Socioeconomic Research & Monitoring Program for the Channel Islands National Marine Sanctuary

Non-consumptive Recreational Use Estimates via Access from Private Recreation Boats in the Channel Islands National Marine Sanctuary 2007

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Introduction

In 2006-07, a survey was conducted on those who access the Channel Islands National Marine Sanctuary (CINMS) via private household boats to participate in non-consumptive recreation activities. This was a major gap of information identified in the Social Science Plan 2007 – 2010) as part of the Socioeconomic Research & Monitoring Program for the CINMS (National Marine Sanctuary Program 2007). The survey results are summarized in LaFranchi and Pendleton (2008) and detailed analysis of the Knowledge, Attitudes and Perceptions of marine reserves and marine conservation areas and the economic non-market use values for these special zones were addressed in Loper (2008). In addition, a recent follow-up effort on estimating a travel cost model was implemented in a class project Master's thesis by University of California – Santa Barbara, Bren School Students (Gornik et al, 2013). This effort modeled site choice based on travel costs and site attributes (e.g. fish abundance, fish diversity, invertebrate abundance, invertebrate diversity and kelp cover) for those who accessed the CINMS for non-consumptive recreation via private household boats.

The 2006-07 survey effort did not include a mechanism for estimating the total use by those who accessed the CINMS via private household boats for non-consumptive recreation. Thus, in all the above cited efforts, there was no way to extrapolate results from the survey samples to population estimates. Here, this issue is addressed by using the CINMS **S**anctuary **A**erial **M**onitoring and **S**patial **A**nalysis **P**rogram (SAMSAP) and the 2006-07 survey data. SAMSAP is used to derive estimates of the number of boats using the CINMS for non-consumptive recreation. The 2006-07 survey was used to get estimates of the average number of people per boat and the number of days per boat trip. These latter two estimates are used to derive estimates of the number of boat trips and the number of person-days of non-consumptive recreation via access by private household boats. These estimates can be used to aggregate sample results in LaFranchi and Pendleton (2008), Loper (2008) and Gornik et al (2013) as well as future efforts estimating the market economic impacts (e.g. spending and the associated impacts on output/sales, value added, income and employment) on the local economy.

SAMSAP Estimates of the Number of Boats

SAMSAP has been in operation since 1997. SAMSAP counts the number of boats observed for a given day in the CINMS by type of boat (Waltenberger et al 2013). Boats are classified in several classifications. For purposes of this report, two classifications are relevant: Recreational boats doing non-consumptive recreation and sailboats doing non-consumptive recreation. Recreational fishing activities were classified as "Sports Fishing boats", but a distinction is not made between those that are private household boats and those that are the "for hire" charter fishing boats. Although, the 2006-07 survey included some that did recreational fishing or consumptive diving, the main focus was on non-consumptive recreation.

The objective of this report is to provide an estimate of the number boats where those aboard were engaged in non-consumptive recreation for the calendar year 2007. For years 2006 and 2007, the time of the 2006-07 survey, SAMSAP only contained 30 days of sampling. This was not enough sampling days to support estimation of the number of boats by season and type of day, so years 2001 through 2009 were selected to make estimates of the number of private household boats in the CINMS for non-consumptive recreation by season and type of day. This provided 157 days of sampling.

It is hypothesized that the number of boats observed would be different by season and type of day. Based on LaFranchi and Pendleton 2008, the "main boating season" was defined as the months May through September, with the "Off season" months being January through April and October through December. Type of day was classified into "weekdays" and "weekend-holidays". This yields four strata for estimation: 1) Main Season – weekdays, 2) Main Season-weekend-holidays, 3) Off Season – weekdays, and 4) Off Season – weekend-holidays. It is expected that weekend-holidays will, on average, have more boats per day than weekdays.

Two approaches were evaluated for making estimates. The first approach simply develops average of the number of boats by season and type of day. Averages by season and type of day are then multiplies by the number of days in each of the four strata for the calendar year 2007. The second approach adjusts for wind speed based on past research using SAMSAP for commercial boats that found a relationship between wind speed and the number of boats observed with threshold values to identify "true zero days" (Katz 2012). Because the sampling time period had to be extended to years before and after the 2006-07 period, other adjustments were made in a prediction model for economic factors, including population of Santa Barbara and Ventura counties, real per capita income (real meaning adjusted for inflation) and real gasoline prices.

