



**A Socioeconomic Profile of Recreation Users of
the California Northern Central Coast Region,
Greater Farallones National Marine Sanctuary
and the northern portion of Monterey Bay
National Marine Sanctuary, 2011**

U.S. Department of Commerce
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NOAA's Office of National Marine Sanctuaries
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Cover

ONMS (Top Left). MBNMS, Bob Talbot (Top Center). Brandt Cormorant GFNMS (Top Right). GFNMS (Bottom Left). Brown Pelican UFWS (Bottom Right).

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Abstract

This report provides a socioeconomic profile of recreation users in California's Northern Central Coast Region, which includes the Greater Farallones National Marine Sanctuary (GFNMS) and the northern portion of the Monterey Bay National Marine Sanctuary (MBNMS). The Cordell Bank National Marine Sanctuary is also located within the region but there was not enough information obtained to do a profile for this sanctuary.

The information used here was from a study conducted by Ecotrust for the State of California's Monitoring Enterprise's North Central Coast (NCC) MPA Baseline Program. Point97 (Ecotrust's small business unit) provided all the data and documentation so we could estimate how much of the recreation activity in the NCC region was done in national marine sanctuaries. The study was done covering the activity in the year 2011.

A socioeconomic profile includes demographics (e.g. age, race/ethnicity, gender, education level, household income, household size, and place of residence) of the users; the amount of use by type of recreation activity; and the spending in the local economy while doing the recreation activity, and how that spending generates output/sales, value-added, income and employment in the local economy.

The report compares profiles of the users of the entire NCC region with users of the GFNMS and the users of the northern portion of MBNMS, and between the GFNMS and the northern portion of MBNMS. Statistically significant differences are highlighted.

Key Words

Demographics, Recreation use, person-days, economic impact/contribution, output/sales, value-added, income, jobs.

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Glossary Terms

(adapted from Day, 2011)

Employment –The total annual average jobs. This includes the self-employed in addition to wage and salary employees, and all full-time, part-time and seasonal jobs, based on a count of full-time and part-time job averages over twelve months.

Intermediate Inputs -Goods and service required to create a product.

Labor Income – Is equivalent to employee compensation + proprietor (business owner) income.

Output –The total value of an industry’s production, comprised of the value of intermediate inputs and value added.

Person-Days –The number of days (not trips) a person takes.

Trip-Related Expenditures – Expenditures on goods and services for specific trip, such as food or live bait.

Value Added –Value added demonstrates an industry’s value of production over the cost of the goods and services required to make its products. Value Added is often referred to as Gross Regional Product.

1. Introduction

Source of Information

The information used here was from a study conducted by Ecotrust (Chen et al., 2013) supported by the State Coastal Conservancy, the State of California, and the California Department of Fish and Wildlife through the California Sea Grant Program. The study provided a baseline for socioeconomic monitoring in the MPA Program under the Marine Life Protection Act for the North Central California (NCC) Region. The NCC Region covers an area which includes Greater Farallones National Marine Sanctuary (GFNMS), the northern portion of Monterey Bay National Marine Sanctuary (MBNMS) and Cordell Bank National Marine Sanctuary (CBNMS), however no observations were obtained for CBNMS. In 2015, we obtained the data and documentation from Ecotrust.

Survey Methodology

Chen et al. (2013) used an Internet Panel developed by Knowledge Networks, Inc. (KN) for 13 counties in North Central California within a one-day's trip to the NCC Region. In 2010, the study area's population included 6,943,138 people age 18 or older out of the total population of 8,984,415 (U.S. Census 2010). The KN panel included 6,129 people and 5,079 panel members responded to the survey for a response rate of 82.9%. Spatial information was obtained using an on-line tool developed to obtain the spatial use by activity type on the respondent's last trip. About 60 percent of respondents completed the mapping portion of the survey (3,018 respondents that mapped 13,955 data points). The data was weighted by KN to make it representative of the study area population using the 2010 Census by gender, race, and ethnicity (Hispanic and Non-Hispanic) for those ages 18 or older. See Chen et al. (2013) for details.

What was Estimated

The data was for the year 2011 and covered all recreation uses, but was primarily focused on non-consumptive recreation uses. Many users do both consumptive and non-consumptive recreation over a 12-month period or even on their last trip to the NCC Region. Since we recently had estimated recreational fishing use and the economic impacts of that use (Leeworthy and Schwarzman 2015), we focused here on non-consumptive recreation use. All the estimates included here cover the entire NCC Region, GFNMS and the northern portion of the MBNMS.

Since the data obtained spatial use, it allowed us to estimate recreation uses within the two sanctuary areas along with a socioeconomic profile of the users. Recreation use was estimated by type of recreation activity. Comparative demographic profiles of users were developed for the NCC Region, GFNMS and the northern portion of MBNMS and tested for statistical differences. Expenditure profiles by category were also developed for the three areas and the IMPLAN input-output model was used to estimate the economic impact of these expenditures on the local area economies for the NCC Region, GFNMS

and the northern portion of MBNMS in terms of total output, value added, income and employment. The Chen et al. (2013) report did not include estimates of the economic impact of the expenditures, so we did two estimates for the economic impact of the NCC Region; one with all visitors and all recreation activities and one with only non-consumptive recreation for comparison with the GFNMS and the northern portion of MBNMS. For the details on how each estimates was made, see Leeworthy et al (2015).

Definition of Study Areas

In this report, there are three types of study areas: 1) the survey sampling area, 2) the areas where the recreation activity takes place, and the areas where the primary socioeconomic impacts take place.

Survey Sampling Area. **The survey sampling area included 13 counties within a reasonable one-day’s reasonable one-day’s trip to the NCC Region (** Table 1.1 and Figure 1.1).

Table 1.1 Survey Sampling Study Area for the NCC Region

Counties
Alameda
Contra Costa
Lake Marin
Marin
Mendocino
Napa
Sacramento
San Francisco
San Mateo
Santa Clara
Santa Cruz
Solano
Sonoma

Source: Chen et al. (2013)

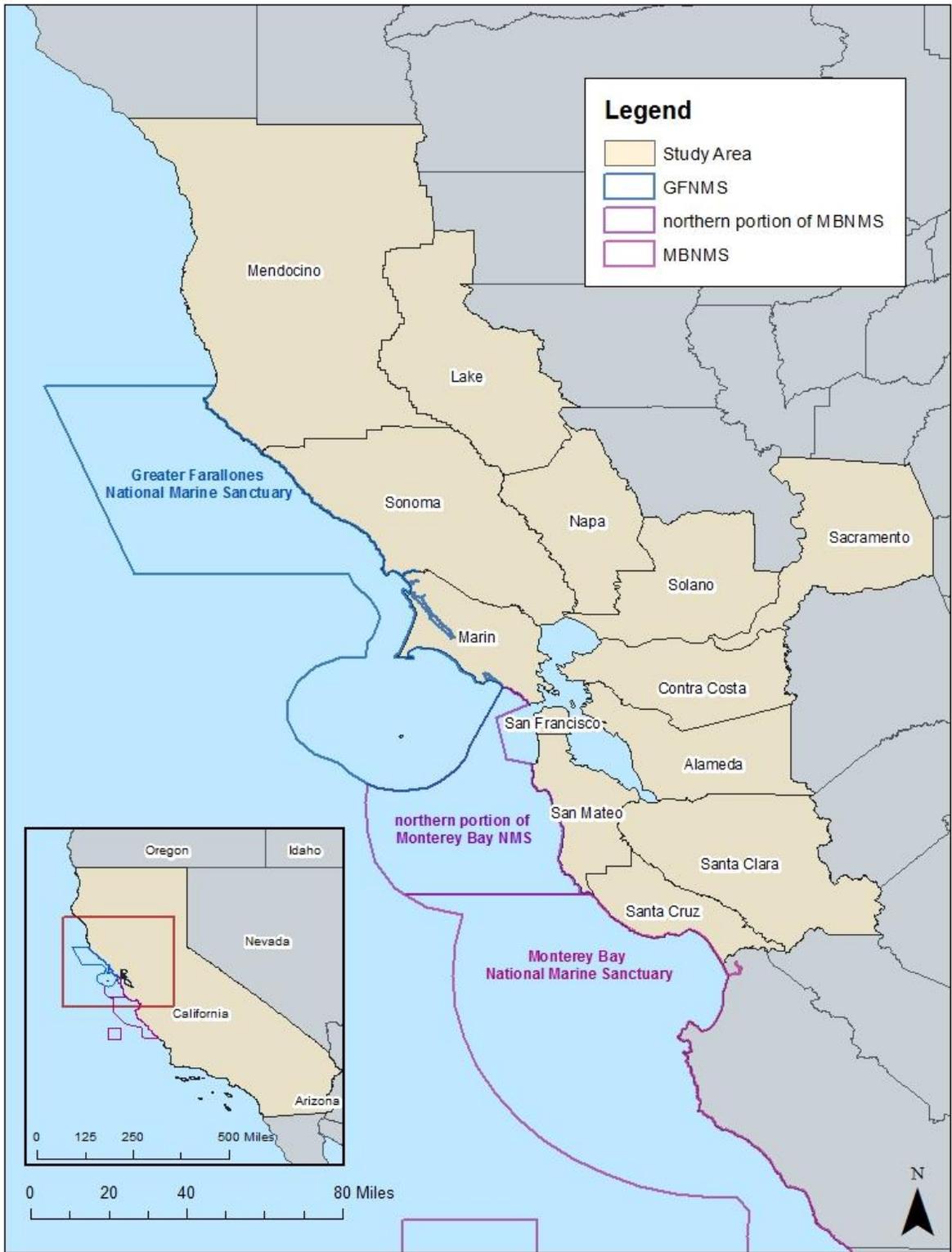


Figure 1.1 Map of the Survey Sampling Area

Areas of Recreation Activity. The NCC Region extends from Alder Creek in the north to Pigeon Point in the south. The GFNMS and the northern portion of the MBNMS are generally sub-sets of the NCC Region, however the northern portion of MBNMS doesn't include San Francisco Bay or an area offshore from the mouth of San Francisco Bay, which is being evaluated to be included in MBNMS. The GFNMS extends from a point just below the NCC Region boundary in the north to Rocky Point in Marin County in the south. The northern portion of MBNMS extends from the southern boundary of Marin County in the north to Pigeon Point in the south. The seaward sanctuary boundaries are shown in Figure 1.2.

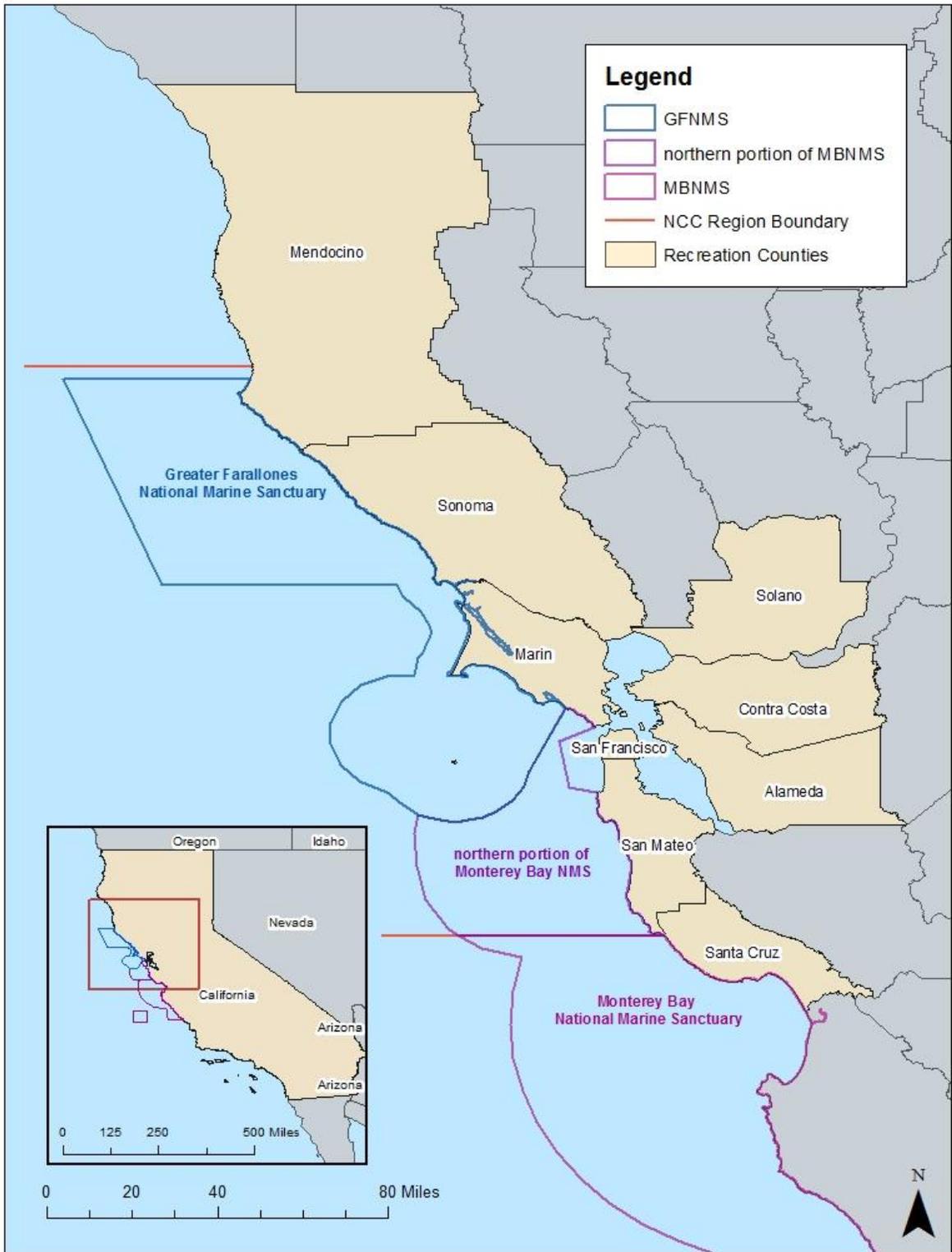


Figure 1.2 Map of the Recreation Areas

Areas of Economic Impact. Each of the three areas of recreation activity has their own separate areas where the primary socioeconomic impacts of the recreation activity take place. Here we focus on where the primary economic impacts take place from spending associated with the recreation activities. In using the IMPLAN input-output model, the first task is to define the study area for the economic impact estimation. IMPLAN uses a county as the basic unit and one can build a study area as an aggregation of counties. Because IMPLAN estimates the “multiplier” impacts, which include indirect and induced impacts (see Chapter 4 for definitions), it is important to capture counties which account for a high proportion of the inputs into production, especially labor since many people who work in coastal counties live inland in adjacent counties. We defined counties as primary counties (counties adjacent to the coastal and ocean waters) and secondary counties (counties for which a high number of employees in the primary counties live). The employees in primary counties that live in secondary counties spend a portion of their incomes in their home counties for housing, food, transportation and other services and this makes up the “induced” portion of the “multiplier” in IMPLAN.

We used the “Census of Inter-county Commuters” (U.S. Census 2009-2013), which provides the employment by county of residence and county of work to determine secondary counties of impact. We used a cut-off of 4,000 employees to establish whether a county would be counted as a secondary impact county. The details of this estimation are provided in Leeworthy et al (2015).

