

- ECONOMIC DATA REPORT -

For the

NOAA Fisheries Spinner Dolphin - Human Interaction EIS



Prepared for the

U.S. Department of Commerce
NOAA Fisheries
Pacific Islands Regional Office
Protected Resources Division

by

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August 22, 2007

Ms. Michelle McGregor, Economist
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Silver Spring, Maryland

Dear Ms. McGregor:

In accordance with the terms of our contract with NOAA Fisheries' Pacific Islands Regional Office (PIR), we are submitting this finalized document titled "Economic Data Report for NOAA Fisheries Spinner Dolphin - Human Interaction EIS." The report describes economic dimensions of commercial tour boat operations which facilitate interaction with spinner dolphins around the Main Hawaiian Islands (MHI). The archival and field research components of the project were initiated in October 2006 and completed during late February 2007.

We have revised the draft version of the report per your editorial and substantive comments and those of PIR staff. Please note that we provide additional discussion of the following: (a) seasonality as regards tourism and commercial tour boat operations in the MHI, (b) interactions between dolphin-oriented commercial tour operations and local fishing operations, with reference to literature that may be useful for assessing the potential effects of new regulations on small boat fishing operations active in the bays of interest, and (c) the larger context of general commercial tour boat operations and associated economic factors in the MHI. As regards the latter, please note that Hawaii's commercial use permit data do not include figures for specific types of operations. We therefore provide total figures only.

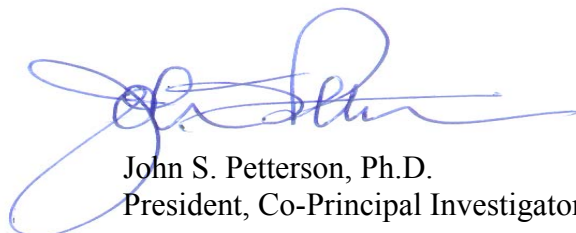
It is our hope that the following report and data will prove highly useful to your agency in its efforts to describe the affected environment and assess the prospective regulatory changes. Should you have any questions regarding the final report or any other aspect of the project, please feel free to contact me at (910) 200-9650.

Mahalo nui loa for the opportunity to be involved in this important project. We look forward to serving the needs of NOAA's Protected Resources Division in years to come.

Sincerely yours,



Edward W. Glazier, Ph.D.
Principal Investigator



John S. Petterson, Ph.D.
President, Co-Principal Investigator

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Economic Data Report for NOAA Fisheries Spinner Dolphin - Human Interaction EIS

1.0 Introduction

The following pages summarize data collected for the Protected Resources Division of NOAA Fisheries' Pacific Islands Regional Office (PIR) in support of its efforts to analyze the potential economic effects of regulating human interactions with wild spinner dolphins (nai'a or *Stenella longirostris*) in the Main Hawaiian Islands (MHI). Collection and compilation of economic data have been undertaken as one component of a comprehensive Environmental Impact Statement (EIS) that is assessing the nature and effects of interactions between spinner dolphins and humans, and the biophysical, socioeconomic, and socio-cultural implications of regulating those interactions (see Federal Register Vol. 71, No. 190, October 2006). In keeping with NOAA Fisheries' mandates under the National Environmental Policy Act (NEPA), the EIS will be used to facilitate regulatory decisions that achieve balance between the long-term well-being of a protected marine resource and the needs and interests of adjacent human populations.

The data that are the primary focus of this report regard economic aspects of spinner dolphin tour operations presently undertaken in suitable locations in the MHI. Because prospective regulations may directly affect operations which intentionally enable interaction with dolphins, special focus is applied to pertinent economic dimensions of those businesses.

Fieldwork and archival research for this project were undertaken between October 2006 and February 2007. The field component involved a period of extensive interviewing and observational research with tour guide owner-operators throughout the MHI. The work was undertaken and completed by Impact Assessment, Inc. (IAI), a firm specializing in social and economic research in Hawai'i, and along the coastal and offshore zones of the U.S. and abroad.

1.1 Project Goals and Objectives

The goal of this project was to provide the Protected Resources Division of NOAA Fisheries PIR with select forms of information its staff required to prepare an EIS which "addresses the [potential] need for regulations to protect wild spinner dolphins from harassment by swimmers, kayakers, commercial tour boat operators, and others." The data and this report will also be used for attaining compliance with the Regulatory Flexibility Act (RFA), including the Initial Regulatory Flexibility Analysis and Final Regulatory Flexibility Analysis.

As stipulated in the project SOW and as discussed with NOAA staff administering the project, a series of interrelated objectives were designed and achieved to satisfy the goals of the project. These were as follow:

- Identify, review, and summarize materials descriptive of biophysical and human dimensions of human-spinner dolphin interactions in the MHI;
- Use archival research and snowball sampling methods to identify spinner dolphin and related marine tourism businesses currently active in the MHI, and conduct fieldwork to assess the nature of interactions between the various operations and *Stenella longirostris*;
- Contact and interview owner-operators and/or managers of commercial marine tour businesses throughout the MHI, focusing especially on identifying and interviewing:
 - (a) “swim with wild dolphin” commercial tour owner-operators;
 - (b) commercial tour boat owner-operators known to intentionally engage in activities that involve direct or indirect interaction with spinner dolphins;
 - (c) owner-operators of spiritual retreats who specialize in guiding clients to interact with spinner dolphins for the purpose of inter-species communication and/or enhancement of the client’s “holistic well-being;”
- Contact and interview a sub-sample of kayak tour owner-operators known to purposely engage in activities that involve direct or indirect interaction with spinner dolphins; and
- For each island where dolphin tour-oriented operations occur, and for each type of business in (a), (b), and (c) above, gather the following information:
 - (a) number of each type of business that will be affected by prospective regulations on human-dolphin interactions;
 - (b) valid categorization of the businesses as “small” or “large” as defined in 13CFR121.201;
 - (c) number of employees and wages paid;
 - (d) annual gross receipts;
 - (e) number of customers served annually as “residents” or “visitors”;
 - (f) number of each type of business owned by minorities, with focused discussion of Native Hawaiian-owned businesses;
- Prepare a detailed and readily comprehensible narrative report and visual display of quantitative information including descriptive statistics.

1.2 Research Approach and Methodology

Rigorous social science research methods were employed to satisfy the project goals and objectives described above. These involved: (a) archival research at regional repositories and via the internet to aid in identifying the operations of interest and to develop background understanding and description of such operations and related issues and settings, (b) direct conversational interaction with a wide range of knowledgeable informants, including public officials and dolphin tour owner-operators and other staff, and (c) participant and unobtrusive observation of activities directly or indirectly associated with spinner dolphin tour operations and related marine tourism operations and activities.

Field Methods. As prescribed in the project SOW, the desired information was to be collected through a series of in-depth interviews with knowledgeable public officials and persons directly associated with spinner dolphin tours. Because the interviews involved relatively straightforward subject matter, the information was elicited via loosely-structured protocols designed to guide the interviewers and interviewees through a basic line of inquiry about economic aspects of the tour operations. While the approach involved open-ended and relatively unstructured discussions, it nevertheless enabled systematic collection of the requested information. IAI has used this approach successfully in a number of similar studies in Hawai'i and elsewhere. Readers interested in further discussion of these methods are referred to Singleton and Straits (199:242) and Bernard (1998).

Fieldwork also involved unobtrusive and participant observation of commercial tour operations, and visits to sites where some of the operations in question are based or conducted. On the Big Island these included: Honokōhau Harbor, Kealahou Bay, Kailua Bay, Keauhou Bay, and areas along the Puna District coastline. On Maui these included Lahaina and Mā'alaea Bay. On O'ahu, field researchers worked at Wai'anae and adjacent coastlines. Finally, on Kaua'i, the team worked at Hanalei, Port Allen, Kīkī a Ola, and Kukui'ula. The sites were chosen based on initial interviews with public officials knowledgeable of tour departure sites. Additional sites were identified during the course of the research, but not all such places were visited since it was more likely to reach and interact with owners and operators in more populated areas. For instance, although it was determined that certain tours visit remote La Pérouse Bay and bays around Lāna'i, the owners of those firms were contacted at their base of operations in Lahaina.

Addressing Challenges in the Field. As is typical of social research associated with potential regulatory change, one fieldwork-related challenge for the current study was effective communication of the nature of the research and development of rapport with owner-operators of the businesses in question. In most cases, once the nature of the work was communicated, there was much willingness to participate. Members of the field team made clear that the intent of the study was to provide NOAA with the best possible information about the businesses so as to enable valid and objective assessment of the issues and to ensure balanced decision-making about potential regulations. Team members were also clear in stating that the identities of all participants would be held in confidentiality and that data resulting from the research would be aggregated so that information about any one business could not be discerned from a larger group of businesses.

Response Issues. Again, most business owners contacted during the course of the study were willing to contribute and did so without reservation. Some operators were repeatedly not available given numerous responsibilities or because they were on travel leave. As such, despite our patient efforts, ten commercial tour boat owners contacted during the study did not respond to the invitation to participate. Two spiritual retreat owners did not respond, and one could not be located; it was determined that the latter is only periodically available in the islands. A few of the participating kayak business owners expressed concern about competition with other firms and were reluctant to release specific information about revenue, wages, and other factors. This was also the case for some of the participating boat-based commercial tour business operators. Final sample sizes are therefore provided for each of the variables discussed in this report.

1.3 Project Focus and a Working Typology of Tour Operations

This project was undertaken to meet the specified objectives, with directed focus on enumerating and describing relevant aspects of firms that promote and enable interactions with spinner dolphins in various settings around the MHI. An important finding of the research is that there are basic differences between: (1) commercial tour boat businesses that offer either “swim with dolphin” experiences or “spiritual” experiences, and (2) commercial tour boat businesses that do not purposely enable such experiences but which may nevertheless enable interaction with dolphins unintentionally and indirectly. There are also differences between “swim with dolphin” tours and “spiritual” experience tours, as described further along in this report.

Commercial Boat Tour Operations and Dolphin Interactions: Differences in Intent. The primary difference between operations is one of intent. The advertised intention of owners and operators of the dolphin-oriented swim tours is to bring clientele into close proximity with spinner dolphins. This is, of course, true of the spiritual retreat operations as well. Passengers are transported by boat to areas in which dolphins are known to be present during the daytime hours. They are then guided to or near the dolphins which tend to rest during the day in suitable areas of certain bays around the islands (see Norris 1991). Face masks, fins, and snorkels enhance the viewing experience. Some tours involve guided physical contact with the creatures.

The intention of those operating the more generalized commercial boat tours is rather to offer clients a range of ocean activities. These include sightseeing, snorkeling, viewing various forms of sea life from a vantage point in and/or above the water, dinner cruising, and just generally spending time on the ocean. There is no advertisement of direct interaction with dolphins. The passengers in this case may *see* dolphins and in some cases the vessel may come into close proximity with them, but the experience tends to be indirect and unintentional. There are two complicating factors here. One is the tendency of some dolphins to move towards or with ocean-going vessels, in which case interaction with humans results in part due to the behavior of the cetacean. The other is the behavior of captains who may on occasion react to clients desiring to move closer to a pod when it is encountered by chance.

The results of this study make clear that the vast majority of commercial tour boat operations in the MHI do not involve intentional interaction with spinner dolphins; relatively few business operators report intentional encounters in close quarters. Indeed, many business owners

contacted during the project described a more general set of activities that only occasionally lead to unintended and largely indirect interaction.¹ Because some businesses rely on direct encounters with dolphins and others do not, we use manner of interaction as the principal criteria for categorizing the businesses. That is, we focus on identifying and characterizing operations intentionally providing direct interactive experiences with dolphins, but we also address operations involving only indirect and unintentional encounters.² Thus, analysts will have data in hand with which to examine potentially differential effects of any new regulations on dolphin-specific tours and tours with a more general focus.

Dolphin-Oriented Spiritual Retreat Opportunities. A small number of businesses on the Big Island and one business on Maui provide experiences for persons wishing to interact with spinner dolphins to enhance their physical, mental, and/or spiritual well-being. Invariably, the intent of these operations is close interaction between humans and dolphins, and in some cases, physical and/or reported metaphysical contact. This is a small and unique category of tour operations.

Kayak Operations. Work conducted during initial phases of this study made clear that numerous kayak tour businesses around the MHI are actively involved in eco-tourism activities. Interviews and background research also made clear that the typical intention of such firms is to provide clients with a variety of recreational and sightseeing experiences. The research team could identify only one operator advertising direct-intentional interactions with dolphins.³

Again, as is the case for the majority of commercial tour boat businesses, human-dolphin interactions may occur unintentionally since some kayak tours are conducted in or near areas where dolphins are known to be present and dolphins occasionally exhibit what may be interpreted as curiosity (Norris 1994:56) and swim near kayakers. Kayak operations are also unique in that some involve tour guides and some do not. Although most kayak business owners and others interviewed during this study claim to discourage kayak renters from engaging spinner dolphins, direct encounters may indeed occur in the absence of, or despite such guidance.

Initial findings indicated that kayak tour operators tended to provide clients with a variety of experiences that most typically did not include direct interaction with dolphins. It was nevertheless decided that such businesses should be included in our sample since operators could provide insight into possible interaction scenarios and other relevant information. Given basic differences between kayak tours and boat-based tours, we describe these businesses via a distinct category.

¹ While we have no reason to doubt the assertions of the participants, the actual truth value of all such claims cannot be empirically verified in the absence of an extended period of participant observation research.

² Although all human-dolphin interactions may be of interest to regulators, it is difficult to determine the extent to which the mere possibility of encountering dolphins is economically significant for firms that do not advertise or intentionally provide interactive experiences with the creatures. In the absence of direct observation, it is also difficult to confidently determine how often and in what manner such interactions occur.

³ Again, an extended period of participant observation research with kayak operators around the MHI would be required to verify the extent to which dolphins are actually avoided or engaged by kayakers.

1.4 Identifying the Universe of Relevant Businesses and a Sample thereof

An initial phase of this study involved determination of a valid sampling frame - the universe of businesses potentially enabling tourists and kama'āina (long-time residents) to interact with spinner dolphins in the MHI. This was accomplished by reviewing archival materials and asking business owners and operators, harbormasters, and other knowledgeable persons to identify tours that typically involve dolphin encounters. The results of this effort are provided in Table 1-1 and Figure 1-1 below. Note that: (a) because it was not known at the outset which operations actually involved intentional interactions with dolphins, we term the sampling frame “tour businesses *reportedly* involving dolphin interactions,” and (b) the firms enumerated in Tables 1-1 and 1-3, and Figures 1-1 and 1-2 below are a subset of the larger fleet of Hawai'i-based commercial boat tour businesses depicted in Table 1-2 below, recently enumerated by Markrich (2004). Although any of the vessels reported in Table 1-2 may periodically encounter spinner dolphins, our primary mission was to identify and characterize firms focused on such encounters.

Table 1-1 Sampling Frame: Tour Businesses Reportedly Involving Dolphin Interactions, by Island in 2006

Type of Business	Island				
	Hawai'i	Maui	O'ahu	Kaua'i	Total
Commercial Tour Boat	15	29	8	11	63
Spiritual Retreat	5	1	0	0	6
Kayak	10	8	9	3	30
Total by Island	30	38	17	14	99
TOTAL	99				

Table 1-2 All Permitted Commercial Tour Boat Operations in the MHI, by County: 2003

County	Number of Permitted Commercial Tour Boats
Hawai'i	100
Maui	117
O'ahu	196
Kaua'i	59
TOTAL	472

Source: Figures derive from commercial use permit programs administered by the State's Division of Ocean and Boating Recreation, and Harbors Division (see Markrich 2004); Permits are general use permits –specific uses are not indicated in the data.