Estimates by Season and Type of Day: Unadjusted for other factors

SAMSAP contained 157 sample days in 2001 – 2009. Table 1 shows the distribution of sample days by the four seasons and type of day strata. Of the 157 sampled days, 79 were during the Main Season and 78 during the Off Season. Relatively small sample sizes were available for weekend-holidays, this is an important limitation for the Main Season, since these are, on average, the highest use days.

Table 1. CINMS SAMSAP Aerial Fly-overs 2001 - 2009

Season[1]	Number of Weekdays	Number of Weekend-Holidays	Total Number of Days
Main Season	62	17	79
Off Season	67	11	78
Total	129	28	157

1. Main Season is months May - September and Off Season is Jan. - Apr. and October - December.

Source: SAMSAP aerial flyover data 2001-2009

A major issue when extrapolating sample estimates of use to population estimates is whether the sample includes "true zero days" i.e. are true zero days averaged into estimates of the average number of boats observed by season and type of day. Table 2 shows the distribution of the sample days that were "true zero days" by the four strata for estimation. In total, 26 sampling days or 16.56% of the 157 sample days were "true zero days". Almost all "true zero days" were weekdays. No "true zero days" were observed during Main Season Weekend-holidays and only one "true zero days" was observed during the Off Season Weekend-holidays.

Table 2. True Zero Days SAMSAP 2001 - 2009[1]

Season	Number of Weekdays	Number of Weekend-Holidays	Total Number of Days
Main Season	6 (9.67%)	0 (0%)	6 (7.59%)
Off Season	19 (28.36%)	1 (9.09%)	20 (25.6%)
Total	25 (19.38%)	1 (3.57%)	26 (16.56%)

1. Days of sampling when zero number of recreational boats or sailboats were observed in SAMSAP 2001-2009.
2. Percents in parentheses are the percent of sample days by season and type of day. (see Table 1 for the number of sample days by season and type of day).

Source: SAMSAP aerial flyover data 2001-2009

As hypothesized, "Main Season" days had higher mean number of boats observed than "Off Season" days and higher mean number of boats observed on weekend-holidays than weekdays (Table 3). Multiplying mean number of boats observed by season and type of day by the number of 2007 calendar days by season and type of day yields estimates of the total number of boats in the CINMS by season and type of day. For the entire calendar year, it is estimated that 3,680 boats contained people undertaking non-consumptive recreation via private household boats in 2007.

Table 3. CINMS Estimated Total Number of Recreational Boats 2007

Season/Type of Day	Mean Number Boats	2007 Number Days	2007 Number Boats
Main Season/Weekday	11.74	106	1,244
Main Season/Weekend-holiday	26.06	47	1,225
Off Season/Weekday	4.01	148	593
Off Season/Weekend-holiday	9.64	64	617
Total		**365**	**3,680**

Source: SAMSAP aerial flyover data 2001-2009

Model Adjusting for Wind and Economic Factors

As noted above, it was hypothesized that wind and economic factors might explain the number of boats observed. It was hypothesized that number of boats observed over time might be explained by economic factors so that the simple means by season and type of day should be adjusted for these factors.

For wind, based on the work of (Katz 2012), data was obtained on wind speed from the "eastern buoy" in the Channel Islands (NOAA, National Data Buoy Center). Wind speed is provided continuously every 10 minutes every day. Wind speed was measured in meters/second, but was converted to "knots" for analysis. The data was obtained for the period 2001 – 2009 and average wind speeds were calculated for each day. The averages for the 157 SAMSAP sample days were then merged with the SAMSAP data for analysis. Two of the 157 days had missing data (May 25 and 26, 2003), so only 155 days of wind speed and SAMSAP data were available to estimate a model including wind. Appendix A contains the wind speeds for each of the 155 days with the number of boats observed and season and type of day.

