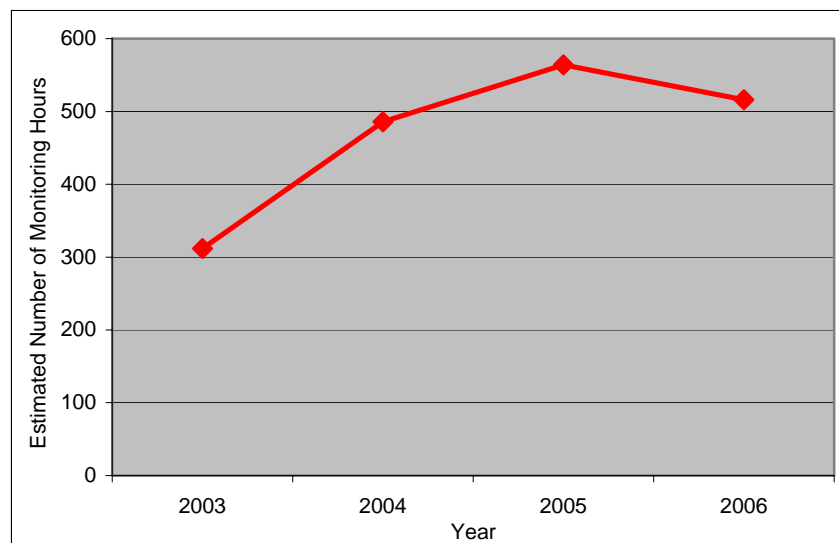
42. This analysis includes a statistical analysis to determine if the number of vessels observed by Soundwatch in the proximity of killer whales in the Puget Sound area (a measure of the number of whale watching vessels present in the Puget Sound area) and the number of hours Soundwatch spent observing the Puget Sound area for incidents of ignoring the whale watching guidelines are significant predictors (i.e., play a role in determining) of the total number of annual incidents observed in a given year.<sup>46</sup> That is, the objective was to determine whether the number of incidents recorded by Soundwatch is representative of the total number of incidents occurring in the Sound or is the estimate of recorded incidents influenced by survey methods. This statistical analysis highlighted that an increased number of vessels near the whales is not related to the number of incidents, and

<sup>46</sup> The R version 2.6.1 statistical software program (R Project, 2007) was used.

the number of hours spent surveying for incidents does have an effect on the total number of annual incidents estimated by Soundwatch. Specifically:

- The average annual number of vessels observed in the proximity of killer whales at any given time between 9:00 a.m. and 6:00 p.m. in the Puget Sound area from May through September has remained relatively constant at approximately 20 vessels since 1998.<sup>47</sup> The average annual number of vessels observed in the proximity of killer whales in the Puget Sound area is not a significant predictor of the number of annual incidents.<sup>48</sup>
- The estimated number of monitoring hours logged by the Whale Museum increased between 2003 and 2004 and between 2004 and 2005, but decreased between 2005 and 2006 (Exhibit 2-3). The estimated number of monitoring hours is a significant predictor of the total number of annual incidents observed.<sup>49</sup> Specifically, the total number of incidents observed in the Puget Sound area is estimated to increase by 3.27 with every additional hour of monitoring.
- However, because the estimated number of monitoring hours logged by the Whale Museum does not increase each year from 2003 to 2006, it cannot be the only cause of the increase in the total number of incidents observed in the Puget Sound area each year. This is further illustrated by the fact that the number of incidents observed per hour of observation increased annually from 2003 to 2006. Specifically, an average of 1.20 incidents were observed per hour in 2003, while an average of 2.48 incidents were observed per hour in 2006.

EXHIBIT 2-3 ESTIMATED NUMBER OF OBSERVATION HOURS (MAY-SEPTEMBER 2003-2006)



<sup>47</sup> The Whale Museum. 2006. Soundwatch Public Outreach/Boater Education Project Final Program Report. Note that the Whale Museum does not define a distance within which a vessel is considered to be "in the proximity of a killer whale."

<sup>48</sup> Results of a linear regression analysis run in R version 2.6.1 (*t-test*,  $p = 0.1104$ ,  $df = 7$ ,  $\alpha = 0.05$ ).

<sup>49</sup> Results of a linear regression analysis run in R version 2.6.1 (*t-test*,  $p = 0.0123$ ,  $df = 7$ ,  $\alpha = 0.05$ ).

Source: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2006.

## 2.2 PARTIES POTENTIALLY AFFECTED BY APPROACH REGULATIONS

43. This analysis employs the Soundwatch data on the number of incidents of ignoring the 100 meter/yard approach guideline in order to approximate the parties most likely to be affected in the case that NMFS' codifies the guideline (Scenario 1), or implements a stricter 200 meter/yard approach guideline (Scenario 2).

### 2.2.1 PARTIES LIKELY TO BE AFFECTED BY SCENARIO 1

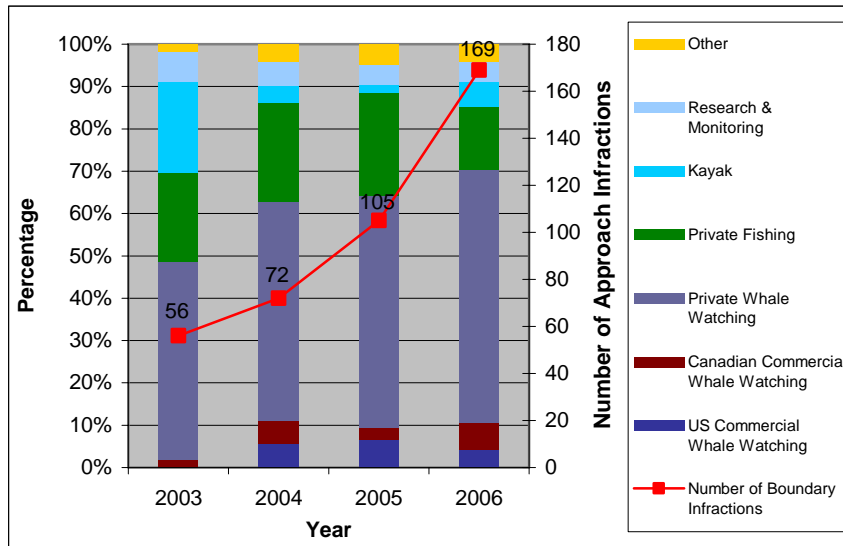
44. As described above, the whale watching guidelines currently recommend a 100 yard/meter approach distance from the killer whales for all vessels operating in the Sound. In the case that all vessels are currently complying with this voluntary guideline, no parties would be expected to be affected by a regulation codifying the same approach distance. It is therefore the parties that are not currently complying with the voluntary guideline that will be affected by the potential regulation, as those parties would have to alter their current practices.
45. Incidents of ignoring the 100 meter/yard approach guideline represents a significant portion of the total number of annual incidents associated with noncompliance of the guidelines observed in the Puget Sound area in all years from 2003 to 2006 (Exhibit 2-2). Specifically, approach incidents represent at least 9.5 percent of all incidents each year from 2003 through 2006. Overall, the number of approach incidents has steadily increased since 2003 from 56 incidents in 2003 to 169 incidents in 2006 (Exhibit 2-4).
46. Between 2003 and 2006, private whale watching vessels (i.e., private recreational vessels engaged in whale watching or cruising activities) caused more approach incidents than any other vessel type, accounting for at least 46.8 percent of all approach incidents (Exhibit 2-4). Further, the portion of approach incidents caused by private whale watching vessels has increased annually from 46.8 percent in 2003 to 59.6 percent in 2006. Private fishing vessels have the second highest rate of approach incidents for all years between 2003 and 2006 representing at least 14.9 percent of annual approach incidents. Kayaks were associated with 21 percent of approach incidents in 2003 but this decreased to six percent in 2006. Commercial whale watching vessels (U.S. and Canadian vessels combined) represent only a small portion of annual approach incidents, representing at most 11.1 percent of the total number of approach incidents in any given year between 2003 and 2006.<sup>50</sup> That is, for the most part, organized whale watching tours are complying with the existing approach guidelines whereas this is less true for individuals independently engaged in whale watching in the Sound.
47. The vessel types identified in Exhibit 2-4 are the vessel types that may be affected by an approach regulation governing minimum vessel distances from the whales. As shown, the largest category of affected vessels is private recreational boat operators engaged in

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<sup>50</sup> Based on data provided by Kari Koski, Soundwatch Coordinator, The Whale Museum: Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

whale watching activities. The remainder of this section describes in more detail the relative magnitude of individuals affected in each of these vessel categories.

EXHIBIT 2-4 DISTRIBUTION OF APPROACH INCIDENTS BY VESSEL TYPE (MAY-SEPTEMBER 2003-2006)



Source: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

Private Whale Watching and Fishing Vessels

48. Based on the distribution of 100-meter/yard approach guideline incidents by vessel type, private vessels, more specifically, private whale watching vessels are the most likely to be affected by a 100-yard approach regulation. Specifically, based on recent patterns of incidents, *it is estimated that 75 private-vessel trips will be affected per whale watching season (55 whale watching trips and 20 fishing trips) in the case that NMFS codifies the 100 yard/meter approach guideline.*<sup>51</sup> An average of 3.42 people per private vessel was observed between 2006 and 2007.<sup>52</sup> Thus, the potential NMFS 100 yard/meter approach guideline would affect approximately 256 people on private vessels per whale watching season. Given that Soundwatch data does not track the specific vessels committing approach infractions, some of the 75 affected private-vessel trips may be due to repeat offenders (i.e., the same vessel committing an approach infraction on separate trips). Further, private-vessels are more likely than other vessel types to contain repeat participants (i.e., individuals in their own, private boats recreating and fishing). To the extent that Soundwatch data captures repeat private-vessel approach infractions involving repeat participants, this analysis overestimates the number of people potentially affected if NMFS codifies the 100 yard/meter approach guideline.

<sup>51</sup> The number of affected trips is estimated by determining the average number of approach incidents per whale watching season from 2003 through 2006 using Soundwatch Public Outreach/Boater Education Program data found in: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

<sup>52</sup> Personal communication with Kari Koski of the Whale Museum on August 1, 2008.

#### Kayaks

49. The percentage of annual approach incidents involving kayaks decreased from approximately 21 percent in 2003 to approximately six percent in 2006. Next to private whale watching and fishing vessels, kayaks cause the next greatest fraction of the total approach guideline incidents. Again, based on recent incident patterns, *it is estimated that, on average, seven kayak trips will be affected each whale watching season by the institution of an enforceable 100 yard/meter approach regulation.*<sup>53</sup> Importantly, however, kayaks most likely carry only one or two individuals and therefore the total number of kayakers potentially affected if the guideline is codified is minor. Assuming each incident involves a unique kayak and up to two individuals (a conservative estimate potentially overstating the number of individuals affected), *this analysis estimates up to 14 individuals kayakers may be affected in Scenario 1.*

#### Commercial Whale Watching Industry

50. Despite the fact that commercial whale watching vessels are involved in a relatively small percentage of the total number of approach incidents (Exhibit 2-4), these vessels support a greater number of individuals. Thus, individuals participating in commercial whale watching activities are forecast to be the largest group potentially affected by codifying the 100 yard/meter approach guideline.
51. A total of 82 approach incidents were caused by U.S.-based commercial whale watching vessels in the Puget Sound area between 1998 and 2006.<sup>54</sup> Further, 23 U.S.-based, vessel-operating, commercial whale watching companies in the Puget Sound area committed an approach incident at least once between 1998 and 2006 (Exhibit 2-5).<sup>55</sup> The majority of these companies (14 out of the 23) caused three or fewer approach incidents between 1998 and 2006; six of the 23 companies caused seven or more approach incidents in that time.

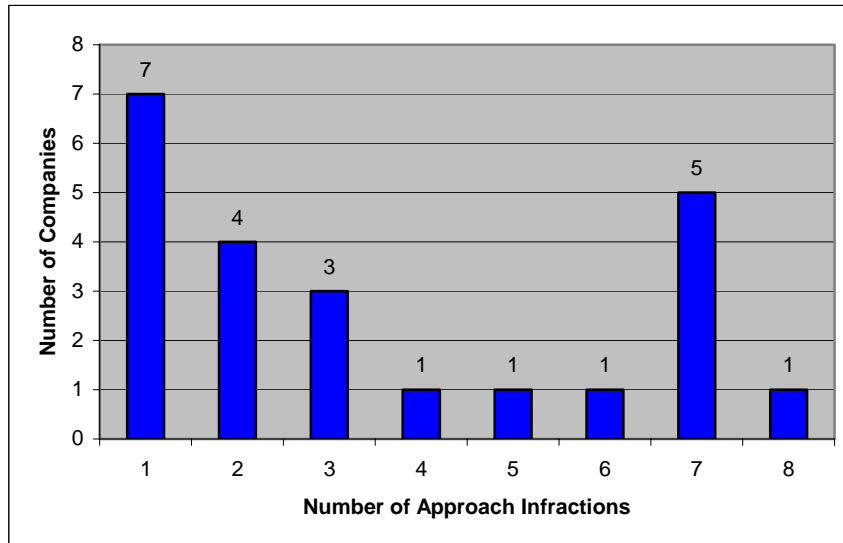
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<sup>53</sup> Ibid.

<sup>54</sup> Based on data provided by Kari Koski, Soundwatch Coordinator, The Whale Museum, "Soundwatch Public Outreach/Boater Education Program data" provided on January 7, 2008.

<sup>55</sup> Although there are only 17 to 19 vessel-operating, U.S. commercial whale watching companies based in the Puget Sound area (see Chapter 1), the 23 companies committing an approach infraction between 1998 and 2006 includes non Puget Sound based companies and commercial companies that conduct limited whale watching activities.

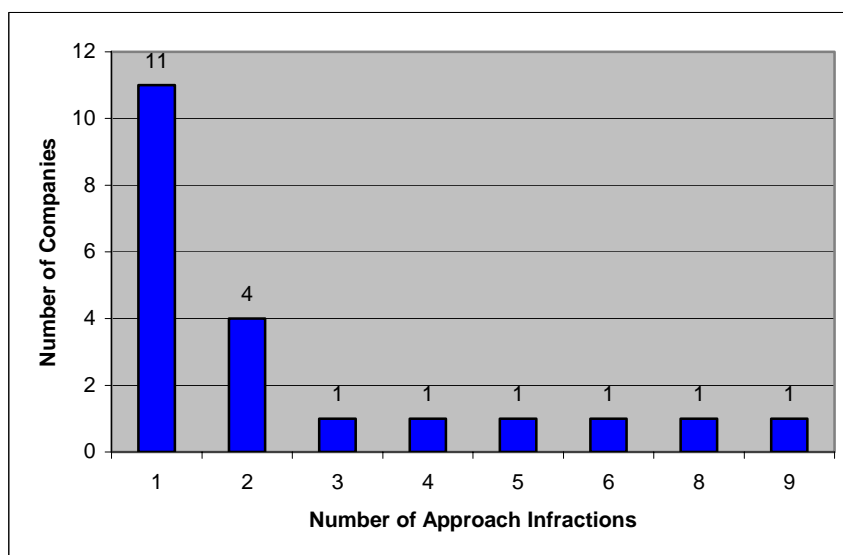
**EXHIBIT 2-5 DISTRIBUTION OF U.S.-BASED COMMERCIAL WHALE WATCHING COMPANIES CAUSING APPROACH INCIDENTS IN THE PUGET SOUND AREA (MAY-SEPTEMBER 1998-2006)**



Source: Soundwatch Public Outreach/Boater Education Program data provided by the Whale Museum on January 7, 2008.