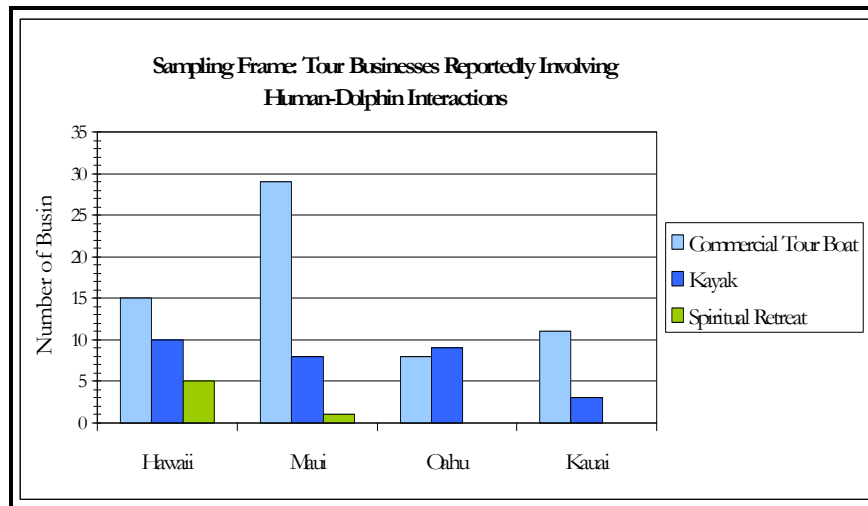


Figure 1-1 Sampling Frame

Using the sampling frame as point of departure, the research team set out to contact as many business owners or operators as possible in order to determine the nature of typical interactions between their patrons and spinner dolphins. In some cases, the responding owners or operators asserted that such interactions did not occur. In other cases, our inquiries went unanswered or it was determined that the business in question was no longer in operation.

When owners or operators reported that their operations did typically involve some form of interaction with spinner dolphins, a time and date for an interview was determined and ultimately conducted. This procedure resulted in interviews with owners or operators of a total of 53 businesses in the MHI. Some of the respondents were clearly highly knowledgeable of pertinent factors and issues and were consulted more than once. The outcome of the sampling process is depicted in Table 1-3 and Figure 1-2 below.

Table 1-3 Report on Data Collection Effort: Number and Location of Businesses Interviewed for Study

Type of Business	Island				
	Hawai'i	Maui	O'ahu	Kaua'i	Total
Commercial Tour Boat	9	7	8	6**	30
Spiritual Retreat	3†	0*	0	0	3
Kayak	7	4	4	5	20
Total by Island	19	11	12	11	53
TOTAL	53				

* The sole spinner dolphin-oriented spiritual retreat operator on Maui did not return our inquiry. **Discussion with owners of businesses operating from Hanalei was limited since this study was conducted in winter when seasonally high swells preclude tour operations by relatively small Hanalei-based vessels. † One business in this category is new and operates only periodically; its owner was not on-island at the time of this study. The second did not wish to participate.

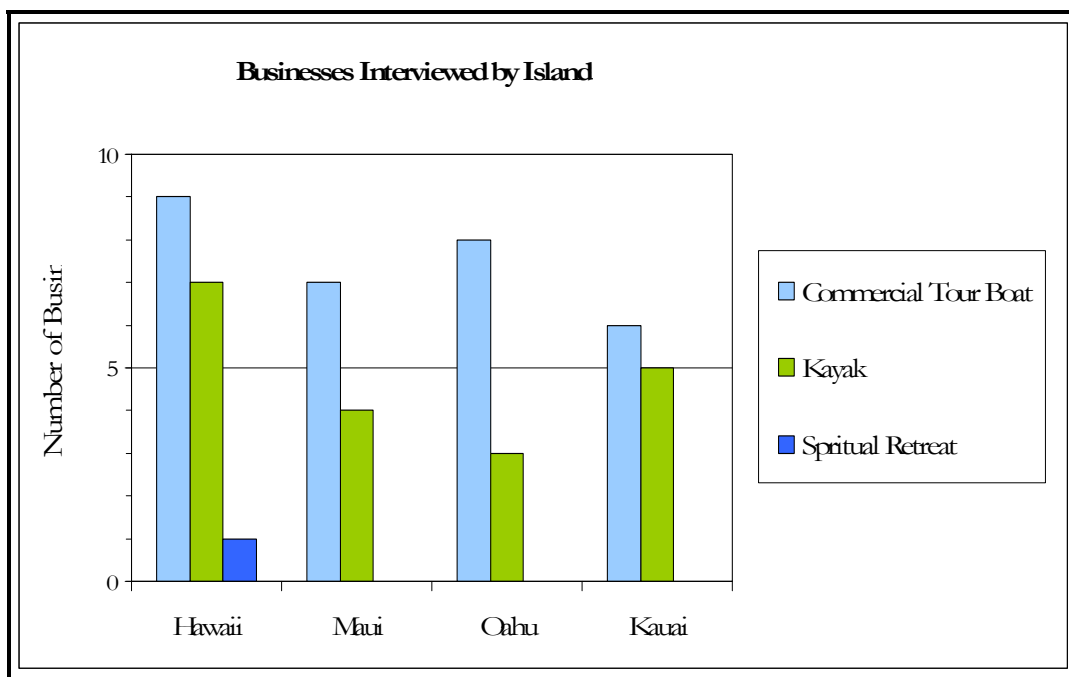


Figure 1-2 Businesses Interviewed by Island

1.5 Overarching Factors and Findings of Relevance to Environmental Assessment

Under stipulations in NEPA, Executive Order 12898,⁴ and other legislation, various information is needed for effective assessment of the prospective human-environmental effects of federal regulatory actions. In this case, assessment-related information needs relate to measures that could potentially be established to regulate human interaction with spinner dolphins in the MHI. This includes information about the size of dolphin tour businesses and potential ownership by persons in minority and low income populations, among other factors.

Formal Classification of Size of Business for the RFA. All but one of the businesses for which interviews were conducted during the course of this study can be classified as small businesses under the conditions of 13CFR121.201 (see Table 1-4 below). This is the federal rule that defines size eligibility standards recognized by the Small Business Administration for various types of business enterprises.⁵ In this case, the principal criterion for small business status is less than \$6 million in annual receipts. A large tour boat operation based on Maui reportedly grossed over \$10 million in 2006 and cannot therefore be classified as a small business.

Table 1-4 Size Classification of Commercial Tour Businesses Interviewed, by Island in 2006

Size of Business	Island			
	Hawai'i	Maui	O'ahu	Kaua'i
Small	19	10	12	11
Large	0	1	0	0

Ownership and Employment for Persons in Minority and Low-Income Groups. Hawai'i is unparalleled in terms of the genetic and cultural complexity of its resident populations. As such, identification of distinct and officially-defined minority groups is problematic. However, our interview process revealed that four of the 53 businesses of interest (7.5 percent) are owned by Native Hawaiians. The location of these businesses and the reported nature of their interactions with spinner dolphins are depicted in Table 1-4 below.

Table 1-5 Minority-Owned Commercial Tour Operations by Type of Interaction with Dolphins per Island *

Minority	Island							
	Hawai'i		Maui		O'ahu		Kaua'i	
	Direct	Indirect	Direct	Indirect	Direct	Indirect	Direct	Indirect
Native Hawaiian	0	0	0	0	1	1	0	2
Other	0	0	0	0	0	0	0	0
Total	0		0		2		2	
% of TOTAL	-		-		7.5			

* Native Hawaiian status as reported by owners or operators.

⁴ Executive Order 12898 states that to the extent practicable “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.”

⁵ We use Standard Industrial Classification (SIC) code 487219 (Scenic and Sightseeing Transportation, Water) for the purpose of determining the size of the businesses in question.

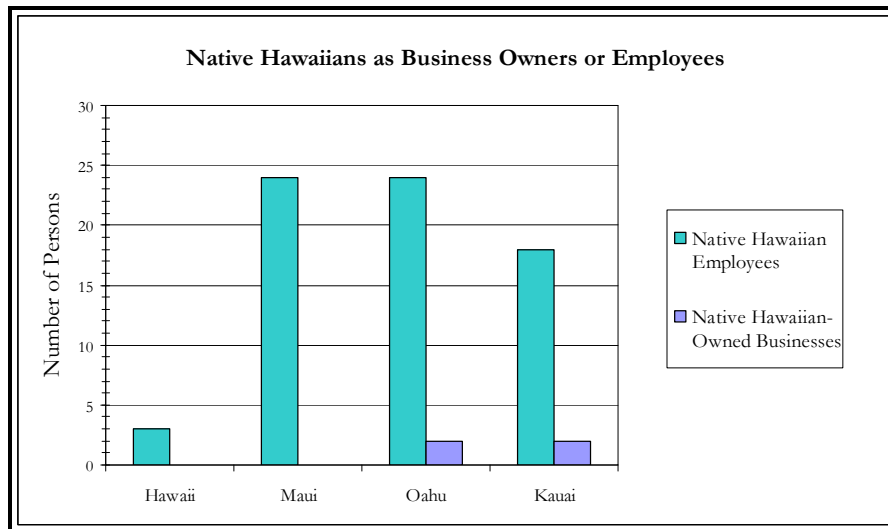


Figure 1-3 Native Hawaiian Employees

It was also determined that a significant number of Native Hawaiians are employed in the commercial tour operations of interest. The distribution of these persons is depicted by island in Figure 1-3 above, and by island and type of interaction above and Table 1-5 below.

Table 1-6 Total Native Hawaiian Employees Enumerated, by Business and Island: 2006

Type of Business	Native Hawaiian Employees				Total
	Hawai'i	Maui	O'ahu	Kaua'i	
Operations Reporting Direct Interaction w/Dolphins	0 (n=3)*	n/a**	8 (n=4)	n/a	8
Operations Reporting Indirect Interaction w/Dolphins	0 (n=5)	24 (n=6)	12 (n=3)	18 (n=4)	54
Spiritual Retreat Businesses	0 (n=3)	n/a	n/a	n/a	0
Kayak Businesses	3 (n=3)	†	†	†	3
Total of Native Hawaiian Employees Enumerated	3	24	20	18	65
Total of All Employees Enumerated	83	153	176	119	531
% Native Hawaiians w/Direct Interaction Firms	1.5 %				
% Native Hawaiians w/Indirect Interaction Firms	10.7 %				
% Native Hawaiian Employees All	12.2 %				

* In this report, "n" refers to the number of businesses reporting on the variable at hand; the n of N. ** "n/a" is used here to indicate "not applicable." In this case non-applicability refers to the fact that there are no spiritual retreat businesses on O'ahu or Kaua'i. †These data were not collected from kayak business owners on these islands, and the spiritual retreat owner on Maui did not respond to our inquiries.

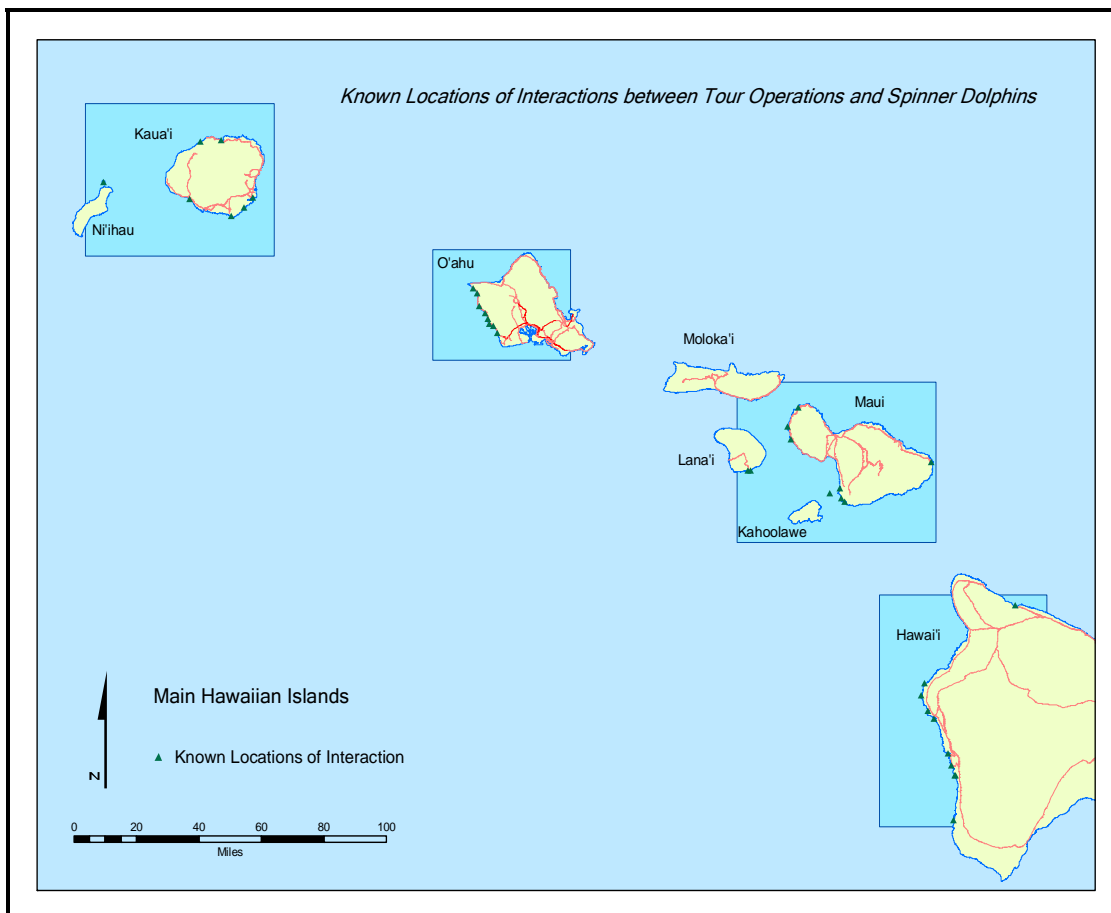
1.6 Organization and Limitations of the Data

Following this introductory section, we begin to describe economic dimensions of the various types of commercial tour operations that involve interaction with spinner dolphins in the MHI. The descriptive material is organized by island, and it is focused on: (a) documentation of the settings where tour-based human-spinner dolphin interactions occur, and (b) relevant attributes of the types of businesses delineated above.

As per the SOW, the reporting phase of this project was intended to be primarily descriptive rather than analytical in nature. We do not, therefore, extrapolate from the data that were collected, nor do we estimate values for the larger universe of tour businesses active in the MHI. Unless otherwise noted, description is focused on attributes of the businesses reported by the owners or operators during the past year - in this case, 2006. Discussion of long-term trends was not undertaken with the owners or operators; recall bias was thereby minimized. We do provide some indication of business trends in the concluding discussion of the report.

Each of the subsequent sections is organized around the descriptive elements outlined in the project SOW. We provide additional data to further understanding of cost and revenue factors pertinent to business operations and assessment of the potential effects of regulatory options.