For the economic factors, data on annual population, real per capita income and real gasoline prices were obtained (Table 4). Real here means adjusted for inflation to 2007 dollars using the Consumer Price Index (U.S. Department of Labor, Bureau of Labor Statistics). Population of Santa Barbara and Ventura counties was used (U.S. Department of Commerce, Bureau of the Census) since most recreational boaters in the CINMS reside in these two counties. Real per capita income was calculated using the populations of the two counties and the personal incomes received by residents of both these counties. Personal income for the two counties was obtained from (U.S. Department of Commerce, Bureau of Economic Analysis). Gasoline prices were obtained from the (U.S. Energy Information Administration). U.S. annual average dollars per gallon were used converted to 2007 dollars.

Table 4. Economic Factors that Potentially Impact the Demand for Recreational Boating in the CINMS 2001 - 2009

Year	Population[1] (Thousands)	Real Per Capita Income[2] (2007 $)	Real Gas Prices per Gallon[3] (2007 $)	Consumer Price Index (2007=1.0)
2001	1,169,853	$40,001	$1.66	1.1708
2002	1,184,667	$39,592	$1.55	1.1525
2003	1,194,880	$40,832	$1.76	1.1268
2004	`1,201,278	$43,171	$2.03	1.0976
2005	1,202,276	$43,954	$2.41	1.0616
2006	1,206,268	$46,139	$2.65	1.0285
2007	1,211,270	$46,379	$2.80	1.0000
2008	1,222,212	$44,561	$3.13	0.9630
2009	1,235,486	$41,960	$2.27	0.9664

1. Santa Barabra plus Ventura counties.
2. Toial personal income for Santa Barbara and Ventura counties divided by the total population of both counties and adjusted to 2007 dollars using the consumers price index.
3. Average annual price of gas in the U.S. adjusted ot 2007 dollars using the consumers price index.

Sources: U.S. Department of Commerce, Bureau of the Census,
U.S. Department of Commerce, Bureau of Economic Analysis
U.S. Energy Information Administration
U.S. Department of Labor, Bureau of Labor Statistics

The Estimated Models

Since the number of boats observed is integer or count data, the appropriate statistical model is either the "Poisson" or "Negative Binomial" regression model. The "Poisson" model assumes the distribution of the number of boats (Y) is distributed with mean equal to variance. The "Negative Binomial" relaxes this assumption when the "Poisson" model has a problem called "over dispersion", which is a form of "heteroskedasticity" or non-constant variance, which leads to a downward bias in the standard errors of the estimated coefficients for explanatory variables (e.g. wind speed, population, real per capita income, and real gas prices). The "Poisson" and "Negative Binomial" models are estimated using the statistical software (the LIMDEP portion of NLOGIT 5, Econometric Software, Inc.).

The "Poisson" and "Negative Binomial" models general take the form of the following:

$$LN(Y) = a + B(X)$$

where,

LN (Y) = the natural logarithm of the number of boats observed
a = constant
B = coefficients on a vector of explanatory variables (X)

Note: the vector of explanatory variables can be linear (arithmetic) or logarithmic. The models are estimated using both specifications. Table 5 has the definitions and descriptive statistics for model variables.

Table 5. Definitions and Descriptive Statistics for Model Variables

Variable Name	Definition	Mean	Std. Error	Minimum	Maximum	N
Y	Number of non-consumptive recreational boats observed	9.4968	0.0831	0	101	155
LN (Y)	Natural logarithm of (Y+1)	1.74087	0.0074	0	4.625	155
Season	1=Main boating season May through September and 0=Off season Jan. -Apr. and Oct. - Dec.	0.4968	0.0032	0	1	155
TDAY	Type of Day, 1=weekday and 0=weekend-holiday	0.8258	0.0024	0	1	155
WSPD	Average Wind Speed on Day of sampling in KNOTS	8.2533	0.0223	2.4711	21.3779	155
LWSPD	Natural logarithm of WSPD	2.0263	0.00268	0.9047	3.0624	155
POP	Population of Santa Barbara and Ventura counties in hundreds of thousands	12.01188	0.001066	11.69853	12.35486	155
LPOP	Natural logarithm of POP	2.4858	0.000088	2.45946	2.514	155
RPCINC	Real Per Capita Income for Santa Barabara and Ventura counties in thousands of 2007 dollars	42.5805	0.0157	39.592	46.379	155
LRPCINC	Natural logarithm of RPCINC	3.75	0.00037	3.68	3.84	155
RGP	Real annual average of U.S. prices for gasoline in 2007 dollars	2.1444	0.00314	1.55	3.13	155
LRGP	Natural Logarithm of RGP	0.737	0.00147	0.4383	1.141	155