Notes: Total number of companies committing approach infractions includes non Puget Sound based companies and commercial companies that conduct limited whale watching activities.

**EXHIBIT 2-6 DISTRIBUTION OF CANADIAN-BASED COMMERCIAL WHALE WATCHING COMPANIES CAUSING APPROACH INCIDENTS IN THE PUGET SOUND AREA (MAY-SEPTEMBER 1998-2006)**



Source: Soundwatch Public Outreach/Boater Education Program data provided by the Whale Museum on January 7, 2008.

Notes: Total number of companies committing approach infractions includes non Puget Sound based companies and commercial companies that conduct limited whale watching activities.

52. In addition, 21 Canadian-based commercial whale watching companies operating in the Puget Sound area caused 54 approach incidents between 1998 and 2006. Approximately half of these companies (11 out of 21) caused only one approach incident between 1998 and 2006. Further, only three (14.3%) Canadian-based, vessel operating, commercial whale watching companies in the Puget Sound area caused six or more approach incidents between 1998 and 2006.<sup>56</sup>
53. Although a number of commercial whale watching companies in the Puget Sound area caused at least one approach incident since 1998, most companies do not indicate a pattern of non-compliance, having caused few incidents (three or fewer) in that time. In general, both the U.S.- and Canadian-based commercial whale watching companies in the Puget Sound area appear to adhere to the 100-meter/yard approach guideline. This analysis therefore does not anticipate that most commercial whale watching companies operating in the Sound will have to significantly alter their current whale watching practices if NMFS establishes an enforceable 100 yard/meter approach regulation.
54. Approximately 15 commercial whale watching trips have approached the whales within 100 yards/meters per season. *This analysis therefore estimates that an average of 15 commercial whale watching trips may be affected by a 100 yard/meter approach regulation per whale watching season.* Of these 15 trips, nine trips are forecast to be taken by U.S.-based commercial whale watching companies. The nine affected trips represent approximately 0.4 percent of the total number of whale watching trips taken by U.S.-based commercial whale watching companies in the Puget Sound area in a whale watching season, assuming that U.S.-based companies take approximately 2,564 whale watching trips each season (Memorial Day to Labor Day). Further, these nine trips represent even less, (0.1 percent) of the 6,264 whale watching trips estimated to occur in an average year.<sup>57</sup> While data are not available to describe the average number of passengers engaged in a Canadian commercial whale watching trip, this analysis assumes for simplicity that it is comparable to the U.S. commercial operations. Thus 15 whale watching trips carrying an average of 55 passengers per trip, results in *approximately 825 potentially affected whale watch participants.*<sup>58,59</sup> The estimate of potentially affected

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<sup>56</sup> Based on data provided by Kari Koski, Soundwatch Coordinator, The Whale Museum, "Soundwatch Public Outreach/Boater Education Program data" provided on January 7, 2008.

<sup>57</sup> Total number of trips taken assumes that 70 percent of the total number of U.S.-based commercial whale watching trips offered in the Puget Sound area between Memorial Day and Labor Day actually occur. Source: Russell, S., and M. Schneider. IN prep as of September 2008. A Sociocultural Description of the U.S. Whale Watching Industry in the Puget Sound, WA. NOAA Technical Memorandum-NMFS-NWFSC. (Available from S. Russell, Conservation Biology Division, NWFSC 2725 Montlake Blvd. E., Seattle, WA 98112.)

<sup>58</sup> The average number of passengers per commercial whale watching trip is based on vessel capacity information found in: Russell, S., and M. Schneider. IN prep as of September 2008. A Sociocultural Description of the U.S. Whale Watching Industry in the Puget Sound, WA. NOAA Technical Memorandum-NMFS-NWFSC. (Available from S. Russell, Conservation Biology Division, NWFSC 2725 Montlake Blvd. E., Seattle, WA 98112.)

<sup>59</sup> This analysis forecasts potentially affected individuals for both Canadian and U.S. as data are not available to determine what percentage of the affected individuals may be U.S. citizens. This analysis therefore likely overstates the number of U.S. whale watchers potentially affected by the regulations.



individuals represents 0.2 percent of the estimated 500,000 individuals participating in whale watching activities in Washington State.

#### Other Vessel Types

55. The remaining vessel types potentially affected by an enforced approach regulation include shipping vessels and commercial fishing vessels.<sup>60</sup> These other vessel types combined have been involved in up to 4.8 percent of annual approach incidents in recent years; thus, the number of vessels within the “other” vessel category that would have to alter their current activities if a 100-yard approach guideline became required is expected to be relatively minor.<sup>61</sup> This analysis estimates that, *on average, four “other” vessel trips (including commercial shipping and fishing vessels) in the Puget Sound area during the whale watching season may be affected by a 100-yard approach guideline.*<sup>62</sup>

#### 2.2.2 PARTIES LIKELY TO BE AFFECTED BY SCENARIO 2

56. Data are not available on the distance of vessels from whales beyond the 100 meters/yards mark identified in the existing guidelines. This analysis is therefore not able to quantify the number of parties potentially affected by Scenario 2. Any vessels not currently adhering to the 100-meter/yard-distance requirement included in the whale watching guidelines would be required to alter their current practices if a 200-yard approach guideline was made mandatory by the NMFS. That is, the parties identified in Section 2.2.1 as potentially affected by Scenario 1, are a subset of the parties potentially affected by Scenario 2.
57. All whale watching vessels not complying with the 100 yard/meter guideline, as well as additional vessels in all categories that are currently complying with the 100 yard/meter approach guideline but not maintaining an approach distance of 200 yards from whales, will likely be affected by an enforceable 200 yard/meter approach regulation. Thus, the number of individuals potentially affected by Scenario 2 is expected to be greater than the number of individuals potentially affected by Scenario 1. Currently, data are not available to determine how many more vessels would be affected by a 200 yard/meter regulation than a 100 yard/meter regulation, or whether the relative proportions of entities/activities affected would remain the same.

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<sup>60</sup> Research and monitoring vessels are assumed to have a vested interest in complying with guidelines and regulations designed to protect and conserve the killer whales and are therefore not forecast to be negatively affected by this regulation.

<sup>61</sup> The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

<sup>62</sup> The number of affected trips is estimated by determining the average number of approach incidents per whale watching season from 2003 through 2006 using Soundwatch Public Outreach/Boater Education Program data found in: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

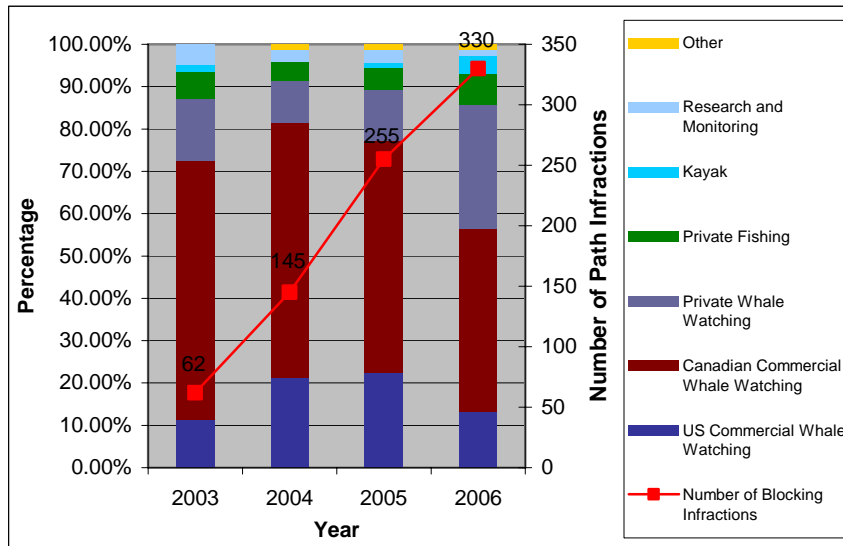
### 2.3 PARTIES POTENTIALLY AFFECTED BY VESSEL PATH REGULATIONS

58. The whale watching guidelines specify that vessels should “keep clear of the whales’ path” and “avoid positioning [themselves] within the 400 meter/yard area in the path of whales.”<sup>63</sup> Thus, codifying this guideline through the potential NMFS vessel path regulation is expected to affect only those vessels that do not currently adhere to the whale watching guidelines. This analysis uses the number of times vessels in the Puget Sound area are observed to park in the path of whales, included in the Soundwatch Program data, as a measure of current vessel compliance with the path guideline.
59. Between 2003 and 2006, “Parked in path of whales” (hereafter “path incidents”) represented at least 17 percent of the total number incidents of noncompliance with the whale watching guidelines observed annually in the Puget Sound area during the main part of the whale watching season (Exhibit 2-2). Further, the number of path incidents has increased from 62 in 2003 to 330 in 2006, causing the proportion of the total number of incidents of noncompliance with the whale watching guidelines represented by path incidents to increase from 17 percent in 2003 to 26 percent in 2006.
60. In all years between 2003 and 2006, Canadian commercial whale watching vessels were observed parking in the path of whales more than any other vessel type (Exhibit 2-7). Specifically, Canadian commercial whale watching vessels represent at least 43 percent of all path incidents observed in the Puget Sound area annually during the main part of the whale watching season. Since 2003, the proportion of the number of path incidents represented by Canadian commercial whale watching vessels has decreased annually from 61 percent in 2003 to 43 percent in 2006. The recent decrease in the proportion of path incidents caused by Canadian commercial whale watching vessels is accompanied by an increase in the proportion of path incidents caused by private (not commercial) whale watching vessels. Specifically, private whale watching vessels represent 29 percent of path incidents in 2006, up from 12 percent in 2005. The proportion of path incidents made up by U.S. commercial whale watching vessels fluctuates between roughly 12 and 22 percent between 2003 and 2006. The remaining vessel categories (i.e. private fishing vessels, kayaks, and other vessels) each represent less than ten percent of the number of path incidents observed in a given year between 2003 and 2006. Of these remaining vessel types, private fishing vessels are observed in more path incidents than either kayaks or other vessels.
61. The remainder of this section further examines the magnitude to which different vessel types (represented by the vessel types in Exhibit 2-7) may be affected by potential NMFS path regulations.

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<sup>63</sup> The Whale Museum. 2006. “Be Whale Wise Guidelines for Boaters, Paddlers, and Viewers.”

EXHIBIT 2-7 DISTRIBUTION OF PARKED IN PATH INCIDENTS BY VESSEL TYPE (MAY-SEPTEMBER 2003-2006)



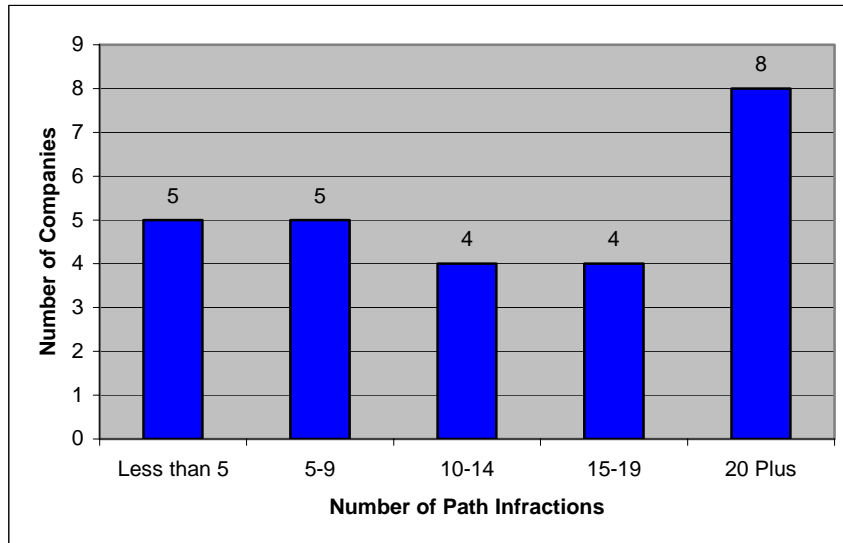
Source: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

**Commercial Whale Watching Industry**

62. As illustrated in Exhibit 2-7, commercial whale watching vessels (U.S. and Canadian whale watching vessels combined) are the most likely vessel type to be affected by potential NMFS path regulations. In particular, Canadian commercial whale watching vessels are most likely to be affected by potential path regulations as they were involved in the highest rate of path incidents between 2003 and 2006. Specifically, 26 Canadian commercial whale watching companies caused a total of 407 path incidents between 2003 and 2006 (Exhibit 2-8), more than double the number of path incidents caused by private whale watching vessels, which caused the second highest number of path incidents in the same time period (151 path incidents).<sup>64</sup> Further, eight Canadian-based commercial whale watching companies caused more than 20 path incidents between 2003 and 2006, while only five Canadian commercial whale watching companies caused less than five path incidents in the same time period. Exhibit 2-8 indicates that the large number of path incidents caused by Canadian companies is the result of repeated non-compliance with the vessel path guidelines specified in the whale watching guidelines by Canadian whale watching companies.

<sup>64</sup> Although there are only 22 vessel-operating, Canadian commercial whale watching companies based in the Puget Sound area (see Chapter 1), the 26 companies involved in a path incident between 1998 and 2006 includes non Puget Sound based companies and commercial companies that conduct limited whale watching activities.

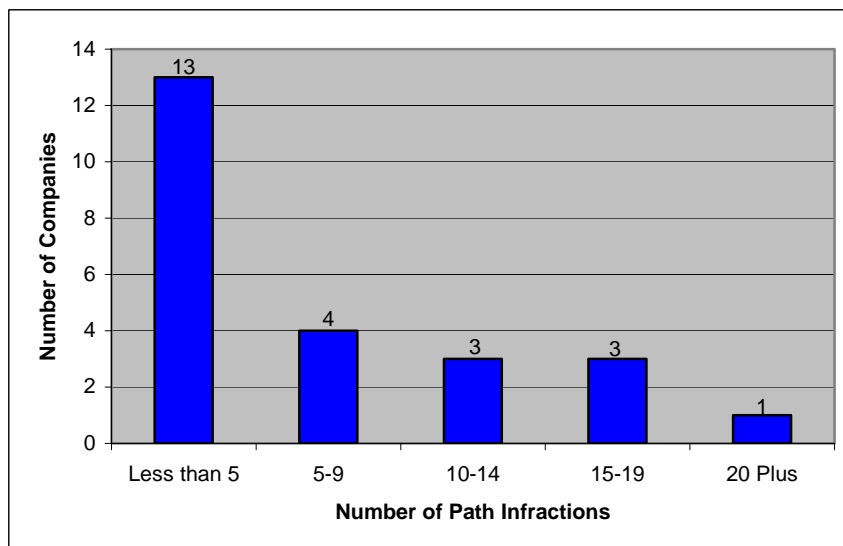
**EXHIBIT 2-8 DISTRIBUTION OF CANADIAN-BASED COMMERCIAL WHALE WATCHING COMPANIES CAUSING PATH INCIDENTS IN THE PUGET SOUND AREA (MAY-SEPTEMBER 2003-2006)**



Source: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

Notes: Total number of companies involved in path incidents includes non Puget Sound based companies and commercial companies that conduct limited whale watching activities.

**EXHIBIT 2-9 DISTRIBUTION OF U.S.-BASED COMMERCIAL WHALE WATCHING COMPANIES CAUSING PATH INCIDENTS IN THE PUGET SOUND AREA (MAY-SEPTEMBER 2003-2006)**



Source: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

Notes: Total number of companies involved in path incidents includes non Puget Sound based companies and commercial companies that conduct limited whale watching activities.