Section Two provides information about tour businesses operating on Hawai'i Island, also known as the Big Island. Section Three describes relevant businesses and settings on Maui. Section Four is descriptive of businesses and settings on O'ahu. Section Five addresses the same for Kaua'i. Finally, Section Six summarizes key findings from the previous sections, and provides brief concluding discussion. References follow.



Map 1-1 Known Locations of Interactions between Tour Operation and Dolphins in the MHI

2.0 Economic and Operational Aspects of Commercial Tours Active around Hawai'i Island

This section describes relevant aspects of commercial tour businesses based on the Big Island. We begin with brief discussion of the physical settings where interactions between commercial tour boat operations and spinner dolphins are known to occur. This is followed by description of the areas from which tour operations depart and a basic overview of the operations. Finally, we present concise description of the results of our fieldwork in the region.

2.1 Relevant Ocean Tourism Activities and their Locations on Hawai'i Island

Hawai'i Island is the southernmost of the Hawaiian Islands, and the southernmost point in the United States. The island is roughly 30 miles southeast of Maui, across the 'Alenuihāhā Channel. The Big Island is the largest of the eight main Hawaiian Islands and the largest island in the United States. It encompasses 4,028 square miles of rugged volcanic terrain.

The Kona Coast extends for some 70 miles along the west coast of the Big Island. The region is of particular interest to tourists, given its dry climate, numerous resorts, and a range of opportunities for ocean-oriented sightseeing and recreation. Kailua-Kona (Kailua) is the largest town in the area, with a year 2000 population of 9,870 persons. Most visitors land at the Kailua Keāhole-Kona International Airport. Many find lodging in the Kailua area and make daily sightseeing forays to points of interest north and south. Markrich (2004:17) estimates that 313,924 persons took tour boat trips around the Big Island in 2003, the fewest of all the islands.

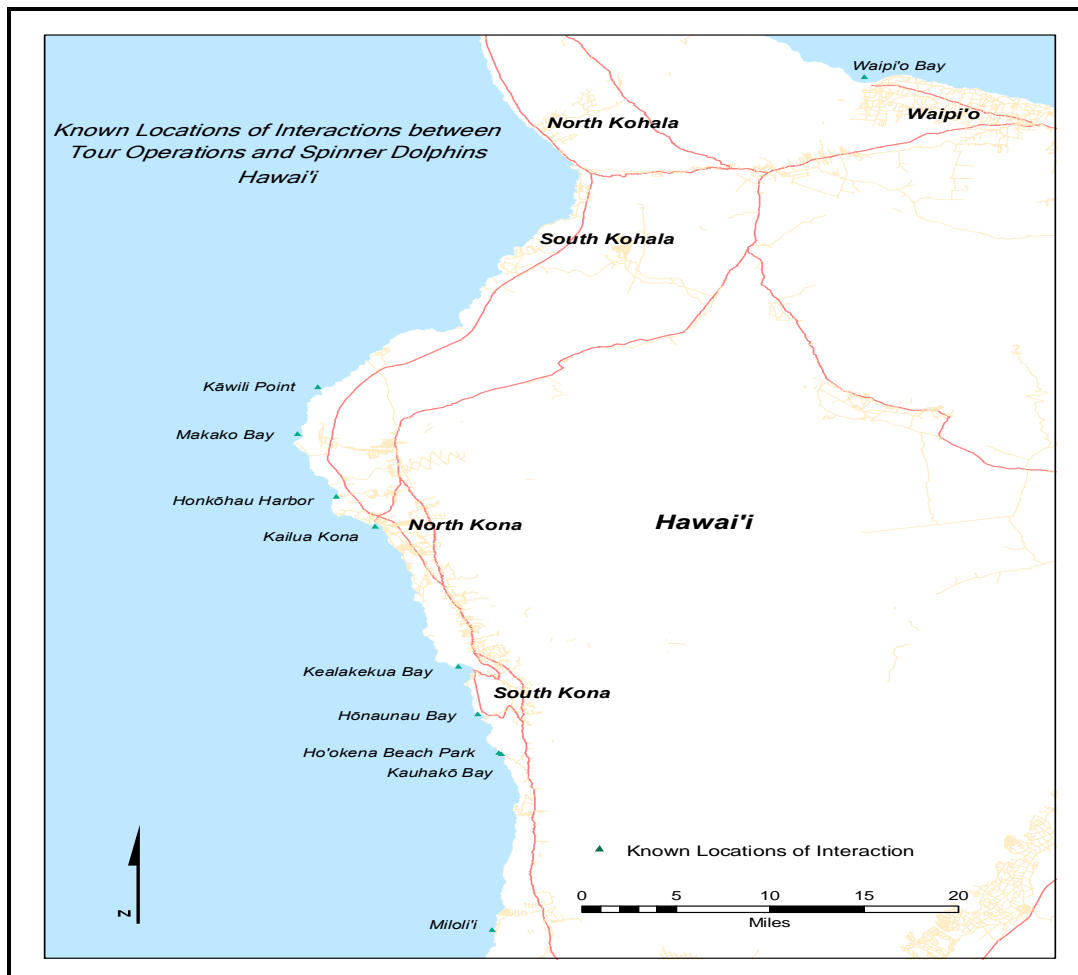
Honokōhau Harbor is located just north of Kailua-Kona. This is the largest harbor facility in the region. A variety of charter fishing and ocean tour businesses are based here, as are several spinner dolphin tour operations. The latter tend to depart for bays to the south where spinner dolphins are often present during daylight hours. Readers are referred to Norris (1991) for extensive discussion of spinner dolphins, dolphin research, and a wide range of issues of relevance to human interaction with dolphins along this stretch of coastline.

Areas of Known Interaction. Commercial operations involving dolphin encounters occur in numerous locations along the leeward side of the Big Island.⁶ Limited operations sometimes occur at remote Waipi'o Bay. As depicted in Map 2-1 below, guided and incidental interactions between humans and spinner dolphins are known to occur at the following locations:

- 1) Kāwili Point, about 11 miles north of Kailua-Kona;
- 2) Makako Bay, 9 miles north of Kailua and adjacent to the airport at Keāhole;
- 3) Kailua Bay, a well-used area adjacent to Kailua-Kona;

⁶ The term "leeward" refers primarily to the west-facing sides of the islands. These are sheltered from wind waves generated by prevailing east and northeasterly trade winds. As such, they present conditions that apparently are favorable for resting dolphins and for humans who prefer ocean sightseeing activities in relatively tranquil waters.

- 4) Kealahou Bay, an highly significant cultural site for Native Hawaiians, some 5 miles south of the town of Captain Cook and about 15 miles south of Kailua;
- 5) Hōnaunau Bay, a particularly important site for Native Hawaiians, 11 miles south of Captain Cook and 21 miles south of Kailua;
- 6) Ho'okena Beach Park, adjacent to a fishing-oriented predominantly Native Hawaiian village, roughly 12 miles south of Captain Cook and 22 miles south of Kailua at the north end of Kauhakō Bay;
- 7) Miloli'i Bay, also adjacent to a fishing-oriented predominately Native Hawaiian village, 37 miles south of Kailua;
- 8) Waipi'o Bay, adjacent to a remote valley located 22 miles north of Waimea on the northeast-facing side of the island;
- 9) Waikoloa Beach, a resort area along the northwest coast of the Big Island, about 20 miles west of Waimea (not depicted).



Map 2-1 Known Locations of Interactions between Tour Operations and Dolphins on Hawai'i

Many of these sites are remote, and rugged shorelines can make for challenging beach access. Operators of the larger tour businesses therefore incur expenses transporting clients to the viewing areas by boat. Fuel and vehicle maintenance costs are also involved in transportation of clients to and from hotels and other locations to points of departure at the harbors.

Kealakekua Bay is perhaps the most popular dolphin viewing site in the MHI. Kealakekua means “pathway of the gods” in Hawaiian. This remains a place of great cultural significance to the descendants of the original inhabitants of the islands. The entire area and its facilities are used extensively by Native Hawaiians, including Native Hawaiian fishermen. Most of the land surrounding the bay is part of the Kealakekua Bay State Historical Park. The location is also frequented by ocean-going tour operators, although a boat launch area is used by kayakers.

A sandy beach at the predominately Native Hawaiian village of Ho'okena affords relatively easy access to the ocean. Intentional interactions with dolphins via small vessel tour operations occur here on occasion. Traditional ōpelu and akule fishing activities have long been conducted above offshore ko'a (areas of mounded reef) in offshore areas adjacent to the village. Conflicting uses and value systems have been reported in previous years as increasing numbers of visitors seek to recreate or conduct commercial activities in ocean areas of great importance to long-time residents. This can also be said of Hōnaunau, Miloli'i, and Waipi'o, and many other areas.

Primary Points of Departure and Operational Tendencies. At least 11 tour boat companies are based at the Honokōhau small boat harbor. These provide opportunities for scuba diving, whale watching, snorkeling, and swim with dolphin experiences. A few of the vessels operating from the harbor are periodically leased by operators of dolphin-oriented spiritual retreat businesses. A large number of charter boat operations are also based at Honokōhau. Readers are referred, for purposes of comparative reference, to a study of charter fishing patron motivations and expenses around the MHI. The report includes relevant analyses for all of the main islands (see O'Malley and Glazier 2001).

Kailua Pier was being used in 2006 by a small number of commercial tour boat business owners. The pier is directly adjacent to Kailua town. The Keauhou boat harbor, located approximately 20 miles south of Kailua-Kona, was being used by three commercial boat tour operators contacted during the course of this study.

2.2 Economic Aspects of Relevant Businesses

Based on archival research and initial interviews with public officials and business owners on the Big Island, we were able to identify a total of ten operations known to engage in direct interactions with spinner dolphins. Approximately 17 businesses reported indirect interaction with the creatures. Field staff interviewed nine tour boat owner-operators in total, six of whom were involved in dolphin guiding activities. Three of the five Big Island-based spiritual retreat owner-operators were interviewed; one declined to participate and a second was not on-island at the time of this study. Seven kayak operators were identified and contacted. Businesses thus enumerated are presented in Table 2-1 below.

Table 2-1 Reported Nature of Interactions with Spinner Dolphins on Hawai'i Island in 2006

Type of Business	Number of Businesses Known to Interact with Dolphins on Big Island		
	Direct	Indirect	TOTAL
Commercial Tour Boat	6	~9*	~15
Spiritual Retreat	5	n/a	5
Kayak	unknown**	~7	~7
TOTAL	11	~16	~27

* Uncertainty is related to inadequate understanding of manner and extent of indirect interactions in remote locations along the Big Island; ** Lack of understanding relates to uncertain manner and extent of interactions between kayak renters who are free to travel and interact with dolphins without guidance or oversight.

Gross Revenue. As depicted in Table 2-2 below, operations involving indirect interaction with spinner dolphins on the Big Island generated significantly more revenue than did other operations. This is, in part, reflective of the fact that direct interactions are undertaken by businesses with somewhat less operating capacity than for the more generalized operations. Capacity-related factors are depicted in Table 2-3 below. The number of support vehicles used to transport clients from population centers to points of departure is provided as one indication of business capacity. Note that while tour owners or operators reporting indirect interaction with dolphins maintain fewer vessels on average, those vessels tend to be larger and capable of bearing more passengers than those facilitating direct interaction. The latter statement holds true for operations across the islands, as noted in subsequent sections of this report.

The amount of gross revenue generated by Big Island-based spiritual retreat businesses is minimal relative to that of the other operations. But it should be kept in mind that the retreat owners periodically sub-contract with local vessel captains and crew, and a small number of staff, in order to facilitate the retreat events. Thus, while there are operating costs involved, there are few significant fixed costs. Meanwhile, commercial tour owner-operators enabling direct interaction with dolphins must address various fixed costs in addition to costs associated with individual trips. Greater vessel capacity and flexibility in tour objectives may ultimately be advantageous to those operating generalized tour businesses.

Table 2-2 Estimated Gross Revenue by Type of Business: Hawai'i Island, 2006

Type of Business	Big Island				
	Total Gross Revenue (\$)	Mean Gross Revenue (\$)	Std. Dev. (\$)	Median Gross (\$)	Range (\$)
Tour Ops Reporting Direct Interaction	725,000 (n=6)	145,000	93.941 K	140,000	60 K – 290 K
Tour Ops Reporting Indirect Interaction	3,450,000 (n=3)	1,150,000	1.611 M	400,000	300 K - 3M
Spiritual Retreat Businesses	591,735 (n=3)	197,245	168.353 K	212,000	212 K – 357.735 K
Kayak Businesses	*	*	*		*

* None of our sample of kayak business owners on the Big Island was willing to release revenue information.

Table 2-3 Capacity of Boat Tours Involving Direct and Indirect Interaction with Dolphins: Big Island, 2006

Type of Business (Big Island)	Attributes Relevant to Business Capacity			
	Mean # Boats	Mean LOA (feet)	Mean Capacity (persons)	Mean # Vehicles
Tour Ops Reporting Direct Interaction (n=5)	2.25	28	17	0
Tour Ops Reporting Indirect Interaction (n=3)	1.0	34	53	4

Employees and Wages. Interview data regarding number of employees also indicate that tour operations involving intentional interaction with dolphins are relatively smaller than the more generalized operations (see Table 2-4 below). This is logical in that fewer crew members are required to operate the smaller vessels and to serve relatively fewer clientele. The number of persons assisting with the dolphin-oriented spiritual retreats reportedly varies, depending on the size of the scheduled retreat event. Larger events require larger vessels with multiple crew members and guides, but most retreats are of small to moderate scope and, as noted above, involve small groups of hired specialists. One such business owner reports periodic employment of an office staff of two persons.

Wages are comparable across businesses on the Big Island, with the exception of somewhat higher hourly wages for those periodically employed by the retreat owner-operators. As noted later in this report, wages earned by captains are typically higher than for other positions in the industry, and they tend to be highest for the generalized tour operations.

Table 2-4 Number of Employees and Hourly Wages by Type of Business on Hawai'i Island: 2006

Type of Business	Hawai'i		
	Total Employees in Sample	Mean Number Employees*	Mean Hourly Wages (\$)
Tour Ops Reporting Direct Interaction	13 (n=5)	2.6	16.30 (n=4)
Tour Ops Reporting Indirect Interaction	61 (n=5)	20	17.00 (n=3)
Spiritual Retreat Businesses	variable**	variable	22.00 (n=3)
Kayak Operations	9 (n=3)	3	17.60 (n=3)

* Mean of the sample is expressed as the average number of persons employed over the course of a given year.

** Spiritually-oriented dolphin businesses on the Big Island and Maui operate as expert guides who contract with vessel operators and other staff on a periodic or regular basis to aid in the conduct of their interactive sessions and retreats; the number of contract employees varies extensively based on the nature of the retreat or tour.

Customers Served Annually, and Patron Point of Origin. As reported by participating owners and operators, the generalized commercial tour boat operations were most popular for patrons on the Big Island (Table 2-5 below). Relatively few persons engaged in dolphin-oriented spiritual activities. The vast majority of patrons of all businesses were visitors from the U.S. Continent. Interestingly, a relatively high percentage of residents and visitors from Asian countries patronized swim with dolphin tours on the Big Island. Most persons engaging in the spiritual retreat opportunities were visiting from the mainland.