Table 6. Estimated Models for the Number of Boats Recreational Boats in CINMS

Dependent Variable LN(Y) Mean=LN (9.497)=1.740873, N=155					
Explanatory Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	1.71498	9.0817	2.5053	29.3125	2.7865
	(2.63)***	(0.54)	(7.92)***	(0.49)	(4.79)***
Season		1.1558	1.099	1.1628	1.1116
		(5.14)***	(4.79)***	(4.95)***	(4.62)***
TDAY		-0.7295	-0.8106	-0.7469	-0.81104
		(-2.46)**	(-3.21)***	(-2.56)**	(-3.20)***
WSPD		-0.4818	-0.0407		
		(-1.53)	(-1.20)		
POP		-0.4514			
		(-0.37)			
RPCINC		-0.06698			
		(-0.43)			
RGP		0.7673			
		(0.80)			
LWSPD	0.26227			-0.3722	-0.30657
	(0.83)			(-1.26)	(-0.99)
LPOP				-6.5255	
				(-0.39)	
LRPINC				-3.0776	
				(-0.42)	
LRPG				1.7281	
				(0.74)	
Summary Statistics					
Alpha (overdispersion)	1.551	1.087	1.1276	1.0958	1.1318
	(8.36)***	(6.75)***	(6.93)***	(6.77)***	(7.01)***
Log Likelihood function	-504.38	-480.82	-483.04	-481.26	-483.25
Restricted log Likelihood	-1233.07	-900.67	-942.91	-906.63	-945.39
Chi-squared	1457.38	839.69	919.74	850.74	924.27
Chi-Square Significance	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***
Psuedo R-squared	0.5909	0.466	0.4877	0.4692	0.4888
AIC	1014.8	977.7	976.1	978.5	976.5

***, **, * means significance at 1%, 5%, and 10%
z-values in parentheses under estimated coefficients

Five model specifications were estimated. For each model, the "Poisson" and "Negative Binomial" models were estimated. The "Negative Binomial" model results are reported. The "Poisson" model was rejected because the test for over dispersion was significant for all models (Alpha in Table 6).

In "Model 1", the number of non-consumptive recreational boats observed was a function of the natural logarithm of wind speed (LWSPD). LWSPD was positively related, but not significant in this simple model. This is opposite of what was hypothesized. It was expected that wind speed would be negatively related to the number of boats observed.

In the estimation of means by four strata (e.g. Main Season-Weekday, Main Season-Weekend-holiday, Off Season-Weekday, and Off Season-Weekend-holiday), it was found that the means were highest for Main Season-Weekend-holiday, followed by Main Season-Weekday, Off Season-Weekend-holiday and Off Season-Weekday. The results from Models 2-5, confirm these results. No other variables are significant in explaining the number of boats observed for the 2001-2009 time period (Table 6). In Gornik et al (2013), wind exposure determined spatial site choice within the CINMS, but here it is found that the total number of boats using the CINMS is not related to wind speed. Of the 157 days of sampling in SAMSAP for 2001-2009, only five days had wind speeds above 18 knots, and during these five days, only one day had zero boats and two days one boat observed. All five of the days were weekdays and three of the five days were Main Season, but two of these days were early May at the beginning of the Main Season.

The explanation for why there was no relationship found between wind speeds and the total number of boats observed by SAMSAP is that 95.5% of boats with non-consumptive recreators were on overnight trips to CINMS with an average number of days per trip equal to 2.27. So the day the boat was observed has less than a 50% probability that the day of observation was the day the boaters arrived in the CINMS. It is the crossing of the Santa Barbara Channel and the wind and tide conditions that would be expected to determine whether a boater makes the decision to go to the islands. Once there, as shown in Gornik et al (2013), wind exposure explains the spatial distribution across island locations.