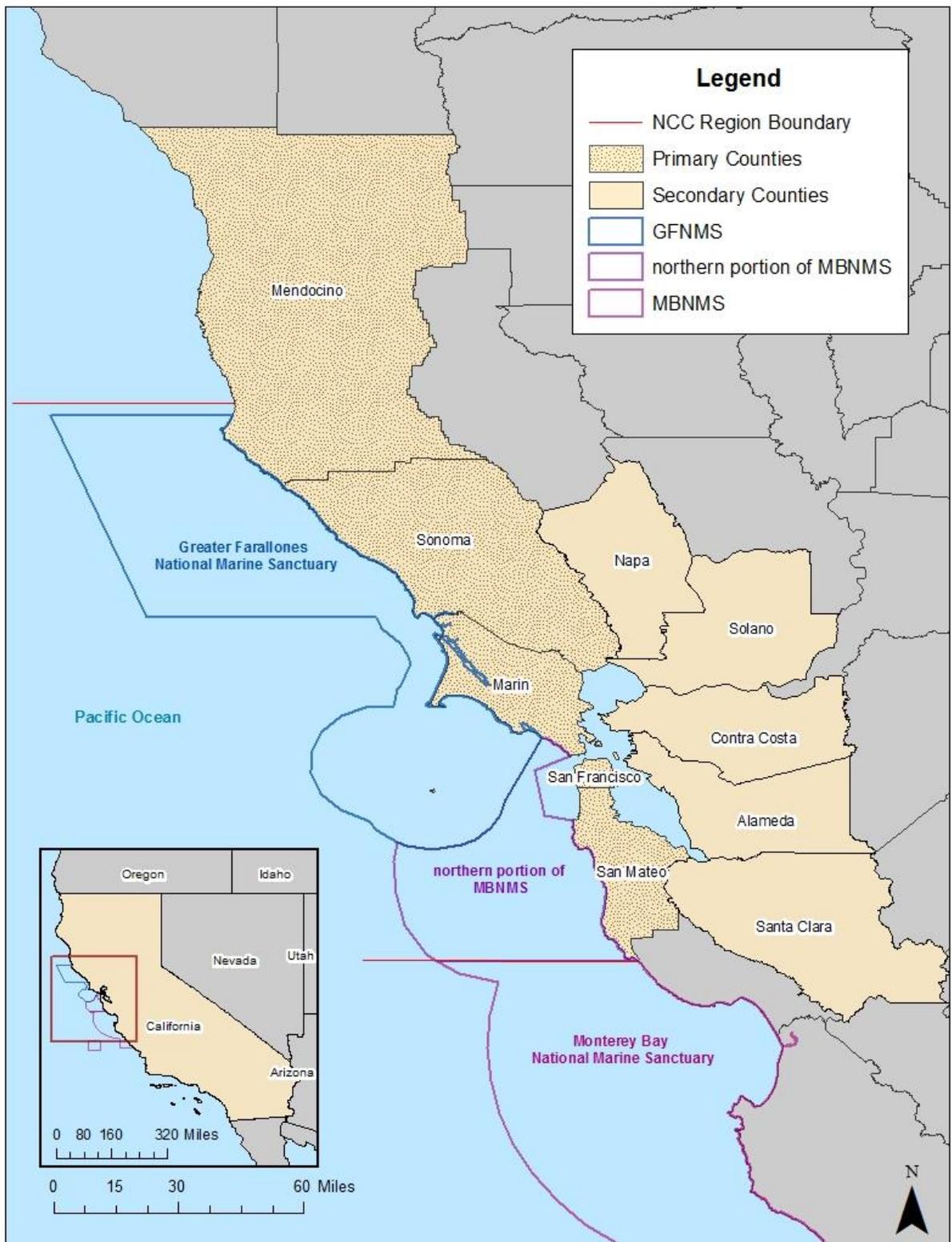


Figure 1.3 Areas of Economic Impact for the NCC Region

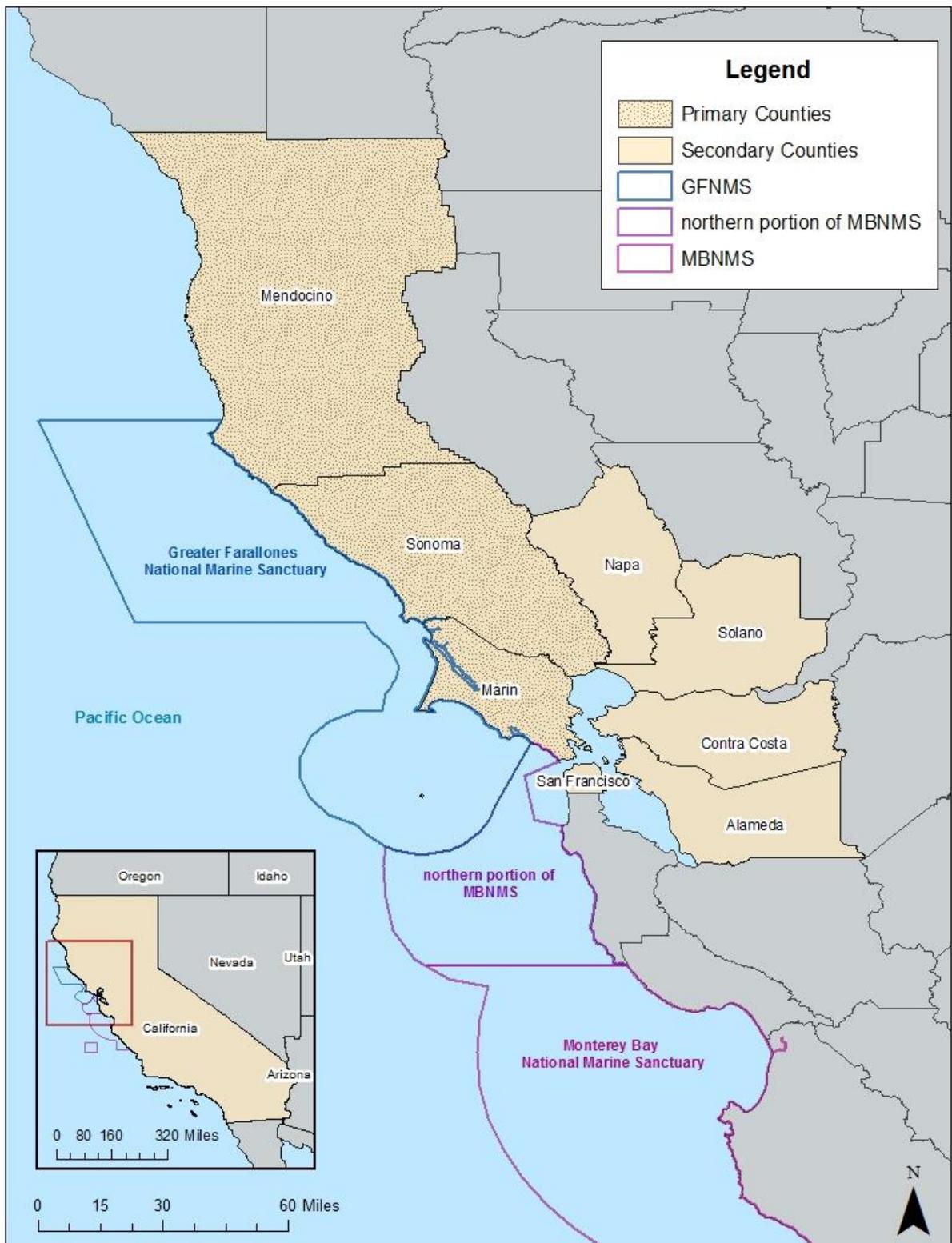


Figure 1.4 Areas of Economic Impact for GFNMS

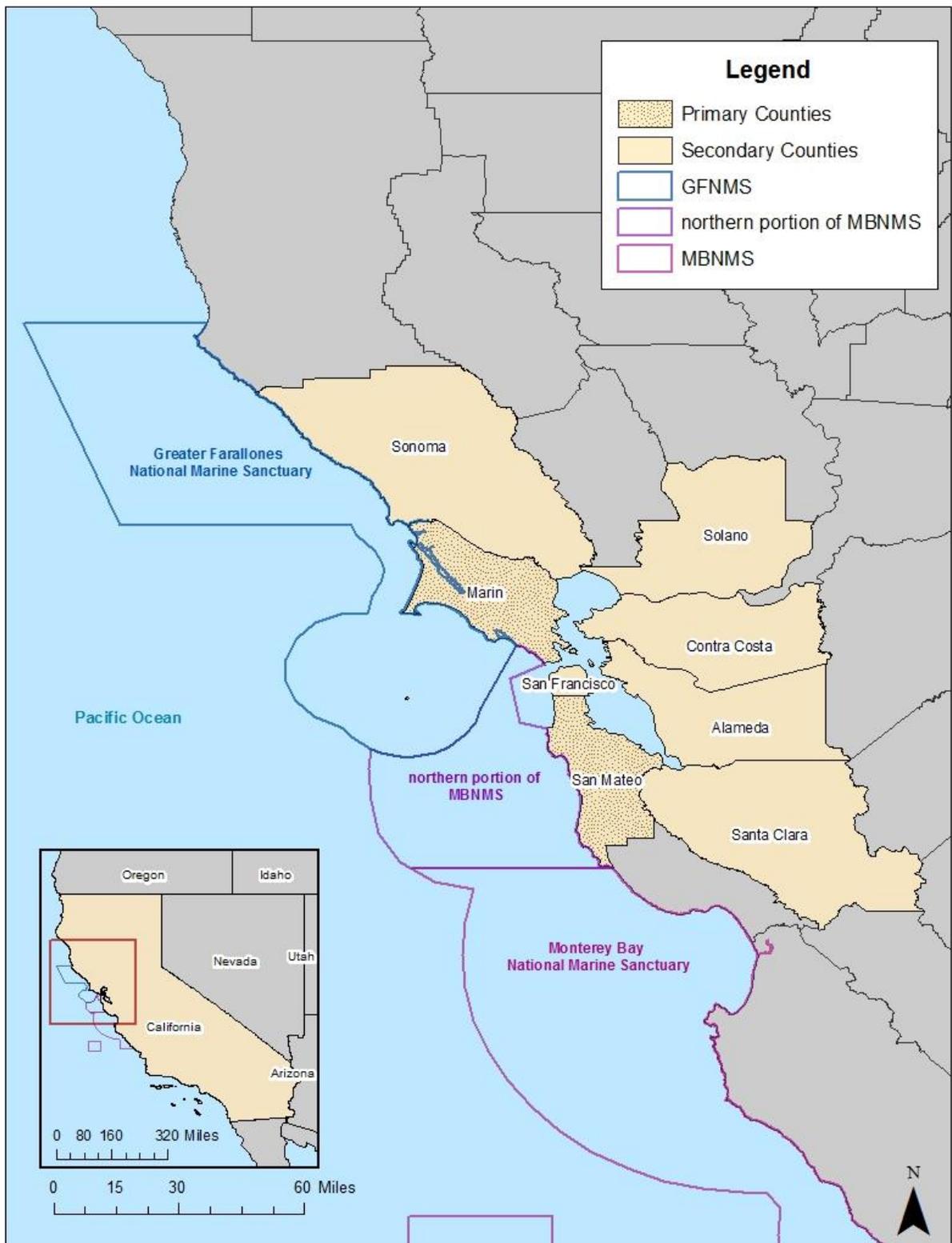


Figure 1.5 Areas of Economic Impact for the northern portion of MBNMS

2. Demographic Profiles of Users – Who are the users?

Comparative Profiles for the NCC Region, GFNMS and the norther portion of MBNMS

Age. Recreators in the whole NCC region were, on average, slightly older than those that recreated in the two sanctuaries, but this difference was not statistically significant. The highest proportion of users in all three areas was in the age category 55-64 ().

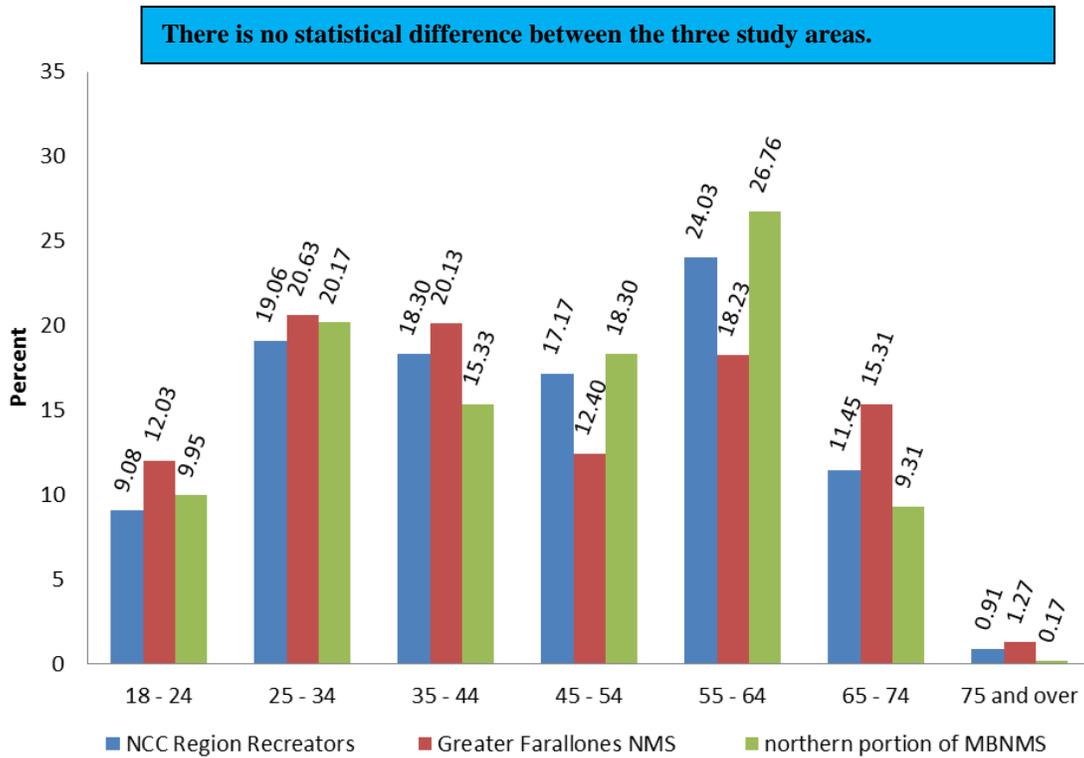


Figure 2.1 Age Distribution in the 3 study areas

Table 2.1 Age Statistics for the 3 Study Areas

	NCC Region Recreators	Greater Farallones NMS	northern portion of MBNMS
Minimum	18	19	18
Maximum	100	78	75
Mean	46.21	45.03	45.29
Median	46	42	46
Mode	56	56	56

Gender. A higher proportion of recreators in the NCC region and the two sanctuaries were male and there are no significant differences between the three study areas (Figure 2.2.2).

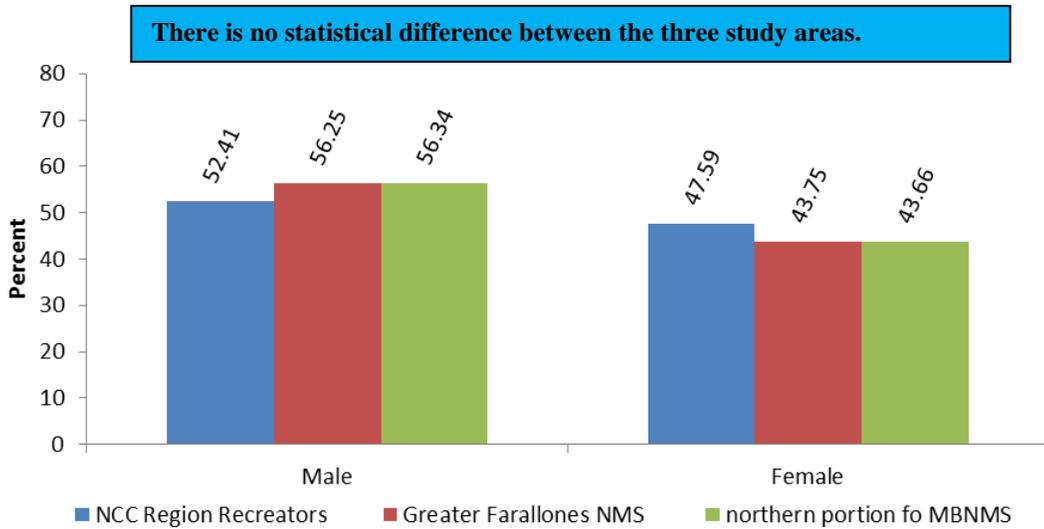


Figure 2.2 Gender Distribution in the 3 Study Areas

Race and Ethnicity. The majority of the recreators in all the three regions were white, non-Hispanic. Although the percent of white, non-Hispanics in GFNMS was slightly greater than those in the NCC Region or the northern portion of MBNMS, there were no significant differences between the three study areas (Figure 2.3).