Table 2-5 Patronage by Type of Business: Hawai'i Island, 2006

Type of Business (Big Island)	Mean Number and Percent of Patron Origin					
	Total Patrons 2006	Mean # Patrons	% Local*	% Asia*	% Continent*	% Other*
Ops Reporting Direct Interaction	7,724 (n=5)	1,545	21	14	62	11
Ops Reporting Indirect Interaction	31,400 (n=3)	10,466	13	6	81	4
Spiritual Retreat Businesses	627 (n=3)**	-	5	9	77	11
Kayak Businesses	(n=2)	886	4	3.5	81	12

* Expressed as sample mean based on respondents' recollection of relative percentages of patrons' point of origin over the course of previous year. ** Range = 90 to 1,702

Variation in Trip Fees. Fees paid by patrons to undertake commercial boat tours on Hawai'i Island were highest for those involving intentional interaction with dolphins. But fees for engaging in dolphin-specific spiritual activities were highest of all, ranging from \$160 to \$260 per trip or distinct retreat experience. Ranges in fee amounts reflect variation in both time spent at sea and the nature of the experience(s) offered. Some of the more generalized boat tour operations can entail multiple recreational activities in multiple locations. Variation in fees for swim with dolphin tours tends to relate to the amount of time patrons are involved in the activity at sea.

Table 2-6 Mean Trip Fees by Type of Business: Hawai'i Island, 2006

Type of Business	Big Island Mean Trip Fees \$ *	
	Mean (\$)	Range (\$)
Tour Operations Reporting Direct Interaction w/Dolphins	128 (n=5)	90 – 175
Tour Operations Reporting Indirect Interaction w/Dolphins	108 (n=3)	95 – 130
Spiritual Retreat Businesses	200 (n=3) **	160-260
Kayak Businesses	235 (n=5)	50-460†

* Both mean and range incorporate variation across a variety of ocean experiences and time at sea. ** Retreat costs can encompass a range of holistic experiences; these vary by business as do fees. † The nature and duration of kayak adventure packages vary extensively within and across businesses, as do fees.



Remote Waipi'o Bay and Valley, Hawai'i Island

3.0 Economic and Operational Aspects of Commercial Tours Active around Maui

This section describes economic and operational aspects of commercial tour businesses based on Maui. We begin with brief discussion of the settings where human-dolphin interactions are known to occur, and description of operational tendencies and points of departure. This is followed by description of our fieldwork and results of that effort.

3.1 Relevant Ocean Tourism Activities and their Locations on Maui

Maui is located 30 miles northwest of the Big Island across the 'Alenuihāhā Channel, and 9 miles east of Moloka'i across the Pailolo Channel. The year 2000 population of Maui County was 128,094 persons (U.S. Census). The island is the second largest in the chain, encompassing 1,159.2 square miles of land area. The population density is roughly 111 persons per square mile. Much of the eastern and upland portions of the island are sparsely populated. Kahului, Kīhei, Wailuku, and Lahaina are the principal population centers on the island. Their respective year 2000 populations were 20,146; 16,749; 12,296; and 9,118 persons.

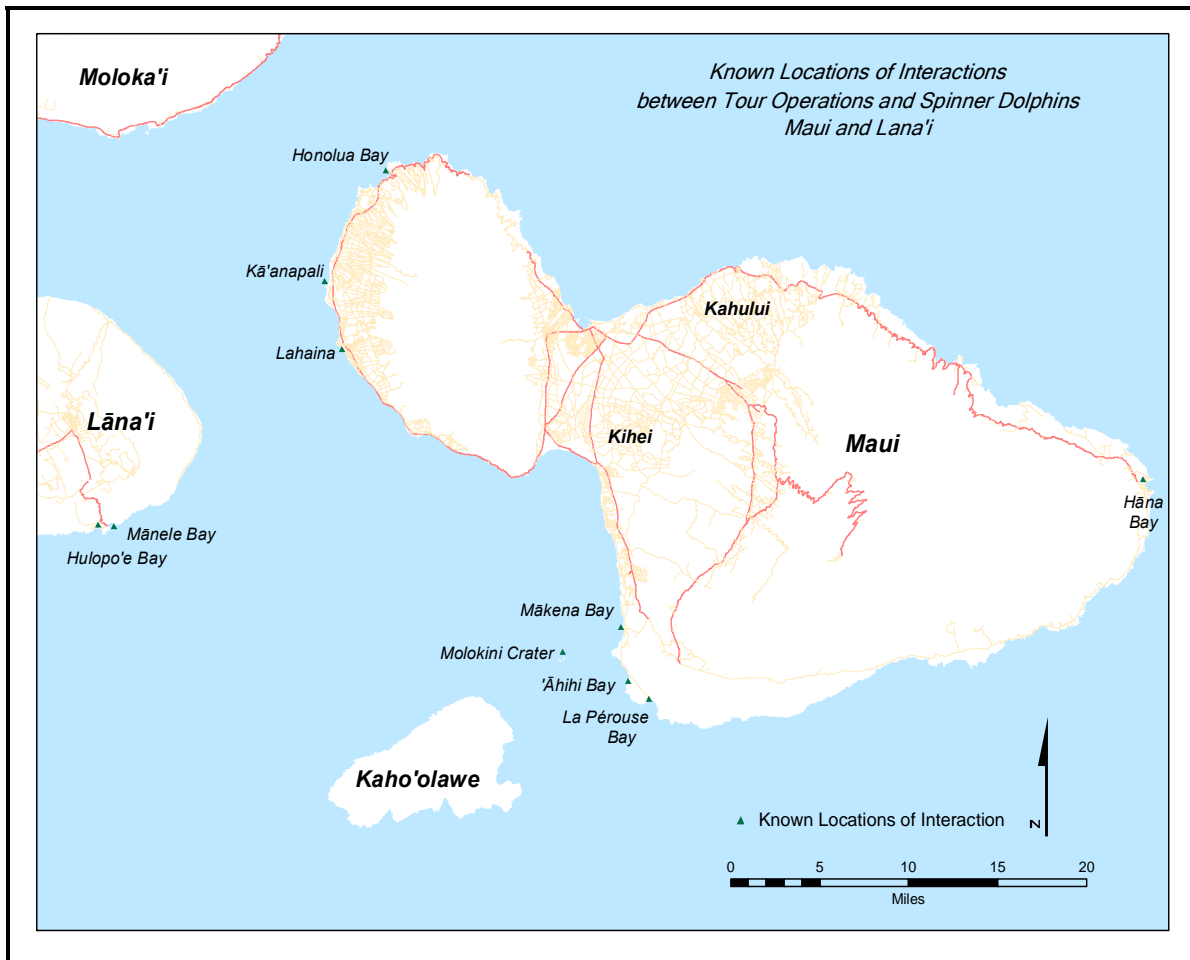
Numerous oceanfront resorts and tourist services are available along the West Maui coastline. These are also scattered throughout northeasterly portions of the West Maui and southwesterly portions of East Maui around Kīhei. Most visitors to the area arrive at the Kīhei International Airport, some 20 miles northeast of Lahaina. Markrich (2004:17) estimates that some 1,114,822 persons took commercial boat tour trips around Maui during 2003, far more than for any other island in the chain.

Lahaina and Kā'anapali are popular tourist destinations in the West Maui region. Numerous ocean recreation opportunities are available from Mā'alaea Harbor and Lahaina. Charter fishing and commercial tour boat operations that periodically encounter spinner dolphins are based in both locations. Many visiting tourists use the services of these businesses to make half- and full-day ocean recreation and sightseeing forays from their place lodging in Lahaina, Kā'anapali, Kīhei, and elsewhere on the island. West Maui and southwest portions of East Maui are leeward coastlines and hence favorable for boating, snorkeling, and other ocean recreation activities.

It should be noted that a significant number of Native Hawaiians are employed by commercial tour boat operations based on Maui. Owner-operators contacted for the purposes of this study report a combined total of 24 such employees.

Areas of Known Interaction. Tour boat operations involving indirect/incidental interactions with spinner dolphins are conducted in numerous locations along the leeward sides of Maui. Limited operations sometimes also occur at remote Hāna Bay and La Pérouse Bay. Some captains explore 'Au'au Channel between Maui and Lāna'i, and the bays along the coastline of Lāna'i. As Maui is closest to Lāna'i, Maui-based operators are the source of commercial boat tours around that neighbor island. As depicted in Map 3-1 below, guided and incidental interactions between boat-based tour operations and spinner dolphins are known to occur at the following locations adjacent to Maui and Lāna'i:

- 1) Mākena Bay, roughly 10 miles south of Kīhei;
- 2) La Pérouse Bay, an additional five miles south of Mākena, amidst a very rugged volcanic landscape;
- 3) 'Āhihi Bay, located between Mākena and La Pérouse Bays;
- 4) Molokini Crater, a popular snorkeling destination roughly three miles east of the Mākena-La Pérouse Bay State Park (dolphins are often seen *en route*);
- 5) Around Lahaina Harbor, which is located 21 miles west of Wailuku across the West Maui Mountains;
- 6) Kā'anapali, located some 5 miles north of Lahaina and just south of Kapalua;
- 7) Honolua Bay, also a popular surfing break, located some 14 miles north of Lahaina;
- 8) Hulopo'e Beach and Mānele Bay along the southern coastline of Lāna'i.



Map 3-1 Known Locations of Interactions between Tour Operations and Dolphins on Maui

Primary Points of Departure and Operational Tendencies. Most of Maui’s large commercial boat tours operate from locations along the west side of the island. These include: Lahaina Harbor, Mā'alaea Harbor, Kīhei boat ramp, Kā'anapali Beach, and Māla Wharf and ramp. Three tour companies moor vessels offshore Kā'anapali Beach; two businesses use Māla Wharf and Ramp; eight companies dock their vessels in Lahaina Harbor; three companies use Mā'alaea Harbor; and one company launches from Kīhei boat ramp for trips to Molokini. Field staff made repeated attempts to reach owners of three additional large tour boat firms also active in the Lahaina area, but the desired personnel were unavailable at the time of this study.

Most operations on Maui conduct one to two snorkel or wildlife watching cruises per day, and most sail the waters between Maui and Lāna'i and along the West Maui coastline. The vessels tend to be quite large and with extensive passenger capacity. A few companies advertise the possibility of seeing dolphins, but none report intentional interactions as on Hawai'i Island and O'ahu. One firm reportedly does offer “dolphin-oriented” snorkel trips, but it does not advertise direct interaction with the creatures. Moreover, its predetermined trip destinations may not necessarily occur where dolphins have been recently sighted.

Of note, a locally-respected kayak business owner-operator reported that none of the “legitimate” kayak operations involved intentional interactions with dolphins. But it was his contention that two “rogue” operators were offering swim with dolphin tours without general business permits.

Several Maui-based tour boat operations offer snorkeling trips around Lāna'i, and sometimes advertise that a resident pod of spinner dolphins may “often [be] encountered” around that island. One owner-operated reported that all the firm’s employees were born on Lāna'i.

Owners of firms operating large vessels report that they must dry dock on O'ahu or Hawai'i Island for two to three weeks each year. Repairs and costs associated with housing captain and crew during periods of maintenance reportedly can be extensive.

Sources indicate the existence of a sole dolphin-oriented spiritual retreat on Maui. However, the owner-operator could not be identified or reached for discussion at the time of this study.

3.2 Economic Aspects of Relevant Businesses

As noted above, commercial boat tour operations on Maui reportedly do not involve intentional interaction with spinner dolphins. But indirect or unintentional interaction undoubtedly occurs, and a few businesses advertise the possibility of encountering dolphins. Although not advertised or discussed in the interviews, it is also quite possible that intentional-direct interactions also occur. We have enumerated roughly 20 commercial tour boat operations currently active on Maui that are likely to encounter dolphins indirectly or unintentionally during the course of their snorkeling and sightseeing operations.

Table 3-1 Nature of Interactions with Spinner Dolphins by Commercial Tour Operations on Maui

Type of Business	Number of Businesses Known to Interact with Dolphins on Maui		
	Direct	Indirect	TOTAL
Commercial Tour Boat	uncertain*	~20 **	~20
Spiritual Retreat	n/a	n/a	n/a
Kayak	uncertain*	5	5
TOTAL	1	~25	~25

* Uncertainty is based on the probability of underreporting of interactions by respondents

Field staff used a combination of archival research and the recommendations of public officials and business peers to identify a subset of Maui-based tour owners whose operations were at once the largest and most likely to encounter and/or interact with spinner dolphins. It was felt that this purposive sampling strategy would reveal economic aspects of operations most pertinent to the goals of the study on an island where direct interactions reportedly are not advertised or widely championed. As such, a total of seven owner-operators were contacted and interviewed. Four kayak operators were also contacted and interviewed.

Gross Revenue. As notable in Table 3-2 below, and in summary discussion in the final section of this report, Maui commercial tour operations are the largest and they generate more revenue than any other operations for which data were collected during the study. The extensive scope of these operations is further reflected in operational capacity (Table 3-3 below).

Table 3-2 Estimated Gross Revenue by Type of Business: Maui, 2006

Type of Business	Maui				
	Total Gross Revenue (\$)	Mean Gross Revenue (\$)	Std. Dev. (\$)	Median Gr. Revenue (\$)	Range (\$)
Tour Ops Reporting Direct Interaction	n/a	n/a	n/a	n/a	n/a
Tour Ops Reporting Indirect Interaction	19,835,893 (n=6)	3,305,982	3.743 M	1,367,946	400 K – 10M *
Spiritual Retreat Businesses	n/a	n/a	n/a	n/a	n/a
Kayak Businesses	864,020 (n=2)**	-	-	-	-

*The large tour operation at the upper end of this range is the sole business qualifying for large-business status. **Total based on information provided by the two kayak business owners willing to provide revenue data.

Table 3-3 Capacity of Boat Tours Involving Direct and Indirect Interaction with Dolphins: Maui, 2006

Type of Business (Maui)	Attributes Relevant to Business Capacity			
	Mean # Boats	Mean LOA (feet)	Mean Capacity (persons)	Mean # Vehicles
Tour Ops Reporting Direct Interaction	n/a	n/a	n/a	n/a
Tour Ops Reporting Indirect Interaction (n=6)	2.33	55	108 (n=5)	1

Employees and Wages. Table 3-4 below depicts the total number of employees, mean number of employees per business, and mean hourly wages for sampled businesses on Maui. We note that the wage rate depicted below is slightly higher than that estimated for “water vessel captains” at the time the Bureau of Labor generated occupational employment and wage estimates for Hawai’i in 1998. The estimated mean hourly wage for captains that year was \$17.75. Maui-based kayak tour operators contacted for the purposes of this study pay their guides on a trip by trip basis, typically around \$80 per trip.

Table 3-4 Number of Employees and Hourly Wages by Type of Business on Maui for 2006

Type of Business	Maui		
	Total Employees in Sample	Mean Number Employees*	Mean Hourly Wages (\$)
Tour Ops Reporting Direct Interaction	n/a	n/a	n/a
Tour Ops Reporting Indirect Interaction	141 (n=7)	20	18.90 (n=6)
Spiritual Retreat Businesses	n/a	n/a	n/a
Kayak Operations	12 (n=3)	4	n/a**

* Mean of the sample is expressed as the average number of persons employed over the course of a given year.