Conclusion: The mean number of boats by season and type of day are the best estimates for extrapolating from sample to population using SAMSAP data for non-consumptive recreational boats. These means do include "true zero" days.

Estimation of the Number of Boat Trips and Person-days of Non-consumptive Recreation

Number of Boat Trips. The above estimation estimated the number of boats observed doing non-consumptive recreation in the CINMS for year 2007. From LaFranchi and Pendleton (2008), the boats sampled in 2006-07 were overwhelmingly overnight trips to the CINMS with 95.5% being overnight trips. This means that on a given day of sampling most boats have a higher probability of being observed. So when trying to derive estimates of the number of boat trips, the estimated number of boats observed must be divided by the average number of days the boats were in the CINMS. It was estimated that the mean number of days was 2.27. So taking the estimate of the number of boats and dividing by the average number of days in the CINMS per boat trip, it is estimated that for 2007 there were 1,621 boat trips for non-consumptive recreation in the CINMS).

Number of Boat Trips = Number of boats/number of days per boat trip

1,621= 3,680/2.27

Number of Person-days. Another standard measure used in outdoor recreation is the concept of a person-day. A person-day is defined as one person doing an activity for one day or any part of a day. For our application, this estimate is equal to the number of estimated boat trips times the average number of people on-board the boats. Although not reported in LaFranchi and Pendleton (2008), the survey data and documentation was obtained by the author and the mean number of people onboard was estimated. For the 2006-07 samples, there was an average of 2.65 people per boat for boats primarily doing non-consumptive recreation versus 2.72 for boats with people doing primarily consumptive recreation. Using the estimate of 2.65 persons per boat, it is estimated that in 2007 there was 9,752 person-days of non-consumptive recreation via private household boats in the CINMS.

Number of Person-days = Number of Boats * Average Number of People onboard

9,752 = 3,680 * 2.65

Discussion

Here we have estimated three different metrics for the total amount of use in 2007 by those participating in non-consumptive recreation in the CINMS via access from private household boats. The number of boats was estimated using SAMSAP data from 2001 – 2009. A sample of 157 days was used to estimate mean number of boats observed by season and type of day and extrapolated to the all 365 days in 2007. The estimate for the number of boats in 2007 is 3,680.

The number of boat trips was estimated using the estimate of the number of boats from SAMSAP divided by the average number of days each boat spent in the CINMS per boat trip from the 2006-07 survey by LaFranchi and Pendleton (2008) to yield an estimate of 1,621 boat trips.

The number of person-days of non-consumptive recreation via private household boats was then estimated multiplying the estimated number of boats or boat days by the average number of people onboard from the 2006-07 survey by LaFranchi and Pendleton (2008). The estimated number of person-days is 9,752.

The number of boat trips can be used to aggregate sample estimates of non-market economic use value per boat trip to total annual value. Non-market economic use value here is the amount of consumer's surplus or the value a consumer receives for a good or service over and above what they have to pay to obtain the good or service. Here it is the value received by those who accessed the CINMS for non-consumptive recreation in the CINMS via private household boats. From Gornik et al (2013), it was estimated that the non-market economic use value for these users was $53.45 per boat trip. Multiplying this by the estimate of the number of boat trips in 2007 (1,621) yields an estimate of total non-market economic use value of $86,642 (1,621 * $53.45). This is the appropriate metric for inclusion of benefit-cost analysis of public investments to protect or restore natural resources in the CINMS that support non-consumptive recreation, or in facilities and services to support access to the CINMS for this activity.

The estimated number of boat trips can also be used to estimate the market economic impact of this non-consumptive recreation in the CINMS. Market economic impacts include estimates of spending by those undertaking the activity and the associated impacts on sales/output, value added, income and employment, including the "multiplier" or "ripple effects" of the spending. From LaFranchi and Pendleton (2008), the estimated spending per boat trip for those who primarily participated in non-consumptive recreation was $249.10. Multiplying this estimate by the estimated number of boat trips for 2007 yields an estimate of total spending of $403,791 (1,621 * $249.10). This estimate with the details of the spending by spending category can be used as input into an input-output model such as IMPLAN to get estimates of the sales/output, value added, income and employment impacts of this spending on the local economy.