63. U.S. commercial whale watching vessels caused a total of 139 path incidents between 2003 and 2006. A total of 24 U.S.-based commercial whale watching companies caused at least one path incident between 2003 and 2006 (Exhibit 2-9).<sup>65</sup> The majority of these companies (13) caused less than five path incidents in that time. Further, only one U.S.-based commercial whale watching company caused more than 20 path incidents between 2003 and 2006. Thus, the path incidents caused by U.S. commercial whale watching vessels between 2003 and 2006 appear to be the result of occasional non-compliance with the vessel path guidelines specified in the whale watching guidelines by a large number of companies. This differs from the path incidents caused by Canadian whale watching companies in the same time period, which appear to be the result of systematic non-compliance of a few companies with the path guidelines specified in the whale watching guidelines.
64. Between 2003 and 2006, an average of 137 commercial whale watching vessels caused path incidents in the Puget Sound area during the peak whale watching season (May-September).<sup>66</sup> Therefore, *this analysis estimates that an average of 137 commercial whale watching trips may be affected during the peak of the whale watching season each year.* Of these 137 trips, 102 are forecast to be by Canadian-based commercial whale watching companies, while 35 are forecast to be by U.S.-based commercial whale watching companies. The 35 affected U.S.-based commercial whale watching trips represent approximately one percent of the total number of the U.S.-based commercial whale watching trips taken in a whale watching season.<sup>67</sup> Given an average of 55 passengers per commercial whale watching trip, *a total of 7,535 commercial whale watch participants may be affected by potential vessel path regulations.*<sup>68,69</sup> The number of commercial whale watch participants potentially affected by vessel path regulations represents 1.5 percent of the estimated 500,000 individuals participating in whale watching activities in Washington State.

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<sup>65</sup> Although there are only 17 to 19 vessel-operating, U.S. commercial whale watching companies based in the Puget Sound area (see Chapter 1), the 24 companies involved in a path incident between 1998 and 2006 includes non-Puget-Sound-based companies and commercial companies that conduct limited whale watching activities.

<sup>66</sup> Based on data found in: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

<sup>67</sup> Total number of trips taken assumes that 70 percent of the total number of U.S.-based commercial whale watching trips offered in the Puget Sound area between Memorial Day and Labor Day actually occur. Source: Russell, S., and M. Schneider. IN prep as of September 2008. A Sociocultural Description of the U.S. Whale Watching Industry in the Puget Sound, WA. NOAA Technical Memorandum-NMFS-NWFSC. (Available from S. Russell, Conservation Biology Division, NWFSC 2725 Montlake Blvd. E., Seattle, WA 98112.)

<sup>68</sup> The average number of passengers per commercial whale watching trip is based on vessel capacity information found in: Russell, S., and M. Schneider. IN prep as of September 2008. A Sociocultural Description of the U.S. Whale Watching Industry in the Puget Sound, WA. NOAA Technical Memorandum-NMFS-NWFSC. (Available from S. Russell, Conservation Biology Division, NWFSC 2725 Montlake Blvd. E., Seattle, WA 98112.)

<sup>69</sup> This analysis forecasts potentially affected individuals for both Canadian and U.S. as data are not available to determine what percentage of the affected individuals may be U.S. citizens. This analysis therefore likely overstates the number of U.S. whale watchers potentially affected by the regulations.

#### Private Whale Watching and Fishing Vessels

65. After commercial whale watching vessels, private vessels cause the next highest number of path incidents in the Puget Sound area. Private whale watching vessels are associated with more path incidents than private fishing vessels. Specifically, private whale watching vessels caused a total of 151 path incidents between 2003 and 2006, while private fishing vessels experienced 48 path incidents over the same time period. *It is estimated that, on average, 50 private vessel trips may be affected by potential vessel path regulations.*<sup>70</sup> Of these trips, 38 are forecast to be taken by private whale watching vessels and 12 are forecast to be taken by private fishing vessels. Assuming that private-vessel trips include 3.42 participants, *an estimated 171 private-vessel trip participants may be affected by potential vessel path regulations each whale watching season.*<sup>71</sup> To the extent that Soundwatch data captures repeat private-vessel path incidents involving repeat participants, this analysis overestimates the number of people potentially affected by vessel path regulations.

#### Kayaks

66. Kayaks represent a small percentage of the path incidents caused in the Puget Sound area. Specifically, kayaks represent at most four percent of the annual path incidents occurring between 2003 and 2006 during the peak whale watching season in the Puget Sound area. Further, kayaks caused only 18 path incidents between 2003 and 2006 in the Puget Sound area. *This analysis estimates that, on average, five kayak trips may be affected by potential vessel path regulations in the Puget Sound area annually.*<sup>72</sup> Assuming each incident involves a unique kayak and up to two individuals (a conservative estimate potentially overstating the number of individuals affected), *this analysis estimates up to ten individual kayakers may be affected by potential vessel path regulations.*

#### Other Vessel Types

67. Other vessel types that may be affected by potential NMFS vessel path regulations include shipping vessels and commercial fishing vessels.<sup>73</sup> These vessel types represent less than two percent of the number of path incidents caused by vessels in the Puget Sound area. Therefore the number of “other” vessels that would have to alter their current behavior following vessel path regulations is expected to be quite small.

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<sup>70</sup> The number of affected trips is estimated by determining the average number of path incidents per whale watching season from 2003 through 2006 using Soundwatch data found in: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

<sup>71</sup> The average number of participants per private vessel is based on personal communication with Kari Koski of the Whale Museum on August 1, 2008. The total number of participants affected is not exactly equal to 50 times 3.42 due to rounding.

<sup>72</sup> The number of affected trips is estimated by determining the average number of path incidents per whale watching season from 2003 through 2006 using Soundwatch data found in: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

<sup>73</sup> Research and monitoring vessels are assumed to have a vested interest in complying with guidelines and regulations designed to protect and conserve the killer whales and are therefore not forecast to be negatively affected by this regulation.

Specifically, *this analysis estimates that, on average, only two trips taken by “other” vessels may be affected by potential vessel path regulations in the Puget Sound area.*<sup>74</sup>

#### 2.4 PARTIES POTENTIALLY AFFECTED BY VESSEL SPEED REGULATIONS

68. The existing whale watching guidelines specify that vessels should “reduce speed to less than 7 knots when within 400 meters/yards of the nearest whale.”<sup>75</sup> Thus, only vessels not currently complying with the speeds specified in the whale watching guidelines stand to be affected by potential NMFS vessel speed regulations. This analysis uses Soundwatch data, which includes information on vessels’ adherence to the speed guidelines specified in the whale watching guidelines to determine the parties most likely to be affected by potential vessel speed regulations. Specifically, the number of “fast within a quarter mile of whales” incidents (hereafter “speeding incidents”) observed by the Soundwatch Program is used to determine the vessels that may be affected by a potential vessel speed regulation.<sup>76</sup>
69. Speeding incidents represent a relatively small proportion of the total number of incidents of noncompliance with the whale watching guidelines observed by the Soundwatch Program between 2003 and 2006 in the Puget Sound area (Exhibit 2-2). Specifically, speeding incidents represent at most 11 percent of the total number of incidents observed in any given year between 2003 and 2006. However, the total number of speeding incidents has increased from 13 (four percent of total annual incidents) in 2003 to 139 (11 percent of total annual incidents) in 2006.
70. Private whale watching vessels were associated with the most speeding incidents of any vessel type in the Puget Sound area between 2003 and 2006, representing at least 42 percent of all speeding incidents in any year (Exhibit 2-10). With the exception of 2003 when Canadian commercial vessels caused the second-highest number of speeding incidents, private fishing vessels caused the second-greatest number of speeding incidents in the Puget Sound area. Specifically, private fishing vessels represent between 16 and 25 percent of all speeding incidents observed annually in the Puget Sound area between 2003 and 2006. The number of speeding incidents caused by commercial whale watching vessels (both U.S. and Canadian vessels) varies by year between 2003 and 2006. In general, U.S. and Canadian commercial whale watching vessels combine to represent between 10 and 25 percent of the total number of speeding incidents in the Puget Sound area between 2003 and 2006. In 2003, Canadian-based commercial whale watching vessels had the second highest rate of speeding incidents, representing 31 percent of all speeding incidents observed. Other vessel types (includes commercial fishing and shipping vessels) represent at most six percent of the total number of speeding incidents

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<sup>74</sup> The number of affected trips is estimated by determining the average number of path incidents per whale watching season from 2003 through 2006 using Soundwatch data found in: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

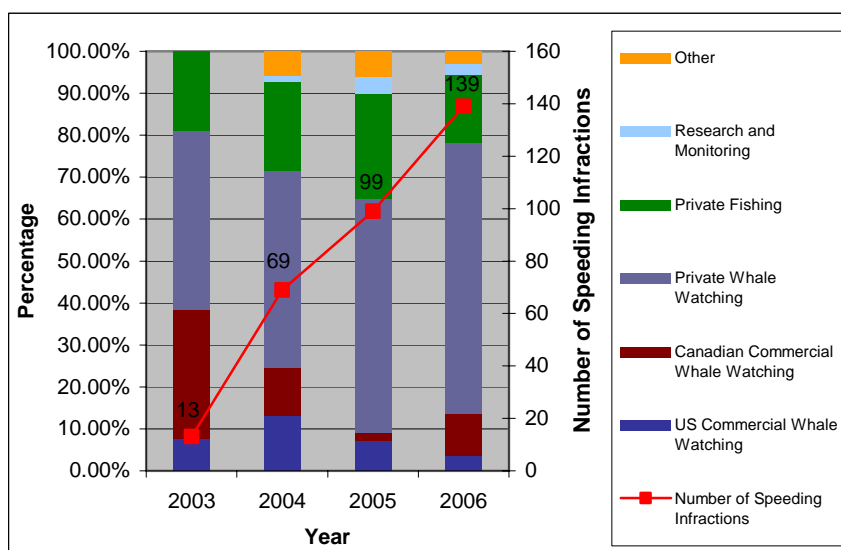
<sup>75</sup> The Whale Museum. 2006. “Be Whale Wise Guidelines for Boaters, Paddlers, and Viewers.”

<sup>76</sup> A fast within a quarter mile incident is defined in: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report for 2003 as a “vessel motoring faster than 7 knots within 440 yards from whales.”

observed in the Puget Sound area between 2003 and 2006. Thus, other vessel types are not expected to be greatly affected by potential speed regulations. Additionally, no speeding incidents involving kayaks were observed between 2003 and 2006 in the Puget Sound area. This is most likely due to kayakers not being able to paddle at speeds greater than seven knots. Thus, kayaks are not expected to be affected by potential vessel speed regulations.

71. The remainder of this section presents more detailed estimates of the parties that are likely to be affected by potential vessel speed regulations and the degree to which parties might be affected.

**EXHIBIT 2-10 DISTRIBUTION OF SPEEDING IN THE VICINITY OF WHALE INCIDENTS BY VESSEL TYPE (MAY-SEPTEMBER 2003-2006)**



Source: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

**Private Whale Watching and Fishing Vessels**

72. As indicated in Exhibit 2-10, private whale watching and fishing vessels combine to represent the majority of speeding incidents observed in the Puget Sound area between 2003 and 2006. Private vessels represent at least 62 percent of all speeding incidents observed annually between 2003 and 2006. Private whale watching vessels caused a total of 183 speeding incidents between 2003 and 2006, while private fishing vessels caused a total of 64 speeding incidents in the same time period. Based on their high rate of speeding incidents, private vessels, in particular private whale watching vessels, are expected to be the most likely vessel type to be affected by potential NMFS vessel speed regulations. Specifically, *this analysis estimates that, on average, 62 private vessel trips may be affected by potential vessel speed regulations.*<sup>77</sup> Of these trips, 46 are forecast to

<sup>77</sup> The number of affected trips is estimated by determining the average number of speeding incidents per whale watching season from 2003 through 2006 using Soundwatch data found in: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.



be taken by private whale watching vessels, while 16 are forecast to be taken by private fishing vessels. Assuming that private-vessel trips include 3.42 participants, *an estimated 212 private-vessel trip participants may be affected by potential vessel speed regulations each whale watching season.*<sup>78</sup> To the extent that Soundwatch data captures repeat private-vessel speeding incidents involving repeat participants, this analysis overestimates the number of people potentially affected by vessel speed regulations.

#### Commercial Whale Watching Industry

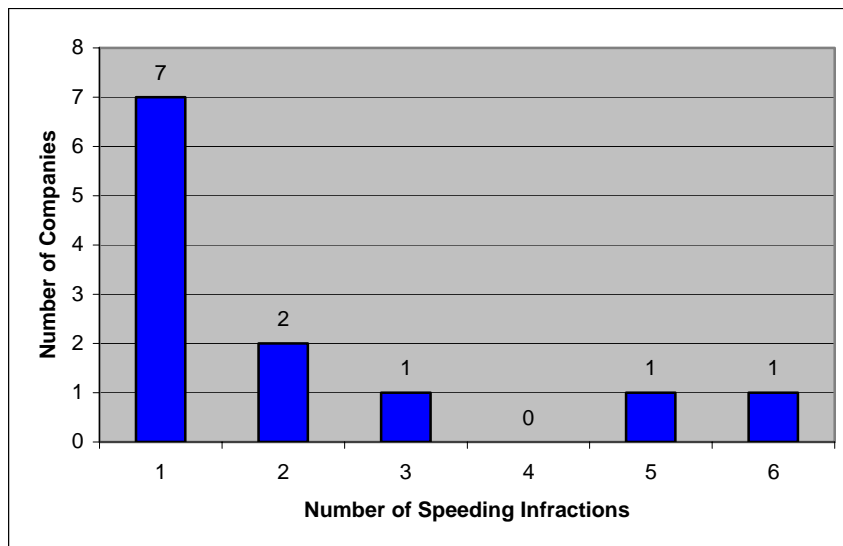
73. Based on the distribution of speeding incidents by vessel type, commercial whale watching vessels (U.S. and Canadian vessels combined) are the second most likely vessel type to be affected by potential vessel speed regulations after private vessels. U.S.-based and Canadian-based commercial whale watching companies were involved in a similar number of speeding incidents between 2003 and 2006. Specifically, 12 U.S.-based commercial whale watching companies caused a total of 22 speeding incidents between 2003 and 2006, while 13 Canadian-based commercial whale watching companies caused a total of 28 speeding incidents in the same time period.<sup>79</sup>
74. Of the 12 U.S.-based commercial whale watching companies that caused at least one speeding incident between 2003 and 2006, the majority of these companies (seven) caused only one speeding incident (Exhibit 2-11). Further, only two U.S. commercial whale watching companies caused five or more speeding incidents between 2003 and 2006. Of the 13 Canadian-based commercial whale watching companies causing at least one speeding incident between 2003 and 2006, six caused only one speeding incident in that time (Exhibit 2-12). Further, the majority of Canadian commercial whale watching companies (eight) caused two or less speeding incidents between 2003 and 2006. Only one Canadian commercial whale watching company caused five or more speeding incidents between 2003 and 2006.
75. Although 25 commercial whale watching companies in the Puget Sound area caused at least one speeding incident between 2003 and 2006, most of these companies did not repeatedly disregard the speeding guidelines specified in the whale watching guidelines. That is, there does not appear to be a systematic lack of compliance with voluntary vessel speed guidelines. Thus, potential vessel speed regulations are expected to have a minimal effect on commercial whale watching activities in the Puget Sound area.