Customers Served Annually, and Patron Point of Origin. Maui-based commercial boat tour owner-operators interviewed during this study report a total patronage of nearly 200,000 persons for their businesses (Table 3-5 below). Although Maui-based boat tour operators contacted during the current study reported that most of their patrons were visiting from the U.S. Continent, a relatively large percentage reportedly were visiting from distant Asian nations. Maui kayak operators also indicated that most of their patrons were visiting from the contiguous 48 states and Alaska.

Table 3-5 Patron Point of Origin as Reported By Owners, by Type of Business: Maui, 2006

Type of Business (Maui)	Mean Number and Percent of Patron Origin					
	Total Patrons 2006	Mean # Patrons	% Local*	% Asia*	% Continent*	% Other*
Ops Reporting Direct Interaction	n/a	n/a	n/a	n/a	n/a	n/a
Ops Reporting Indirect Interaction	195,696 (n=7)	27,957	10	18	66	12
Spiritual Retreat Businesses	n/a	n/a	n/a	n/a	n/a	n/a
Kayak Businesses	4,300 (n=3)	4,300	**	**	88	**

* Expressed as sample mean based on respondents' recollection of patron origin over the course of previous year.

Variation in Trip Fees. Variation in fees for participating in ocean-going tours on Maui relates both to duration of trip and nature of activities undertaken during a given trip. Mean fees are slightly higher than for similar trips on O'ahu, but significantly lower than for trips of a similar nature on Kaua'i and Hawai'i Island. Maui fees are depicted in Table 3-6 below.

Table 3-6 Mean Trip Fees by Type of Business: Maui, 2006

Type of Business	Maui Mean Trip Fees (\$) *	
	Mean (\$)	Range (\$)
Tour Operations Reporting Direct Interaction w/Dolphins	n/a	n/a
Tour Operations Reporting Indirect Interaction w/Dolphins	82 (n=7)	70-119
Spiritual Retreat Businesses	n/a	n/a
Kayak Businesses	82.50 (n=3)	50-300

* Both mean and range incorporate variation in the nature of ocean experiences offered, and time at sea. ** The nature and duration of kayak adventure packages vary extensively within and across businesses, as do fees.

4.0 Economic and Operational Aspects of Commercial Tours Active around O'ahu

This section of the report describes relevant aspects of commercial boat tour businesses based on O'ahu. The discussion begins with overview description of the settings where human-dolphin interactions are known to occur. This is followed by a brief description of the range of operations and locations from which they depart, and description of results.

4.1 Relevant Ocean Tourism Activities and their Locations on O'ahu

Ancient Hawaiians referred to O'ahu as “the meeting place.” Contemporary O'ahu continues to be the primary point of arrival and departure for visitors. The economy is based primarily in tourism-related services. Honolulu County was home to 876,156 persons in 1999. Population density is high - nearly 1,500 persons per square mile. Some 42 percent of the population resides in Honolulu. The population of Wai'anae, on the leeward side of the island where most tour operations occur, was 10,506 persons at the time of the most recent Census. Markrich (2004:17) estimates that 854,350 persons took commercial boat tours around the island of O'ahu in 2003.

Commercial tour boat operations involving interaction with spinner dolphins are conducted along the leeward side of O'ahu, also known as the Leeward Coast. Visiting tourists land at the Honolulu International Airport and very typically stay at resorts in Waikīkī, some 30 miles from Wai'anae. The relatively new resort at Ko'olina is increasingly popular with tourists, and close proximity to beaches on the Leeward Coast reduces travel time and associated costs to points of departure for ocean travel to areas where dolphins are known to congregate.

Socioeconomic conditions along the Leeward Coast are challenging for many residents. Based on year 2000 Census figures, poverty rates among families in the Wai'anae area exceeded 17 percent; the nationwide rate is 9.2 percent. There is, therefore, some notable degree of juxtaposition of relatively affluent tourists and relatively impoverished residents in areas adjacent to the offshore zones in which the commercial boat tour operations occur.

Many residents depend on near- and offshore fishing for food and/or cash income, and some conflicts have been reported between local fishermen and eco-tourism boat tour operators. Interview data collected during the current project supports the assertion of Markrich (2004:32) that problems developed in the early 2000s over the tendency of some tour operators to navigate through akule⁷ schooling areas en route to viewing sites. The Wai'anae harbormaster reportedly developed a navigation protocol to help mitigate the problems. Readers are referred to Glazier (2007) for extended discussion of the social and economic dimensions of small boat fishing in this and other areas of Hawaii, and to Hamilton and Huffman (1996) for cost-earnings information regarding akule and other fishing operations on Oahu and throughout the in the MHI.⁸ Readers may also refer to Kushima and Miyasaka (2001) for discussion of the akule fishery and its management.

⁷ Akule or big-eyed scad (*Selar crumenophthalmus*) constitute an important food source for many local residents.

⁸ MHI small boat cost-earnings data are currently being updated by NOAA Fisheries Pacific Island Fishery Science Center.

Areas of Known Interaction. Intentional-direct and indirect-incident interactions between boat-based tour operations and spinner dolphins are known to occur in a variety of locations along the Leeward Coast. These are depicted on Map 4-1 below, and described in brief below:

- 1) Yokohama Bay, located at the northern terminus of Farrington Highway on the far northwestern reaches of the Leeward Coast;
- 2) Mākua Valley, located roughly 7 miles north of Wai'anae and just south of Yokohama Bay;
- 3) Mākaha, a popular surfing break, located two miles north of Wai'anae;
- 4) Pōkaī Bay, an historic ocean access area, located adjacent to Wai'anae Harbor and about 30 miles from Waikīkī;
- 5) Mā'ili Point, a popular surfing break, located approximately five miles south of Wai'anae;
- 6) Waipahu Beach/Nānākuli, located roughly eight miles northwest of Makakilo City and some 25 miles from Waikīkī; and
- 7) Kahe Point, also known as Electric Beach/Power Plant, located about three miles south of Nānākuli.

Primary Points of Departure and Operational Tendencies. Commercial tour boat operators enabling interaction with spinner dolphins along the Leeward Coast are based at either the state-operated Wai'anae small boat harbor or the privately-owned Ko'olina Marina. Five firms were based at Wai'anae at the time of this study. Harbor facilities here include 109 berths, seven access ramps, and the harbor office. Notably, a moratorium on new commercial permits is in place at Wai'anae, and a company must go out of business before another can enter. A large vessel will begin operating from Wai'anae in September of 2007, replacing that of a recently bankrupted tour firm.

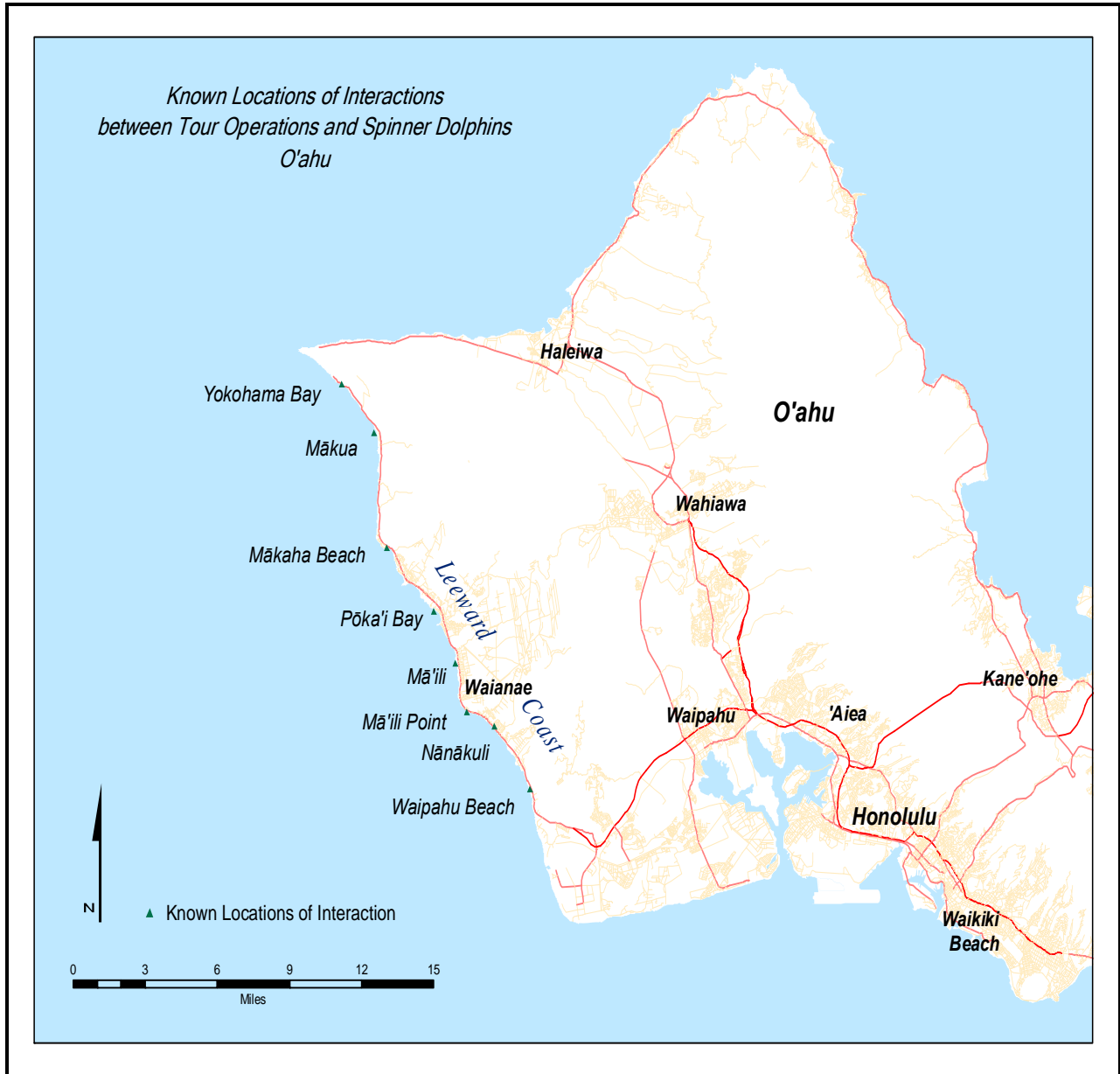
Three O'ahu-based tour companies operate from Ko'olina Marina. This facility can accommodate vessels up to 150 feet in length and maintains 330 full-service slips, a restaurant, and a fuel dock. Guests staying at Ko'olina Resort comprise a significant portion of patrons on tour vessels operating from this marina.

Close proximity between dolphin viewing areas to Wai'anae Harbor and Ko'olina Marina reduce transportation costs on the water. Operators at Ko'olina further benefit, in that many clients stay at the resort and do not therefore need transportation from distant places of lodging.

A number of factors are associated with the fact that eco-tourism activities are increasingly popular along the Leeward Coast of O'ahu. The clarity of the nearshore waters is appealing to divers and snorkelers. Swells can affect recreational boating, but wind waves typically are minimal, since the prevailing trade winds blow offshore along the leeward side, smoothing the ocean surface to a glass-like condition. Numerous white sandy beaches and areas of sand in the

nearshore zone afford a pleasant experience for beach-goers and nearshore swimmers. The latter also appear to attract spinner dolphins and persons who wish to view them. Extensive areas of coral reef support various reef fishes and other sea life. Finally, the green pali (hills) of the Wai'anae Range soar above these settings, creating what some term “breathtaking scenery.”

Given this range of amenities, many of the commercial boat tour operators active here do not focus on the dolphin experience. A range of alternative activities may be undertaken to satisfy the clientele. But half of the fleet does focus on providing interactive experiences with dolphins in what might be termed ideal environmental settings for so doing.



Map 4-1 Known Locations of Interactions between Tour Operations and Dolphins on O'ahu

4.2 Economic Aspects of Relevant Businesses

Both intentional-direct and indirect-incident interactions between tour operations and dolphins occur along the Leeward Coast of O'ahu. As depicted in Table 4-1 below, we were able to achieve an exhaustive sample of these owner-operators, though not all such persons were able or willing to provide input on all categories of desired information. Field staff also contacted owner-operators or managers of eight kayak operations on O'ahu. It should be noted that some such operations do not encounter dolphins since they typically operate along stretches of windward coastline where such creatures are rarely seen.

Table 4-1 Nature of Interactions with Spinner Dolphins by Commercial Tour Operations on O'ahu

Type of Business	Number of Businesses Known to Interact with Dolphins on O'ahu		
	Direct	Indirect	TOTAL
Commercial Tour Boat	4	4	8
Spiritual Retreat	n/a	n/a	n/a
Kayak	unknown*	~4**	4
TOTAL	~4	~8	~12

*Lack of understanding relates to uncertain manner and extent of interactions between kayak renters who are free to travel and interact with dolphins without guidance or oversight; **Estimate is limited to four given that some businesses on O'ahu operate in areas where spinner dolphins are not commonly present.

Gross Revenue. Of note in our sample is the relative importance of commercial boat tour operations that are focused on direct interaction with spinner dolphins on O'ahu (Table 4-1 below). The swim with dolphin tours here generated a significant amount of revenue during 2006, as did those operations focusing on more general ocean recreational experiences. Revenues are similar despite apparent differences in operational capacity (Table 4-2 below). As was the case for operations on the Big Island, firms involved in intentional interaction with dolphins utilize smaller vessels with less passenger capacity than do the more generalized operations.

Table 4-2 Estimated Gross Revenue by Type of Business: O'ahu, 2006

Type of Business	O'ahu				
	Total Gross Revenue (\$)	Mean Gross Revenue (\$)	Std. Dev. (\$)	Median (\$)	Range (\$)
Tour Ops Reporting Direct Interaction	3,034,894 (n=4)	758,724	269.56 K	825,000	384.94 K - 1M
Tour Ops Reporting Indirect Interaction	2,597,853 (n=3)	865,951	552.22 K	868,353	312.5 K – 1.417 M
Spiritual Retreat Businesses	n/a	n/a	n/a	n/a	n/a
Kayak Businesses	*	*	*	*	*

* None of our sample of kayak business owners on O'ahu was willing to release revenue data.

Table 4-3 Capacity of Boat Tours Involving Direct and Indirect Interaction with Dolphins: O'ahu, 2006

Type of Business (O'ahu)	Attributes Relevant to Business Capacity			
	Mean # Boats	Mean LOA (feet)	Mean Capacity (persons)	Mean # Vehicles
Tour Ops Reporting Direct Interaction (n=4)	1.25	38	36	4
Tour Ops Reporting Indirect Interaction (n=4)	1.25	67	130	16

Employees and Wages. Wages for employees of the swim with dolphin firms on O'ahu are somewhat lower than for those working for the more generalized commercial boat tour operations. Moreover, relatively fewer persons are employed by the former, as is indicated in the total and mean number of employees depicted in Table 4-4 below. As noted above, two of the Native Hawaiian-owned businesses are based in the Wai'anae area, one of which is a swim with dolphins operation. Owner-operators on this island report a combined total of 24 Native Hawaiian employees.

Table 4-4 Number of Employees and Hourly Wages by Type of Business on O'ahu for 2006

Type of Business	O'ahu		
	Total Employees in Sample	Mean Number Employees*	Mean Hourly Wages (\$)
Tour Ops Reporting Direct Interaction	39 (n=4)	10	16.25 (n=4)
Tour Ops Reporting Indirect Interaction	62 (n=4)	16	18.90 (n=4)
Spiritual Retreat Businesses	n/a	n/a	n/a
Kayak Operations	75 (n=3)	25	10.25 (n=2)

* Mean of the sample is expressed as the average number of persons employed over the course of a given year.