The estimates provided here are ***underestimates*** since the island of Santa Barbara was not included in the SAMSAP data from 2001 – 2009.

Future Research

Future surveys of non-consumptive recreation in the CINMS for those accessing via private household boats should include a sample design that would allow for the extrapolation from sample to population. This would not only allow for better estimates of total use, but would also allow for modeling how the use would change with changes in user and site characteristics/attributes, which was a limitation of the work found in Gornik et al (2013) due to the sampling strategy employed by LaFranchi and Pendleton (2008) in the 2006-07 survey of non-consumptive users.

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Appendix A: Number of Boats Observed and Wind Speed Estimates by Day for SAMSAP Sampling Days 2001 – 2009

Obs	Date	Year	Month	Day	Season	Day type	Boats	Wind Speed
1	20010503	2001	5	3	May-Sept	weekday	3	4.5833
2	20010505	2001	5	5	May-Sept	weekend-holiday	35	10.3624
3	20010522	2001	5	22	May-Sept	weekday	4	5.4835
4	20010529	2001	5	29	May-Sept	weekday	7	6.13
5	20010606	2001	6	6	May-Sept	weekday	17	4.2513
6	20010821	2001	8	21	May-Sept	weekday	18	7.0329
7	20010822	2001	8	22	May-Sept	weekday	5	7.1975
8	20010823	2001	8	23	May-Sept	weekday	12	5.2332
9	20020101	2002	1	1	Other	weekend-holiday	3	3.6559
10	20020108	2002	1	8	Other	weekday	0	6.8979
11	20020110	2002	1	10	Other	weekday	3	5.4471
12	20020117	2002	1	17	Other	weekday	0	7.3649
13	20020131	2002	1	31	Other	weekday	0	7.9411
14	20020206	2002	2	6	Other	weekday	6	4.5347
15	20020303	2002	3	3	Other	weekend-holiday	2	6.2636
16	20020306	2002	3	6	Other	weekday	3	7.6145
17	20020309	2002	3	9	Other	weekend-holiday	9	5.0665
18	20020311	2002	3	11	Other	weekday	0	10.0911
19	20020325	2002	3	25	Other	weekday	5	10.0857
20	20020326	2002	3	26	Other	weekday	0	7.0059
21	20020514	2002	5	14	May-Sept	weekday	1	18.182
22	20020516	2002	5	16	May-Sept	weekday	10	7.4445
23	20020517	2002	5	17	May-Sept	weekday	23	5.5456
24	20020519	2002	5	19	May-Sept	weekend-holiday	6	6.381
25	20020609	2002	6	9	May-Sept	weekend-holiday	2	6.5632
26	20020610	2002	6	10	May-Sept	weekday	10	6.6218
27	20020621	2002	6	21	May-Sept	weekday	5	12.3949
28	20020622	2002	6	22	May-Sept	weekend-holiday	26	11.4164
29	20020723	2002	7	23	May-Sept	weekday	20	13.1885
30	20020724	2002	7	24	May-Sept	weekday	1	12.982
31	20020729	2002	7	29	May-Sept	weekday	0	9.8522
32	20020805	2002	8	5	May-Sept	weekday	22	8.4297
33	20020904	2002	9	4	May-Sept	weekday	18	8.4432
34	20020908	2002	9	8	May-Sept	weekend-holiday	5	9.0546
35	20020909	2002	9	9	May-Sept	weekday	22	5.2311
36	20021002	2002	10	2	Other	weekday	2	6.9832
37	20021103	2002	11	3	Other	weekend-holiday	17	4.9679
38	20021105	2002	11	5	Other	weekday	13	4.9396
39	20021106	2002	11	6	Other	weekday	3	5.3323
40	20021112	2002	11	12	Other	weekday	5	3.2242
41	20021212	2002	12	12	Other	weekday	3	3.187
42	20021213	2002	12	13	Other	weekday	0	3.7128