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<sup>78</sup> The average number of participants per private vessel is based on personal communication with Kari Koski of the Whale Museum on August 1, 2008. The total number of participants affected is not exactly equal to 62 times 3.42 due to rounding.

<sup>79</sup> Based on data found in: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

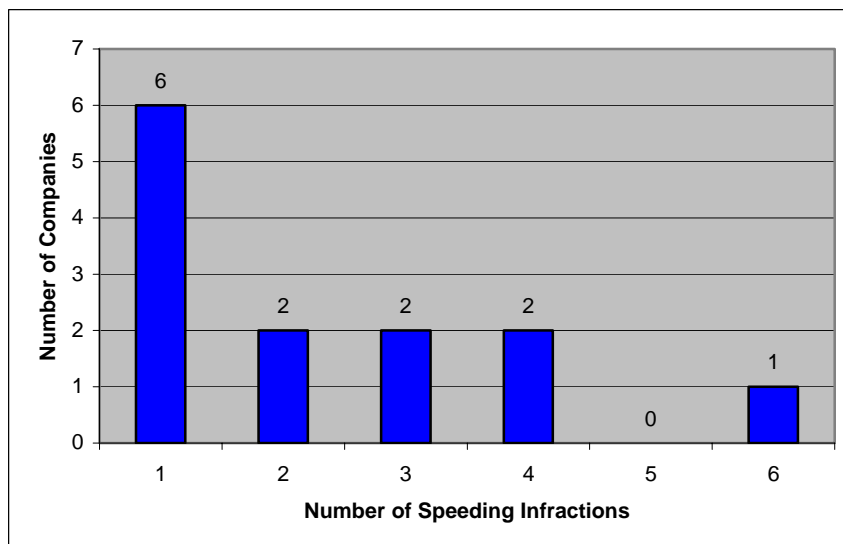
**EXHIBIT 2-11 DISTRIBUTION OF U.S.-BASED COMMERCIAL WHALE WATCHING COMPANIES CAUSING SPEEDING INCIDENTS IN THE PUGET SOUND AREA (MAY-SEPTEMBER 2003-2006)**



Source: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

Notes: Total number of companies involved in speeding incidents includes non Puget Sound based companies and commercial companies that conduct limited whale watching activities.

**EXHIBIT 2-12 DISTRIBUTION OF CANADIAN-BASED COMMERCIAL WHALE WATCHING COMPANIES CAUSING SPEEDING INCIDENTS IN THE PUGET SOUND AREA (MAY-SEPTEMBER 2003-2006)**



Source: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

Notes: Total number of companies involved in speeding incidents includes non Puget Sound based companies and commercial companies that conduct limited whale watching activities.

76. Specifically, *this analysis estimates that, on average, 13 commercial whale watching trips may be affected annually by potential vessel speed guidelines during the peak of the whale watching season in the Puget Sound area.*<sup>80</sup> Of these trips, six are forecast to be taken by U.S. commercial whale watching companies, while seven are forecast to be taken by Canadian commercial whale watching companies. The six affected trips forecast to be taken by U.S. commercial whale watching companies represent less than one percent of the total number of trips taken by U.S. commercial whale watching companies in a whale watch season.<sup>81</sup> Given an average of 55 participants per commercial whale watching trip, the 13 potentially affected commercial whale watching trips results in *715 commercial whale watch participants that may be affected by the potential vessel speed regulations.*<sup>82, 83</sup> The 715 potentially affected commercial whale watch participants represents less than one percent (0.1 percent) of the estimated 500,000 individuals participating in whale watching activities in Washington State.

#### Kayaks

77. There were no speeding incidents involving kayaks between 2003 and 2006 in the Puget Sound area. This is most likely because kayakers are not able to paddle at speeds greater than seven knots. Thus, potential vessel speed regulations are not expected to affect kayakers.

#### Other Vessel Types

78. Other vessel types that may be affected by potential NMFS vessel speed regulations include commercial fishing and shipping vessels.<sup>84</sup> These “other” vessels represent at most six percent of the annual speeding incidents in the Puget Sound area between 2003 and 2006. “Other” vessels caused only 14 speeding incidents between 2003 and 2006. Thus, it is expected that “other” vessels will be minimally affected by potential vessel

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<sup>80</sup> The number of affected trips is estimated by determining the average number of speeding incidents per whale watching season from 2003 through 2006 using Soundwatch data found in: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

<sup>81</sup> Total number of trips taken assumes that 70 percent of the total number of U.S.-based commercial whale watching trips offered in the Puget Sound area between Memorial Day and Labor Day actually occur. Source: Russell, S., and M. Schneider. IN prep as of September 2008. A Sociocultural Description of the U.S. Whale Watching Industry in the Puget Sound, WA. NOAA Technical Memorandum-NMFS-NWFSC. (Available from S. Russell, Conservation Biology Division, NWFSC 2725 Montlake Blvd. E., Seattle, WA 98112.)

<sup>82</sup> The average number of passengers per commercial whale watching trip is based on vessel capacity information found in: Russell, S., and M. Schneider. IN prep as of September 2008. A Sociocultural Description of the U.S. Whale Watching Industry in the Puget Sound, WA. NOAA Technical Memorandum-NMFS-NWFSC. (Available from S. Russell, Conservation Biology Division, NWFSC 2725 Montlake Blvd. E., Seattle, WA 98112.)

<sup>83</sup> This analysis forecasts potentially affected individuals for both Canadian and U.S. as data are not available to determine what percentage of the affected individuals may be U.S. citizens. This analysis therefore likely overstates the number of U.S. whale watchers potentially affected by the regulations.

<sup>84</sup> Research and monitoring vessels are assumed to have a vested interest in complying with guidelines and regulations designed to protect and conserve the killer whales and are therefore not forecast to be negatively affected by this regulation.

speed regulations. Specifically, *this analysis estimates that four “other” vessel trips may be affected annually during the peak whale watching season in the Puget Sound area.*<sup>85</sup>

## 2.5 PARTIES POTENTIALLY AFFECTED BY ESTABLISHMENT OF KILLER WHALE PROTECTION AREAS

79. This analysis employs the USCG and Soundwatch vessel count data in order to approximate the parties most likely to be affected in the case that NMFS’ establishes an enforceable protected area closed to vessels when whales are present. Scenario 1 describes the potential effect of preventing vessels from operating in the current voluntary no-go zone, including a quarter mile from the west coast of San Juan Island stretching from Eagle Point to Mitchell Point and a half mile wide zone along a three kilometer stretch centered on Lime Kiln Lighthouse (Scenario 1). Scenario 2 describes the potential effect of preventing vessels from operating within an expanded no-go zone, including a half mile wide area along the west coast of San Juan Island from Eagle Point to Mitchell Point. Exhibit 2-13 maps the existing no-go zone being considered for codification in Scenario 1.

### 2.5.1 VESSEL TRAFFIC IN THE HARO STRAIT REGION

80. As described in Chapter 1 of this report, the commercial vessels that participate in the U.S. and Canadian Co-operative Vessel Traffic System (CVTS) generally traverse a series of well-defined navigation lanes called the Traffic Separation Scheme (TSS). The TSS comprises two traffic lanes with a separation zone in between. The USCG ensured that the edges of the navigation lanes were far enough from the western San Juan Island shoreline so as not to interfere with the smaller vessels engaged in whale watching activities.<sup>86</sup> Exhibit 1-1 in Chapter 1 of this report highlights the position of the established navigation lanes, which occur more than a half mile west of the west coast of San Juan Island, and therefore outside of the potential Protection Areas of Scenario 1 or 2.

81. In addition, none of the established ferry routes for Washington State Ferries (Exhibit 1-1) occurs within a half mile of the west coast of San Juan Island. Assuming that tankers, freighters, cargo and container ships, tugs, ferries, and governmental and privately-owned vessels that are large enough to require registration with the CVTS are using the established routes, they are not expected to occur within the potential Protection Area for the killer whales.

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<sup>85</sup> The number of affected trips is estimated by determining the average number of speeding incidents per whale watching season from 2003 through 2006 using Soundwatch data found in: The Whale Museum. Soundwatch Public Outreach/Boater Education Project Final Program Report. 2003; 2004-2005; and 2006.

<sup>86</sup> United States Coast Guard, 2000. Docket #USCG-1999-4974 Port Access Route Study, Strait of Juan de Fuca and Adjacent Waters, Haro Strait and Boundary Pass Issues 9a - 9d; pp 60 - 64.

EXHIBIT 2-13 EXISTING, VOLUNTARY NO-GO ZONE FOR KILLER WHALES IN PUGET SOUND



82. Commercial fishing in Haro Strait and near the San Juan Islands has been limited in recent years due to decreased catch opportunities and increasing fuel costs.<sup>87</sup> Additionally, a recent biological assessment concluded that the salmon fisheries are unlikely to have direct effects on the killer whales from vessel noise, or contact with vessels and gear. These fishing vessels are not targeting the whales and are primarily found in areas in the northern San Juan Island area where the killer whales spend limited amounts of time.<sup>88</sup> There have been few incidents of commercial fishing vessels approaching close to whales, however, these vessels do at times occur within the potential no-go zones and therefore may be affected by enforcement of closing these areas.
83. The level of fishing effort has decreased in the San Juan Islands region from 1999 to present. Specifically, tribal fishing effort has declined by 62 percent (to an average of 178 gillnet vessels and 22 purse seine vessels for the fishing season) and other, commercial fishing effort by 84 percent (to an average of 109 gillnet vessels, 34 purse seine vessels, and 11 reef net sets). In the Strait of Juan de Fuca, the majority of the remaining fishing activity occurs in the offshore areas, close to the Canadian border. In the San Juan Island area, the level of fishing activity is expected to further decrease even absent the establishment of no-go zones due to the limited number of fishing days and high fuel costs.
84. The number of vessels participating in fishing in the entire area of the Strait of Juan de Fuca is expected to be low, less than 30 percent (less than 86 gillnet vessels, 17 purse seine vessels, and three reef net sets, in total), in future years and no fishing activity is expected for the majority of the months that the killer whales will be present (there may be some overlap of whale presence and fishing in July and August). The number of vessels potentially affected is therefore expected to be minor compared to the total number of private and commercial whale watching and recreational vessels that frequent the area.<sup>89</sup>
85. Because larger commercial vessels are not expected to traverse the potential no-go zones, and because fishing vessels only occur in these areas to a limited extent, the following sections accordingly focus on small to medium-sized private and commercial recreational vessels (including kayaks), especially whale watching vessels that are most likely to occur within the potential Protection Areas.
86. Exhibit 2-14 summarizes Soundwatch's vessel counts as observed in the western San Juan Island area for the months of April through September for the years 1998 to 2006.<sup>90</sup>

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<sup>87</sup> National Marine Fisheries Service (NMFS). 2007. Biological Assessment: Effects of the 2007 U.S. Fraser Panel Fisheries on the Southern Resident Killer Whale (*Orcinus orca*) Distinct Population Segment (DPS).

<sup>88</sup> Ibid.

<sup>89</sup> Ibid.

<sup>90</sup> Because the Whale Museum locates vessels based on a quadrant system, and does not always include precise location information, it is not possible to determine the count of vessels exclusively within the ¼ and ½ mile Protected Areas. Thus, the area within which these vessels occur is larger than but fully inclusive of the voluntary Protected Areas. Considering this, the analysis may overestimate the number of vessels potential affected.

Exhibit 2-15 presents the percentages of each vessel type based on the monthly averages estimated in Exhibit 2-16. Commercial whale watching vessels account for over half of the vessels found along western San Juan Island during the whale watching season. According to Soundwatch, the maximum number of commercial vessels occurred in 2001 after which there has been a slight decline.<sup>91</sup>

87. Private recreational and fishing boats are the second most frequently encountered vessels in the waters along the western San Juan Island. Kayaks and research vessel types comprise about 14 percent of the vessels. Ships and aircrafts have been encountered only rarely in this area. As can also be seen from Exhibit 2-14, the total number of vessels in the area has been on the increase since 1998, with the peak 10,200 vessels per whale watching season in 2005.

**EXHIBIT 2-14 ANNUAL VESSEL COUNTS BY VESSEL TYPE FOR WESTERN SAN JUAN ISLAND OFFSHORE AREAS (APRIL - SEPTEMBER)**

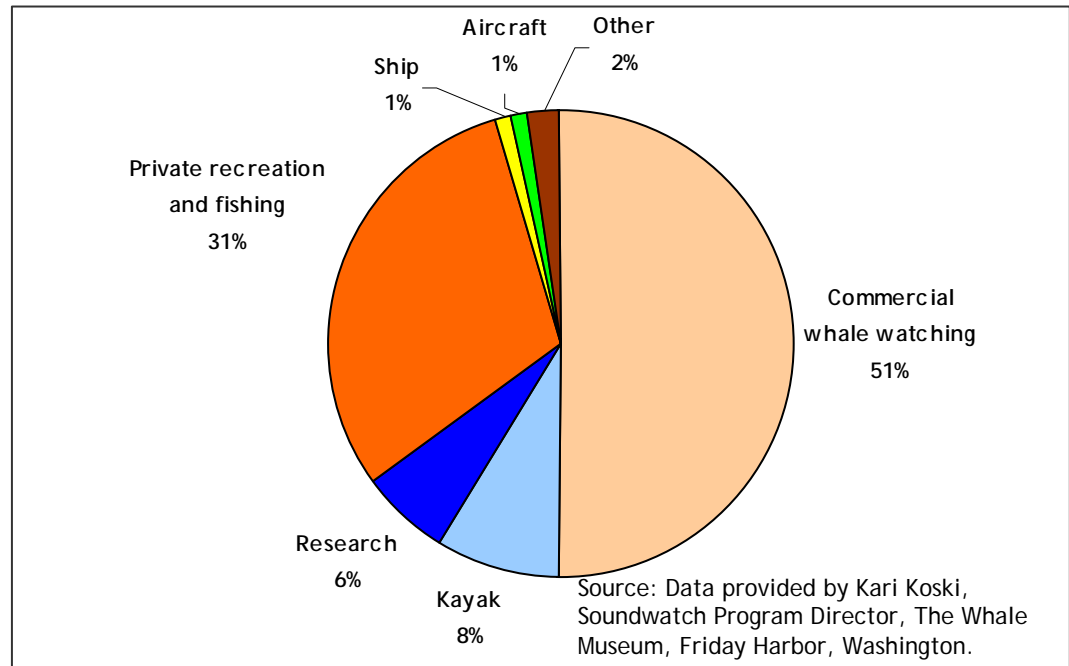
YEAR	COMMERCIAL WHALE WATCHING	KAYAK (RECREATION & COMMERCIAL)	RESEARCH	PRIVATE (RECREATION & FISHING)	SHIP	AIRCRAFT	OTHER <sup>1</sup>	TOTAL
1998	3,558	691	425				558	5,232
1999	4,871	797	536				129	6,333
2000	4,133	556	429				253	5,371
2001	4,186	548	439		28		67	5,268
2002	1,773	441	223	888	51	53	53	3,482
2003	2,162	359	279	2,019	48	42	57	4,966
2004	4,546	670	599	2,334	143	113	74	8,479
2005	4,642	807	675	3,722	160	78	119	10,203
2006	3,850	766	592	2,600	70	71	224	8,173
<b>ANNUAL AVERAGE</b>	<b>3,747</b>	<b>626</b>	<b>466</b>	<b>2,313</b>	<b>83</b>	<b>71</b>	<b>170</b>	<b>6,390</b>

<sup>1</sup> "Other" vessels include smaller, inflatable vessels, vessels engaged in commercial fishing, enforcement, and other unclassified activities. These data on "other vessels" were collected at this aggregate level and data are not available to break this information down further.

