

# Marine Mammal and Human Patterns of Use

*(INSPIRING AND INFORMING A COOPERATIVE STEWARDSHIP PROCESS)*

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## INTRODUCTION

The first time I camped at Point Adolphus was in 1996. It was the end of September and I was finishing up a three month kayaking trip in Southeast Alaska exploring some of the most awesome coastline I had ever seen. Southeast Alaska is one of the few places left on earth where wilderness can be experienced on a grand scale. Each cape and cove offers a unique opportunity to feel awe, wonder, and immense gratitude.

I arrived at Point Adolphus late in the evening after a tough days paddle. Typically the end of September brings significant changes in weather system intensity in Southeast and this day was no exception. By the time I reached the navigation aid at the point I was exhausted and running on autopilot, simply looking for a good beach to pitch a tarp and dry my soaking gear by campfire. I knew nothing of Point Adolphus except what my tired eyes and mind noticed: a couple of nice beaches, decent protection from the southeasters, enough driftwood to dry me out, nice kelp beds (which meant good fishing) and lots of current.

I was coming to Point Adolphus because it was near an island where I was to begin a new winter job as caretaker of a remote wilderness cabin. At the time, I had no idea of the area's immense popularity for recreation and tourism, or that it was a site for some of the best whale watching in the world. The day's stormy weather and waning light obscured all such signs.

Because I was landing well past the peak of the tourist season, it was not hard to find a good campsite. I simply picked the first cobble beach that offered itself to me and was within a reasonable day's paddle of my winter destination. Once onshore, it quickly became obvious that the beaches around Point Adolphus saw a lot of visitor use during the summer. Even in the failing light I was quick to stumble across a well worn path that led to a level spot cleared of spruce branches and devils club where I could pitch my tarp. At the time, my worn out condition led me only to appreciate the convenience of the situation.

During my first night I was awakened several times by powerful trumpet sounds that carried to me over the wind. I struggled to guess at their source but could think of



*Diving whale and the Sunrise over the Chilkat Mountains - About as far away from a stormy day at Point Adolphus that you can get. This shot was taken in the early morning from our field camp just west of the navigation marker.*

nothing other than some strange kind of ship blast in the stormy night. I would have never guessed that these were the sounds of humpback whales in pursuit of the prey that concentrates in tidal eddies off the nearby point. Needless to say, the eerie sounds of my first night at Point Adolphus left a deep impression on my mind.

The stormy weather continued and as a result I remained at Point Adolphus for a week. During this time, the area made an even deeper impression on me as I watched the tides ebb and flow, and the symphony of life that played throughout. The abundance of whales, sea lions, seals, porpoises, and eagles that were a part of my daily life (even though I spent most of my time under the tarp) far exceeded my previous experiences in Southeast Alaska. It was then that I began to understand and appreciate the unique qualities of this place.



*Figure 1 ~ Located at the extreme northern end of Chichagof Island in Southeast Alaska, Point Adolphus extends into the waters of Icy Strait approximately fifteen miles west of Hoonah and ten miles south of Gustavus and Glacier Bay National Park. Tidal currents and prominent geological features enhance deep-water upwelling of nutrient-rich waters. Great masses of plankton and fish moving in concert with the tremendous tidal flow attract large numbers of birds, land, and marine mammals.*

### **THE CONSERVATION CHALLENGE ~LOVING NATURE TO DEATH**

Since that stormy week in 96' I have spent approximately 250 nights camped at Point Adolphus, with the remainder of the last five years at home on a nearby island. During this period, my appreciation for the ecology of the area has only grown stronger. Also during that time I have witnessed at great length that I am not alone in my feelings for this place. Thousands of visitors come each summer to experience the whales of Point Adolphus. Many, if not most, are probably drawn by the same basic awe and love for the humpbacks and their habitat that I have. The question is: Can we love it too much?

Recreation and tourism can pose both threats and opportunities for conserving wildlife and habitat. The rapid growth of the

tourist industry combined with the increasing notoriety of Point Adolphus has led many people to point out a variety of problems, including habitat degradation, increased stress on wildlife populations, and social conflicts. Conversely, good management, monitoring of impacts, education, and economic incentives, can make recreation and tourism a positive force for conservation.