Obs	Date	Year	Month	Day	Season	Day type	Boats	Wind Speed
43	20021215	2002	12	15	Other	weekend-holiday	0	8.2081
44	20030130	2003	1	30	Other	weekday	0	3.5927
45	20030210	2003	2	10	Other	weekday	5	6.4768
46	20030221	2003	2	21	Other	weekday	3	5.2149
47	20030411	2003	4	11	Other	weekday	3	10.2382
48	20030412	2003	4	12	Other	weekend-holiday	8	4.8181
49	20030414	2003	4	14	Other	weekday	2	8.1665
50	20030416	2003	4	16	Other	weekday	6	6.2557
51	20030417	2003	4	17	Other	weekday	9	6.8142
52	20030418	2003	4	18	Other	weekday	7	18.3791
53	20030419	2003	4	19	Other	weekend-holiday	1	10.4819
54	20030525	2003	5	25	May-Sept	weekend-holiday	41	.
55	20030526	2003	5	26	May-Sept	weekday	35	.
56	20030711	2003	7	11	May-Sept	weekday	17	6.8857
57	20030712	2003	7	12	May-Sept	weekend-holiday	28	4.7924
58	20030715	2003	7	15	May-Sept	weekday	19	11.6742
59	20030811	2003	8	11	May-Sept	weekday	27	8.871
60	20030812	2003	8	12	May-Sept	weekday	2	8.6645
61	20030821	2003	8	21	May-Sept	weekday	28	5.8708
62	20031021	2003	10	21	Other	weekday	10	12.6837
63	20031101	2003	11	1	Other	weekend-holiday	10	5.9019
64	20031104	2003	11	4	Other	weekday	0	8.8562
65	20040107	2004	1	7	Other	weekday	4	5.057
66	20040108	2004	1	8	Other	weekday	0	4.5469
67	20040401	2004	4	1	Other	weekday	1	6.1934
68	20040609	2004	6	9	May-Sept	weekday	1	21.3779
69	20040612	2004	6	12	May-Sept	weekend-holiday	15	6.7359
70	20040701	2004	7	1	May-Sept	weekday	25	8.5242
71	20040713	2004	7	13	May-Sept	weekday	7	12.82
72	20040714	2004	7	14	May-Sept	weekday	3	11.6135
73	20040716	2004	7	16	May-Sept	weekday	11	7.0747
74	20040717	2004	7	17	May-Sept	weekend-holiday	6	8.347
75	20040719	2004	7	19	May-Sept	weekday	29	10.8104
76	20040720	2004	7	20	May-Sept	weekday	5	8.7226
77	20040802	2004	8	2	May-Sept	weekday	23	8.8886
78	20050118	2005	1	18	Other	weekday	1	3.9476
79	20050127	2005	1	27	Other	weekday	3	8.5458
80	20050201	2005	2	1	Other	weekday	0	4.0596
81	20050207	2005	2	7	Other	weekday	2	9.9669
82	20050209	2005	2	9	Other	weekday	3	5.3337
83	20050224	2005	2	24	Other	weekday	2	4.1094
84	20050301	2005	3	1	Other	weekday	0	7.8156