Source: Data provided by Kari Koski, Soundwatch Program Director, The Whale Museum, Friday Harbor, Washington.

<sup>91</sup>The Whale Museum. 2006. 2004 - 2005 Final Program Report: Soundwatch Public Outreach/Boater Education Project. The Whale Museum, Friday Harbor, Washington.

EXHIBIT 2-15 RELATIVE FREQUENCY OF VESSEL TYPES OBSERVED IN WESTERN SAN JUAN ISLAND OFFSHORE AREAS (APRIL - SEPTEMBER)



88. Exhibit 2-16 highlights the average number of vessels that have been observed in each month of the whale watching season between 1998 and 2006 for western San Juan Island offshore areas. The peak month of activity for all vessel types is July, whereas April, the start of the season, vessel numbers off the west coast of San Juan Island are very limited. Thus, June, July and August are the busiest months of the year for whale watching as well as other recreational and fishing activities in the western San Juan Island area of Haro Strait.



EXHIBIT 2-16 AVERAGE MONTHLY VESSEL COUNTS FOR WESTERN SAN JUAN ISLAND OFFSHORE AREAS (1998 - 2006)

MONTH	COMMERCIAL WHALE WATCHING	KAYAK (RECREATION & COMMERCIAL)	RESEARCH	PRIVATE (RECREATION & FISHING)	SHIP	AIRCRAFT	OTHER <sup>1</sup>	ALL VESSELS
April	4	0	1	1	0	0	0	6
May	275	48	30	35	3	2	6	398
June	823	160	94	117	8	6	25	1,233
July	1,345	219	483	155	19	15	26	2,262
August	874	152	430	96	12	12	93	1,668
September	426	47	247	63	13	5	21	822
MONTHLY AVERAGE	624	104	214	78	9	7	28	1,065

<sup>1</sup> "Other" vessels include smaller, inflatable vessels, vessels engaged in commercial fishing, enforcement, and other unclassified activities. These data on "other vessels" were collected at this aggregate level and data are not available to break this information down further.

Source: Data provided by Kari Koski, Soundwatch Program Director, The Whale Museum, Friday Harbor, Washington.

#### 2.5.2 PARTIES LIKELY TO BE AFFECTED BY SCENARIO 1

89. The vessel counts presented above are for an area that includes but is not exclusive to the voluntary Protection Areas. This section of the analysis specifically quantifies the parties traveling within the existing, voluntary no-go zone to provide information on the parties most likely to be affected in the case that the no-go zone is made enforceable (Scenario 1).
90. As described in Section 2.2, Soundwatch monitors commercial whale watch operators, recreational boaters, kayakers, and other vessel operators to record behaviors that are inconsistent with the existing whale watching guidelines.<sup>92</sup>
91. Two of the vessel incident types monitored by Soundwatch provide an estimate of the number of motorized vessels observed in the existing, voluntary no-go zone: vessels occurring "within 440 yards (a quarter mile) of the San Juan Island No Boat Zone" (San Juan); and vessels occurring "within 880 yards (half mile) of Lime Kiln" (Lime Kiln).
92. Exhibit 2-17 presents the vessel counts for all years for which Soundwatch has collected incident data for San Juan and Lime Kiln incidents. The number of incidents has been steadily decreasing over the years in these areas. Soundwatch attributes this effect to the increasing awareness about existing no-go zone due to public outreach and education efforts. Interestingly, however, Exhibit 2-17 highlights that the number of private recreational and fishing vessels venturing into the existing no-go zone has been steadily increasing. This may be due to an increase in the total number of these vessels over this

<sup>92</sup> The Whale Museum. 2006. 2004 - 2005 Final Program Report: Soundwatch Public Outreach/Boater Education Project. The Whale Museum, Friday Harbor, Washington.

time, although Exhibit 2-14 suggests no consistent pattern exists for the number of these vessels occurring in the broader region in recent years. Further, while commercial vessels are professionally obliged to be aware of regulations and guidelines, private vessels engaged in recreational whale watching or fishing may be less aware of the existing, voluntary no-go zone.

**EXHIBIT 2-17 ANNUAL VESSEL OBSERVATION TOTALS BY VESSEL TYPE WITHIN THE VOLUNTARY NO-GO ZONE (APRIL - SEPTEMBER)**

YEAR	COMMERCIAL WHALE WATCHING	PRIVATE (RECREATION & FISHING)	KAYAK (RECREATION & COMMERCIAL)	RESEARCH	OTHER <sup>1</sup>	TOTAL
1998	106					106
1999	162					162
2000	94				3	97
2001	76	2				78
2002	17	5		1		23
2003	37	22	2	2		63
2004	27	11				38
2005	24	66		2	4	96
2006	2	56		5	5	68
<b>TOTAL</b>	<b>545</b>	<b>162</b>	<b>2</b>	<b>10</b>	<b>12</b>	<b>731</b>

<sup>1</sup> "Other" vessels include smaller, inflatable vessels, vessels engaged in commercial fishing, enforcement, and other unclassified activities. These data on "other vessels" were collected at this aggregate level and data are not available to break this information down further.  
Source: Data provided by Kari Koski, Soundwatch Program Director, The Whale Museum, Friday Harbor, Washington.

93. Exhibit 2-18 describes the total incident counts within the existing, voluntary no-go zone on a monthly basis to assess the variation between the vessel types in relation to the season. The pattern of incidents within the no-go zone is consistent with the overall pattern observed in the analysis in Exhibit 2-16 of total vessel counts which peak between July and August. Exhibit 2-18 indicates that vessels are most frequently found within the existing no-go zone in the months of June and July and are considerably less frequent before and after those months. Exhibit 2-19 summarizes for every observation hour the number of different types of vessels that were observed. Exhibit 2-19 indicates an increase in the number of vessels until 11 am before a slight decrease around lunchtime. The highest number of vessels are observed in the late afternoon between 2 and 4pm.

**EXHIBIT 2-18 TOTAL MONTHLY VESSEL OBSERVATION BY VESSEL TYPE WITHIN THE EXISTING, VOLUNTARY NO-GO ZONE (1998 -2006)**

MONTH	COMMERCIAL WHALE WATCHING	PRIVATE (RECREATION & FISHING)	KAYAK (RECREATION & COMMERCIAL)	RESEARCH	OTHER <sup>1</sup>	TOTAL
April	1					1
May	43	3				46
June	233	15				248
July	162	61		5	4	232
August	71	17		3	2	93
September	35	66	2	2	6	111
<b>TOTAL</b>	<b>545</b>	<b>162</b>	<b>2</b>	<b>10</b>	<b>12</b>	<b>731</b>

<sup>1</sup> "Other" vessels include smaller, inflatable vessels, vessels engaged in commercial fishing, enforcement, and other unclassified activities. These data on "other vessels" were collected at this aggregate level and data are not available to break this information down further.

Source: Data provided by Kari Koski, Soundwatch Program Director, The Whale Museum, Friday Harbor, Washington.

**EXHIBIT 2-19 TOTAL HOURLY VESSEL OBSERVATIONS BY VESSEL TYPE WITHIN THE EXISTING, VOLUNTARY NO-GO ZONE (1998 -2006)**

TIME	COMMERCIAL WHALE WATCHING	KAYAK (RECREATION & COMMERCIAL)	RESEARCH	PRIVATE (RECREATION & FISHING)	OTHER <sup>1</sup>	TOTAL
9 - 10 AM	0			1		1
10 - 11 AM	17	2	1	20	4	44
11 AM - 12 PM	89			12	1	102
12 PM - 1 PM	63		4	21		88
1 PM - 2 PM	71			17		88
2 PM - 3 PM	121		3	37	3	164
3 PM - 4 PM	101		2	35	1	139
4 PM - 5 PM	70			17		87
5 PM - 6 PM	12			2		14
6 PM - 7 PM	1				3	4
<b>TOTAL</b>	<b>545</b>	<b>2</b>	<b>10</b>	<b>162</b>	<b>12</b>	<b>731</b>

<sup>1</sup> "Other" vessels include smaller, inflatable vessels, vessels engaged in commercial fishing, enforcement, and other unclassified activities. These data on "other vessels" were collected at this aggregate level and data are not available to break this information down further.

Source: Kari Koski, Soundwatch Program Director, The Whale Museum, Friday Harbor, Washington.

94. Because a vessel may be involved in repeated incidents throughout a month or season, the counts of vessels in the existing, voluntary no-go zone are not counts of unique vessels that can be found in the no-go zone throughout the season. This analysis assumes, however, that a vessel passes through the Protection Area only once per trip. In this case, the count of incidents reported in Exhibit 2-20 may be an efficient estimator of the number of vessel trips in the existing, voluntary no-go zone during an average whale watching season.

**EXHIBIT 2-20 AVERAGE ANNUAL VESSEL TRIPS WITHIN THE EXISTING, VOLUNTARY NO-GO ZONE BY VESSEL TYPE (SCENARIO 1, 1998 - 2006)**

BEHAVIOR	LOCATION	COMMERCIAL WHALE WATCHING	KAYAK (RECREATION & COMMERCIAL)	RESEARCH	PRIVATE (RECREATION & FISHING)	OTHER <sup>1</sup>	TOTAL
Within 440 yards of SJI No-Boat Zone	¼ Mile Protected Area	55	<1	1	11	1	68
Within 880 yards of Lime Kiln	½ Mile Around Lime Kiln	5	0	< 1	7	1	13
<b>SUBTOTAL</b>		<b>61</b>	<b>&lt;1</b>	<b>1</b>	<b>18</b>	<b>1</b>	<b>81</b>

Note: Estimates are rounded to the nearest vessel trip. Totals may therefore not sum due to the rounding.

<sup>1</sup>"Other" vessels include smaller, inflatable vessels, vessels engaged in commercial fishing, enforcement, and other unclassified activities. These data on "other vessels" were collected at this aggregate level and data are not available to break this information down further.

Source: Data provided by Kari Koski, Soundwatch Program Director, The Whale Museum, Friday Harbor, Washington.

95. As highlighted in Exhibit 2-20, only commercial whale watching vessels and private vessels stand to be measurably affected if the existing, voluntary no-go zone becomes mandatory. Additionally, according to these data, relatively few vessels travel within the existing, voluntary no-go zone around Lime Kiln lighthouse. Only 16 percent of the incidents occurred in this region. Specifically, five commercial whale watching trips and seven private vessel trips are expected to be affected per whale watching season around Lime Kiln.
96. A greater number of individuals stand to be affected by a regulation enforcing closure of the quarter mile buffer of San Juan Island. Approximately 55 commercial whale watching trips and 11 private vessel trips annually are forecast to be affected by the closure of this area to vessels.

97. Assuming an average of 55 participants per commercial whale watching trip and 3.42 participants per private-vessel trip, this analysis anticipates that the following parties may be affected by an established no-go zone according to Scenario 1 per whale watching season:
- *Individuals engaged in a commercial whale watching tour: 3,355;*<sup>93,94</sup>
  - *Individuals engaged in private vessel activities: 62.*<sup>95,96</sup>
98. As described in Chapter 1, Soundwatch estimates that approximately 500,000 engage in whale watching activities by either commercial operations or kayaks annually. The estimated number of individuals potentially affected by Scenario 1 is therefore *approximately 0.7 percent of the estimated total number of individuals engaging in these activities annually.*
99. Using Soundwatch data, this analysis estimates that less than one kayak trip is affected by the existing no-go zone each whale watching season (Exhibit 2-20). However, the west-side of San Juan Island includes the San Juan County Park boat launch, frequently used by kayakers. Kayakers launching from San Juan County Park launch directly into the existing, voluntary no-go zone. Thus, kayakers launching from San Juan County Park stand to be affected if the existing, voluntary no-go zone becomes an enforceable no-go zone. San Juan County estimates that over 10,000 kayakers launched from San Juan County Park in 2007.<sup>97</sup> Such high numbers of kayakers are not reflected in the Soundwatch data, which includes only two incidents of kayakers within the existing, voluntary no-go zone between 1998 and 2006 (Exhibit 2-17).
100. A great difference clearly exists in the number of potentially affected kayakers estimated using the Soundwatch data and the San Juan County estimate. This difference may be due to kayakers quickly vacating the existing, voluntary no-go zone after launching. Alternatively, Soundwatch observers may not see kayakers in the existing, voluntary no-go zone due to their small size compared to commercial whale watching vessels and because the Soundwatch vessels themselves do not enter the no-go zone. Assuming that over 10,000 kayakers do launch from San Juan County Park each year and that such kayakers would not be able to view whales in the same manner launching from other sites in the Puget Sound area, *an additional two percent of the estimated total number of individuals*

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<sup>93</sup> The average number of passengers per commercial whale watching trip is based on vessel capacity information found in: Russell, S., and M. Schneider. IN prep as of September 2008. A Sociocultural Description of the U.S. Whale Watching Industry in the Puget Sound, WA. NOAA Technical Memorandum-NMFS-NWFSC. (Available from S. Russell, Conservation Biology Division, NWFSC 2725 Montlake Blvd. E., Seattle, WA 98112.)

<sup>94</sup> This analysis forecasts potentially affected individuals for both Canadian and U.S. as data are not available to determine what percentage of the affected individuals may be U.S. citizens. This analysis therefore likely overstates the number of U.S. whale watchers potentially affected by the regulations.

<sup>95</sup> The average number of participants per private vessel is based on personal communication with Kari Koski of the Whale Museum on August 1, 2008. The total number of participants affected is not exactly equal to 18 times 3.42 due to rounding.

<sup>96</sup> To the extent that Soundwatch data captures repeat private-vessels within the current no-go zone involving repeat private-vessel participants, this analysis overestimates the number of people potentially affected by Scenario 1.

<sup>97</sup> San Juan County, Economic Development Council. Kayak Economic Impact. July, 2008.

*engaging in whale watching activities annually would be affected by regulating the existing no-go zone.*

101. Although the number of incidents occurring in the no-go zone by Lime Kiln Lighthouse is less than that within the quarter mile of coast no-go zone, the geographic scope of these areas varies considerably. To describe the density of incidents (and therefore affected trips) within the existing no-go zone of Scenario 1, Exhibit 2-21 estimates the density of incident counts per square kilometer. While significantly less total incidents occur around Lime Kiln, the number of incidents per square kilometer is more than double the number of incidents per square kilometer that occur within a quarter mile of the west coast of San Juan Island.

**EXHIBIT 2-21 AVERAGE ANNUAL VESSELS IN THE EXISTING NO-GO ZONES PER SQUARE KILOMETER BY VESSEL TYPE (SCENARIO 1, 1998 - 2006)**

BEHAVIOR	COMMERCIAL WHALE WATCHING	KAYAK (RECREATION & COMMERCIAL)	RESEARCH	PRIVATE (RECREATION & FISHING)	OTHER <sup>1</sup>	TOTAL
¼ Mile Protected Area	7	<1	<1	1	1	9
½ Mile Around Lime Kiln	9	0	0	11	1	21

Note: Estimates are rounded to the nearest vessel trip. Totals may therefore not sum due to the rounding.

<sup>1</sup>"Other" vessels include smaller, inflatable vessels, vessels engaged in commercial fishing, enforcement, and other unclassified activities. These data on "other vessels" were collected at this aggregate level and data are not available to break this information down further.

Source: Data provided by Data provided by Kari Koski, Soundwatch Program Director, The Whale Museum, Friday Harbor, Washington.