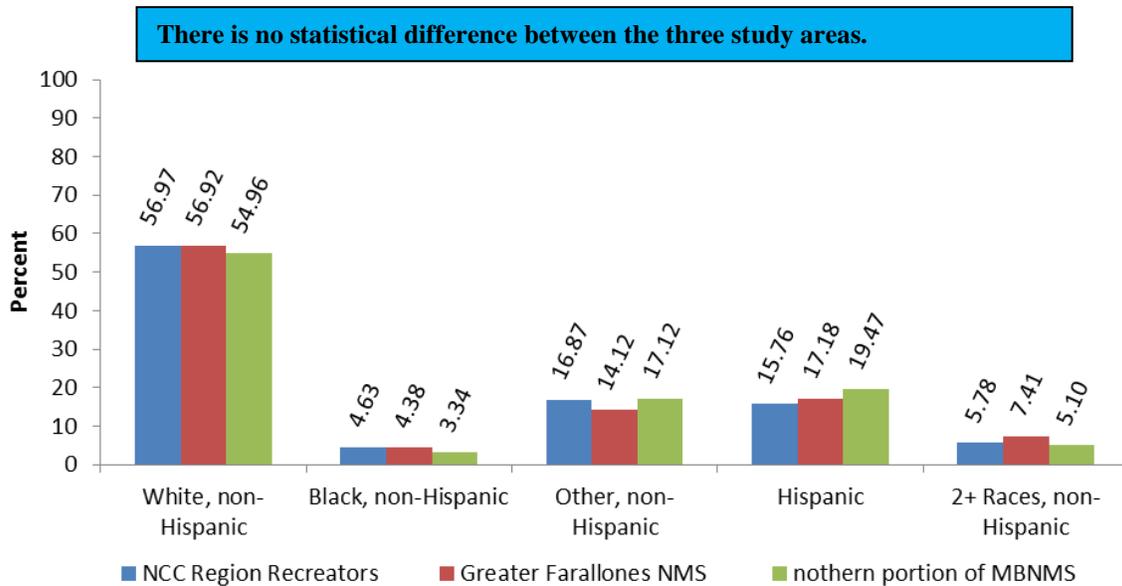


Figure 2.3 Race and Ethnicity in the 3 Study Areas

Marital Status. A higher proportion of the recreators in the three study regions were married. But there was no statistical differences between the NCC region and the two sanctuaries (Figure 2.4).

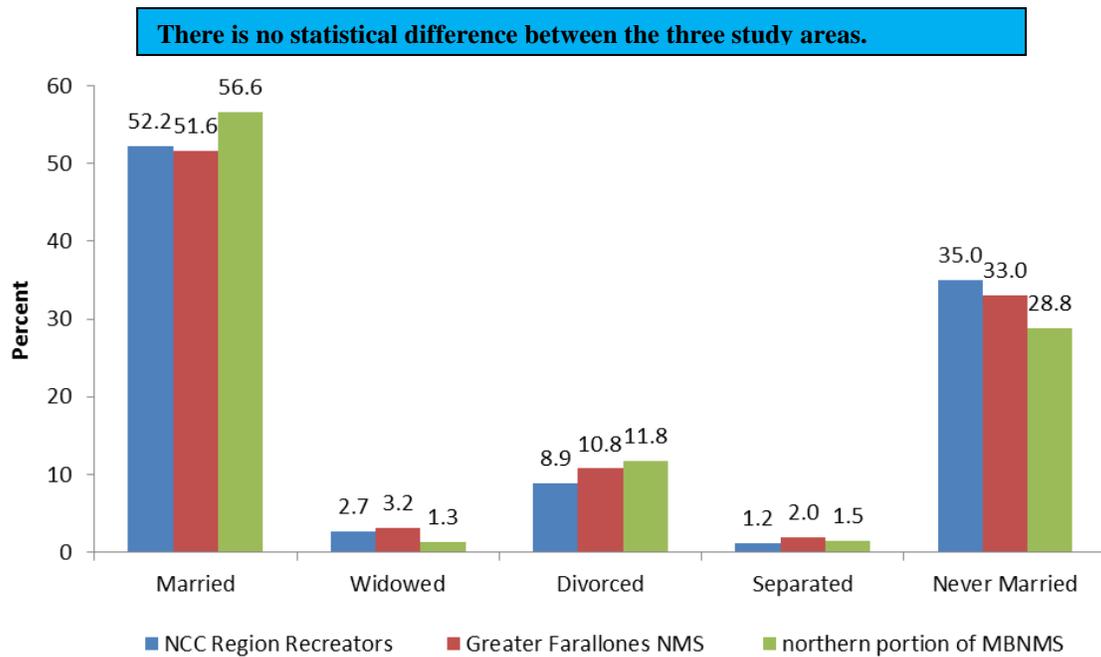


Figure 2.4 Marital Status Distribution of the 3 Study Areas

Head of Household. A great majority of the population that recreates in the NCC Region and the two sanctuaries are heads of household and the differences between the three study areas was not statistically significant (Figure 2.5).

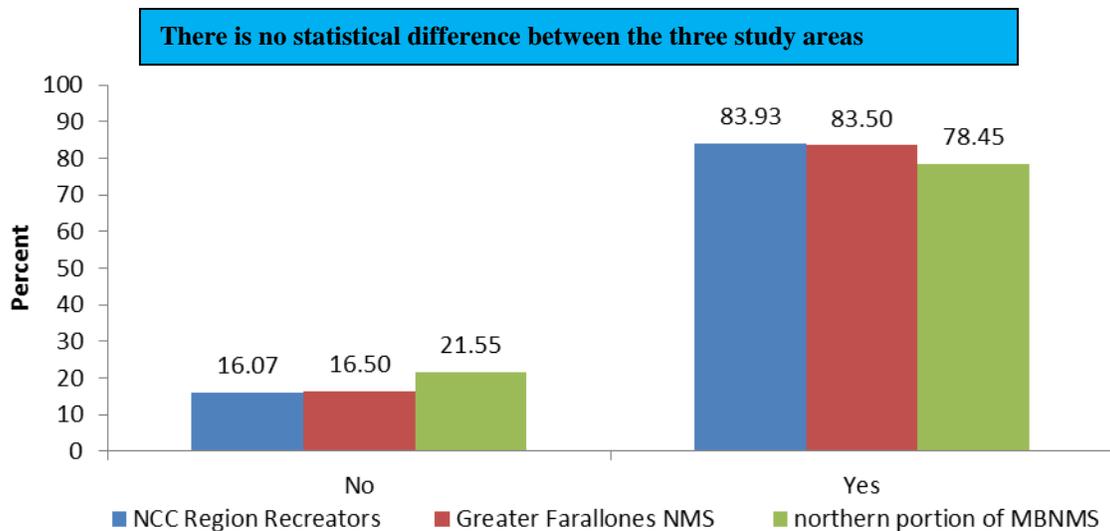


Figure 2.5 Head of Household of the 3 Study Areas

Household Size. The majority of the recreators in the NCC region, GFNMS and the northern portion of MBNMS came from a 2 person household. Even though the percentage of the people that were from a 2 person household was greater in the northern portion of MBNMS, there was no statically significant difference between the NCC region and the two sanctuaries (Figure 2.6).

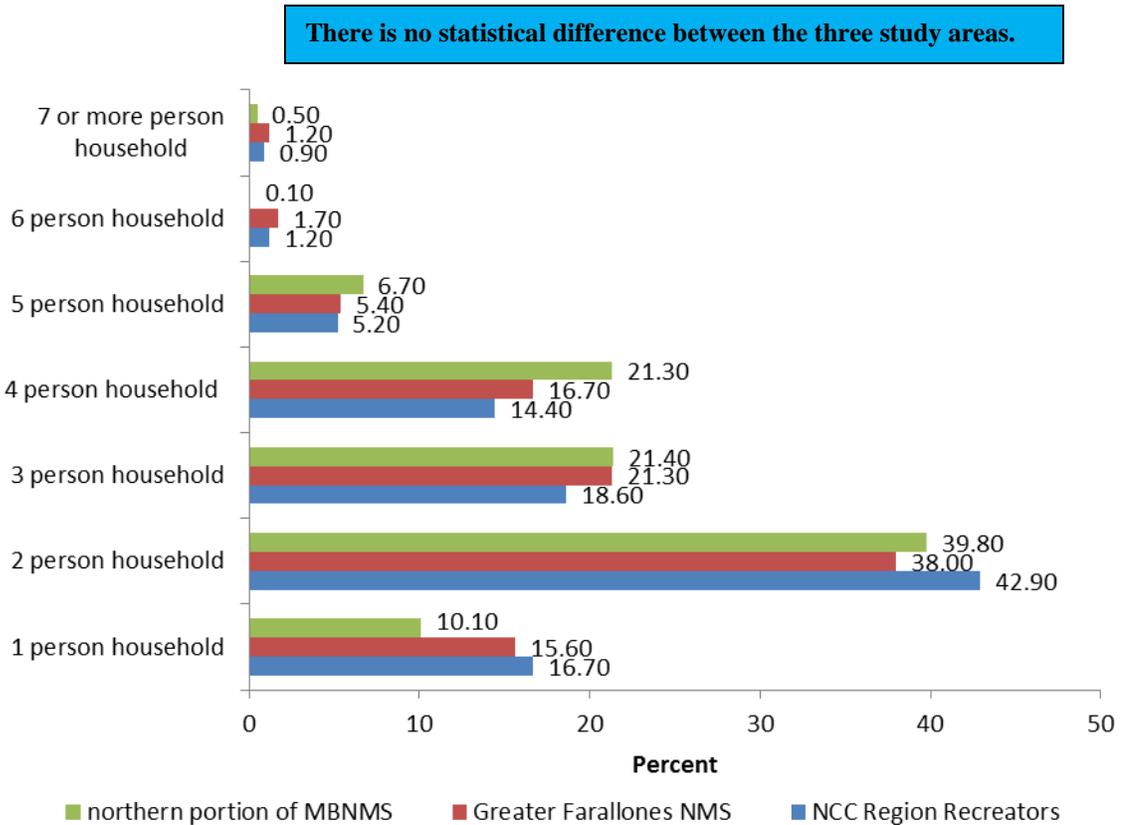


Figure 2.6 Household Size Distribution of the 3 Study Areas

Table 2.2 Household Size Statistics

	NCC Region Recreators	Greater Farallones NMS	northern portion of MBNMS
Minimum	1	1	1
Maximum	15	12	7
Mean	2.57	2.69	2.77
Median	2	2	3
Mode	2	2	2

Housing Type. A higher proportion of the recreators in the NCC region and the two sanctuaries lived in a detached house. Although the percentage of recreators that lived in a detached house was slightly lower in the northern portion of MBNMS, the differences between the 3 regions were not statically significant (Figure 2.7).

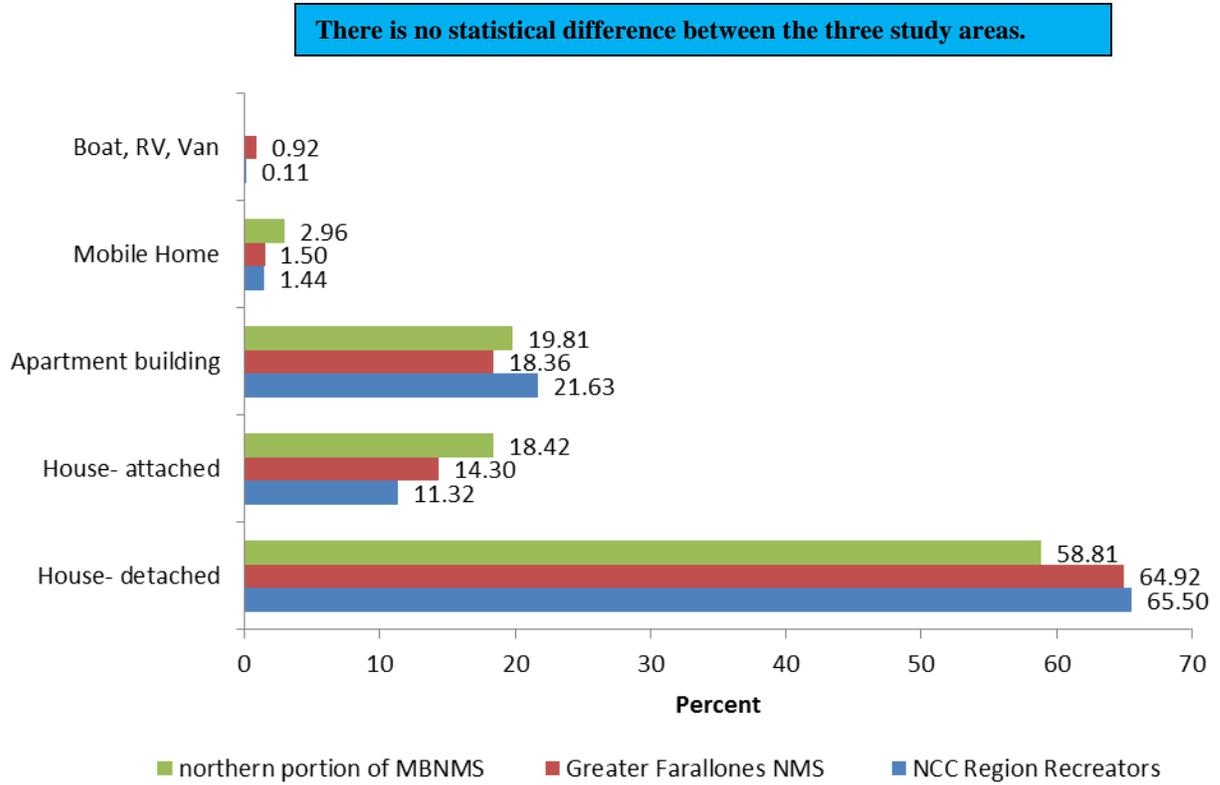


Figure 2.7 Housing Type Distribution of the 3 Study Areas

Current Employment Status. The majority of the recreators in the NCC region and the two sanctuaries were working- paid employees and there was no statically significant difference between the 3 regions (Figure 2.8).

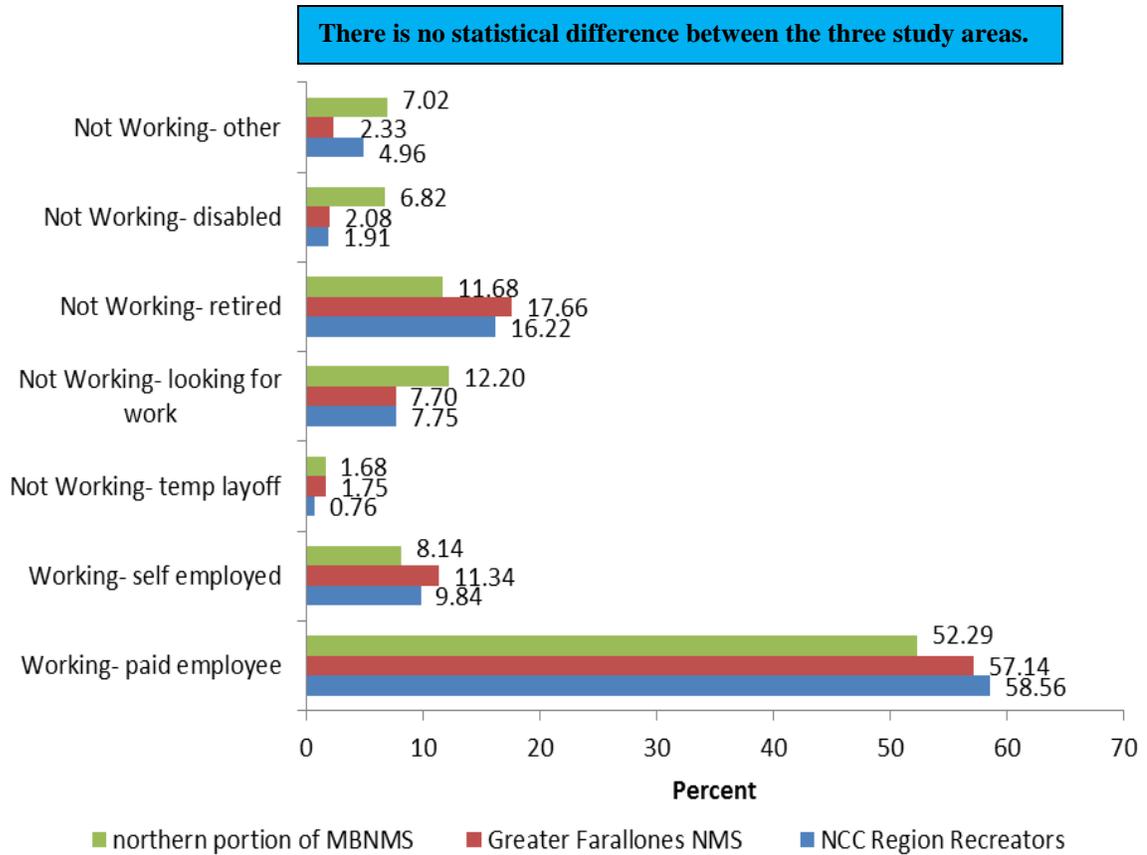


Figure 2.8 Employment Status Distribution of the 3 Study Areas

Educational Level. A higher proportion of the recreators in the NCC region and the northern portion of MBNMS attained a bachelor’s degree or higher, while the majority of the population that recreated in GFNMS only attended some college. There is a statically significant difference between the recreators in the GFNMS and the recreators in the northern portion of MBNMS and there is no statistical difference between the recreators in the NCC region and the recreators in the GFNMS or the northern portion of MBNMS when it is divided into these categories (Figure 2.9).