Much of the concern stems from the lack of guidance that has accompanied the recent increase in recreation and tourism at Point Adolphus. For many this lack of

guidance is actually part of its appeal. Compared to the highly regulated “whale waters” of nearby Glacier Bay National Park, Point Adolphus allows for a great deal of freedom for the recreation and tourist sectors of society. During the height of the tourist season, 3000 passenger cruise ships, whale watching and fishing vessels (private and commercial), and substantial transient traffic are observed daily in the near vicinity of Point Adolphus. In addition, you may see anywhere from a handful, to over fifty kayakers using the beaches as a convenient base to explore the area and experience the whales, bears, and other wildlife that live in the marine and terrestrial near-shore zones of Chichagof Island.



*The extremes of the human use spectrum at Pt Adolphus*

The conservation questions posed by concerned locals, environmentalists and commercial users have been escalating in frequency and intensity. Although the National Marine Fisheries Service has recently created national regulations for marine mammal viewing the crux of the problem still remains; how is human presence affecting the animals? Even if we could sidestep the quagmire of user conflict, jurisdictional fragmentation, and empty pockets for public education and regulatory enforcement, we would still be without important baseline information necessary to begin an informed exploration of the issue.

### ***GENESIS OF THE ORGANIZATION ~ A CALL FOR COOPERATIVE STEWARDSHIP***

That was the case three years ago. Since then, a small group of Southeast Alaskans devoted to finding solutions to the problems described above have worked hard to implement positive changes in the region. In 1999 a nonprofit research, conservation and education organization was created called Southeast Alaska Wilderness Exploration, Analysis and Discovery (SEAWEAD). Since its inception, SEAWEAD has worked to facilitate research based cooperative stewardship among local citizens, communities, and government agencies of Southeast Alaska.

SEAWEAD's main objectives are to identify conservation issues, collect site-specific scientific and natural history information, and process and present the information in a broadly accessible form to interested parties.

The crux of our work is bridging gaps: information gaps, institutional gaps, and gaps among civic and user groups. SEAWEAD strives to be a focal point for partnerships in conservation. During our work at Point Adolphus SEAWEAD has benefited from the



*The “gear train” is a common sight at Point Adolphus and a good example of primal cooperation.*



*The stationary observation study is conducted from an elevated shore-based station. Humpback whale behavioral data are collected to determine variations with the presence, proximity and activity of vessels. The lead researcher and two assistants document humpback whale and vessel use with a theodolite (precision survey instrument) and a laptop computer loaded with Ardvark (software developed at Cornell University for tracking humpback whales). This combination allows observational records of whales and vessels to be linked to specific indicators of whale behavioral change: activity, location, respiration rate, and surface and dive duration. The data are later analyzed to determine how whale behavior varies with vessel presence and activity.*

humans near Point Adolphus; 2) examine the relationship between humpback whale behavior and human activity; 3) develop scientific reports and education materials; and 4) provide outreach to local communities, management agencies and user groups.

### **FOCUS AND THE BIG PICTURE ~ CREATING A BALANCED PERSPECTIVE**

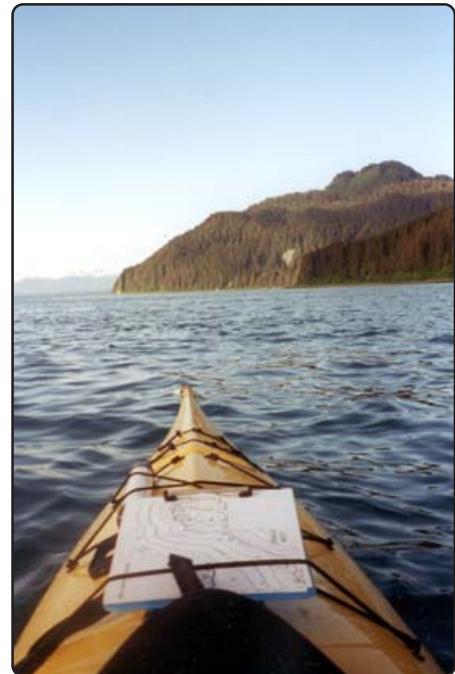
In 1999 we began a pilot study focusing on both the stationary observation and mobile survey techniques. The two perspectives form a holistic blend of science and natural history investigation, with the unified purpose of providing useful and user friendly information for the inevitable debate and discussion process.