### 2.5.3 PARTIES LIKELY TO BE AFFECTED BY SCENARIO 2

102. This section of the analysis quantifies the parties traveling within a half mile of the west coast of San Juan Island between Eagle Point and Mitchell Point. These parties are anticipated to be affected by the establishment of an enforceable killer whale no-go zone according to Scenario 2 (i.e., an expanded no-go zone).
103. Soundwatch tracks incidents of vessels occurring "inshore of whales" when the whales are within a half mile of the shore of western San Juan Island. This analysis uses these data to estimate the parties potentially affected by Scenario 2, an enforceable no-go zone within a half mile of the west coast of the Island. Accordingly, Exhibit 2-22 describes the average number of vessels potentially affected by Scenario 2 per whale watching season by vessel type.

EXHIBIT 2-22 AVERAGE ANNUAL VESSEL TRIPS WITHIN THE POTENTIAL, EXPANDED NO-GO ZONE BY VESSEL TYPE (SCENARIO 2, 1998 - 2006)

BEHAVIOR	LOCATION	COMMERCIAL WHALE WATCHING	KAYAK (RECREATION & COMMERCIAL)	RESEARCH	PRIVATE (RECREATION & FISHING)	OTHER <sup>1</sup>	TOTAL
Inshore of Whales	½ Mile Protected Area	58	<1	0	27	1	82

Note: Estimates are rounded to the nearest vessel trip. Totals may therefore not sum due to the rounding.

<sup>1</sup>"Other" vessels include smaller, inflatable vessels, vessels engaged in commercial fishing, enforcement, and other unclassified activities. These data on "other vessels" were collected at this aggregate level and data are not available to break this information down further.

Source: Data provided by Kari Koski, Soundwatch Program Director, The Whale Museum, Friday Harbor, Washington.

104. As incidents are only assigned one category in the Soundwatch database, these potentially affected parties are not inclusive of those described in Section 2.3.2 for Scenario 1. As such, this analysis estimates the total number of individuals likely to be affected by Scenario 2 as the sum of the individuals potentially affected in Scenario 1 and those described by Exhibit 2-21. Again, assuming that 55 passengers are engaged per commercial whale watching trip and 3.42 per private vessel trip, this analysis estimates that the following quantities of individuals stand to be affected by the establishment of an enforceable half mile protection area off the west coast of San Juan Island per whale watching season:

- *Individuals engaged in a commercial whale watching tour: 6,545;<sup>98,99</sup>*
- *Individuals engaged in private vessel activities: 154.<sup>100,101</sup>*

105. As described in Chapter 1, Soundwatch estimates that approximately 500,000 people engage in whale watching activities annually through either commercial tours and kayaks. The estimated number of individuals potentially affected by Scenario 2 is therefore *approximately 1.3 percent of the estimated total number of individuals engaging in these activities annually*. Again, to the extent that kayakers use the San Juan County Park boat launch, *an additional 2 percent of the estimated total number of individuals engaging in whale watching activities may be affected by the expanded no-go zone each year*.

<sup>98</sup> The average number of passengers per commercial whale watching trip is based on vessel capacity information found in: Russell, S., and M. Schneider. IN prep as of September 2008. A Sociocultural Description of the U.S. Whale Watching Industry in the Puget Sound, WA. NOAA Technical Memorandum-NMFS-NWFSC. (Available from S. Russell, Conservation Biology Division, NWFSC 2725 Montlake Blvd. E., Seattle, WA 98112.)

<sup>99</sup> This analysis forecasts potentially affected individuals for both Canadian and U.S. as data are not available to determine what percentage of the affected individuals may be U.S. citizens. This analysis therefore likely overstates the number of U.S. whale watchers potentially affected by the regulations.

<sup>100</sup> The average number of participants per private vessel is based on personal communication with Kari Koski of the Whale Museum on August 1, 2008. The total number of participants affected is not exactly equal to 45 times 3.42 due to rounding.

<sup>101</sup> To the extent that Soundwatch data captures repeat private-vessels within the expanded no-go zone involving repeat private-vessel participants, this analysis overestimates the number of people potentially affected by Scenario 2.

## 2.6 ASSUMPTIONS AND CAVEATS

106. To overcome data limitations, this analysis makes a number of assumptions. Exhibit 2-23 summarizes the major assumptions and caveats underlying the estimation of potentially affected entities.

### EXHIBIT 2-23 CAVEATS AND ASSUMPTIONS

ASSUMPTION	POTENTIAL EFFECT ON RESULTS <sup>1</sup>
Because of the vessel tracking methods employed by the Coast Guard and Soundwatch, not all vessel types occupying the Puget Sound region are quantified. For example, when conducting vessel counts, some vessel types (e.g., commercial fishing, some recreational vessels, enforcement vessels) are grouped into an "other vessel" category.	+/-
Data on the capacity of all Canadian whale watching vessels are not complete. This analysis therefore assumes that average capacity is similar to the United States: 55 passengers.	+
Data are not available on the distribution of fishing vessels across the Protected Areas. This analysis therefore provides information on the total numbers of fishing vessels operating in the vicinity of the Strait of Juan de Fuca overall.	+
To estimate the number of vessels in the Protected Areas, the analysis relies on vessels counted according to a quadrant system established by Soundwatch. The quadrants considered overlap the Protected Area boundaries but also include some areas outside of the Protected Areas. The counts of vessels within these quadrant areas therefore may overestimate the number of vessels in the Protected Areas.	+
The analysis relies on the number of incidents (defined as vessels not complying with the whale watching guidelines) to project the number of entities affected. Because Soundwatch is not continuously monitoring vessels, this analysis may underestimate the number of potentially affected entities.	-
Counts of vessels within the Protected Areas are based on daily counts and assumes that each vessel counted in the Protected Area on a given day is unique (i.e., vessels do not cross the Protected Area more than once per trip). Because a vessel may be involved in repeated incidents throughout a month or season, however, the counts of vessels in the Protected Areas are not a count of unique <i>vessels</i> potentially displaced, but rather unique <i>trips</i> potentially displaced.	+
Notes: +: This assumption may result in an overestimate of real costs. -: This assumption may result in an underestimate of real costs. +/-: This assumption has an unknown effect on estimates.	

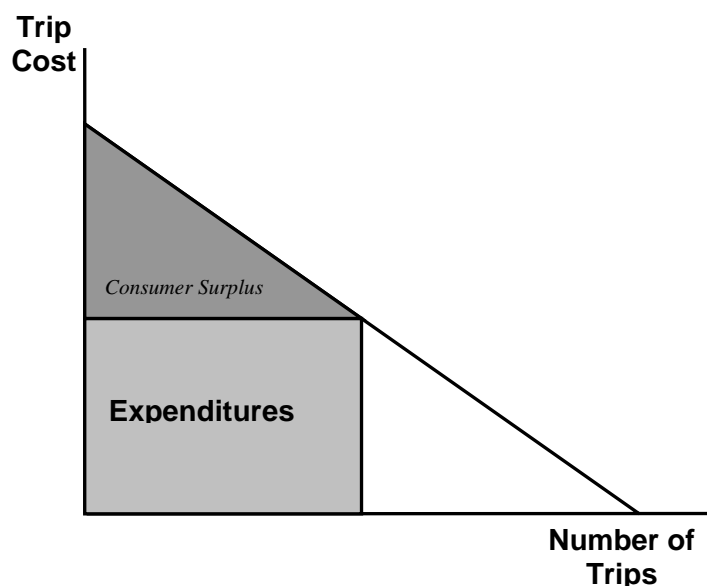


## CHAPTER 3 | POTENTIAL ECONOMIC EFFECTS OF VESSEL TRAFFIC REGULATIONS

107. Existing research does not allow for the quantification of economic impacts of NMFS' alternatives for minimum approach distance, vessel speed, and vessel path regulations or the establishment of enforceable no-go zones, and primary research is beyond the scope of this analysis. Information provided in this chapter describes the extent to which the potentially affected parties identified in Chapter 2 may be affected by vessel traffic regulations. This chapter first presents a qualitative discussion of the types of economic impacts that may be generated by such regulations (Section 3.1) and then describes how these types of impacts relate to the management alternatives being considered. Finally, this chapter describes recent research related to the valuation of whale watching activities (Section 3.2).
108. In general, the results of recent research vary concerning the extent to which proximity to whales relates to willingness to pay for a whale watching trip. A recent study focused on the Southern Resident killer whales in Puget Sound, however, concludes that it is more important to whale watching participants that they view whales in a respectful, protective manner than that they get within a specific distance of the whales. This suggests that any negative effects caused by minimum approach distance regulations may be minimized if the participants are educated on the reasons for the regulation.
- 3.1 TYPES OF ECONOMIC IMPACTS ASSOCIATED WITH THE POTENTIAL VESSEL TRAFFIC REGULATIONS**
109. A person's ability to get close to whales, including parking directly in the paths of the whales, vessel speeds, or ability to access no-go zones may contribute to an individual's willingness to pay to participate in whale watching activities. As such, potential vessel traffic regulations which limit proximity and access may generate negative social welfare impacts to the individuals forecast to be affected in Chapter 2. Further, to the extent that proximity to whales, vessel speeds, or the ability to access no-go zones contribute to an individual's likelihood to participate in whale watching activities, regional economic impacts to industries providing goods and services to the whale watching industry may occur.
110. The economic 'impact' of the whale watching industry consists of two dimensions: net economic or welfare value, and regional economic contribution. Net economic value, or consumer surplus, is measured by what individuals are willing to pay for whale watching above beyond what they are required to spend. Actual expenditures on whale watching

(and turn their contribution to output, jobs and wages) provide a measure of the relative importance of different resources or industries within a local or regional economy. The relationship between expenditures and consumer surplus for whale watching is illustrated in Exhibit 3-1.

EXHIBIT 3-1 INDIVIDUALS' DEMAND FOR WHALE WATCHING TRIPS



#### Social Welfare Impacts

111. Exhibit 3-1 depicts a hypothetical demand curve for whale watching trips. The demand curve indicates what consumers would be willing to pay for various numbers of trips taken over the course of a particular period in time (e.g., a year or season). The downward slope reflects the conventional notion that the lower (higher) the cost per trip, the more (fewer) trips consumers will take.
112. For example, at a cost per trip of \$60, consumers may take ten trips. Additional trips at that price would exceed what the consumers are willing to pay. The total expenditures for these ten trips is equal to the area of the rectangle labeled 'Expenditures', or \$600 ( $\$60 \times 10$ ). Note that for each trip leading up to ten, the consumers' willingness to pay exceeds the cost per trip. The area of this triangle, labeled 'Consumer Surplus,' represents surplus that accrues to the consumers and is the total value (or social welfare value) of recreational trips.
113. Changes in social welfare value are typically measured when comparing policy alternatives. Across policy alternatives, expenditures may be transferred from one group or area to another. For example, if the quality of a whale watching trip is compromised because of an increased minimum approach distance, change in method of whale

watching (e.g., parking in the path of whales), or lack of access to particular areas, the amount that patrons are willing to pay for trips may decrease. In this case, they may incur greater cost to travel to another area, or they simply may choose a different way to spend their leisure time. Any one of these adjustments would result in a reduction of consumer surplus. While the overall level of spending by an individual on leisure activities is likely to remain constant for a particular individual, the local area or set of businesses that benefit from those expenditures may vary according to the regulatory Scenario.

#### Regional Economic Impacts

114. As the above example suggests, any change in consumer surplus represents the net change, while any change in expenditures is simply a redistribution from one area or set of businesses to another. However, within a particular local or regional economy, the level of expenditures affects revenues, employment, and tax receipts, all of which are of direct concern to residents and proprietors. While a reduction in spending in County A may be compensated for by increased spending in adjacent County B (and thus represent a transfer at a larger geographic scale), this change nonetheless results in decreased (increased) economic activity in County A (B).
115. Regional economic impact analysis can provide an assessment of the potential localized impacts of economic activity, such as whale watching. Specifically, regional economic impact analysis produces a quantitative estimate of the potential magnitude of the level of economic activity associated with an industry. Regional economic impacts are commonly measured using regional input/output models. These models rely on multipliers that represent the relationship between a change in one sector of the economy (e.g., expenditures by whale watchers) and the effect of that change on economic output, income, or employment in other local industries (e.g., suppliers of goods and services to whale watchers). These economic data provide a quantitative estimate of the magnitude of shifts of jobs and revenues in the local economy.
116. Regional economic impact analysis provides information about the scale and scope of localized impacts. It is important to remember that measures of regional economic effects generally reflect shifts in resource use rather than welfare losses. Thus, these types of effects are reported separately from welfare effects (i.e., not summed).

### 3.2 VALUING IMPACTS OF THE POTENTIAL REGULATIONS

117. One factor that should be considered when trying to determine the potential effects of vessel traffic regulations is the different nature of whale watching tours. As discussed in Chapter 1, some whale watching tours are designed only to see whales; they are short (three to four hours), have a moderate cost (\$60 to \$80), and take place on large-capacity, generic vessels. It is probable that participants on this type of tour are likely to base their willingness to pay on actually seeing and perhaps getting close to whales. Other whale watching tours take place on speedboats that travel at high speeds across the Sound to various destinations. Participants on this type of tour may base a significant portion of their enjoyment on traveling in a unique, high-speed boat and sight-seeing across the

Sound. Thus, limiting the proximity these vessels can get to whales may not as significantly limit the participants' willingness to pay for tours. Other tours are longer (a full day or multiple days) and cruise to different ports-of-call within the Puget Sound and beyond, offering participants the chance to get off the boat and shop or eat; whale watching is only one aspect of this type of tour. Again, due to the nature of this type of tour, limiting the proximity of whale-watching vessels to whales, or affecting methods of viewing, may not limit customers' demand or their willingness to pay for harbor cruises because only one enjoyable aspect of the tour is potentially being limited.

118. As described in Chapter 1, the regional economic contribution of the current killer whale watching industry in Puget Sound is approximately \$18.4 million annually and 205 jobs to the 19 counties adjacent to the killer whales' habitat through direct, indirect, and induced expenditures related to the industry.<sup>102</sup> This may be considered the regional economic value of the resource (i.e., the whale watching industry in Puget Sound) at risk, providing context for understanding the potential effects of regulations.

### 3.2.1 ALTERNATIVES FOR MINIMUM APPROACH DISTANCE REGULATIONS

119. Because so few whale watching trips (less than one percent of all commercial whale watching trips taken in the Puget Sound area during the whale watching season) are estimated to be affected by the potential 100 meter/yard approach regulation, Scenario 1 of the potential approach regulations is not expected to significantly affect the price of whale watching trips in the Puget Sound area. Given that data are not available to quantify the economic impacts of either a 100 meter/yard approach guideline or a 200 yard/meter approach guideline, it is difficult to determine the difference in the effects of the two regulations. In the case that the level of enjoyment by whale watchers is proportional to their proximity to the whales, the effects of the 200 yard/meter regulation in Scenario 2 will be greater than the effects of the 100 yard/meter approach regulation of Scenario 1 for any particular set of participants. In addition, because of the greater distance requirement, a greater number of individuals is forecast to be affected in Scenario 2 than in Scenario 1, as described in Chapter 2.
120. A greater impact to individuals engaged in whale watching activities is therefore expected for Scenario 2 than Scenario 1 for two reasons: 1) individuals may be willing to pay less due to the greater minimum approach distance; and 2) impacts are experienced by a greater number of individuals (not only those that are approaching the whales closer than 100 yards/meters, but also individuals approaching whales between 200 and 100 yards/meters).
121. One way impacts may be generated is that commercial operations may adjust their equipment and infrastructure in the case that the distance regulation is 200 yards/meters. For example, they may shift to larger viewing platforms that provide better vantage points. The larger vessels that are higher on the water provide better viewing opportunities at greater distances from the whales. The greater distance regulation could

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<sup>102</sup> IEc performed an IMPLAN Analysis to generate this information using: IMPLAN Professional, Social Accounting, and Impact Analysis Software, User's Guide, Analysis Guide, Data Guide, Minnesota IMPLAN Group, Inc., 2002.

therefore shift the focus on the industry to larger vessels with more passengers (which is closer to the current U.S. operations as opposed to the smaller vessels associated with the Canadian commercial operations).