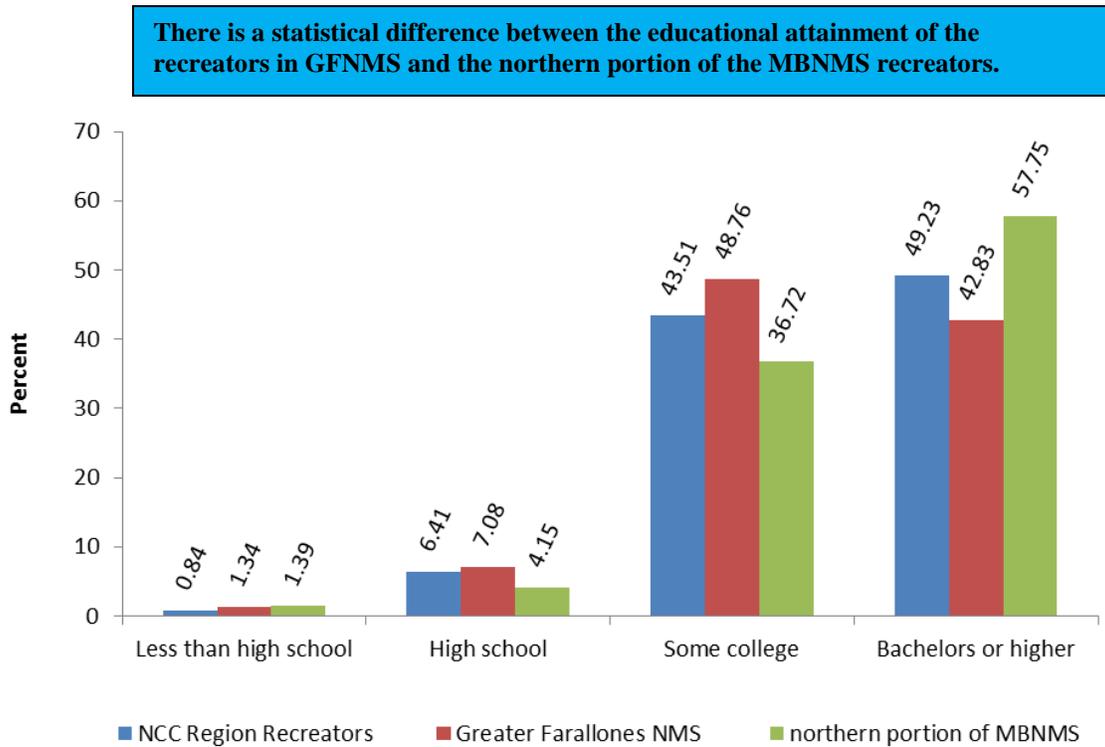


Figure 2.9 Educational Level Distribution of the 3 Study Areas

Household Income. A slightly higher proportion of the recreators in the NCC region, GFNMS and the northern portion of MBNMS had a household income between \$75,000 and \$99,999 and there was no statistically significant difference between the NCC region and the two sanctuaries (Figure 2.10).

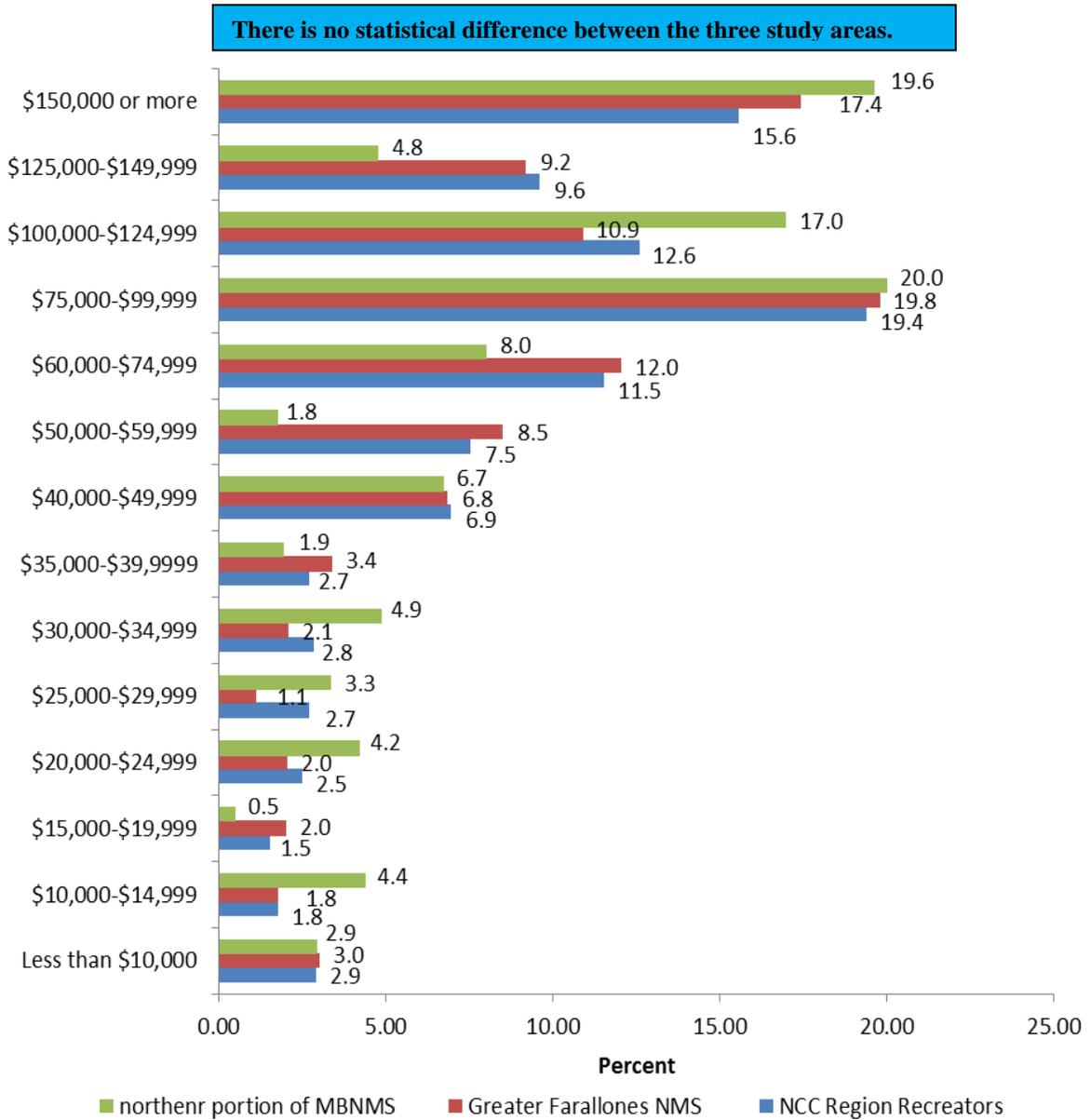


Figure 2.10 Household Income Distribution of the 3 Study Areas

Zip Codes. Table 2.3 shows the distribution of the top five zip codes in which the NCC Region, GFNMS and the northern portion of MBNMS recreators reside.

Table 2.3 Top Five Zip Codes for each Study Area

Study Area/Rank	Zip Code	Percentage
NCC Region Recreators		
1	94109	1.26%
2	95831	1.25%
3	94114	1.18%
4	94521	1.12%
5	94080	1.07%
Greater Farallones NMS		
1	95818	3.94%
2	95687	2.44%
3	95632	2.23%
4	94080	2.19%
5	95630	1.95%
norther portion of MBNMS		
1	94541	6.06%
2	95062	3.33%
3	94002	2.64%
4	94109	2.50%
5	94087	2.42%

Counties. Table 2.4 shows the distribution of the Top Five Counties that the NCC Region, GFNMS and the northern portion of MBNMS recreators reside. Alameda, Contra Costa and Santa Clara within the top 5 counties recreators were residents from in all the three study areas.

Table 2.4 Top Five Counties for each Study Area

Study Area/Rank	County	Percentage
NCC Region Recreators		
1	Santa Clara	17.52%
2	Sacramento	16.45%
3	Alameda	16.04%
4	Contra Costa	12.57%
5	San Francisco	11.61%
Greater Farallones NMS		
1	Sacramento	24.15%
2	Contra Costa	15.52%
3	Santa Clara	13.13%
4	Alameda	12.38%
5	Sonoma	9.54%
norther portion of MBNMS		
1	Santa Clara	28.50%
2	Alameda	21.95%
3	San Mateo	12.73%
4	Contra Costa	9.88%
5	Santa Cruz	8.04%

3. Recreational Use – What are the users doing?

This chapter presents information on the annual level of activity participation for the NCC region, GFNMS and the northern portion of MBNMS. Information is presented on annual and last trip activity, person-trips and person-days. For detailed descriptions of the analysis of activity participation, refer to the Technical Appendix of this Report (Leeworthy et al, 2015).

Annual and Last Trip Activity Participation

NCC Region

The activity participation estimates provided here are in agreement with those provided in Chen et al. (2013) for the NCC Region. They are repeated here for easy comparison with the profiles for the two sanctuary areas. We departed from Chen et al. (2013) in that there are nine activity groupings. Table 3.1 summarizes the estimates for participation in the NCC Region.

Table 3.1 Activity Participation by Activity Group and Activity for the Last 12 months and Last Trip: NCC Region

Activity Group/Activity	Last 12 Months (%)	Last Trip (%)
Beach	67.15	47.59
Beach going (dog walking, kite-flying, jogging, etc.)	65.10	44.56
Collection of non-living resources/beachcombing (agates, fossils, driftwood)	15.10	10.31
Watching from Car	36.57	27.25
Sitting in your car watching the scene	36.57	27.25
Sightseeing	76.99	69.40
Scenic Enjoyment	76.99	69.40
Photography	40.95	37.71
Photography	40.95	37.71
Wildlife	38.60	28.31
Bird Watching	38.60	28.31
Shore Based	39.26	27.16
Hang gliding /parasailing	0.27	0.51
Biking and hiking	39.24	26.83
Surface Water Sports	19.10	7.54
Kayaking in ocean or estuary/slough	4.95	1.27
Kite boarding	0.59	0.36
Using a personal water craft (jet skis)	1.26	0.26
Power boating	2.40	0.74
Sail boating	2.66	1.02
Skim boarding	1.67	0.40
Surfing (board, boogie, stand-up paddle, kayak)	3.67	1.15
Surfing (tow-in)	0.43	0.14
Swimming or body surfing	11.77	4.40
Windsurfing	0.55	0.15
Diving	3.72	1.40
Diving (picking or spear fishing) from a boat	0.62	0.33
Diving (picking or spear fishing) from shore	1.37	0.70
Free-diving/snorkeling (from shore, from boat)	2.36	0.65
Scuba diving (from shore, from boat)	1.91	0.27
Fishing	13.14	6.32
Fishing (hook and line) from a boat	4.78	1.71
Fishing (hook and line) from pier/shore	7.21	2.46
Trap/net from boat (crabbing)	0.92	0.38
Trap/net from pier or shore (crabbing)	2.39	0.84
Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)	4.32	2.78

Source: Ecotrust Survey of North Central California Region

GFNMS

The results for GFNMS are in Table 3.2. The largest percentage of people reported sightseeing on their trips in the past 12 months and the last trip, followed by beach going. Hang gliding/parasailing was the least reported activity.

Table 3.2 Activity Participation by Activity Group and Activity for the Last 12 months and Last Trip: GFNMS

Activity Group/Activity	Last 12 Months (%)	Last Trip (%)
Beach	69.43	55.73
Beach going (dog walking, kite-flying, jogging, etc.)	66.76	51.32
Collection of non-living resources/beachcombing (agates, fossils, driftwood)	21.86	15.88
Watching from Car	38.46	29.51
Sitting in your car watching the scene	38.46	29.51
Sightseeing	71.33	63.65
Scenic Enjoyment	71.33	63.65
Photography	48.87	46.76
Photography	48.87	46.76
Wildlife	44.07	39.40
Bird Watching	44.07	39.40
Shore Based	39.03	30.49
Hang gliding /parasailing	1.94	1.74
Biking and hiking	38.96	30.31
Surface Water Sports	47.88	33.48
Kayaking in ocean or estuary/slough	16.47	7.86
Kite boarding	3.08	2.01
Using a personal water craft (jet skis)	4.33	2.22
Power boating	8.99	4.57
Sail boating	7.50	5.36
Skim boarding	6.20	3.10
Surfing (board, boogie, stand-up paddle, kayak)	9.94	5.41
Surfing (tow-in)	2.41	1.27
Swimming or body surfing	29.37	19.52
Windsurfing	5.53	1.46
Diving	14.17	10.18
Diving (picking or spear fishing) from a boat	2.87	2.78
Diving (picking or spear fishing) from shore	5.04	5.04
Free-diving/snorkeling (from shore, from boat)	9.47	4.36
Scuba diving (from shore, from boat)	4.66	1.94

Table 3.2 Activity Participation by Activity Group and Activity for the Last 12 months and Last Trip: GFNMS (continued)

Activity Group/Activity	Last 12 Months (%)	Last Trip (%)
Fishing	38.83	34.34
Fishing (hook and line) from a boat	16.86	10.73
Fishing (hook and line) from pier/shore	21.64	13.29
Trap/net from boat (crabbing)	4.79	3.12
Trap/net from pier or shore (crabbing)	9.57	6.25
Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)	15.32	16.49

Source: Ecotrust Survey of North Central California Region

Northern portion of the MBNMS

The results for the northern portion of MBNMS are in Table 3.3. Like GFNMS the highest reported activity was sightseeing, followed by beach going. However, more people reported going beach going than in GFNMS.

Table 3.3 Activity Participation by Activity Group and Activity for the Last 12 months and the Last Trip: northern portion of MBNMS

Activity Group/Activity	Last 12 Months (%)	Last Trip (%)
Beach	73.85	60.96
Beach going (dog walking, kite-flying, jogging, etc.)	72.42	57.61
Collection of non-living resources/beachcombing (agates, fossils, driftwood)	16.66	12.03
Watching from Car	42.36	33.90
Sitting in your car watching the scene	42.36	33.90
Sightseeing	76.05	72.32
Scenic Enjoyment	76.05	72.32
Photography	49.63	48.61
Photography	49.63	48.61
Wildlife	50.75	39.07
Bird Watching	50.75	39.07
Shore Based	40.29	29.13
Hang gliding /parasailing	0.53	3.27
Biking and hiking	40.02	26.02
Surface Water Sports	31.59	25.07
Kayaking in ocean or estuary/slough	5.85	3.19
Kite boarding	0.57	0.00
Using a personal water craft (jet skis)	0.79	0.68
Power boating	3.19	0.91
Sail boating	5.00	0.72
Skim boarding	1.27	0.53
Surfing (board, boogie, stand-up paddle, kayak)	10.02	7.27
Surfing (tow-in)	0.78	0.00
Swimming or body surfing	19.84	14.99
Windsurfing	1.38	0.53
Diving	2.42	1.56
Diving (picking or spear fishing) from a boat	0.25	0.00
Diving (picking or spear fishing) from shore	0.60	0.57
Free-diving/snorkeling (from shore, from boat)	1.37	1.40
Scuba diving (from shore, from boat)	1.46	0.40

Table 3.3 Activity Participation by Activity Group and Activity for the Last 12 months and the Last Trip: northern portion of MBNMS (continued)

Activity Group/Activity	Last 12 Months (%)	Last Trip (%)
Fishing	22.55	13.47
Fishing (hook and line) from a boat	6.31	1.76
Fishing (hook and line) from pier/shore	11.23	4.44
Trap/net from boat (crabbing)	1.40	0.78
Trap/net from pier or shore (crabbing)	1.01	0.17
Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)	10.14	6.49

Source: Ecotrust Survey of North Central California Region

Person-trips

The next table presents information on the activities that respondents engaged in for the three regions that were analyzed. Table 3.4 below shows the total number of trips estimated by region for both consumptive and non-consumptive use. For the GFNMS, we estimated 1,274,469 person-trips, while for the northern portion of MBNMS the estimate was 988,036 person-trips. The derivation of these estimates is explained in the Technical Appendix (Leeworthy et al., 2015). Table 3.5 presents the total person-trips for non-consumptive use only. The total person-trips for non-consumptive use only in GFNMS are 1,104,951 and the total in the northern portion of MBNMS is 938,711.

