

U.S. Forest Service Report: 2005 Cruise Ship Opacity Readings by Wilderness Rangers Conducted in Tracy Arm

Introduction

Background

Cruise ship traffic in Tracy Arm increased slowly but steadily between 1999 and 2002, with an average of slightly less than forty visits per year. In 2003, 108 cruise ships visited Tracy Arm; in 2004 there were more than 143 visits; in 2005, 170 visits.

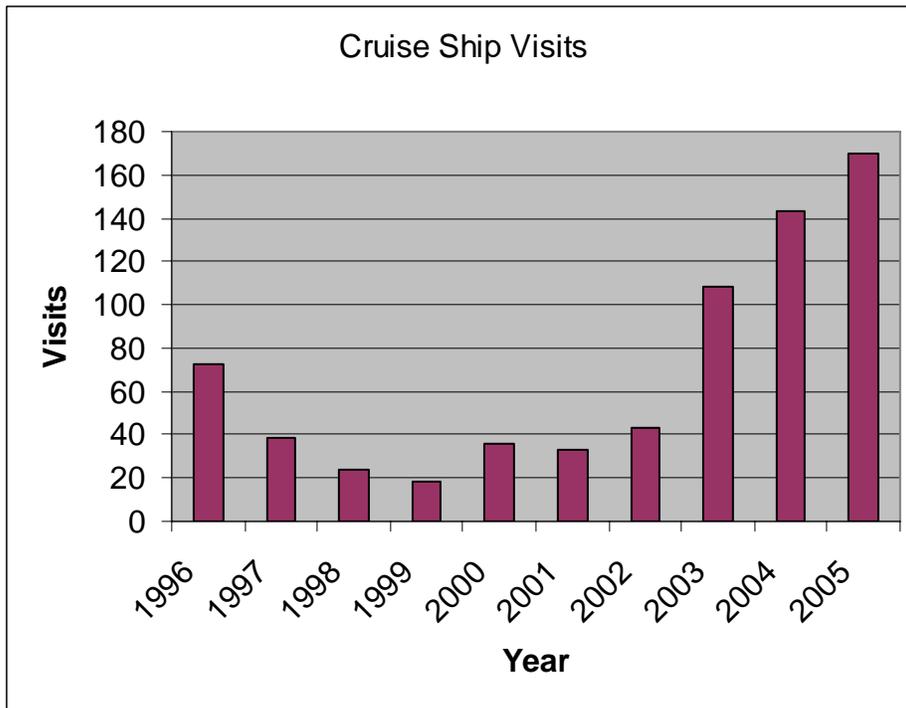


Figure One: Cruise ship visits to Tracy Arm, 1996-2005

Because Tracy Arm averages less than a mile in width, is surrounded by high mountains and frequently sustains inversion layers, cruise ship emissions may linger above the fiord for hours. Sometimes cruise ships will spend an hour or more in the back of the fiord which may lead to an accumulation of emissions. Ship emissions may increase because of rapid changes in engine loading necessary for the ship to maneuver through ice and turn around. With the rise in cruise ship visits to Tracy Arm, the Forest Service has received public complaints concerning air quality within the wilderness area.

As a federal land management agency the Forest Service is charged with protecting the air resource. To further this end the Forest Service and the Alaska Department of Environmental Conservation (ADEC) entered into a Memorandum of Understanding (MOU) in 2002. The MOU provides a framework of cooperation between agencies for

sharing information on cruise ship emissions in Tracy Arm. This cooperation serves the mutual interests of both agencies and the public.

The MOU states that the Forest Service will ensure that wilderness rangers are trained in EPA Method 9 visible emissions monitoring. Qualified rangers will monitor cruise ship emissions in Tracy Arm and share the resultant data with ADEC. The ADEC will review the data and determine what action, if any, is necessary. Other than Glacier Bay National Park, which has its own visible emissions monitoring program, Tracy Arm is the only place in Southeast Alaska where cruise ships are monitored outside of port.

Beyond the visible emissions monitoring, the wilderness program also conducts periodic lichen surveys with Forest Service botanists to measure long term trends in air quality.

Authority

Forest Service Manual Directive 2580.1 cites the congressional legislation (Forest and Rangeland Renewable Resource Planning Act of 1974, as amended by the National Forest Management Act, 16 U.S.C. 1602; Clean Air Act, as amended, 42 U.S.C. 7401 et seq.) directing the agency to protect air quality and outlines procedures to achieve this goal. Additionally, in a February 7, 2005 letter, the Chief of the Forest Service endorsed the 10-year Wilderness Stewardship Challenge, which identified air quality monitoring as one of ten critical elements for successful wilderness management.



USFS Wilderness Rangers read the emissions from a cruise ship in Tracy Arm

Training

Jon Horn, Rebekah Foy, Kevin Hood and Kristin Stelck (Forest Service Wilderness Rangers) were certified in reading visible emission by HMM Consulting in Juneau, AK on April 28, 2005. The training focused on Method 9 of the Environmental Protection Agency (EPA) in reading visible emissions.

Methods

Readings were conducted by a single ranger or two or more rangers. Observations were conducted from land, zodiac or kayak. Opacity was recorded every 15 seconds from a distance approximately ¼ mile from the ship with the sun within a 140 degree arc behind the observer. A reading of at least six minutes is required to obtain a valid read using EPA Method 9. When the Forest Service rangers could continue to meet the EPA

Method 9 monitoring criteria, they took longer readings. Any readings of less than six minutes were discarded.

Cruise Ships in Tracy Arm

Currently the increase in cruise ship visits is outpacing the number of our visible emissions readings:

Year	# Cruise Ships in Tracy Arm	# Of Visible Emission Reads	% Of Cruise Ships Read in Tracy Arm
2003	108	20	19%
2004	143	21	15%
2005	170	25	15%

Figure Two: Yearly percentage of cruise ships entering Tracy Arm that rangers monitored.

However as we get more rangers trained and experienced, and as we gain experience in the logistics of coordinating visible emissions monitoring, we anticipate being able to read a greater percentage of ships in the future.

Conclusion

2005 was successful in expanding the number of rangers qualified and experienced in monitoring visible emissions. We were able to conduct more reads even though our duties were expanded and we were often drawn to other areas. We perfected monitoring by zodiac and consequently were able to engage in readings lasting up to twenty minutes. The positive support we received from ADEC also reaffirmed the importance of continuing to monitor cruise ships in Tracy Arm.