Stationary observation has evolved from its inception with invaluable support and guidance from Glacier Bay National Park. This technique is structured by the rigors of science to take a focused look at the behavioral responses of humpback whales to human (vessel) presence and activity.

cooperation and support of: Glacier Bay National Park, the University of Alaska, the National Marine Fisheries Service, the US Forest Service, Eco-trust, the Sitka Conservation Society, the Leighty Foundation, the Skaggs Foundation, Alaska Discovery, and the ESRI conservation program.

Since 1999 (based at a camp just a few minutes down the beach from where I stayed in '96') SEAWEAD has been engaged in an intensive study that focuses on the whales of Point Adolphus. *The Point Adolphus Humpback Whale Project* is centered on understanding the effect of human-whale interactions on the endangered humpback. We employ both **stationary observation** and **mobile survey** techniques to collect baseline information about patterns of habitat use at Point Adolphus. The objectives of the project are to: 1)

describe the distribution, abundance, and behavior characteristics of humpback whales and



*This is a shot from the hatch of a mobile survey kayak. In the foreground of this shot you will notice the 'deck-writer', a plastic clipboard with a pencil on a lanyard for data collection on-the-go. Data sheets are copies of local chart info with distance delineations and landmark info added in Arcview for sampling standardization. Of course the paper is water proof.*

The mobile survey technique is guided by the gestalt of naturalist study. Its purpose is to provide a broader ecological perspective by describing the distribution and abundance of *all* marine mammal and human activity encountered along approximately fifteen kilometers of coastline around Point Adolphus. For the purposes of this article I will briefly discuss only the mobile survey technique and would like to refer the reader

to our website ([www.seawead.org](http://www.seawead.org)) for more information on methods and results for stationary observation.

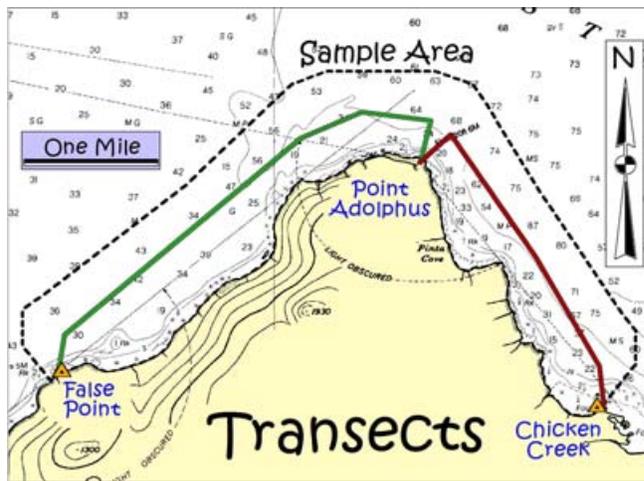


Figure 3 ~ East and West Transect locations

### **GATHERING BASELINE INFORMATION ~ COUNTING CRITTERS BY KAYAK**

By systematically paddling the coastline around Point Adolphus from early June to September, we were able to collect a variety of information about the patterns of habitat use. We established two 8 kilometer paddling transects (figure 3) on each side of the Point Adolphus light that ran within 1.5 kilometers of shore. All marine mammals, human traffic and campsites were identified and recorded along with time,

position, group size and behavior data. This information provides a baseline description of the relative distribution and abundance for humpback whales, stellar sea lions, harbor porpoise, sea otters, harbor seals and human beings in local habitats.

### **COMMUNICATING THE RESULTS ~ THE HEURISTIC POWER OF NATURALIST FIELD STUDY & GIS**

At the heart of our work is the synthesis of scientific research and naturalist study. Science provides a structured look at critical elements in a system, and the naturalist perspective describes the ecological context for interpreting the scientific data. We believe that when balanced the two perspectives greatly enhance one another.

The mobile survey technique paints the canvas of what we know about the marine ecology of Point Adolphus with a rich natural history background. We are confident that this background will prove fundamental to understanding and communicating the finer details of humpback whale behavior observed through the stationary observation study. To better understand what kind of background information I am talking about, I will describe the process of data collection, analysis and presentation with the aid of Arcview and Spatial Analyst (ESRI).

During the 2000 field season we conducted approximately 60 surveys of transects and recorded 750 data points. Each data point represents a group of whales, seals, sea lions, sea otters, porpoises, or people.

Imagine that each time we recorded a data point we were able to drop a color-coded buoy to mark the location. The result would look something like figure 5. In order



Humpback whale encountered on a west transect.