Table 3.4 and Table 3.5 also present the percentage of each activity completed on a trip. The percentages change from Table 3.4 to Table 3.5 as the consumptive activities are removed.

Table 3.4 Person-trips by Activity/Activity Group for the Three Study Areas

Activity Group/Activity	NCC Region		GFNMS		northern portion of MBNMS	
	Person-Trips	(%)	Person-Trips	(%)	Person-Trips	(%)
Beach	4,088,663	19.01	174,141	13.66	175,719	17.78
Beach going (dog walking, kite-flying, jogging, etc.)	3,402,852	15.82	146,402	11.49	141,809	14.35
Collection of non-living resources/beachcombing (agates, fossils, driftwood)	685,810	3.19	27,739	2.18	33,911	3.43
Watching from Car	1,792,354	8.33	43,150	3.39	66,280	6.71
Sitting in your car watching the scene	1,792,354	8.33	43,150	3.39	66,280	6.71
Sightseeing	6,465,111	30.06	231,161	18.14	245,082	24.80
Scenic Enjoyment	6,465,111	30.06	231,161	18.14	245,082	24.80
Photography	3,552,344	16.52	146,402	11.49	155,681	15.76
Photography	3,552,344	16.52	146,402	11.49	155,681	15.76
Wildlife	2,431,930	11.31	110,957	8.71	103,274	10.45
Bird Watching	2,431,930	11.31	110,957	8.71	103,274	10.45
Shore Based	2,299,391	10.69	101,711	7.98	81,694	8.27
Hang gliding /parasailing	16,953	0.08	0	0.00	1,541	0.16
Biking and hiking	2,282,439	10.61	101,711	7.98	80,153	8.11
Surface Water Sports	513,202	2.39	246,572	19.35	104,815	10.61
Kayaking in ocean or estuary/slough	63,187	0.29	47,773	3.75	7,707	0.78
Kite boarding	12,329	0.06	6,164	0.48	0	0.00
Using a personal water craft (jet skis)	20,035	0.09	13,870	1.09	1,541	0.16
Powerboating	44,693	0.21	20,034	1.57	4,624	0.47
Sail boating	55,481	0.26	27,739	2.18	4,624	0.47
Skim boarding	21,576	0.10	15,411	1.21	0	0.00
Surfing (board, boogie, stand-up paddle, kayak)	70,893	0.33	16,952	1.33	23,121	2.34
Surfing (tow-in)	4,623	0.02	1,541	0.12	0	0.00
Swimming or body surfing	211,137	0.98	90,923	7.13	63,197	6.40
Windsurfing	9,247	0.04	6,164	0.48	0	0.00

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Activity Group/Activity	NCC Region		GFNMS		northern portion of MBNMS	
	Person-Trips	(%)	Person-Trips	(%)	Person-Trips	(%)
Diving	78,598	0.37	50,855	3.99	6,166	0.62
Diving (picking or spear fishing) from a boat	12,329	0.06	6,164	0.48	0	0.00
Diving (picking or spear fishing) from shore	27,741	0.13	21,575	1.69	1,541	0.16
Free-diving/snorkeling (from shore, from boat)	26,199	0.12	16,952	1.33	3,083	0.31
Scuba diving (from shore, from boat)	12,329	0.06	6,164	0.48	1,541	0.16
Fishing	285,112	1.33	169,518	13.30	49,325	4.99
Fishing (hook and line) from a boat	50,858	0.24	38,527	3.02	6,166	0.62
Fishing (hook and line) from pier/shore	80,140	0.37	35,445	2.78	15,414	1.56
Trap/net from boat (crabbing)	18,494	0.09	10,788	0.85	3,083	0.31
Trap/net from pier or shore (crabbing)	35,446	0.16	20,034	1.57	3,083	0.31
Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)	100,175	0.47	64,725	5.08	21,580	2.18
Total with Fishing	21,506,705	100	1,274,469	100	988,036	100
Total without Fishing	21,221,593		1,104,951		938,711	

Source: Ecotrust Survey of North Central California Region

Table 3.5 Person-trips by Activity/Activity Group for the Three Study Areas: Non-Consumptive Recreation Only

Activity Group/Activity	<i>NCC Region</i>		<i>GFNMS</i>		<i>northern portion of MBNMS</i>	
	Person-Trips	(%)	Person-Trips	(%)	Person-Trips	(%)
Beach	4,088,663	19.27	174,141	15.76	175,719	18.72
Beach going (dog walking, kite-flying, jogging, etc.)	3,402,852	16.03	146,402	13.25	141,809	15.11
Collection of non-living resources/beachcombing (agates, fossils, driftwood)	685,810	3.23	27,739	2.51	33,911	3.61
Watching from Car	1,792,354	8.45	43,150	3.91	66,280	7.06
Sitting in your car watching the scene	1,792,354	8.45	43,150	3.91	66,280	7.06
Sightseeing	6,465,111	30.46	231,161	20.92	245,082	26.11
Scenic Enjoyment	6,465,111	30.46	231,161	20.92	245,082	26.11
Photography	3,552,344	16.74	146,402	13.25	155,681	16.58
Photography	3,552,344	16.74	146,402	13.25	155,681	16.58
Wildlife	2,431,930	11.46	110,957	10.04	103,274	11.00
Bird Watching	2,431,930	11.46	110,957	10.04	103,274	11.00
Shore Based	2,299,391	10.84	101,711	9.21	81,694	8.70
Hang gliding /parasailing	16,953	0.08	0	0.00	1,541	0.16
Biking and hiking	2,282,439	10.76	101,711	9.21	80,153	8.54
Surface Water Sports	513,202	2.42	246,572	22.32	104,815	11.17
Kayaking in ocean or estuary/slough	63,187	0.30	47,773	4.32	7,707	0.82
Kite boarding	12,329	0.06	6,164	0.56	0	0.00
Using a personal water craft (jet skis)	20,035	0.09	13,870	1.26	1,541	0.16
Powerboating	44,693	0.21	20,034	1.81	4,624	0.49
Sail boating	55,481	0.26	27,739	2.51	4,624	0.49
Skim boarding	21,576	0.10	15,411	1.39	0	0.00
Surfing (board, boogie, stand-up paddle, kayak)	70,893	0.33	16,952	1.53	23,121	2.46
Surfing (tow-in)	4,623	0.02	1,541	0.14	0	0.00
Swimming or body surfing	211,137	0.99	90,923	8.23	63,197	6.73
Windsurfing	9,247	0.04	6,164	0.56	0	0.00

Table 3.5 Person-trips by Activity/Activity Group for the Three Study Areas: Non-Consumptive Recreation Only (continued)

Activity Group/Activity	<i>NCC Region</i>		<i>GFNMS</i>		<i>northern portion of MBNMS</i>	
	Person-Trips	(%)	Person-Trips	(%)	Person-Trips	(%)
Diving	78,598	0.37	50,855	4.60	6,166	0.66
Diving (picking or spear fishing) from a boat	12,329	0.06	6,164	0.56	0	0.00
Diving (picking or spear fishing) from shore	27,741	0.13	21,575	1.95	1,541	0.16
Free-diving/snorkeling (from shore, from boat)	26,199	0.12	16,952	1.53	3,083	0.33
Scuba diving (from shore, from boat)	12,329	0.06	6,164	0.56	1,541	0.16
Total Non-Consumptive	21,221,593	100.00	1,104,951	100.00	938,711	100.00

Source: Ecotrust Survey of North Central California Region

Person-days by Activity and Activity Group

Person-days is a better measure of intensity of use. A person-day is one person doing an activity for any part of a day or a whole day. Here person-days have been normalized to equal 100 percent across activities (see Leeworthy et. al 2015 for how this was done) so adding up person-days across activities will add to the total person-days of annual recreation in a given area. The results by study area for all activities are summarized in Table 3.6 for all activities, including fishing, while Table 3.7 summarizes the results for non-consumptive recreation only.

All Recreation Activities. By activity group, sightseeing was the most popular in the NCC Region with over 11.3 million person-days (30%). Sightseeing was also the most popular activity group in the northern portion of MBNMS with 399.5 million person-days (24.8%), while Surface Water Sports was the most popular activity group in the GFNMS with 6.11 million person-days (19.35%). Fishing was 13.3% of GFNMS person-days, while it was only 1.33% for the NCC Region and 4.99% for the northern portion of MBNMS (Table 3.6).

Non-consumptive Recreation Only. Non-consumptive recreation was 98.67% of all person-days of recreation in the NCC region followed by 95% in the northern portion of MBNMS and 86.7% in the GFNMS. Sightseeing accounted for 30.46% of the non-consumptive recreation in the NCC Region and 26.11% in the northern portion of MBNMS. Surface Water sports accounted 22.32% of person-days of non-consumptive recreation activities in the GFNMS (Table 3.7).

Table 3.6 Person-days by Activity/Activity Group for the Three Study Areas

Activity Group/Activity	<i>NCC Region</i>		<i>GFNMS</i>		<i>northern portion of MBNMS</i>	
	Person-Days	(%)	Person-Days	(%)	Person-Days	(%)
Beach	7,155,160	19.01	431,871	13.66	286,423	17.78
Beach going (dog walking, kite-flying, jogging, etc.)	5,954,992	15.82	363,077	11.49	231,148	14.35
Collection of non-living resources/beachcombing (agates, fossils, driftwood)	1,200,168	3.19	68,794	2.18	55,275	3.43
Watching from Car	3,136,619	8.33	107,012	3.39	108,037	6.71
Sitting in your car watching the scene	3,136,619	8.33	107,012	3.39	108,037	6.71
Sightseeing	11,312,087	30.06	573,280	18.14	399,484	24.80
Scenic Enjoyment	11,313,945	30.06	573,280	18.14	399,484	24.80
Photography	6,216,601	16.52	363,077	11.49	253,760	15.76
Photography	6,216,601	16.52	363,077	11.49	253,760	15.76
Wildlife	4,255,877	11.31	275,174	8.71	168,336	10.45
Bird Watching	4,255,877	11.31	275,174	8.71	168,336	10.45
Shore Based	4,023,935	10.69	252,243	7.98	133,161	8.27
Hang gliding /parasailing	29,667	0.08	0	0.00	2,512	0.16
Biking and hiking	3,994,268	10.61	252,243	7.98	130,649	8.11
Surface Water Sports	898,103	2.39	611,499	19.35	170,849	10.61
Kayaking in ocean or estuary/slough	110,577	0.29	118,478	3.75	12,562	0.78
Kite boarding	21,576	0.06	15,287	0.48	0	0.00
Using a personal water craft (jet skis)	35,061	0.09	34,397	1.09	2,512	0.16
Powerboating	78,213	0.21	49,684	1.57	7,537	0.47
Sail boating	97,092	0.26	68,794	2.18	7,537	0.47
Skim boarding	37,758	0.10	38,219	1.21	0	0.00
Surfing (board, boogie, stand-up paddle, kayak)	124,062	0.33	42,041	1.33	37,687	2.34
Surfing (tow-in)	8,091	0.02	3,822	0.12	0	0.00
Swimming or body surfing	369,490	0.98	225,490	7.13	103,012	6.40
Windsurfing	16,182	0.04	15,287	0.48	0	0.00

Table 3.6 Person-days by Activity/Activity Group for the Three Study Areas (continued)

Activity Group/Activity	<i>NCC Region</i>		<i>GFNMS</i>		<i>northern portion of MBNMS</i>	
	Person-Days	(%)	Person-Days	(%)	Person-Days	(%)
Diving	137,547	0.37	126,122	3.99	10,050	0.62
Diving (picking or spear fishing) from a boat	21,576	0.06	15,287	0.48	0	0.00
Diving (picking or spear fishing) from shore	48,546	0.13	53,506	1.69	2,512	0.16
Free-diving/snorkeling (from shore, from boat)	45,849	0.12	42,041	1.33	5,025	0.31
Scuba diving (from shore, from boat)	21,576	0.06	15,287	0.48	2,512	0.16
Fishing	500,804	1.33	420,405	13.30	80,399	4.99
Fishing (hook and line) from a boat	105,597	0.28	95,547	3.02	10,050	0.62
Fishing (hook and line) from pier/shore	113,028	0.30	87,903	2.78	25,125	1.56
Trap/net from boat (crabbing)	31,778	0.08	26,753	0.85	5,025	0.31
Trap/net from pier or shore (crabbing)	54,709	0.15	49,684	1.57	5,025	0.31
Collecting/picking/harvesting sea life from shore (clamming, seaweed, mussels, etc.)	195,693	0.52	160,518	5.08	35,175	2.18
Total with Fishing	37,636,734	100.00	3,160,683	100.00	1,610,499	100.00
Total without Fishing	37,135,788		2,740,278		1,530,100	

Source: Ecotrust Survey of North Central California Region

The next two figures graphically show the distribution by use type and location. Figure 3.1 below shows that when looking at the entire region, most of the activities are non-consumptive. However, GFNMS has the smallest proportion of non-consumptive activity person-days when compared to total person-days in GFNMS. Within the northern portion of MBNMS 95% of total person-days are dedicated to non-consumptive activities.

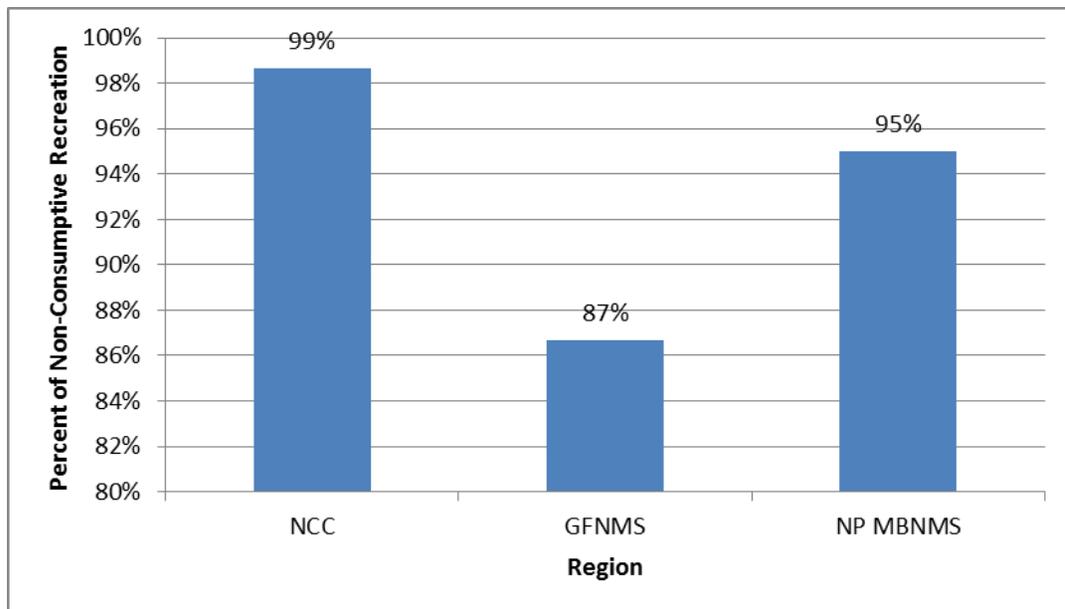


Figure 3.1 Non-Consumptive Person-Days as a Percent of Total Person-Days

Figure 3.2 below shows the percentage of each activity within each region by activity type. Sightseeing is the most common activity in the NCC region and the northern portion of MBNMS. However, surface water sports are the most common activity in GFNMS. Figure 3.2 below shows how the distribution of activities varies across region and what activities are more common or less common within a region.