Customers Served Annually, and Patron Point of Origin. Relatively few O'ahu residents patronize either form of commercial tour boat operations (see Table 4-5 below). This holds true for residents across the islands and may be explained by a variety of factors, including the tendency of residents to: (a) own and operate their own vessels, (b) engage in other forms of recreation or leisure, (c) prioritize tourism-related activities outside of Hawai'i, (d) experience socioeconomic constraints on participating, and/or (e) avoid eco-tourism activities for cultural reasons. The topic may be worthy of a study of its own.

Of note in this sample is the large percentage of visitors from Asian nations who engage in both swim with dolphin tours and the more generalized boat tours along the Leeward Coast. Many O'ahu tourists arrive from Japan, find lodging in Waikīkī, and undertake ocean-based recreation during their stay. Although we did not collect specific point of origin data from kayak operators, one such person reported a mix of patrons from the Continental U.S. and from Japan.

Table 4-5 Patron Point of Origin as Reported By Owners, by Type of Business: O'ahu, 2006

Type of Business (O'ahu)	Mean Number and Percent of Patron Origin					
	Total Patrons 2006	Mean # Patrons	% Local*	% Asia*	% Continent*	% Other*
Ops Reporting Direct Interaction	116,000 (n=4)	29,000	7	38	52	3
Ops Reporting Indirect Interaction	42,309 (n=3)	14,103	5	40	65	5
Spiritual Retreat Businesses	n/a	n/a	n/a	n/a	n/a	n/a
Kayak Businesses	12,565 (n=3)	4,188	**	**	**	**

* Expressed as sample mean based on respondents' recollection of relative percentages of patrons' point of origin over the course of previous year. ** Data not collected for O'ahu kayak businesses.

Variation in Trip Fees. As indicated in Table 4-6 below, fees associated with the swim with dolphin tours on O'ahu are considerably higher than those for charged for the more generalized boat tours. Variation within each business category in this case tends to relate to duration of time on the ocean. Half-day trips are considerably less expensive than full-day ventures.

Table 4-6 Mean Trip Fees by Type of Business: O'ahu, 2006

Type of Business	O'ahu Mean Trip Fees \$ *	
	Mean (\$)	Range (\$)
Tour Operations Reporting Direct Interaction w/Dolphins	113 (n=4)	95-148
Tour Operations Reporting Indirect Interaction w/Dolphins	73.75 (n=4)	41-109
Spiritual Retreat Businesses	n/a	n/a
Kayak Businesses	101 (n=3)	59-300**

* Both mean and range incorporate variation across a range of ocean experiences and time at sea. ** The nature and duration of kayak adventure packages vary extensively within and across businesses, as do fees.



Site of Spinner Dolphin Encounters along the Leeward Coast of O'ahu

5.0 Economic and Operational Aspects of Commercial Tours Active around Kaua'i

This section describes relevant aspects of commercial tour businesses based on Kaua'i. We begin with an overview of the settings where human-dolphin interactions are known to occur. This is followed by a brief description of the range of operations and locations from which they depart, and description of the results of our discussions with owner-operators.

5.1 Relevant Ocean Tourism Activities and their Locations on Kaua'i

Kaua'i is the northernmost of the Main Hawaiian Islands. It is also the fourth largest of the main islands, encompassing some 622 square miles of primarily volcanic terrain. Kaua'i's Mt. Wai'ale'ale is the wettest spot on earth. Lush mountainous areas and broad sandy beaches attract tourists from around the world. Numerous boat tour operations transport sightseers along the rugged Nā Pali coastline when swell conditions are amenable to such activities. The Nā Pali coast faces northwest, directly in line with swells emanating from North Pacific storms.

With the exception of scattered centers of population and a variety of resorts and associated subdivisions, much of Kaua'i is characteristically rural in nature. The year 2000 population density was 94 persons per square mile. Līhu'e is the largest town. Its year 2000 population was 5,674 persons. Waimea, a small town located along the southern shoreline, had a year 2000 population of 1,787 persons. The year 2000 population of Hānalei was 478 persons.

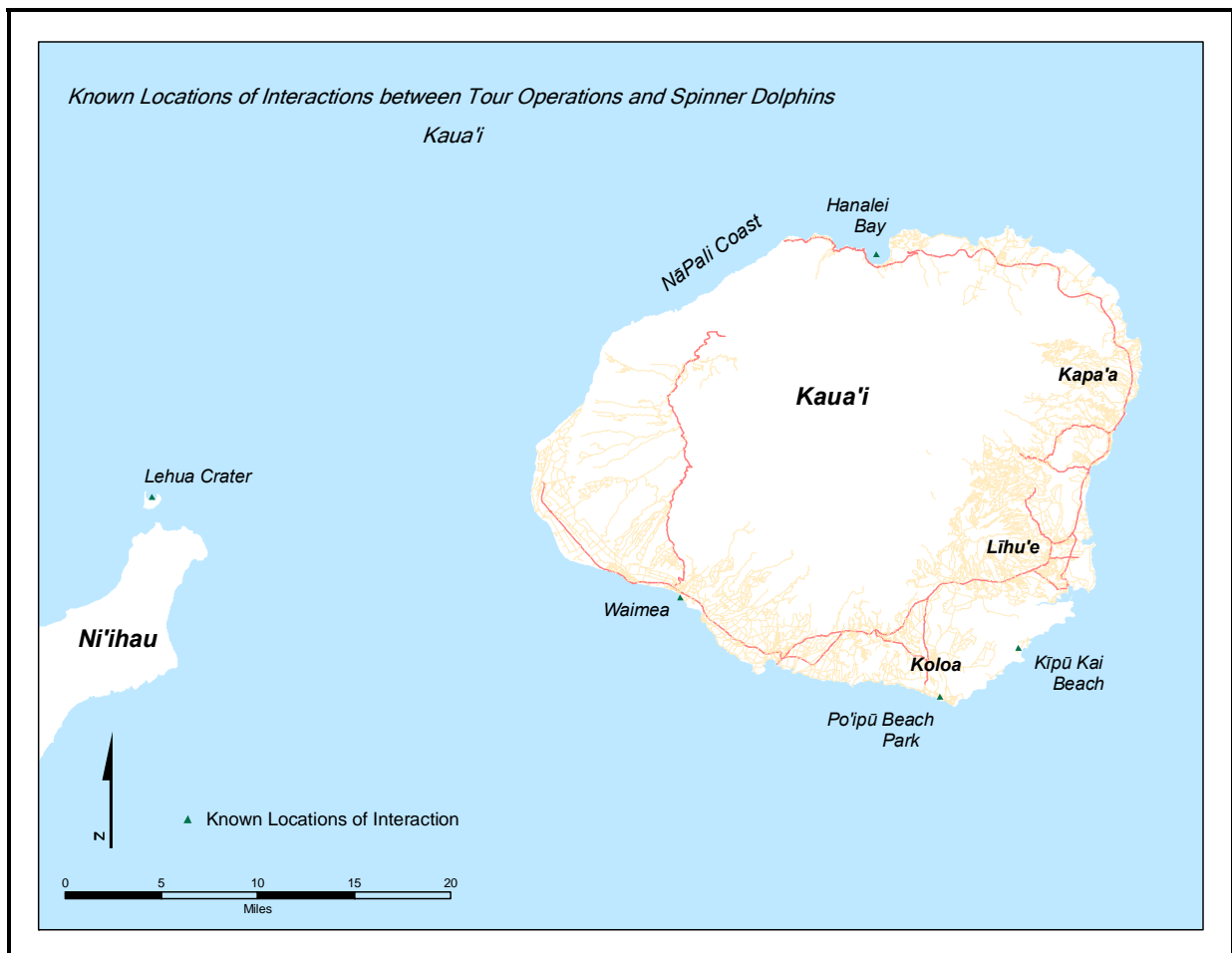
Ni'ihau is located some 17 miles west of Kaua'i across the Kaulakahi Channel. The privately-owned island is inhabited primarily by Native Hawaiians. The island encompasses 70 square miles of rugged terrain, and 45 miles of coastline.

Visitors to Kaua'i land at Līhu'e airport and may find lodging at resorts located primarily along the southern or northern shorelines of the island. Many boat tour operations tend to focus on the Nā Pali experience. Subsequent to establishment of state regulations in 1998 that limited the number and type of operations conducted from Hānalei Bay on Kaua'i's north shore, most vessels now depart for Nā Pali tours from the Waimea area. Markrich (2004:17) estimates that some 427,450 persons took commercial boat tours around Kaua'i in 2003.

Areas of Known Interaction. None of the Kaua'i-based commercial tour boat operators or owners reported guided swim with dolphin tours. The tours reportedly are more general in nature, and any encounters with dolphins tend to be incidental. That is, encounters reportedly occur incidentally during the course of trips that involve a range of general snorkeling or sightseeing activities. One owner did report that some captains have been known to navigate toward pods for purposes of remote viewing since this often leads to better gratuities. Understanding the specific spatial parameters and frequency of this behavior would require an extended period of participant observation.

Encounters between tour operations and spinner dolphins are known to occur in the following locations on Kaua'i, and as depicted on Map 5-1 below:

- 1) Hānalei Bay, a popular surfing area, located on the north shore of the island roughly five miles west of Princeville and some 30 miles northwest of Līhu'e,
- 2) Līhu'e, the capital of Kaua'i, located on the southeast side of the island south of Hanamā'ulu Bay and north of Nāwiliwili Bay;
- 3) Po'ipū Beach Park, a popular surfing area, located on the southern tip of Kaua'i, 14 miles south of Līhu'e and 19 miles east of Waimea;
- 4) Nā Pali Coast, known for dramatic sea cliffs, along the northwestern coast of Kaua'i;
- 5) Waimea, located some 25 miles southwest of Līhu'e; and at
- 6) Lehua Crater, a remnant volcanic tuff cone location about one mile north of Ni'ihau.



Map 5-1 Known Locations of Interactions between Tour Operations and Dolphins on Kaua'i

Primary Points of Departure and Operational Tendencies. The primary places of mooring for Kaua'i commercial tour boat operations are along the south and southwestern sides of the island at Port Allen, Kīkī a Ola, and Kukui'ula small boat harbors. Some vessels moor in Hānalei Bay on Kaua'i's north shore during suitable swell conditions.

The smaller tour boat operations moor at Kīkī a Ola and Kukui'ula harbors. At least three firms are based at each location. The larger catamarans utilize facilities at Port Allen. Six snorkel or wildlife watching operations are based at that facility.

During recent years, three companies were operating from Hānalei Bay during months when sea conditions are relatively calm. Two of these operations advertise the potential for viewing spinner dolphins during morning cruises. One firm makes regular sightseeing trips to Ni'ihau. Owner-operators of kayak companies who guide trips along the Nā Pali coastline report that dolphins may be encountered, but that such encounters tend to be incidental and indirect. The dramatically scenic aspects of this coastline tend to supersede any singular focus.

5.2 Economic Aspects of Relevant Businesses

As noted above, none of the commercial tour boat operations based on Kaua'i report providing swim with dolphin tours. Field staff were able to interview six of the 11 commercial tour boat operators. The three owner-operators who moor their vessels in Hānalei Bay on a seasonal basis were not available during the winter months when fieldwork was undertaken. It is known, however, that those operations use relatively small vessels with limited passenger capacity so as to enable mooring in and passage through Hānalei Bay. The two remaining owner-operators on Kaua'i did not return our inquiries.

Table 5-1 Nature of Interactions with Spinner Dolphins by Commercial Tour Operations on Kaua'i

Type of Business	Number of Businesses Known to Interact with Dolphins on Kaua'i		
	Direct	Indirect	TOTAL
Commercial Tour Boat	0	~11*	~11
Spiritual Retreat	n/a	n/a	n/a
Kayak	0	3	3
TOTAL	0	~14	~14

* Uncertainty relates to the fact that most operators report that their businesses are oriented primarily to sightseeing; the manner and extent of non-directed interaction with spinner dolphins is not well-known

Gross Revenue. Kaua'i-based commercial tour boat operations involving indirect interaction with spinner dolphins generated more revenue than similar operations on O'ahu, but significantly less than those on Maui (Table 5-3 below). Again, there are no swim with dolphin or spiritual retreat businesses based on Kaua'i.

Table 5-2 Estimated Gross Revenue by Type of Business: Kaua'i, 2006

Type of Business	Kaua'i				
	Total Gross Revenue (\$)	Mean Gross Revenue (\$)	Std. Dev. (\$)	Median (\$)	Range \$
Tour Ops Reporting Direct Interaction	n/a	n/a	n/a	n/a	n/a
Tour Ops Reporting Indirect Interaction	9,325,000 (n=4)	2,331,250	2.0866 M	2,625,000	325 K – 4.35 M
Spiritual Retreat Businesses	n/a	n/a	n/a	n/a	n/a
Kayak Businesses	262,500 * (n=1)	262,500	-	-	-

* Kaua'i kayak tour operators were generally reluctant to offer information about revenue given competition between firms operating seasonally along the Nā Pali coast.

Table 5-3 Capacity of Boat Tours Involving Direct and Indirect Interaction with Dolphins: Kaua'i, 2006

Type of Business (Kaua'i)	Attributes Relevant to Business Capacity			
	Mean # Boats	Mean LOA (feet)	Mean Capacity (persons)	Mean # Vehicles
Tour Ops Reporting Direct Interaction	n/a	n/a	n/a	n/a
Tour Ops Reporting Indirect Interaction (n=5)	2.6	45	96	3

Employees and Wages. Kaua'i commercial tour boat operations tend to involve a fairly large number of employees. This relates to the fact that the average vessel is relatively large and most operations use more than one boat to make daily or twice-daily trips along the Nā Pali coastline.

Table 5-4 Number of Employees and Hourly Wages by Type of Business on Kaua'i for 2006

Type of Business	Kaua'i		
	Total Employees in Sample	Mean Number Employees*	Mean Hourly Wages (\$)
Tour Ops Reporting Direct Interaction	n/a	n/a	n/a
Tour Ops Reporting Indirect Interaction	111 (n=5)	20	18.90 (n=4)
Spiritual Retreat Businesses	n/a	n/a	n/a
Kayak Operations	8**	8 (n=1)	n/a**

* Mean of the sample is expressed as the average number of persons employed over the course of a given year.

** Kaua'i kayak operators were reluctant to offer information about employment and wages given competition between a large number of firms operating seasonally along the Nā Pali coast.

Customers Served Annually, and Patron Point of Origin. Tour owners and operators contacted for the purposes of this study report that most persons engaging in Kaua'i's boat tour experiences are visitors from the mainland. Some few local residents also participate. Over 100,000 patrons engaged in a Kaua'i boat tour experience operated by our research participants during 2006.