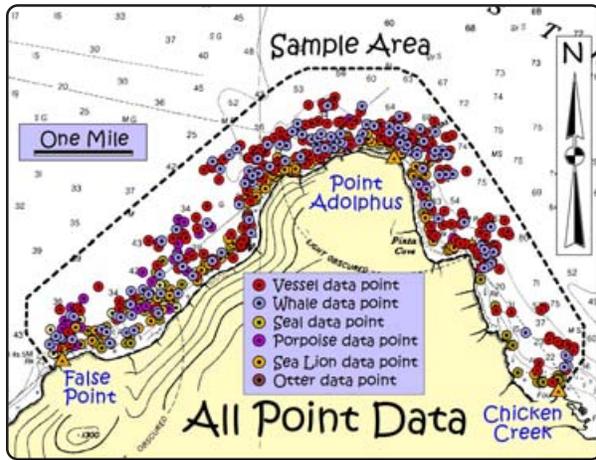


Figure 4 ~ All mobile survey point data

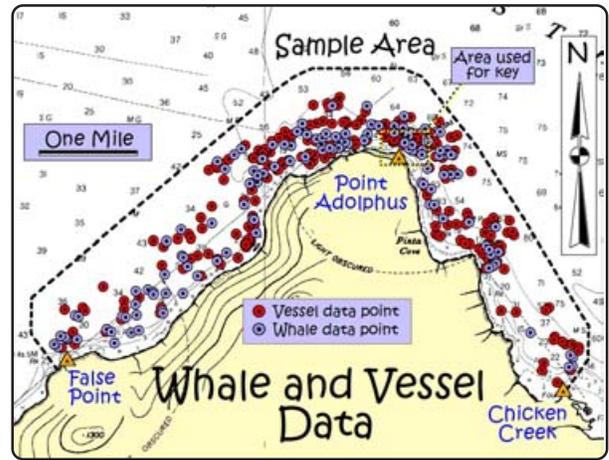


Figure 5 ~ Whale and vessel point data only

to simplify things and lead us to a meaningful comparison I would next run a query and ask Arcview to show me only the points (buoy's) where humpback whales and non-transient vessel traffic were recorded (figure 5).

Now imagine that you are floating in amongst the whale and vessel marker buoys with a 500 foot pole. If you were to tie up to one of the buoys and reach out with your pole, every like buoy you could touch is considered an "in" buoy. The more in buoys you can gather, the more popular that area is for the species you are counting. We call this the 500 foot pole rule. It is a simplified version of what we ask Spatial Analyst to do for us in processing the mobile survey data. In effect, we ask the program to float in every available point (or tied to every buoy) within the study area and systematically search within a 500 foot radius for like symbols; the more like symbols that are found, the higher the density calculation (or use level) for the point type.

The next useful-user friendly function that Spatial Analyst allows us to do is to represent these density calculations with color shading. To take a closer look at how this shading is done, figure 6 zooms in on the "key" area indicated in figure 5. I left the points on the map so that you could see how areas with higher densities (use levels) are shaded with bright colors and areas with lower point densities (use levels) are darker. With this map we begin to see a spectrum of habitat use level *intensity* for humpback whales encountered on mobile surveys.