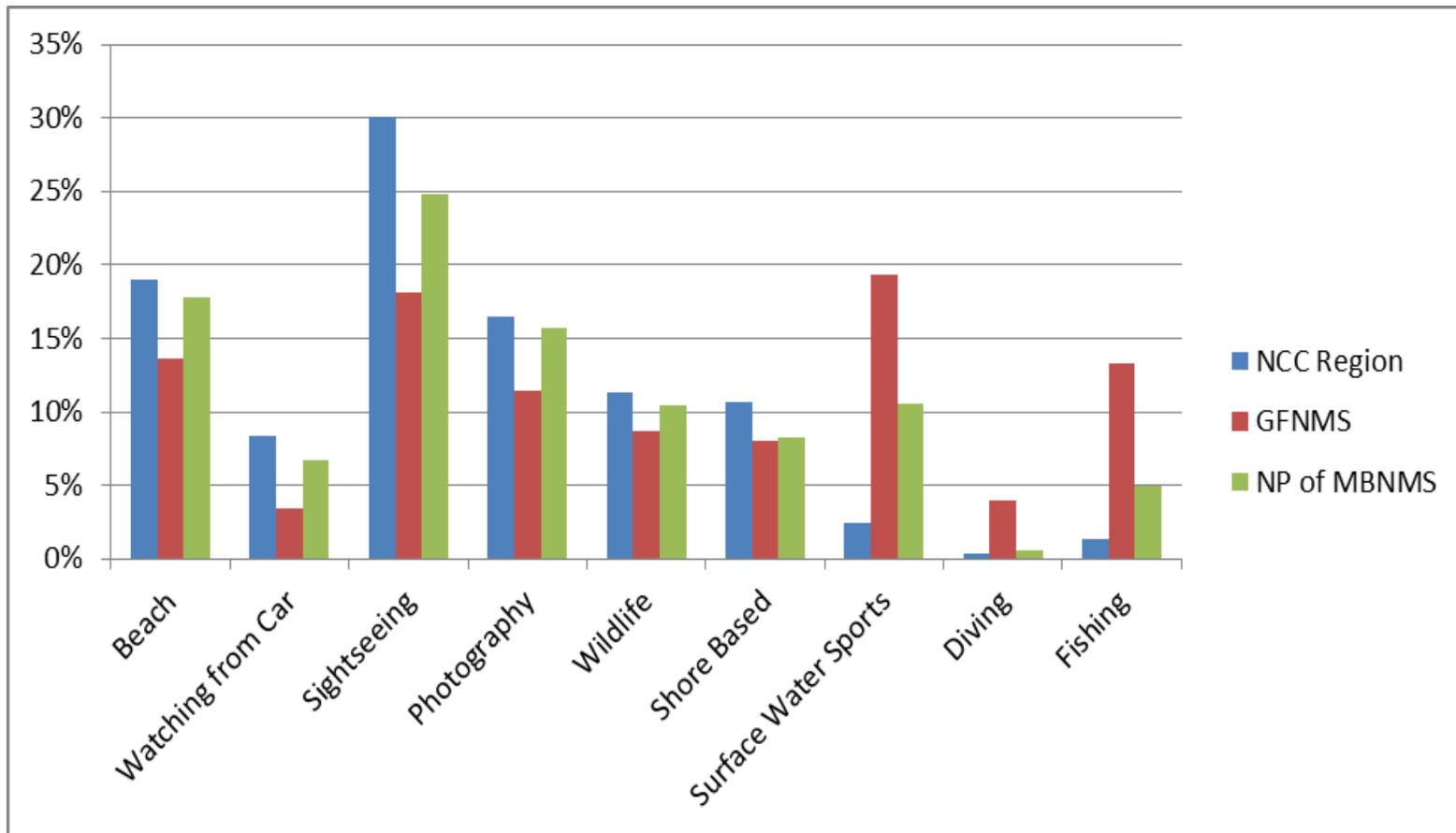


Figure 3.2 Percentage of Person-Days by All Activities within a Region

Table 3.7 Person-days by Activity/Activity Group for the Three Study Areas: Non-Consumptive Recreation Only

Activity Group/Activity	<i>NCC Region</i>		<i>GFNMS</i>		<i>northern portion of MBNMS</i>	
	Person-Days	(%)	Person-Days	(%)	Person-Days	(%)
Beach	7,155,160	19.27	431,871	15.76	286,423	18.72
Beach going (dog walking, kite-flying, jogging, etc.)	5,954,992	16.03	363,077	13.25	231,148	15.11
Collection of non-living resources/beachcombing (agates, fossils, driftwood)	1,200,168	3.23	68,794	2.51	55,275	3.61
Watching from Car	3,136,619	8.45	107,012	3.91	108,037	7.06
Sitting in your car watching the scene	3,136,619	8.45	107,012	3.91	108,037	7.06
Sightseeing	11,313,945	30.46	573,280	20.92	399,484	26.11
Scenic Enjoyment	11,313,945	30.46	573,280	20.92	399,484	26.11
Photography	6,216,601	16.74	363,077	13.25	253,760	16.58
Photography	6,216,601	16.74	363,077	13.25	253,760	16.58
Wildlife	4,255,877	11.46	275,174	10.04	168,336	11.00
Bird Watching	4,255,877	11.46	275,174	10.04	168,336	11.00
Shore Based	4,023,935	10.84	252,243	9.21	133,161	8.70
Hang gliding /parasailing	29,667	0.08	0	0.00	2,512	0.16
Biking and hiking	3,994,268	10.76	252,243	9.21	130,649	8.54
Surface Water Sports	898,103	2.42	611,499	22.32	170,849	11.17
Kayaking in ocean or estuary/slough	110,577	0.30	118,478	4.32	12,562	0.82
Kite boarding	21,576	0.06	15,287	0.56	0	0.00
Using a personal water craft (jet skis)	35,061	0.09	34,397	1.26	2,512	0.16
Powerboating	78,213	0.21	49,684	1.81	7,537	0.49
Sail boating	97,092	0.26	68,794	2.51	7,537	0.49
Skim boarding	37,758	0.10	38,219	1.39	0	0.00
Surfing (board, boogie, stand-up paddle, kayak)	124,062	0.33	42,041	1.53	37,687	2.46
Surfing (tow-in)	8,091	0.02	3,822	0.14	0	0.00
Swimming or body surfing	369,490	0.99	225,490	8.23	103,012	6.73
Windsurfing	16,182	0.04	15,287	0.56	0	0.00

Table 3.7 Person-days by Activity/Activity Group for the Three Study Areas: Non-Consumptive Recreation Only (continued)

Activity Group/Activity	<i>NCC Region</i>		<i>GFNMS</i>		<i>northern portion of MBNMS</i>	
	Person-Days	(%)	Person-Days	(%)	Person-Days	(%)
Diving	137,547	0.37	126,122	4.60	10,050	0.66
Diving (picking or spear fishing) from a boat	21,576	0.06	15,287	0.56	0	0.00
Diving (picking or spear fishing) from shore	48,546	0.13	53,506	1.95	2,512	0.16
Free-diving/snorkeling (from shore, from boat)	45,849	0.12	42,041	1.53	5,025	0.33
Scuba diving (from shore, from boat)	21,576	0.06	15,287	0.56	2,512	0.16
Total Non-Consumptive	37,137,788	100.00	2,740,278	100.00	1,530,100	100.00

Source: Ecotrust Survey of North Central California Region

Figure 3.3 below shows the percentage of each non-consumptive activity within each region by activity type. Sightseeing is the most common activity in the NCC region and the northern portion of MBNMS. However, surface water sports are the most common activity in GFNMS. Figure 3.3 below shows how the distribution of non-consumptive activities varies across region and what activities are more common or less common within a region. Diving is also completed at a higher rate within GFNMS when compared to the other regions.

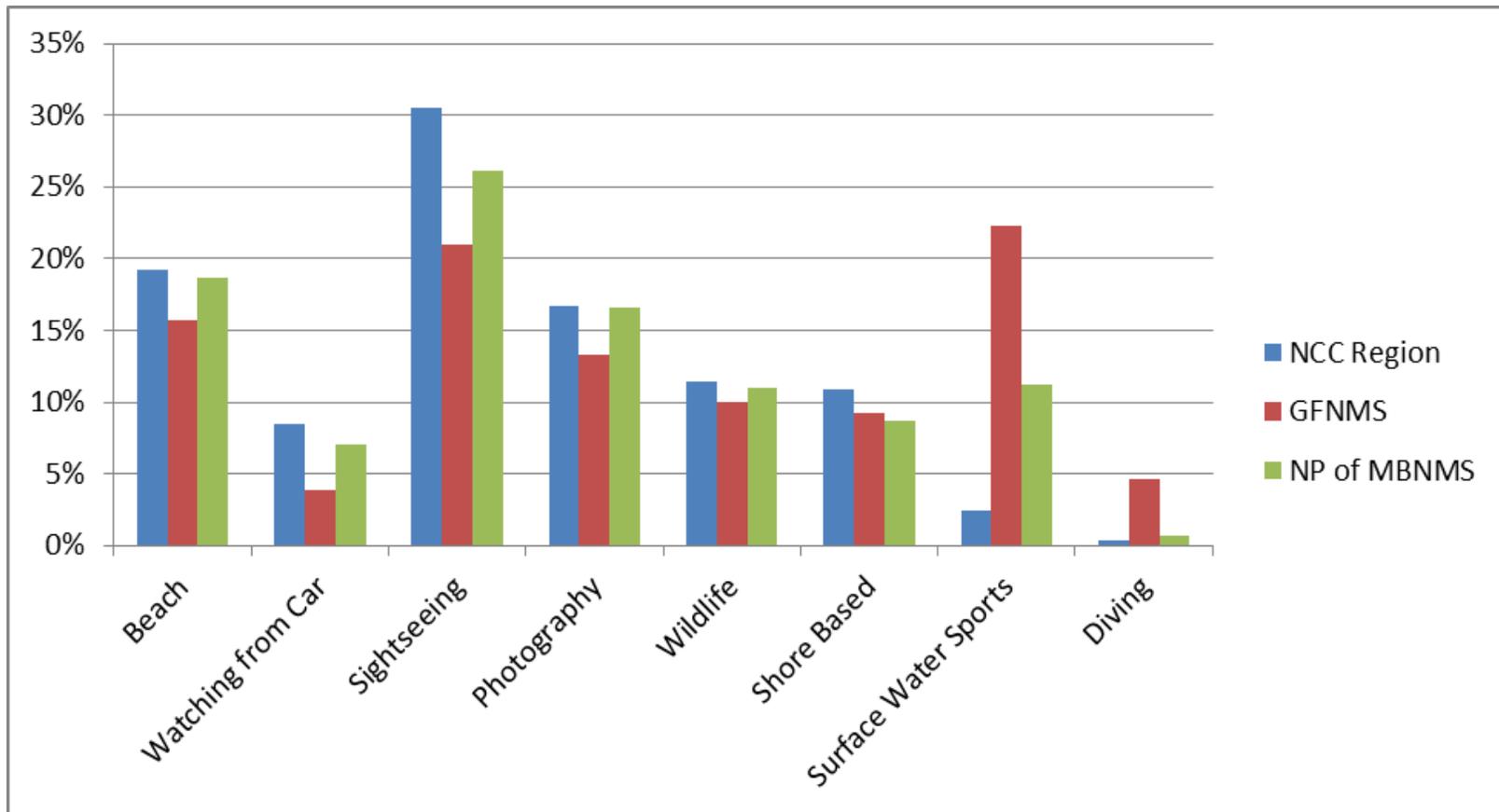


Figure 3.3 Percentage of Non-Consumptive Person-Days by Activity within a Region

North Central California Spatial Use Maps by Activity Groups

The next set of figures presents heat maps of spatial use by activity or activity group in the North Central California region. The heat maps are based on the spatial location of each of the sampled respondents' reported activities. The darker the red coloring on the map, the higher the reported level of activity use was in that area by the sampled respondents. Although the heat maps are based on the sample and not the population, the heat map is representative of the more intensely used areas by the population.