Obs	Date	Year	Month	Day	Season	Day type	Boats	Wind Speed
85	20050412	2005	4	12	Other	weekday	0	7.0302
86	20050415	2005	4	15	Other	weekday	2	8.616
87	20050514	2005	5	14	May-Sept	weekend-holiday	22	6.7616
88	20050531	2005	5	31	May-Sept	weekday	10	6.1003
89	20050608	2005	6	8	May-Sept	weekday	0	12.5873
90	20050617	2005	6	17	May-Sept	weekday	27	11.8523
91	20050628	2005	6	28	May-Sept	weekday	3	9.5863
92	20050719	2005	7	19	May-Sept	weekday	3	9.7037
93	20050720	2005	7	20	May-Sept	weekday	24	8.3514
94	20050730	2005	7	30	May-Sept	weekend-holiday	45	14.5435
95	20050914	2005	9	14	May-Sept	weekday	21	8.9777
96	20050915	2005	9	15	May-Sept	weekday	2	7.8656
97	20050921	2005	9	21	May-Sept	weekday	12	10.55
98	20050927	2005	9	27	May-Sept	weekday	10	8.8211
99	20050928	2005	9	28	May-Sept	weekday	3	9.1558
100	20051014	2005	10	14	Other	weekday	21	5.7615
101	20051026	2005	10	26	Other	weekday	3	5.7305
102	20051027	2005	10	27	Other	weekday	12	10.3732
103	20051101	2005	11	1	Other	weekday	0	4.1177
104	20060104	2006	1	4	Other	weekday	6	4.1676
105	20060106	2006	1	6	Other	weekday	0	3.1487
106	20060117	2006	1	17	Other	weekday	0	3.2215
107	20060201	2006	2	1	Other	weekday	0	7.1165
108	20060203	2006	2	3	Other	weekday	2	9.3771
109	20060209	2006	2	9	Other	weekday	10	3.3605
110	20060216	2006	2	16	Other	weekday	1	13.3922
111	20060330	2006	3	30	Other	weekend-holiday	2	5.3647
112	20060412	2006	4	12	Other	weekday	0	10.1154
113	20060418	2006	4	18	Other	weekday	1	8.4765
114	20060419	2006	4	19	Other	weekday	14	6.8156
115	20060420	2006	4	20	Other	weekday	2	6.9546
116	20060526	2006	5	26	May-Sept	weekday	1	12.4867
117	20060530	2006	5	30	May-Sept	weekday	1	8.6119
118	20060628	2006	6	28	May-Sept	weekday	8	12.6392
119	20060629	2006	6	29	May-Sept	weekday	22	11.8186
120	20060701	2006	7	1	May-Sept	weekend-holiday	4	13.3882
121	20060803	2006	8	3	May-Sept	weekday	37	7.8808
122	20060905	2006	9	5	May-Sept	weekday	19	12.9631
123	20060919	2006	9	19	May-Sept	weekday	1	8.2653
124	20070604	2007	6	4	May-Sept	weekday	0	6.1502
125	20070714	2007	7	14	May-Sept	weekend-holiday	48	10.2449
126	20070815	2007	8	15	May-Sept	weekday	0	10.7819

Obs	Date	Year	Month	Day	Season	Day type	Boats	Wind Speed
127	20070829	2007	8	29	May-Sept	weekday	5	13.202
128	20070902	2007	9	2	May-Sept	weekend-holiday	101	7.5875
129	20071008	2007	10	8	Other	weekday	32	5.8506
130	20071107	2007	11	7	Other	weekday	0	7.3595
131	20071108	2007	11	8	Other	weekday	6	8.9723
132	20071129	2007	11	29	Other	weekday	11	3.5387
133	20071203	2007	12	3	Other	weekday	1	6.1772
134	20080410	2008	4	10	Other	weekday	6	11.3246
135	20080412	2008	4	12	Other	weekend-holiday	40	4.5037
136	20080415	2008	4	15	Other	weekday	3	19.4331
137	20080419	2008	4	19	Other	weekend-holiday	14	12.3099
138	20080515	2008	5	15	May-Sept	weekday	24	6.1151
139	20080616	2008	6	16	May-Sept	weekday	0	8.6308
140	20080714	2008	7	14	May-Sept	weekday	20	11.7646
141	20080930	2008	9	30	May-Sept	weekday	14	11.0547
142	20090225	2009	2	25	Other	weekday	0	14.3478
143	20090325	2009	3	25	Other	weekday	3	6.937
144	20090407	2009	4	7	Other	weekday	2	8.1112
145	20090409	2009	4	9	Other	weekday	6	14.7743
146	20090413	2009	4	13	Other	weekday	7	4.6926
147	20090420	2009	4	20	Other	weekday	12	4.7075
148	20090503	2009	5	3	May-Sept	weekend-holiday	6	10.55
149	20090504	2009	5	4	May-Sept	weekday	0	18.7219
150	20090519	2009	5	19	May-Sept	weekday	6	9.7807
151	20090521	2009	5	21	May-Sept	weekday	11	8.288
152	20090523	2009	5	23	May-Sept	weekend-holiday	3	7.2758
153	20090530	2009	5	30	May-Sept	weekend-holiday	50	8.3865
154	20090609	2009	6	9	May-Sept	weekday	10	7.9884
155	20090610	2009	6	10	May-Sept	weekday	4	8.7793
156	20091202	2009	12	2	Other	weekday	1	8.7413
157	20091218	2009	12	18	Other	weekday	3	2.4711