122. The WWOANW provided comment on the Advance Notice of Public Rulemaking, expressing support for enforcement of the 100 yard/meter guideline for all vessels operating in the Sound, but cautioning that there is unlikely to be a need for increasing that approach distance.<sup>103</sup> In fact, the WWOANW anticipates that the industry may not survive the establishment of a 200 yard/meter minimum approach distance as it will limit the educational value of the whale watching trips and decrease participation. Additionally, individual whale watching operators also expressed support for codifying the existing guidelines.

### 3.2.2 VESSEL PATH REGULATIONS

123. Specific data on the extent to which parking in the path of whales contributes to willingness to pay for whale watching are not available. Because incidents of activity have occurred within these areas (as quantified in Chapter 2), it is reasonable to assume that some preference exists to participate in this type of whale watching behavior. The extent to which individuals may decide not to participate in whale watching because of decreased enjoyment associated with precluding the behavior is not known.

### 3.2.3 VESSEL SPEED REGULATIONS

124. As with the approach and path regulations, in order to quantify impacts of enforceable vessel speed limits requires data on the extent to which vessel speed contributes to willingness to pay for a whale watching trip. Chapter 2 describes the number of whale watching trips and individuals potentially affected by vessel speed regulation using historical data regarding the number of whale watching trips that exceed the proposed limit of seven knots when within 400 yards/meters of the whales. While research is not available to quantify the relative importance of vessel speed to a whale watching trip, assuming the primary objective of participants is to view whales, the speed of the whale watching vessel is unlikely to be a primary factor in overall trip enjoyment and, therefore, in willingness to pay for participation.

### 3.2.4 ALTERNATIVES FOR NO-GO ZONE REGULATIONS

125. Similar to the other vessel regulations, in order to quantify impacts of enforceable no-go zones precluding vessel traffic requires data on the extent to which travel in these areas contributes to willingness to pay for a trip. While Chapter 2 describes the number of whale watching trips and individuals potentially affected in Scenarios 1 and 2 of the no-go zone regulation, information is not available to determine whether these trips would be displaced (i.e., would continue to occur but would travel in alternative areas of the Sound), or would be avoided. In the case that the trips are displaced, the individuals affected are likely to experience social welfare impacts as described above. To the extent

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<sup>103</sup> Whale Watch Operators Association Northwest to National Marine Fisheries Service. June 20, 2007. Re: Docket No. 070125020-70201: I.D. 010907A Protective Regulations for Killer Whales in the Northwest Region Under the Endangered Species Act and Marine Mammal Protection Act.

that the trips are avoided, however, regional economic impacts may occur in addition to the social welfare impacts, as less individuals would be spending money in the regional economy related to whale watching trips.

126. In 2008, San Juan County prepared an economic analysis, which quantified the impact of the current no-go zone on the whale watching industry on San Juan Island. The analysis considered potential welfare impacts, as well as broader regional economic impacts on San Juan Island of regulating the no-go zone. The San Juan County analysis is described below to provide additional detail on the potential effects of Scenario 1 of the no-go zone regulations.

*San Juan County Analysis of Scenario 1 of the No-Go Zone Regulations*<sup>104</sup>

127. San Juan County estimates that 21,000 kayakers visit San Juan Island annually. Of these 21,000 kayakers, over 10,000 (approximately 50 percent) launch from the San Juan County Park boat launch, which is located within the current, voluntary no-go zone. San Juan County estimates that these 10,000 kayakers (each launch is considered to be a “kayaker” although a single kayaker may launch multiple times throughout the year) generated \$38,500 in earnings for San Juan County Park through user fees in 2007. If the current, voluntary no-go zone were mandatory, these 10,000 kayakers would no longer be able to use the San Juan County Park boat launch, resulting in approximately \$38,500 in lost income for the Park each year.
128. The San Juan County analysis assumes that if the current, voluntary no-go zone became mandatory, roughly 50 percent (10,500 individuals) of the 21,000 kayakers visiting San Juan Island annually would no longer kayak in the region. That is, the analysis assumes that the kayakers no longer spend money on kayaking in alternate locations or at different times of year but that those kayak trips are completely foregone. Assuming that each kayaker would have spent approximately \$100 for kayaking equipment and gear, the 50 percent reduction in kayakers would therefore result in \$1.05 million in lost income to San Juan Island outfitters. Additionally, the analysis assumes that each kayaker spends \$100 per day on food, accommodations, and various retail items, and stays on San Juan Island for approximately two days. Thus, the 50 percent reduction in kayakers would result in an additional \$2.1 million loss to the San Juan Island economy. Finally, the San Juan County analysis assumes a San Juan Island-specific multiplier (see discussion of regional economic impacts in section 3.1) of 40 percent.
129. The 40 percent multiplier applied in the San Juan County analysis represents the best judgment of the County. For comparison to the estimated impacts, Chapter 1 of this Draft RIR estimates the regional economic contribution of the U.S. commercial whale watching industry in the broader Puget Sound area to be \$18.4 million annually. The analysis provided for context in Chapter 1 applies the regional economic modeling tool IMPLAN, which employs region-specific data to inform the input/output analysis. More specific data on the distribution of expenditures of the San Juan Island kayakers would be required to conduct a formal regional analysis using IMPLAN (i.e., specific dollars spend

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<sup>104</sup> San Juan County, Economic Development Council. Kayak Economic Impact. July 2008.

per participant in various economic sectors, including restaurants, lodging, gas, equipment, etc.) to compare to the San Juan County estimates.

130. Of note, however, the San Juan County analysis presents the *regional economic contribution* of the kayakers that use the boat launch within the existing, voluntary no-go zone. These numbers would only be considered *impacts* of regulating the no-go zone in the case that all of these kayakers no longer visit San Juan Island due to the no-go zone regulation. That is, the regional economic contribution of these kayakers is only lost assuming that the kayakers do not relocate to other areas in the Puget Sound, do not participate in land-based viewing, and do not instead participate in other recreational activities in the region in place of whale watching in the no-go zone. In the case that a portion of the kayakers do substitute alternate locations or methods for whale watching, some portion or none of their expenditures may be lost to the regional economy.

#### Other Potential Impacts of No-Go Zone Regulations

131. To adjust to the establishment of no-go zones, whale watchers may situate themselves at the edges of these zones to view the whales, in which case the impact to the whale watchers would be similar to that of establishing a greater viewing distance (as described above) as opposed to precluding the activity altogether. The existing no-go zone in Canada has experienced this type of activity: vessels lining the edges of the area and viewing the whales from a greater distance.<sup>105</sup> In addition, whale watchers may choose instead to participate in land-based viewing, which may result in a change in quality of whale watching experience.

#### 3.2.5 POTENTIAL IMPACTS TO OTHER INDUSTRIES

132. The effect of both the proposed regulations on industries other than the whale watching industry is expected to be minimal. As discussed in Chapter 2, shipping vessels, commercial fishing vessels, aircraft, and other vessels not included in the whale watching industry are involved in a very low percentage of incidents of noncompliance with the “Be Whale Wise Guidelines” in the Puget Sound area. In general, impacts are expected to be minimal to industries because, unlike the whale watching industry, viewing whales is not the primary objective of the other industries with vessels occupying the Sound.
133. One potential exception to this reasoning is the proposed vessel speed regulation as speed is less related to whale watching behavior and is more likely to be important to vessels engaged in other activities, such as commercial shipping. Commercial shipping and fishing vessels may experience economic impacts if, for example, speed limits affect their ability to meet planned trip schedules; i.e., the value of their time for additional time spent in transit. As described in Chapter 2, however, because the vessel speed regulation as proposed applies only to vessels within 400 yards/meters of the whales, and a small percentage of other vessel types have been identified exceeding the proposed speed limit this close to whales (only four vessels per year that are not whale watching related are forecast to be affected), the effects of the proposed speed regulation on other types of vessels, such as commercial and shipping boats, is expected to be minor.

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<sup>105</sup> Communication with National Marine Fisheries Service, Protected Resources Division, on February 6, 2008.

134. The Western States Petroleum Association provided comment on NMFS' Advance Notice of Proposed Rulemaking that it is concerned that approach rules, if implemented for cargo and other large vessels, may create unpredictable and unsafe vessel traffic patterns and increase the risk of vessel collisions.<sup>106</sup> As described in Chapter 2, however, the large vessel traffic lanes fall outside of the areas densely occupied by the whales and a negligible percentage of the approach incidents in recent years were associated with these types of vessels.
135. Washington State Ferries commented that, in the case that NMFS codified the "Be Whale Wise Guidelines," their activities would not be affected by the regulations.<sup>107</sup> The Northwest Marine Trade Associate further expressed support for the codification of the guidelines.<sup>108</sup> Both organizations, however, expressed the need for further research on the need for, and impacts of, expanding regulation beyond the protections described in the guidelines.

### 3.3 RECENT RESEARCH FOCUSED ON VALUES ASSOCIATED WITH WHALE WATCHING

136. Individuals reveal their preferences for resources through their behavior. To capture these preferences, one branch of research valuing recreation activities is focused on "revealed preferences," identifying what people are spending to participate in recreational activities to reveal the value that people hold for those activities (e.g., travel cost or hedonic studies). Other types of values have also been analyzed in the economics literature, primarily through the use of stated-preference surveys, in which individuals describe their relative values for various resources or activities, for example whale watching. The monetization of these types of values remains controversial and is debated among academics.
137. No study was identified that specifically models the relationship between proximity to whales and willingness to pay to participate in whale watching activities, which would allow for quantification of social welfare or regional economic impacts. The following research, however, provides useful information on the value that whale watching participants hold for the activity.
138. The results of four past studies: Duffus & Dearden (1993), Orams (2000), Andersen (2004), and Malcolm (2004) provide data on the factors that lead to an enjoyable or memorable whale-watching tour and how satisfied whale-watch participants are with various aspects of their whale-watching tour.

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<sup>106</sup> Western States Petroleum Association to National Marine Fisheries Service. June 20, 2007. Comments of Western States Petroleum Association on the Advance Notice of Proposed Rulemaking Concerning Protective Regulations for Killer Whales in Puget Sound, Washington.

<sup>107</sup> Washington State Ferries to National Marine Fisheries Service. June 5, 2007. Docket No. 070125020-70201; 50 CFR Part 216, Protective Regulations for Killer Whales in the Northwest Region Under the Endangered Species Act and Marine Mammal Protection Act, Advance Notice of Proposed Rulemaking.

<sup>108</sup> Northwest Marine Trade Association to National Marine Fisheries Service. June 11, 2007.

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Duffus and Dearden (1993)<sup>109</sup>

139. Duffus and Dearden (1993) surveyed whale watch participants specifically targeting killer whales in the Johnstone Strait of British Columbia, Canada, in July and August of 1986 and 1989. At the time of the study, voluntary 100 meters/yards approach guidelines existed; however, it is unknown whether the vessels from which whale watch participants were surveyed followed these voluntary approach guidelines. Duffus and Dearden found that among the whale-watch participants surveyed “close observation of whales” was the second most significant component of trip satisfaction level. The most important component of satisfaction was “encountering whales.” Additionally, “seeing displays of whale behavior” and “seeing the coastal scenery” were also significant satisfaction components.
140. The transferability of the results of this study to the approach regulations under consideration for Puget Sound is limited. The Duffus and Dearden surveys took place over 15 years ago and it is not clear how close the whale watching vessels were to the whales when the survey was undertaken. Further, the study does not provide enough information to derive a functional relationship between proximity to whales and trip satisfaction. The research does suggest, however, that proximity to whales and overall trip satisfaction are related.

Orams (2000)<sup>110</sup>

141. Orams surveyed whale watch tour participants targeting humpback whales in Tangalooma, Australia, to determine factors that contributed to their satisfaction or dissatisfaction. Whale watching tours in Tangalooma, Australia, are subject to regulations that restrict vessels from approaching whales closer than 100 meters. Thus, the whale-watching tours surveyed by Orams maintain approach distances from whales similar to those that would be maintained by whale watching vessels in the Puget Sound area if the NMFS 100 yard approach guideline became codified.
142. In contrast to Duffus and Dearden, Orams found that proximity to whales ranked relatively low in terms of factors contributing to whale watching tour enjoyment. Specifically, when Orams asked whale watch tour participants “what could have made the whale watch more enjoyable?” only four percent of respondents said they would have preferred to be closer to the whales. The most common responses were “more spectacular behavior” (26 percent) and “more whales” (24 percent). “Closer to whales” also got fewer responses than: “less people,” “less sea sick,” and “boat construction/angle for viewing.” Further, in tours where few to no whales were seen, approximately 30 percent of people said they were dissatisfied to some degree. These results imply that proximity to whales does not play a significant role in determining enjoyment level. Additionally, the satisfaction results for tours seeing few to no whales suggest that people base their tour enjoyment on more than just the presence of whales.

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<sup>109</sup> Duffus, D.A. and P. Dearden. 1993. Recreational use, valuation, and management of killer whales (*Orcinus orca*) on Canada's Pacific Coast. *Env. Cons.* 20:149-156.

<sup>110</sup> Orams, M.B. 2001. Tourists getting close to whales, is it what whale-watching is all about? *Tour. Manag.* 21:561-569.

143. Orams does note, however, that a study conducted by Duffus (1988), which found that killer whale watchers in British Columbia listed proximity to whales as a very important part of their whale-watching tour.<sup>111</sup> Given the different findings of Duffus (1988) as noted in Orams (2000) and the fact that the Orams study took place in Australia and focused on a different whale species (humpback whales, which are larger than killer whales and therefore may provide better viewing at greater distances), the applicability of the Orams study to whale watching in Puget Sound is limited.

Andersen (2004)<sup>112</sup>

144. Andersen surveyed participants on 15 whale watching tours with two U.S.-based, vessel operating, commercial whale watching companies offering tours from the San Juan Islands, Washington. At the time of the study, both whale watching companies were members of the Whale Watch Operators Association Northwest (WWOANW) and therefore generally followed the “Be Whale Wise Guidelines.” Thus, all whale-watch tours surveyed maintained approach distances of at least 100 meters/yards, similar to the approach distances that would be maintained in Scenario 1 of the potential approach regulation.
145. One of Andersen’s objectives was to determine the expectations whale watch participants had prior to going on a killer whale watching tour in the Puget Sound and participants’ reactions to the tour. None of the participants surveyed by Andersen had specific expectations about how close the whale watching tour would get to killer whales. Rather, the most common expectations for a whale watch tour were: to see killer whales; to enjoy the trip onboard the whale watching vessel; to see other wildlife (besides killer whales); and to learn about killer whales, other wildlife, and the Puget Sound area.
146. Further, when asked, “what was most memorable about your whale watching experience?” seeing killer whales got the highest response rate (39.3 percent). A significant percentage of participants surveyed (30.4 percent) said that specific killer whale behavior or killer whales’ proximity to the whale-watching vessel was the most memorable part of their tour. However, when asked to rank 14 factors in order from most memorable to least memorable, “distance of boat to the whales” received an average rank of 7.67, making it the seventh most memorable factor. The lowest ranked factors (i.e., the most memorable factors) were: seeing a whale; seeing whales in their natural environment; the behavior of whales, and the length of time spent with whales.
147. Finally, when asked if they “were disappointed in any way by their whale-watching tour and if so, how?” no participant surveyed listed “not close enough to killer whales” as a source of disappointment without also stating that they understood that vessels could not get closer to whales because of the “Be Whale Wise Guidelines.” The findings of

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<sup>111</sup> Duffus, D.A. 1988. Non-consumptive use and management of Cetaceans in British Columbia coastal waters. Unpublished Ph.D. dissertation, University of Victoria, B.C. Canada. As cited in: Orams, M.B. 2001. Tourists getting close to whales, is it what whale-watching is all about? *Tour. Manag.* 21:561-569.