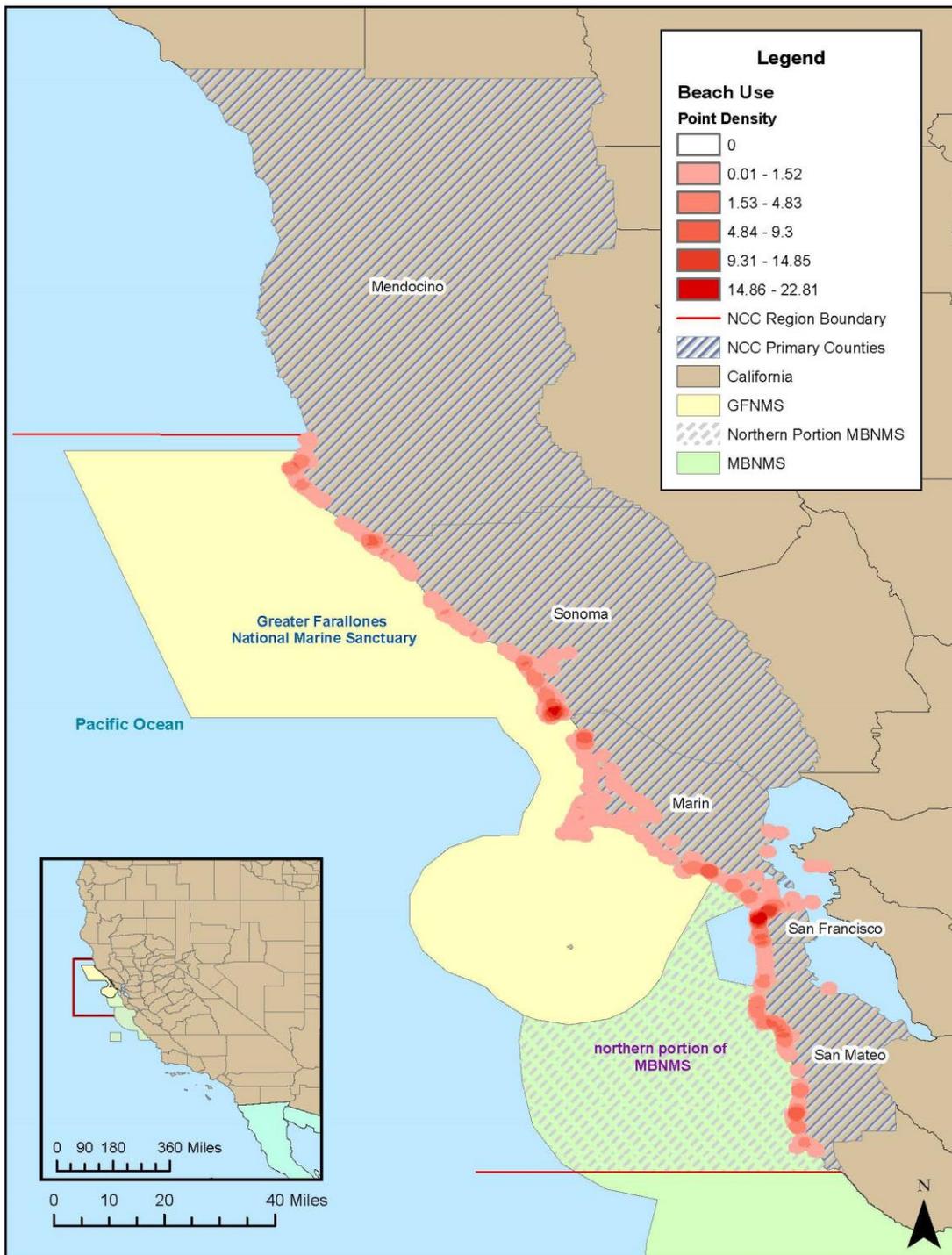


Figure 3.4 North Central California Beach Spatial Use

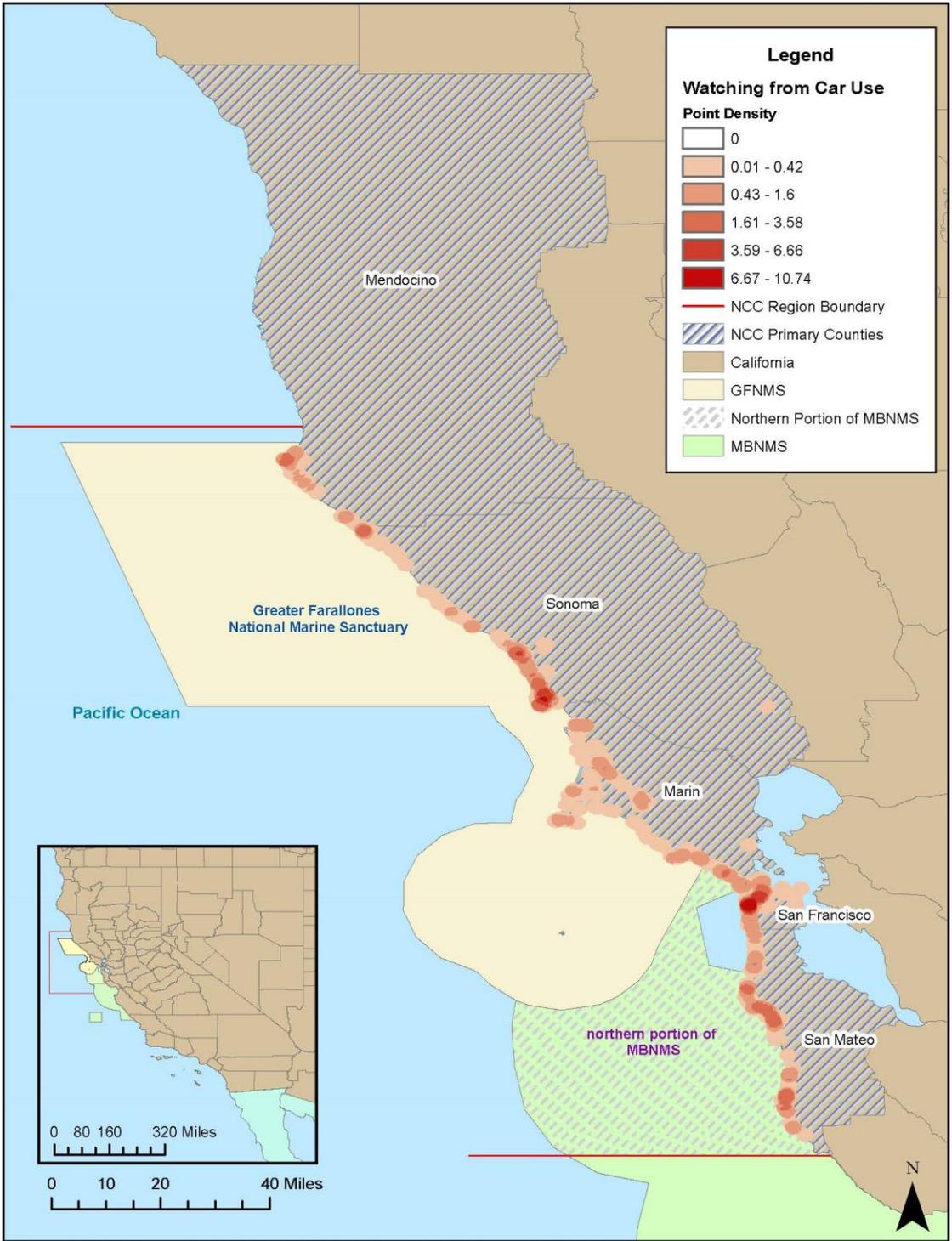


Figure 3.5 North Central California Car Sightseeing Spatial Use

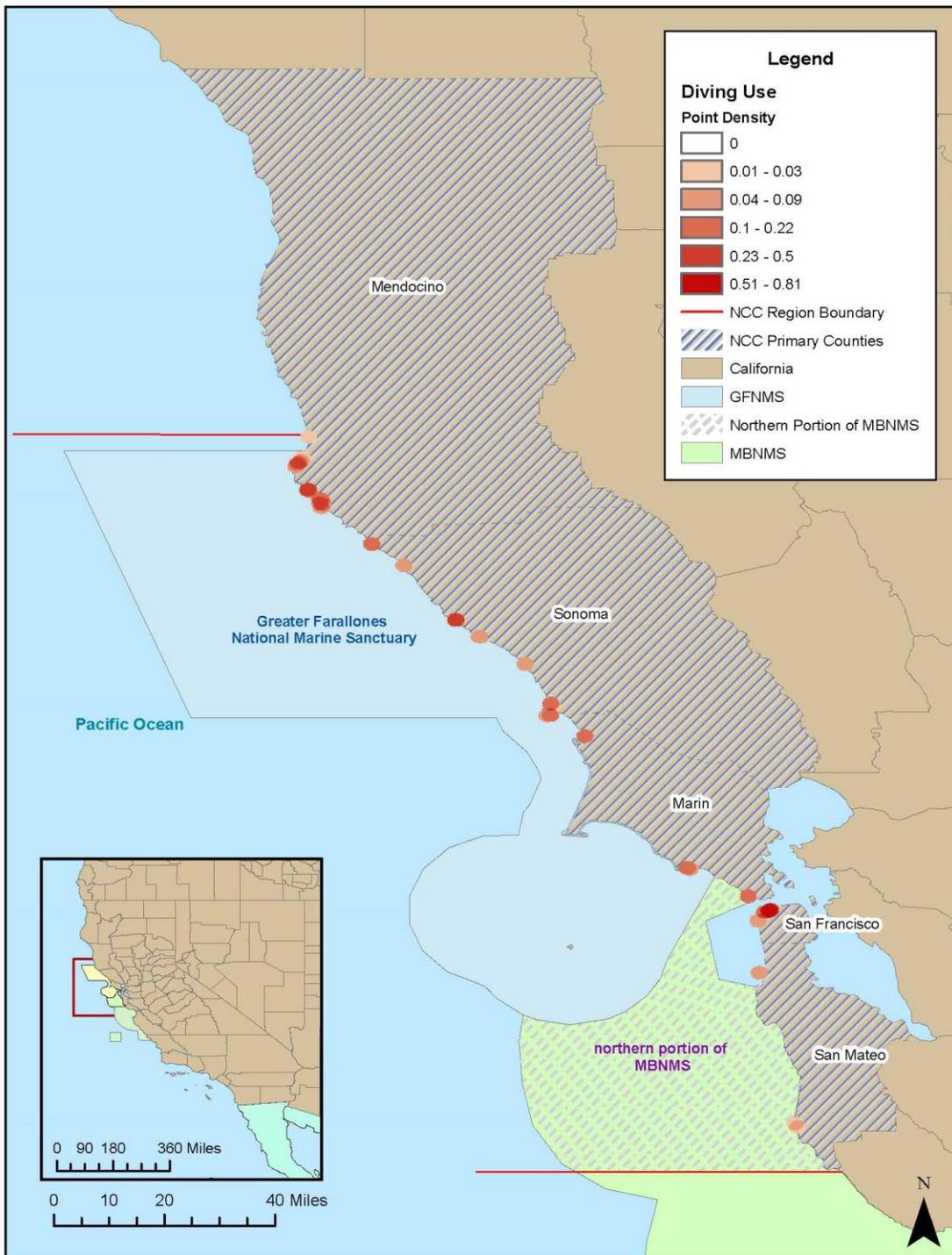


Figure 3.6 North Central California Diving Spatial Use

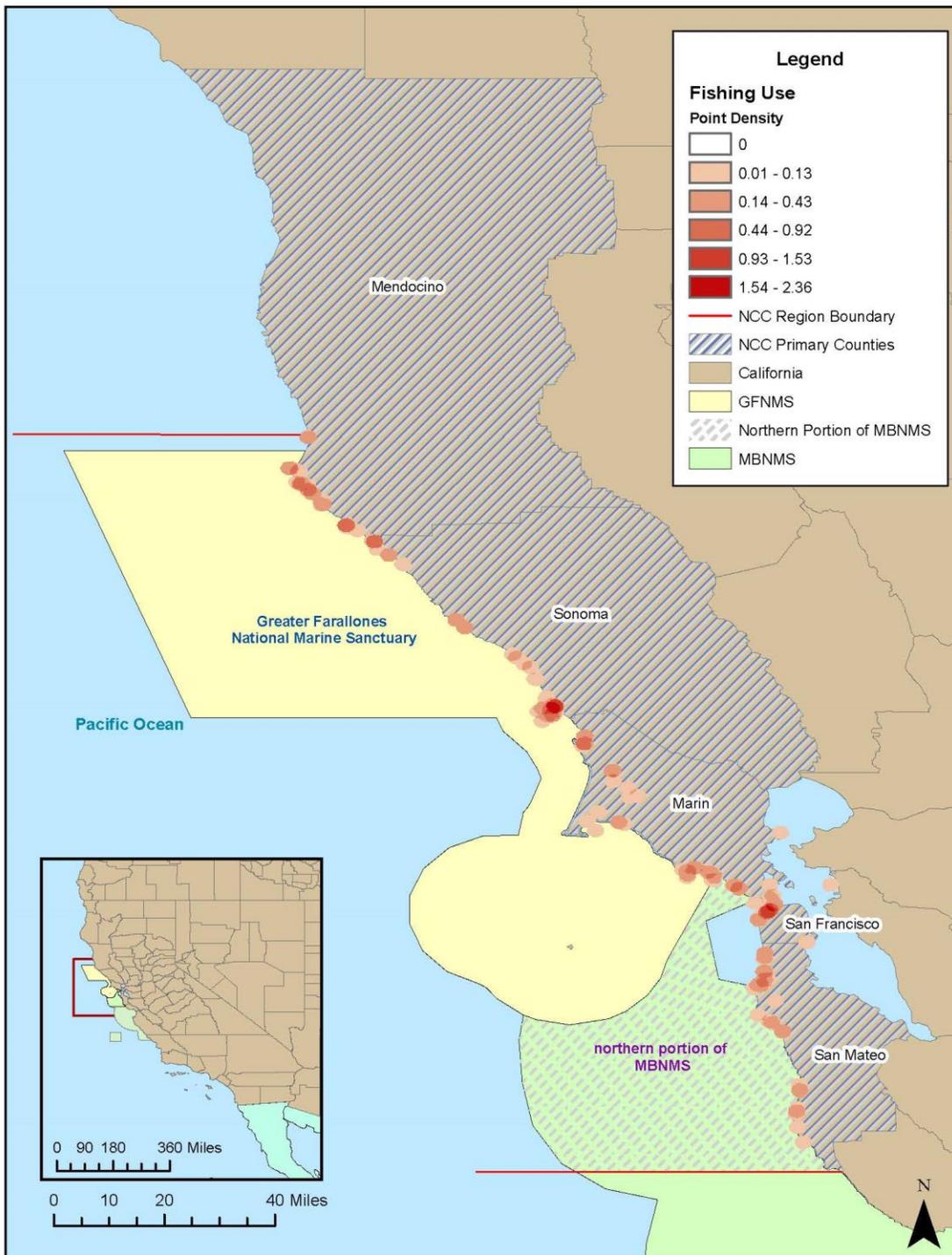


Figure 3.7 North Central California Fishing Spatial Use

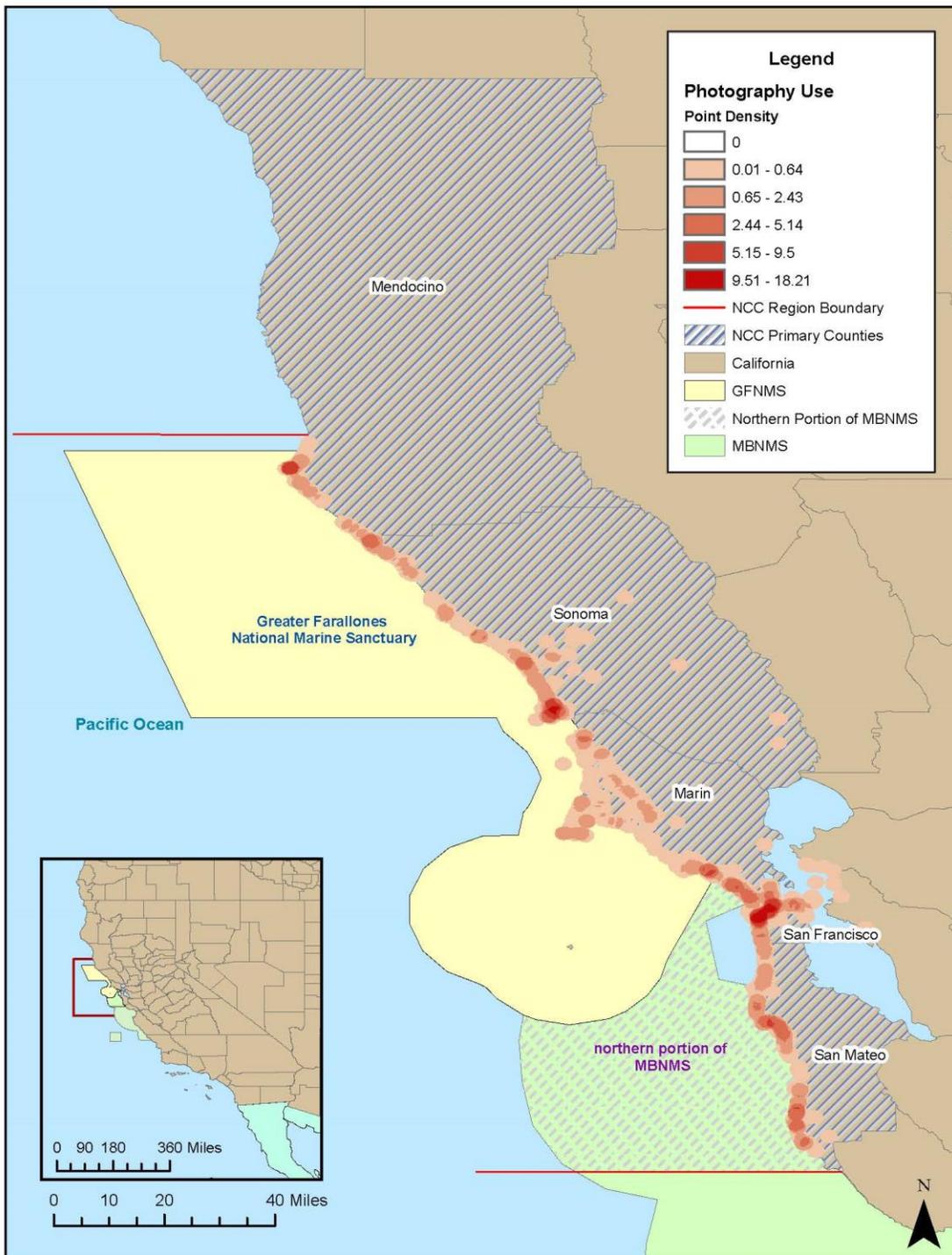


Figure 3.8 North Central California Photography Spatial Use

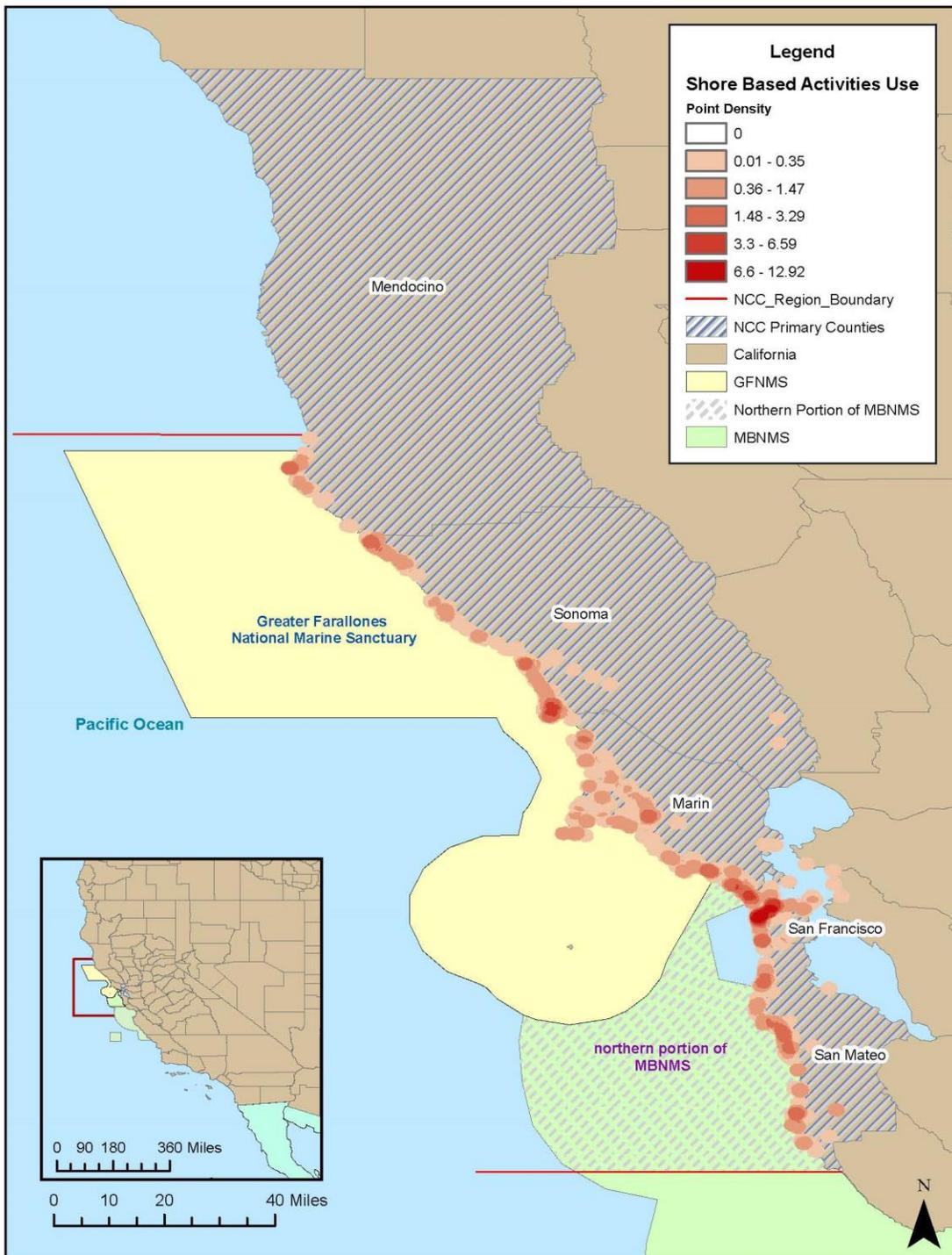


Figure 3.9 North Central California Shore Based Activities Spatial Use

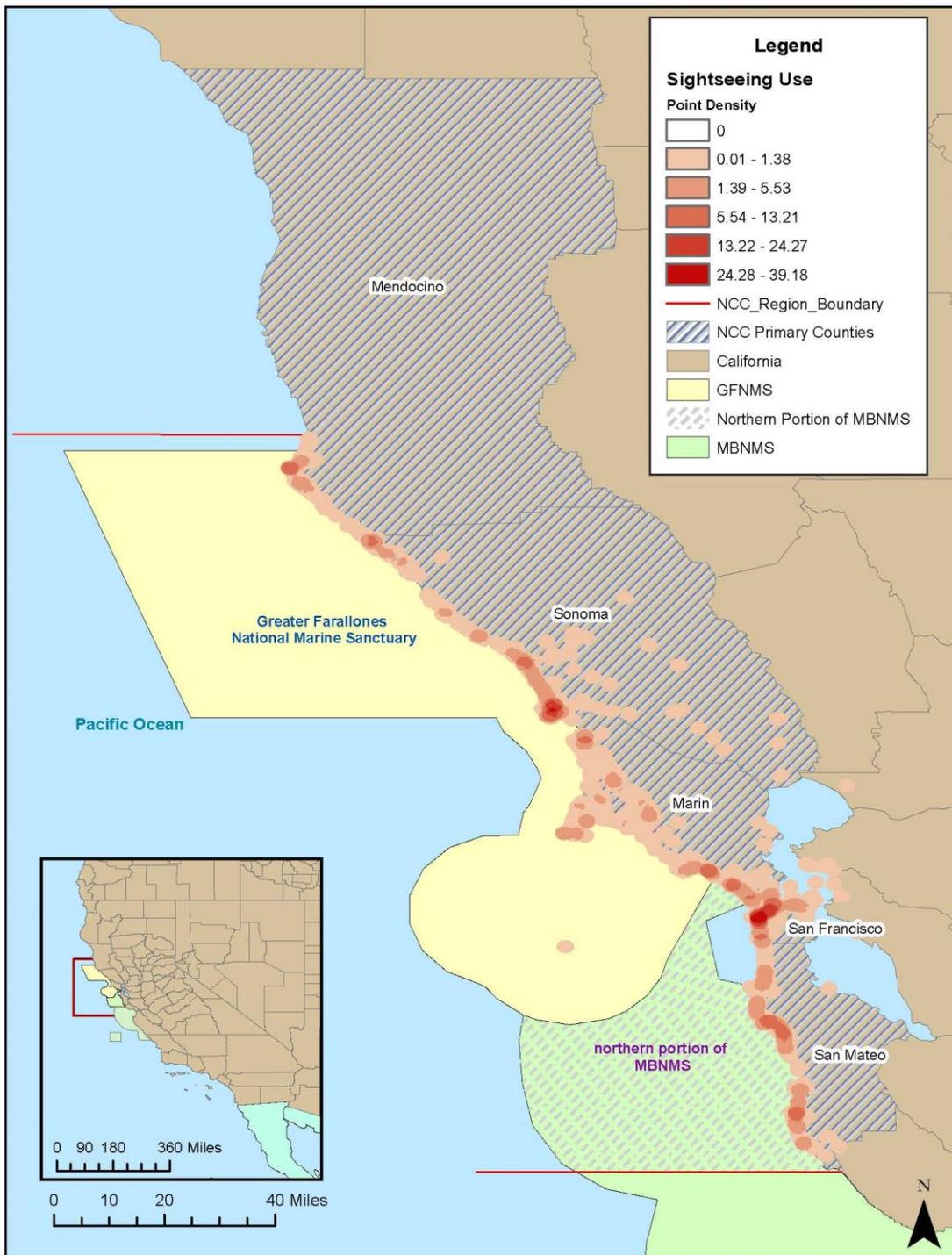


Figure 3.10 North Central California Sightseeing Spatial Use

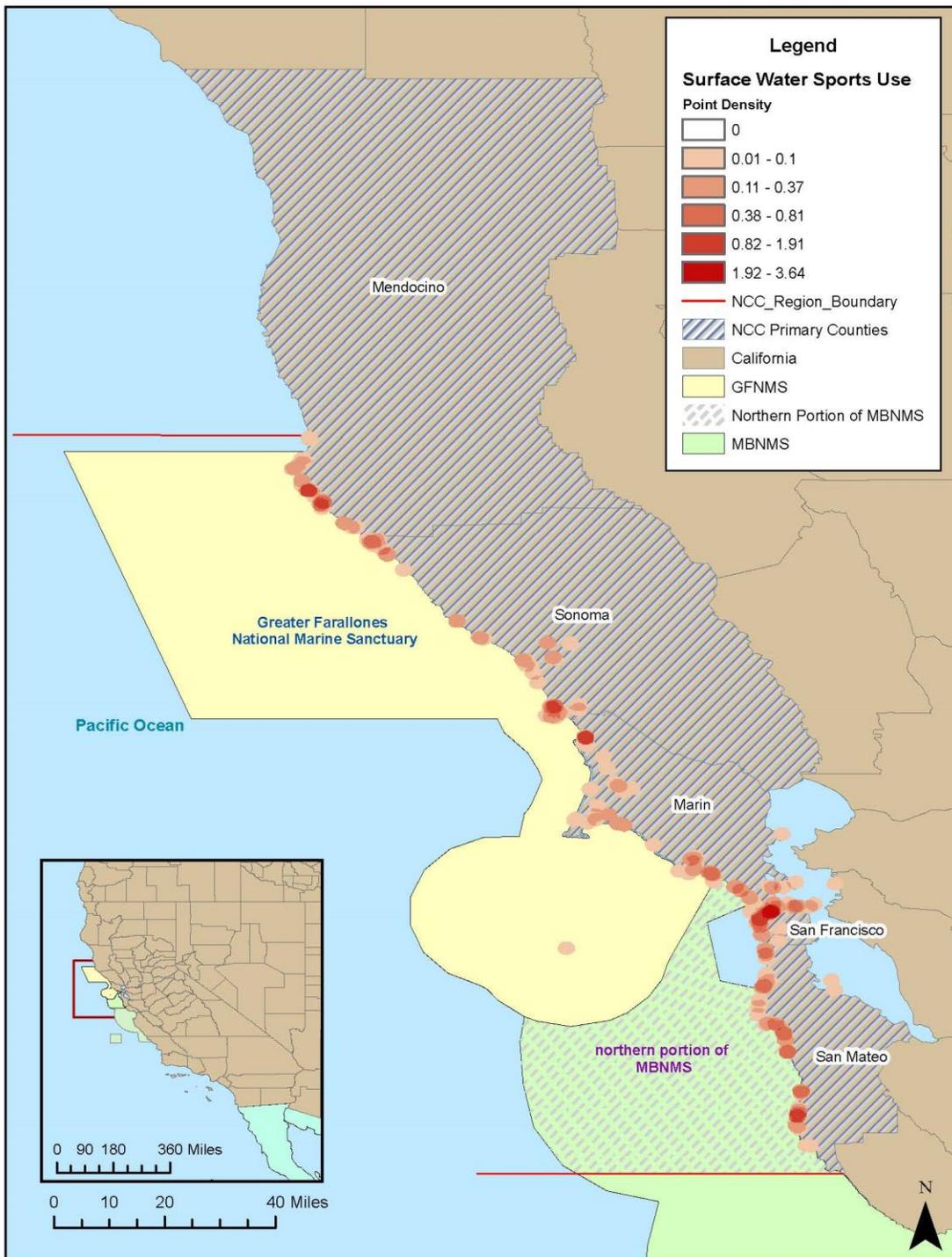


Figure 3.11 North Central California Surface Water Sports Activities Spatial Use

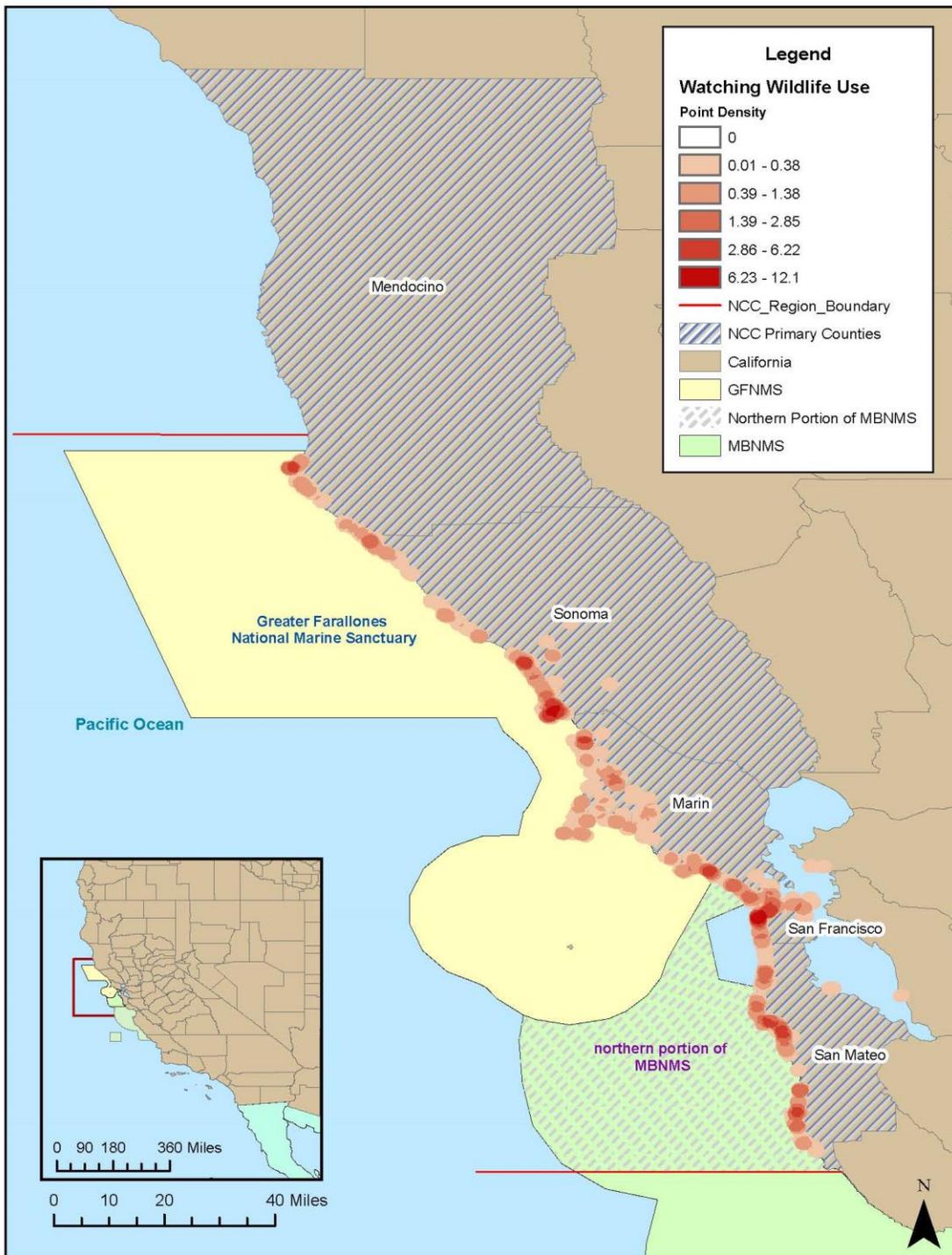


Figure 3.12 North Central California Wildlife Viewing Spatial Use

4. Recreation Expenditure Profiles