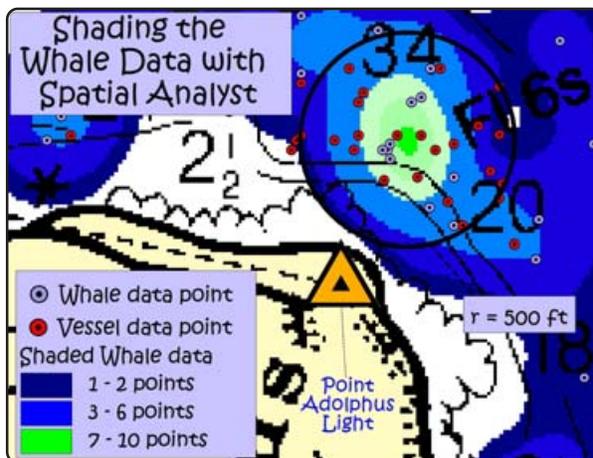


Figure 6 ~ Shading the whale point data

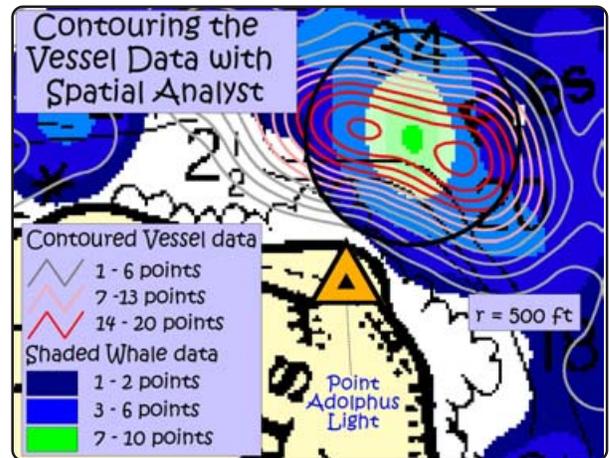


Figure 7 ~ Contouring the vessel point data

In order to clearly compare two sets of point data, Spatial Analyst provides us with another conversion option. Note the vessel points in figure 6. Although most audiences can get a sense for which areas are high use and which areas are low use, to clarify the overall pattern and make an immediate comparison with the whale data we can employ another iteration. Much like we did with the whale point data, we ask Spatial Analyst to calculate point density for vessel encounters. However, this time when we select our output format we choose to represent the spectrum of use level with contours instead of shading (figure 7).

Contours derive directly from the same analytical parameters as the shading, but are helpful in comparison because they can overlay shaded data without obscuring it. Now if the audience can relate to the concept of colored shading for one data set, and can read contours for another, they are able to make a big picture comparison of the patterns of use (figure 8).

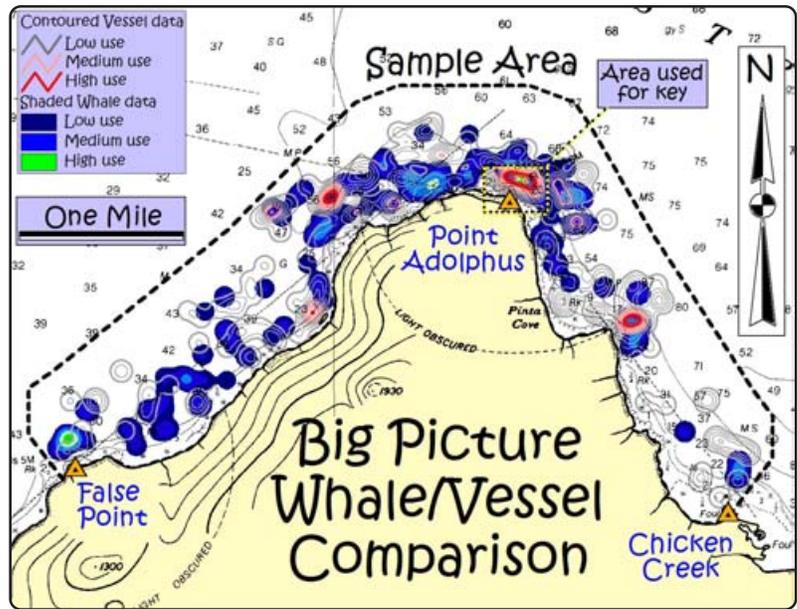


Figure 8 ~ Big picture comparison of humpback and whale and vessel habitat use level. "Hot spots" for each species (and their areas of overlap) are clear.

### A TIME FOR ACTION ~ THE NEXT STEPS IN COOPERATIVE STEWARDSHIP



The SEAWEAD logo ~ As you may guess from the image above, we are working with terrestrial wildlife in southeast Alaska too. A similar study, "Brown Bears of Southeast Alaska (Habitat Use and Human Interaction)" may be of interest to the reader. More information is available on the website at [www.seawead.org](http://www.seawead.org).

In documenting and presenting these areas of overlap to a variety of local communities, conservation groups, management agencies and businesses we have been engaged in raising awareness of the need for cooperative stewardship. Many important questions are outstanding, including some that we can confidently investigate with our current data set (like use level and its relationship to bathymetry or tidal motion), and some that we have very little information on (like the acoustical effect of vessels on humpback whale behavior). Our first steps have been in creating a forum and opening the doors for cooperative stewardship. If we are going to seriously engage in long term planning we must enter this door with wide eyes and mutual respect.

We are currently planning a Point Adolphus symposium for the spring. Highlights

of the event will include a multi-media presentation of information we have collected thus far, a group excursion to Point Adolphus, and a round table discussion of important issues.