<sup>112</sup> Andersen, M.A. 2004. Whale watching and onboard marine environmental education in the San Juan Islands, Washington: tourists’ expectations and evaluations. Unpublished Master’s Thesis, University of Washington, Seattle, Washington.

Andersen imply that while proximity to whales plays a role in how memorable/enjoyable a particular whale watching tour is in the Puget Sound area, it is not the most memorable factor of a whale watching tour. Seeing whales and whales' behavior during the tour are both more memorable factors. Further, the Andersen study implies that whale watch participants in the Puget Sound area are receptive to the "Be Whale Wise Guidelines" and understand their importance of protecting killer whales.

Malcolm (2004)<sup>113</sup>

148. Malcolm surveyed whale-watch participants in the Johnstone Strait, Clayoquot Sound, and Southern Vancouver Island (SVI) in British Columbia, Canada from June 1 to September 30, 2000 to determine, among other things, participants' pre-trip expectations and their post-trip satisfaction levels. The idea behind this type of survey is that whale watch participants' pre-trip expectations play a role in determining their post-trip satisfaction levels. For example, if whale watch participants expected to see a large number of whales breaching the surface, but saw only one whale passively swimming along the surface during their whale watching tour, they might be very dissatisfied with their trip. However, if participants' expectations were simply to see whales they might be satisfied with seeing a single whale swimming along the surface.
149. This analysis focuses on the survey results from SVI because whale watching near SVI focuses on viewing southern resident killer whales, while whale watching focuses on viewing northern resident killer whales and gray whales, respectively, in the Johnstone Strait and Clayoquot Sound. All SVI whale watch participants surveyed participated in whale watch tours conducted by Springtide Charters, which operates out of Victoria, British Columbia, Canada. Springtide Charters is a member of WWOANW.<sup>114</sup> Thus, it follows the voluntary 100 meter/yard approach distance specified in the "Be Whale Wise Guidelines."
150. When asked to list their level of agreement with several whale management statements, SVI whale watch participants showed a high level of agreement with, "Boats should have to stay a minimum distance from whales." More specifically, "Boats should have to stay a minimum distance from whales" ranked fourth in terms of the level of agreement expressed by SVI whale watch participants behind, "Protecting whales is important," "The government has an obligation to protect whales," and "A portion of the cost to go whale watching should go directly to research and management."
151. "Seeing whales in a respectful manner" was the most important general pre-trip expectation among all whale watch participants surveyed and among the SVI whale watch participants surveyed. Other general pre-trip expectations that received high importance scores among SVI whale watch participants surveyed were "See a whale even if it is only one," "See marine wildlife in an uncrowded setting," and "Learn about marine

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<sup>113</sup> Malcolm, C.D. 2004. The current state and future prospects of whale-watching management, with special emphasis on whale-watching in British Columbia. Unpublished Ph.D. dissertation, University of Victoria, B.C. Canada.

<sup>114</sup> Based on a review of the WWOANW website accessed at <http://www.nwwhalewatchers.org> on January 21, 2008.

wildlife.” “Seeing whales up close to boat” was the fourth least important general pre-trip expectation among SVI whale watch participants surveyed.

152. In terms of general satisfaction, “The respectful approach to wildlife by the boat you were on” received the highest satisfaction rating among all whale watch participants surveyed and among SVI whale watch participants surveyed. “The distance from which whales were observed” received the fifth (out of 10) highest satisfaction rating among all participants and SVI participants surveyed. Among SVI whale watch participants surveyed, “The number of whales seen,” “Whale behaviors,” and “What I learned” also received higher satisfaction ratings than “The distance from which whales were observed.” All whale watch participants surveyed and SVI whale watch participants surveyed were most dissatisfied with the “Respectful approach to wildlife by other boats” (i.e., the lack of a respectful approach to wildlife by other boats), “The number of boats around whales,” and “The variety of wildlife seen.”
153. The results of this study indicate that people participating in killer whale watches around SVI place a high value on respecting killer whales in the Puget Sound area. Specifically, whale watch participants surveyed agreed strongly with statements related to the protection of whales. Further, viewing whales in a respectful manner was the most important expectation among participants surveyed and they were most satisfied with the respectful nature in which their whale watching vessel approached whales in the Puget Sound area. It is not clear why participants were most satisfied with the respect their vessels gave whales, but dissatisfied with the lack of respect other vessels in the SVI area gave whales. It could be that a number of other whale watching vessels in the waters around SVI are not members of WWOANW or are private and thus do not adhere to the voluntary 100 meter/yard approach distance specified in the “Be Whale Wise Guidelines.” SVI whale watch participants’ dissatisfaction with the way other whale watching vessels approached whales could also be related to participants’ dissatisfaction with the number of vessels around whales, especially given how important “Seeing marine wildlife in an uncrowded setting” was in the pre-trip survey.
154. More generally, the study implies that whale watchers around SVI are less concerned with getting close to whale as they are with seeing whales in a respectful manner. Thus, the impacts to whale watchers of the 100 yard/meter or 200 yard/meter approach guidelines may be minimized if whale watchers understand that such guidelines are designed to benefit the whales by minimizing the negative effects of whale watching on the whales. Thus, the Malcolm study underscores the importance of managing whale watch participants’ expectations through education on current whale watching guidelines during whale watching tours.

## CHAPTER 4 | SMALL BUSINESS ANALYSIS

147. This appendix considers the extent to which the impacts discussed in the previous Sections could be borne by small entities. The analysis is conducted pursuant to the Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996. Information for this analysis was gathered from the Small Business Administration (SBA), U.S. Census Bureau, and the Risk Management Association (RMA).
148. When a Federal agency proposes regulations, the RFA requires the agency to prepare and make available for public comment an analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions).<sup>97</sup> No initial regulatory flexibility analysis (IRFA) is required if the head of an agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. SBREFA amended the RFA to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have significant economic impact on a substantial number of small entities. To assist in this process, this appendix provides a screening level analysis of the potential for the proposed vessel traffic regulations to affect small entities. This analysis is intended to improve the NMFS' understanding of the effects of the proposed rule on small entities and to identify opportunities to minimize these impacts in the final rulemaking.
149. The analysis evaluates the potential for economic impacts related to the following land use categories:
- Whale watching;
  - Commercial fishing;
  - Other vessel activities (including ferries/passenger vessels, and shipping).
150. Three types of small entities are defined in the RFA:
- Small Business - Section 601(3) of the RFA defines a small business as having the same meaning as small business concern under section 3 of the Small Business Act. This includes any firm that is independently owned and operated and is not dominant in its field of operation. The U.S. Small Business Administration (SBA) has developed size standards to carry out the purposes of the Small Business Act, and those size standards can be found in 13 CFR 121.201. The size standards are matched to North American Industry Classification System (NAICS) industries.

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<sup>97</sup> 5 U.S.C. 601 et seq.

The SBA definition of a small business applies to a firm's parent company and all affiliates as a single entity.

- Small Governmental Jurisdiction - Section 601(5) defines small governmental jurisdictions as governments of cities, counties, towns, townships, villages, school districts, or special districts with a population of less than 50,000. Special districts may include those servicing irrigation, ports, parks and recreation, sanitation, drainage, soil and water conservation, road assessment, etc. When counties have populations greater than 50,000, those municipalities of fewer than 50,000 can be identified using population reports. Other types of small government entities are not as easily identified under this standard, as they are not typically classified by population.
- Small Organization - Section 601(4) defines a small organization as any not-for-profit enterprise that is independently owned and operated and not dominant in its field. Small organizations may include private hospitals, educational institutions, irrigation districts, public utilities, agricultural co-ops, etc.

151. The courts have held that the RFA/SBREFA requires Federal agencies to perform a regulatory flexibility analysis of forecast impacts to small entities that are directly regulated. In the case of *Mid-Tex Electric Cooperative, Inc., v. Federal Energy Regulatory Commission (FERC)*, FERC proposed regulations affecting the manner in which generating utilities incorporated construction work in progress in their rates. The generating utilities expected to be regulated were large businesses; however, their customers -- transmitting utilities such as electric cooperatives -- included numerous small entities. In this case, the court agreed that FERC simply authorized large electric generators to pass these costs through to their transmitting and retail utility customers, and FERC could therefore certify that small entities were not directly affected within the definition of the RFA.<sup>98</sup>
152. Similarly, *American Trucking Associations, Inc. v. Environmental Protection Agency (EPA)* addressed a rulemaking in which EPA established a primary national ambient air quality standard for ozone and particulate matter.<sup>99</sup> The basis of EPA's RFA/SBREFA certification was that this standard did not directly regulate small entities; instead, small entities were indirectly regulated through the implementation of State plans that incorporated the standards. The court found that, while EPA imposed regulation on States, it did not have authority under this rule to impose regulations directly on small entities and therefore small entities were not directly affected within the definition of the RFA.

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<sup>98</sup> 773 F. 2d 327 (D.C. Cir. 1985).

<sup>99</sup> 175 F. 3d 1027, 1044 (D.C. Cir. 1999).

153. The Small Business Administration (SBA) in its guidance on how to comply with the RFA recognizes that consideration of indirectly affected small entities is not required by the RFA, but encourages agencies to perform a regulatory flexibility analysis even when the impacts of its regulation are indirect.<sup>100</sup> "If an agency can accomplish its statutory mission in a more cost-effective manner, the Office of Advocacy [of the SBA] believes that it is good public policy to do so. The only way an agency can determine this is if it does not certify regulations that it knows will have a significant impact on small entities even if the small entities are regulated by a delegation of authority from the Federal agency to some other governing body."<sup>101</sup>
154. This analysis focuses on small entities that may be affected by vessel traffic regulations in Puget Sound for the benefit of killer whales. Chapter 2 describes the number of vessels potentially affected by proposed vessel traffic regulations as summarized in Exhibit 4-1 (more information on the derivation of these estimates is provided in Exhibit 2-1).
155. For commercial fishing activities, while information is available on the size of the fishing fleets that operate within the area of the Strait of Juan de Fuca, data are not refined enough to determine how many individual fishing trips may be offset by the establishment of Protected areas according to the alternative boundaries proposed.

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<sup>100</sup> Small Business Administration, Office of Advocacy. May 2003. A Guide for Government Agencies: How to Comply with the Regulatory Flexibility Act. pg. 20.

<sup>101</sup> *Ibid.*, pg. 21.

**EXHIBIT 4-1 ESTIMATED NUMBER OF TRIPS/INDIVIDUALS POTENTIALLY AFFECTED BY VESSEL TRAFFIC REGULATIONS PER WHALE WATCHING SEASON**

SCENARIO	VESSEL TYPE AFFECTED	NUMBER OF TRIPS AFFECTED	NUMBER OF INDIVIDUALS AFFECTED
<b>APPROACH REGULATION ALTERNATIVES</b>			
Scenario 1: 100 yard/meter approach	Private whale watching	55	188
	Private recreational fishing	20	68
	Commercial whale watching	15	825
	Individual kayaks	7	14
	Other	4	Unknown
Scenario 2: 200 yard/meter approach	Data are not available to forecast specific numbers though totals assumed to be greater than Scenario 1.		
<b>PATH REGULATION</b>			
400 yard/meter buffer area around whales' path	Private whale watching	38	130
	Private recreational fishing	12	41
	Commercial whale watching	137	7,535
	Individual kayaks	5	10
	Other	2	Unknown
<b>SPEED REGULATION</b>			
Reduce speed to less than 7 knots within 400 meters	Private whale watching	46	157
	Private recreational fishing	16	55
	Commercial whale watching	13	715
	Other	4	Unknown
<b>PROTECTED AREA ALTERNATIVES</b>			
Scenario 1	Commercial whale watching	61	3,355
	Individual private vessels	18	62
	Individual kayaks	Unknown	Unknown
	Commercial fishing	Unknown	Unknown
Scenario 2	Commercial whale watching	119	6,545
	Individual private vessels	45	154
	Individual kayaks	Unknown	Unknown
	Commercial fishing	Unknown	Unknown

156. Exhibit 4-2 describes the small business profile of the region for context to the analysis in Chapters 2 and 3. As highlighted in this table, most all of the businesses operating in the commercial whale watching and commercial fishing industries are considered small. It is therefore likely that the potentially affected entities are small businesses.
157. As described in Chapter 3, data are not available to describe a specific per entity economic impact associated with the proposed vessel traffic regulations. In fact, the primary impact is expected to be borne by whale watchers and not necessarily by whale



watching operations. While operations may be affected to the extent that these regulations are established, the analysis does not project decreases in overall activity levels, but rather describes the potential diminished value that individuals may hold for whale watching as a result. Welfare losses to individuals engaged in whale watching are not borne by small entities.

EXHIBIT 4-2 SMALL BUSINESSES THAT MAY BE AFFECTED BY PUGET SOUND VESSEL TRAFFIC REGULATIONS

NAICS CODE / INDUSTRY	SMALL BUSINESS SIZE STANDARD	COUNTY														
		San Juan	Clallam	Jefferson	Mason	Thurston	Pierce	King	Kitsap	Island	Snohomish	Skagit	Whatcom	TOTAL	% SMALL	
<b>Fisheries Related Industries</b>																
114111 - Finfish fishing	\$4.0 million	Total	4	6	1	4	2	9	81	9	3	27	22	25	193	
		Small	4	6	1	4	2	9	75	9	3	27	21	25	186	96.4%
114112 - Shellfish fishing	\$4.0 million	Total	0	0	7	5	5	3	18	1	1	5	1	3	49	
		Small	0	0	7	5	5	3	18	1	1	5	1	3	49	100%
114119- Other marine fishing	\$4.0 million	Total	0	0	1	0	0	1	4	4	0	2	1	0	13	
		Small	0	0	1	0	0	1	4	4	0	2	1	0	13	100%
<b>Whale Watching Industry</b>																
487210 - Scenic and Sightseeing Transportation, Water	\$6.5 million	Total	3	0	0	1	0	2	8	3	1	1	4	1	24	
		Small	3	0	0	1	0	2	7	3	1	1	4	1	23	95.8%
<b>Other Vessel Traffic Related Industries</b>																
483113 - Coastal and Great Lakes Freight Transportation	500 employees	Total	0	0	0	0	0	2	22	0	0	0	0	1	25	
		Small	0	0	0	0	0	1	11	0	0	0	0	0	12	48%
NOTE: Size standard based on SBA's Table of Small Business Size Standards based on NAICS 2002 ( <a href="http://www.sba.gov/size/sizetable2002.pdf">http://www.sba.gov/size/sizetable2002.pdf</a> ). Numbers of businesses are based on Dun and Bradstreet Business Information downloaded February 2008.																

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