Table 5-5 Patron Point of Origin as Reported By Owners, by Type of Business: Kaua'i, 2006

Type of Business (Kaua'i)	Mean Number and Percent of Patron Origin					
	Total Patrons 2006	Mean # Patrons	% Local*	% Asia*	% Continent*	% Other*
Ops Reporting Direct Interaction	n/a	n/a	n/a	n/a	n/a	n/a
Ops Reporting Indirect Interaction	101,050 (n=6)	27,957	9	3	85	3
Spiritual Retreat Businesses	n/a	n/a	n/a	n/a	n/a	n/a
Kayak Businesses**	1,200 (n=1)	1,200	-	-	-	-

* Expressed as sample mean based on respondents' recollection of relative percentages of patrons' point of origin over the course of previous year. **Kaua'i kayak operators were reluctant to offer information about their operations given competition between a large number of firms operating seasonally along the Nā Pali coast.

Variation in Trip Fees. Fees for boat tours on Kaua'i are fairly constant. Variation is related to vessel size and nature of tour rather than duration of trip. Most trips to the Nā Pali coast involve a significant amount of time traveling to the scenic area and returning back to port. Fees therefore incorporate fuel costs for the lengthy trip.

Table 5-6 Mean Trip Fees by Type of Business: Kaua'i, 2006

Type of Business	Kaua'i Mean Trip Fees \$ *	
	Mean (\$)	Range (\$)
Tour Operations Reporting Direct Interaction w/Dolphins	n/a	n/a
Tour Operations Reporting Indirect Interaction w/Dolphins	112.60 (n=5)	92-127
Spiritual Retreat Businesses	n/a	n/a
Kayak Businesses	171.50 (n=2)	168-175

* Both mean and range incorporate variation across a range of ocean experiences and time at sea. ** The nature and duration of kayak adventure packages vary extensively within and across businesses



Nā Pali Coastline

6.0 Additional Cost Factors and Considerations

This section provides additional information regarding cost factors affecting commercial tour boat operators contacted during the course of this study across the MHI. The emphasis is on providing additional information that may be of assistance in: (a) interpreting various forms of data aggregated by island as presented in previous sections, and (b) understanding the nature of observed variation between types of businesses across the islands. A concluding section and references complete the report.

6.1 Revenue, Employment, and Wages

Revenue and Employment. Of all businesses consulted for this study, the owner-operators of generalized commercial tour boat businesses on Maui collectively reported the most extensive gross revenue for 2006 (Figure 6-1 below). This undoubtedly relates to the scope of operations of some of the larger tour boats, some of which carry hundreds of sightseers, multiple times daily.

Revenue generated by tours involving direct interaction with dolphins surpassed that of the more generalized operations only on O'ahu, where a specialized swim with dolphin experience has grown in popularity. Dolphin-oriented spiritual experiences are few in number, obviously highly specialized in their offerings, and therefore generate relatively less revenue than other commercial boat tour operations. Because these operations occur with relatively little overhead, net revenue may be a good indicator for understanding economic dimensions of this unique enterprise.

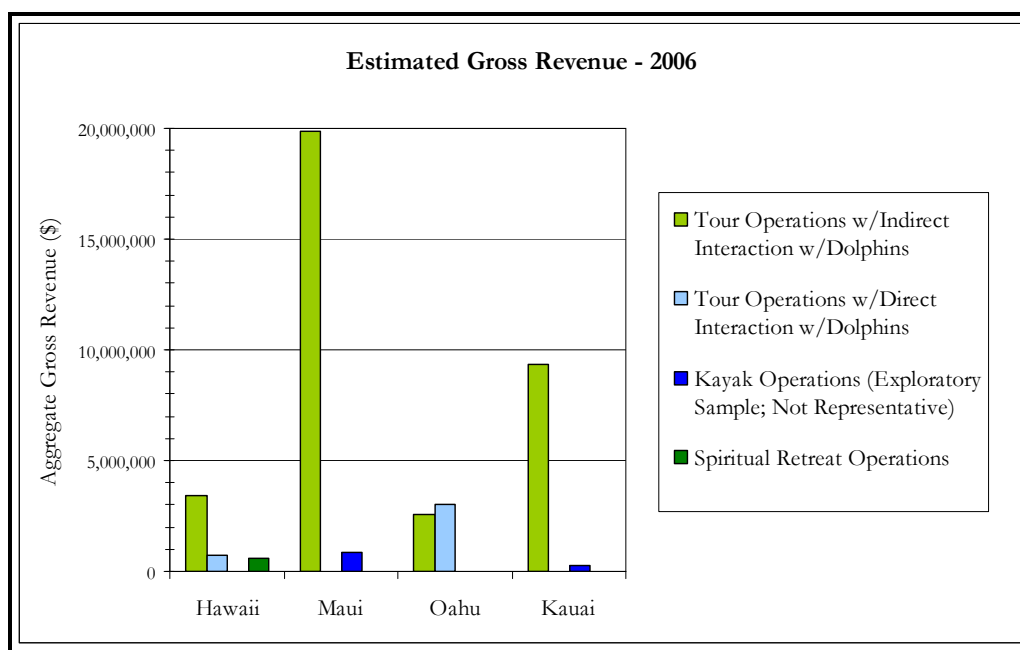


Figure 6-1 Revenue Reported by Participating Owner-Operators (N=33)

Figure 6-2 below underscores the relatively extensive scope of operations for the generalized commercial boat tour operations, and the relatively more limited and specialized nature of operations that undertake direct interaction with dolphins.

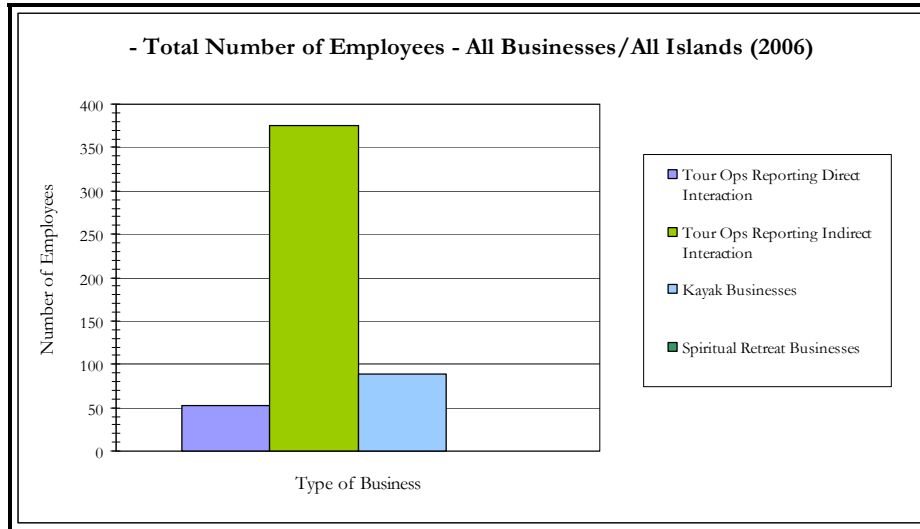


Figure 6-2 Total Employees (N=33)

Earned Wages, and Tour Guiding as Principal Form of Employment. In previous sections, wages were reported in total. Table 6-1 below provides more detail in this regard. Tables 6-2 and 6-3 below provide an indication of the extent to which owners and employees are financially dependent on their jobs in the industry. Almost all reporting owners said that the business was their principal form of income in 2006 and that it also was for most of their employees as well.

Table 6-1 Mean Reported Captain and Office Wages by Business: All Islands, 2006

Type of Business	Mean Wage / Range (\$)	
	Captain	Office
Tour Operations Reporting Direct Interaction w/Dolphins	21.83 / 15 - 25 (n=6)	17.10 / 10 - 25 (n=5)
Tour Operations Reporting Indirect Interaction w/Dolphins	23.54 / 13 - 33 (n=13)	17.28 / 8 - 33 (n=9)
Spiritual Retreat Businesses	Contracted (variable)	22.00 / 20 - 23 (n = 3)
Kayak Businesses	n/a	15.00 (n=1)

Table 6-2 Owners Reporting Tours as Primary Employment, by Business and Island: 2006

Type of Business	Number of Owners Claiming Primary Employment			
	Hawai'i	Maui	O'ahu	Kaua'i
Tour Operations Reporting Direct Interaction w/Dolphins	5 (n=5)	n/a	4 (n=4)	n/a
Tour Operations Reporting Indirect Interaction w/Dolphin	3 (n=3)	7 (n=7)	3 (n=4)	4 (n=4)
Spiritual Retreat Businesses	3 (n=3)	n/a	n/a	n/a
Kayak Businesses	*	*	*	*

* Data not collected

Table 6-3 Employees for Whom Operations are Primary Form of Employment, by Business and Island: 2006

Type of Business	Mean % Engaged in Primary Job *			
	Hawai'i	Maui	O'ahu	Kaua'i
Tour Operations Reporting Direct Interaction w/Dolphins	50 (n=3)	n/a	54 (n=4)	n/a
Tour Operations Reporting Indirect Interaction w/Dolphin	75 (n=5)	88.5 (n=7)	88 (n=3)	99 (n=5)
Spiritual Retreat Businesses	Contracted	n/a	n/a	n/a
Kayak Businesses	**	**	**	**

* As reported by business owners or managers. ** Data not collected

6.2 Patronage and Operational Factors

Total Customers and Point of Origin. As noted in Figure 6-3 below, interviews with tour boat owner-operators around the MHI revealed that most patrons take advantage of generalized tour opportunities. Tours involving intentional-direct interactions with dolphin appear to be a relatively specialized enterprise.

But we emphasize that the reported level of involvement in swim with dolphin tours is not insignificant. Participating owners and operators reported that well over 100,000 patrons took part in such tours in 2006.

Figure 6-4 below reiterates the project finding that relatively few local residents participated in commercial tour boat operations in 2006. Most patrons are visitors from the Continental U.S. and Japan.

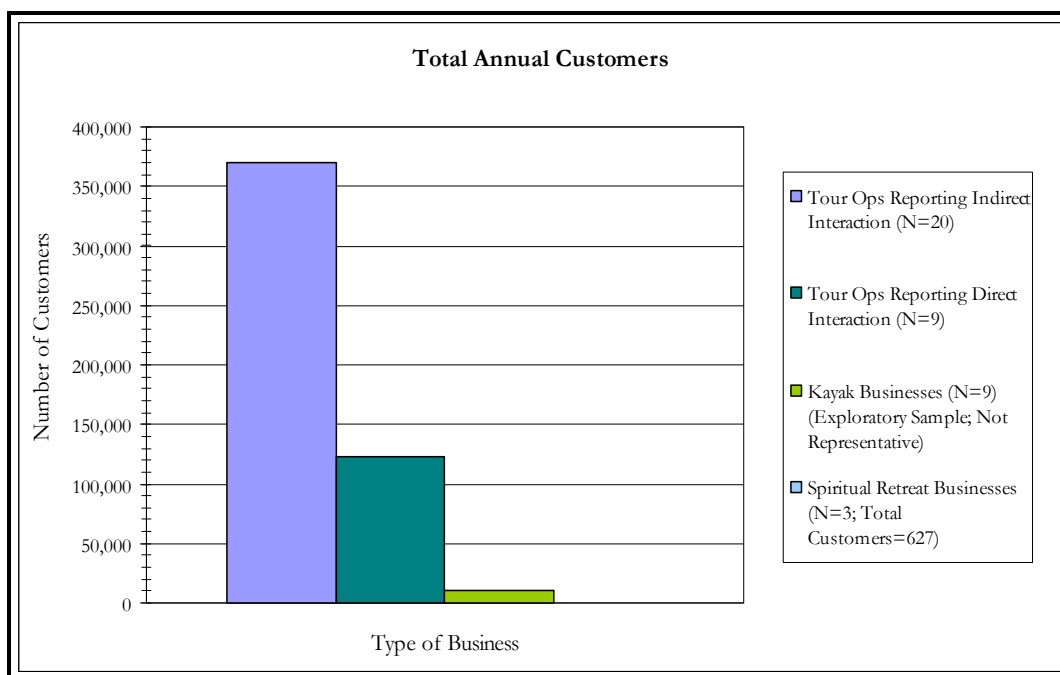


Figure 6-3 Total Customers in 2006 (N=34)

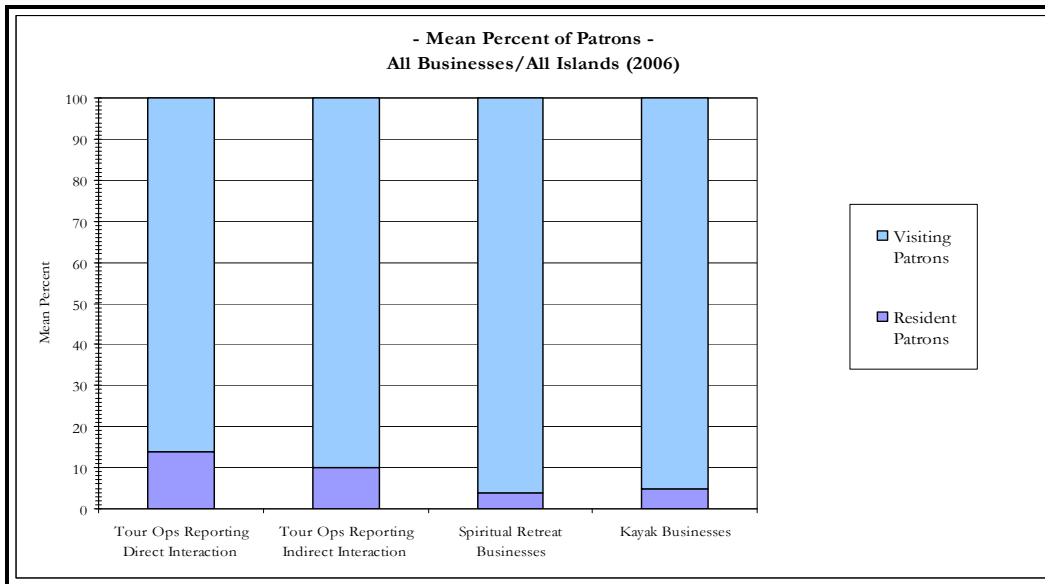


Figure 6-4 Customer Point of Origin (N=26)

Years in Operation. As noted in Table 6-4 and Figure 6-5 below, spinner dolphin swim tour operations are relatively new. None of the businesses currently operating have been active for more than 12 years, while the oldest operating generalized tour business has been active for 34 years.

Table 6-4 Years in Operation by Type of Business: All Islands as of 2006

Type of Business	Average Number of Years in Operation	
	Mean Years	Range in Years
Tour Operations Reporting Direct Interaction w/Dolphins	8 (n=9)	2- 12
Tour Operations Reporting Indirect Interaction w/Dolphins	18 (n=21)	4 – 34
Spiritual Retreat Businesses	8 (n=3)	4 – 13
Kayak Businesses	9 (n=7)	1 – 16

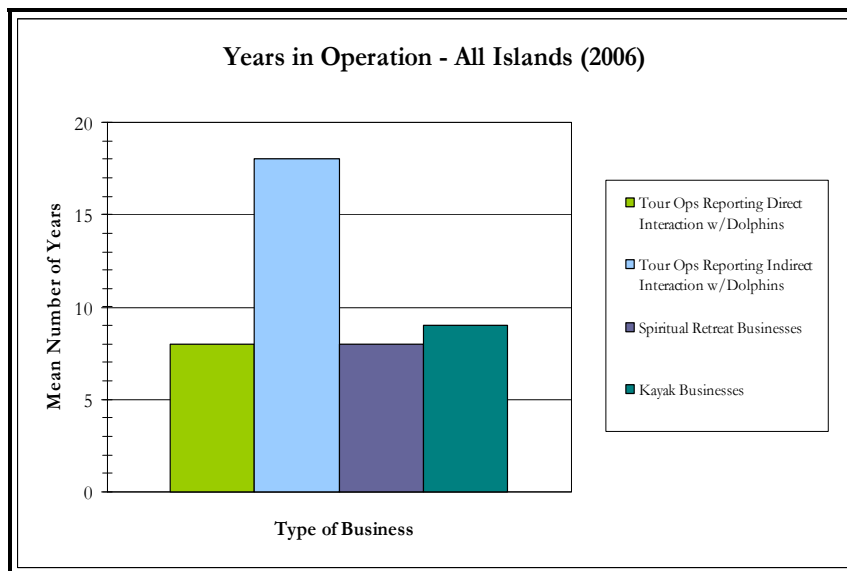


Figure 6-5 Tenure of Businesses (N=37)

Frequency of Trips and Vessel Characteristics. Our data indicate that operations involving direct interaction with spinner dolphins tend to involve relatively more trips per day than the more generalized operations (Table 6-5 below). But at the same time, fewer and smaller boats are used by such operators (Table 6-6 and Figure 6-6 below) and they generally have lower passenger capacities (Table 6-7 below).

The situation is suggestive of a greater outlay of effort per unit of return on the part of the swim with dolphin tour operators. This may help explain the relatively higher trip fees charged by such operators, as discussed in previous sections of this report.

Table 6-5 Trips per Day by Type of Business: All Islands, 2006

Type of Business	Mean Number of Trips per Day *	
	Mean	Range
Tour Operations Reporting Direct Interaction w/Dolphins	2.5 (n=8)	1 – 8 **
Tour Operations Reporting Indirect Interaction w/Dolphins	1.88 (n=18)	1 – 8 **
Spiritual Retreat Businesses	1 (n=3)	1
Kayak Businesses	1.17 (n=6)	1-2

* As calculated across all vessels in a given operation with the exception of kayak businesses. ** Mode = 2

Table 6-6 Vessels and Vessel Characteristics by Type of Business: All Islands, 2006

Type of Business	Mean # Boats in Given Operation	Avg. LOA*/ Range
Tour Operations Reporting Direct Interaction w/Dolphins	1.75 (n=8) **	32.5 (22-42)
Tour Operations Reporting Indirect Interaction w/Dolphins	1.94 (n=18) **	51.2 (27 – 130)
Spiritual Retreat Businesses	All contracted (variable)	Unknown
Kayak Businesses	23 (n=9)	†

* Length overall; ** Mode =1; † Given limited variation in length of kayaks, this data was not collected.

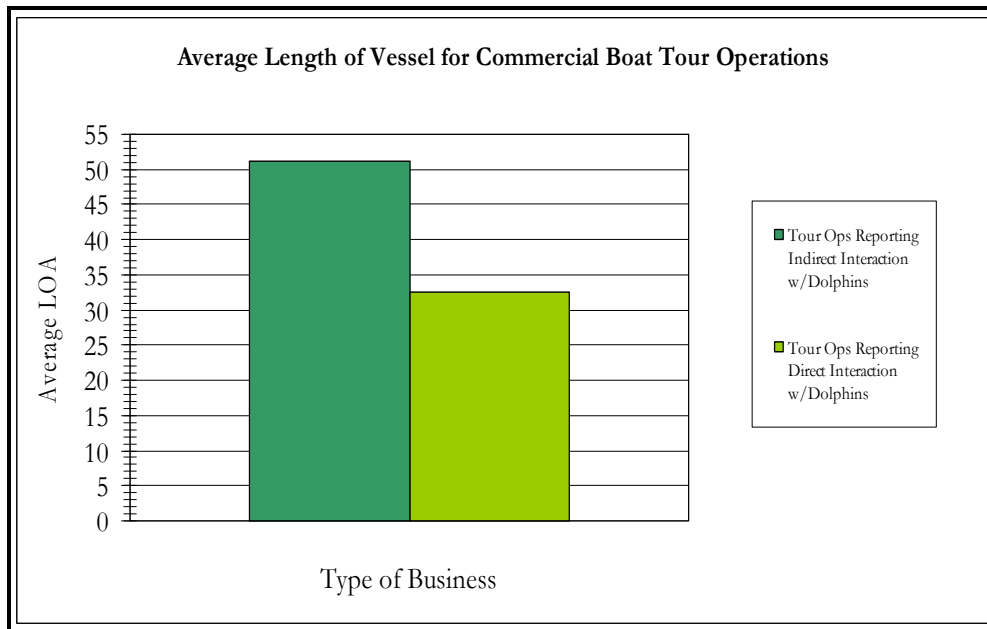


Figure 6-6 Length of Vessels (N=28)

Table 6-7 Maximum Capacity of Tour Boats by Type of Business: All Islands, 2006

Type of Business	Average Maximum Capacity *	
	Mean	Range
Tour Operations Reporting Direct Interaction w/Dolphins	25 (n=9)	6-81
Tour Operations Reporting Indirect Interaction w/Dolphins	99 (n=17)	25 – 400
Spiritual Retreat Businesses	All contracted (variable)	Unknown
Kayak Businesses	1	1-2

* As calculated across all vessels in a given operation (with the exception of kayak businesses).

Additional Cost Factors. Finally, we present information on additional factors tour owner-operators may or must address during the ongoing conduct of their businesses. Because many of the points of departure are some distance from the resort and population centers, many businesses own and maintain customer transport vehicles. Table 6-8 depicts figures that indicate the relative capacities of the firms in this regard. Notably, and intuitively, the larger more generalized operations tend to maintain a greater number of transport vehicles.

Table 6-8 Vehicles Used to Transport Patrons to Operation by Business: All Islands, 2006

Type of Business	Number of Land Vehicles	
	Mean	Range / Mode
Tour Operations Reporting Direct Interaction w/Dolphins	1.5 (n=9)	0 – 5 / 0
Tour Operations Reporting Indirect Interaction w/Dolphins	5.1 (n=18)	0 – 54 / 0
Spiritual Retreat Businesses	All contracted (variable)	unknown
Kayak Businesses	*	*

* Data not collected

Fuel costs are an obvious and significant concern for most owner-operators, and particularly so in the current climate of high fuel costs in the islands. Table 6-9 depicts the reported level of fuel expenditures by island and type of business. Sample sizes are small, but provide a general sense of variability in expenditures for fuel for boats and transport vehicles. Table 6-10 below depicts mean total expenditures for additional cost items in 2006, as averaged across our sample of owner-operators.

Table 6-9 Average Overall Fuel Costs by Island for All Businesses, 2006

Type of Business	Average Overall Fuel Costs (\$)			
	Hawai'i	Maui	O'ahu	Kaua'i
Tour Operations Reporting Direct Interaction	15,654 (n=5)	n/a	51,356 (n=3)	n/a
Tour Operations Reporting Indirect Interaction	48,400 (n=3)	61,008 (n=2)	38,331 (n=2)	84,232 (n=3)
Spiritual Retreat Businesses	*	n/a	n/a	n/a
Kayak Businesses	n/a	n/a	n/a	n/a

* Fuel costs vary by nature of trip and contracted vessel.

Table 6-10 Mean Annual Operating Expenditures, Additional Cost Elements: All Businesses/Islands, 2006

Reported Cost Item (\$)						
Marketing (N=6)	Liability Insurance (N=22)	Food and Supplies (N=19)	Vessel Maintenance (N=22)	Vehicle Maintenance (N=6)	Other Transportation (N=4)	Mooring Fees
52,855	25,873	132,275	55,310	8,723	99,419	*

* Variable; mooring fees at the Waianae small boat harbor increase to \$7.50 per foot per month in April 2007

6.3 Summary Conclusions

The previous sections of this report describe research undertaken to support analysis of the potential economic effects of regulating human interactions with wild spinner dolphins in the MHI. A wide range of pertinent economic and operational data were collected, compiled, and presented in summary form for use by NOAA.

Of particular note in our findings are the clear operational differences detected between commercial boat tour operations that do and do not engage in direct interaction with spinner dolphins. The more generalized operations tend to use larger vessels with higher passenger capacity, and they are more flexible and wide-ranging in the experiences they provide their patrons. Most engage in snorkeling and general sightseeing activities. If interaction with spinner dolphins occurs, it is most typically an unintentional encounter.

But it should be noted that some operators report a “gray area” between truly random encounters and encounters that result because captains know that dolphins are likely to be present in a given area during a particular point in time or under certain environmental conditions. It appears that the possibility of enhanced gratuities can lead some knowledgeable captains to enable a remote viewing experience for the passengers.

Swim with dolphin tours and spiritual retreats involve patently more direct encounters, and it is clear that such operations are tailored to maximize both the benefits of the experience for the patrons and economic return for the firms. For instance, the strategy of dolphin-oriented spiritual retreat leaders is to operate with little overhead by contracting with experienced vessel operators and assistants on a periodic basis to facilitate direct encounters with *Stenella longirostris*. Operators charge relatively high fees for experiences that reportedly involve various visual, physical, and metaphysical forms of interaction with the creatures, and for achieving what are perceived by some to be a range of holistic health benefits.

Tour boat owner-operators offering opportunities for direct interaction with spinner dolphins also appear to have developed certain business strategies for serving clientele and optimizing return on investment. For instance, trip fees tend to be somewhat higher for these operations than for their more generalized tour boat counterparts, and vessel size and hence related trip expenditures tend to be somewhat lower. Moreover, smaller vessel size appears to facilitate a more intimate experience in and around the pods.

These summary findings and the specific quantitative data that comprise the core of this report were generated through discussions with a sample of tour boat owner-operators active in the MHI. We believe the sample is largely representative of the operational tendencies and economic attributes of the principal actors in the fleets in question. Although there are winter and summer peaks in tourism activity in Hawaii, and the current project was conducted only during peak winter months, owners or operators did not report significant differences in the extent of business over the course of the year. In fact, Brewbaker (2001) reports that visitation rates are similar between peak seasons and that the average duration of visits is actually higher in

winter. Given temporal limitations to implementation of fieldwork, we were unable to empirically determine whether more or fewer firms operate only in winter or summer. Based on data of observation and discussions with public officials, however, we assert that the most avid and successful tour boat businesses operate on a year-round basis.

Any consideration of seasonality in this context should address the regional implications of winter weather in the Northern Hemisphere. High swells and brief periods of locally marginal weather conditions both have the potential to inhibit the activities of small boats in certain areas around Hawai'i. For instance, as noted earlier in this report, the Nā Pali coastline of Kaua'i and other north and northwesterly exposures around the islands are subject to the disruptive effects of high swells in wintertime. But we emphasize that such seasonal effects are balanced somewhat in that: (a) high swell and wind events can and do occur and constrain tour boat activities along any given coastline of Hawai'i during any season of a given year, and (b) because study participants were asked to consider economic and other aspects of their businesses across the whole of 2006, the resulting data reflect variation in business activity occurring across the entire year. Moreover, dolphins appear to move around the islands in response to winter storm events, and the pods predictably appear in certain locations (see Norris 1991:174-175). Many tour operators are keenly aware of such patterns and are thus often able to provide clients with a desired viewing experience or other encounter despite the season.

As noted elsewhere in this report, it is difficult to assess the frequency of incidental dolphin encounters and the extent to which these contribute economic benefits to the firms in question. Moreover, while we do not attempt to generate multipliers for gauging the secondary economic impacts of operations and businesses that provide direct encounters, we do provide some information to aid in understanding the data vis-à-vis the larger social and economic context of the islands. For instance, we have consulted the work of Markrich (2004) for additional background data regarding the tour boat industry in Hawaii, including its full scope and relative contribution to the Hawaii tourism economy. This work may be useful for analysts interested in assessing secondary impacts. Utech's work on valuation of whale-watching in the MHI (2000) may also be of some utility in this regard, as may be the aforementioned economic analysis of charter fishing patronage in the MHI generated by O'Malley and Glazier (2001).

We have also briefly discussed problematic interactions between local fishing fleets and tour operations on the Big Island and O'ahu. Given apparent similarities in the habitat preferences of humans who fish and humans who seek out encounters with cetaceans, there is potential for spatial conflict in many of the bays where guided dolphin encounters occur. While assessment of regulations that would displace fishing operations from the areas described here is beyond the scope of this project, we have provided some essential background and have cited materials of utility for use in development of the EIS.

An important consideration for any economic analysis of marine resource use in Hawai'i is valuation of experiences that are not clearly or fully economic under the normative definition of the term. For instance, seafood is obviously sold commercially in the islands. But it is also an important object of sharing and reciprocal exchange in many local settings. As such, any meaningful assessment of potential regulatory changes affecting small boat fishing in the MHI, including those potentially associated with regulation of human interaction with spinner

dolphins, will necessarily address both the formal and informal transactions that are characteristic of the fleets and communities in question.

In the case of guided dolphin encounters, the experience of seeing and in some cases touching dolphins in a natural setting is an experience that is undoubtedly highly valued by the participants. But the actual “value” of that subjective experience is not easily expressed, at least in dollar terms. Moreover, many dolphin tour guides have developed knowledge and various skills that enable and augment the experiences of their patrons. Some have configured their lifestyles and developed identities based on proficiency in so doing. Such factors are also not readily quantified. Some form of qualitative description and analysis may therefore be needed to communicate the experiential worth of dolphin encounters for patrons and guides alike.

Finally, it should be kept in mind that nai'a are of special significance to some Native Hawaiians. Again, while such meaning is not readily expressed in quantitative terms, it may nevertheless bear a range of implications under the stipulations of NEPA and other federal guidance for assessing and setting regulatory policy.

This report has focused on description of relevant economic aspects of a specific form of tour boat operations as recalled by owner-operators in the MHI during 2006. The data are temporally one-dimensional in this respect, and it should be kept in mind that dolphin tours are but a small part of overall commercial tour boat patronage across the islands. Indeed, Markrich (2004:16-17) estimates that commercial tour boats transported a total of 2,700,000 patrons during a period of relative economic decline in 2003, and that the industry generated a total island-wide economic impact of some \$358,742,500 that year. Tour boat firms on Maui and Oahu are thought to have generated the most business, followed by those based on Kaua'i and the Big Island.

The author also reports that the Hawai'i tour boat industry has grown significantly during recent decades. Total gross revenue grew from some \$50 million in 1984 to over \$183 million in 2003, an increase of over 300 percent (Markrich 2004:6). Public officials interviewed during the course of the current project suggest that this trend of growth also applies to dolphin-specific tours, and that kayak-based tours have become particularly popular in the last five years or so. We conclude this report with Table 6-10 below, which indicates extensive growth of the sector on the island of O'ahu. Clearly, the trend of growth and associated generation of revenue bear monitoring in the pending regulatory context that underlies the need for this and related research.

Table 6-11 Annual Gross Receipts, Wildlife Viewing Operations on the Leeward Coast of O'ahu

Fiscal Year	Number of Companies Reporting	Annual Gross Receipts (\$)
1998-1999	2	163,480
1999-2000	3	549,975
2000-2001	4	644,654
2001-2002	4	539,895
2002-2003	5	1,466,942
2003-2004	4	1,849,190
2004-2005	5	2,048,153
2005-2006	5	1,955,181

Source: State of Hawaii, Department of Transportation, Harbors Division

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Tour Ads at Kiosk in Lahaina on Maui