As a follow-up to Chen et al (2013), we estimated the total expenditures and expenditures per person-day for “All Visitors” for all activities to the NCC Region and total expenditures and expenditures per person-day for those doing non-consumptive recreation for the NCC Region, GFNMS and the northern portion of MBNMS. Greater details on how these estimates were derived can be found in Leeworthy et al 2015.

All Visitors to the NCC Region

All visitors to the NCC Region spent a little over \$1.2 billion in the impact area for the NCC Region in 2011. Visitors to the region spent the highest proportion of their expenditures on food and beverages (46%), followed by lodging (Figure 4.1). The highest expenditures were for food & beverages and lodging. These expenditures accounted for about 80% of all expenditures. On a person-day basis, all visitors spent an average of \$25.94 (Table 4.1).

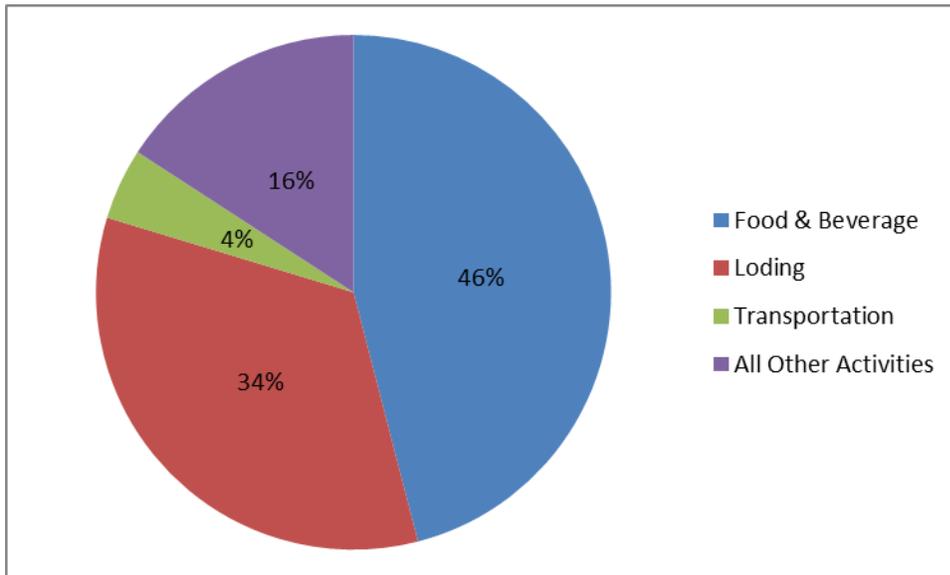


Figure 4.1 Distribution of Total Expenditures by All Visitors in NCC

Table 4.1 Total Expenditures and Expenditures Per Person-day for the NCC Region 2011: All Visitors (2011 Dollars)

Expenditure Category	Total Expenditures	Expenditures Per Person-day
Food and Beverages at a restaurant or bar	414,793,522	8.94
Lodging (if you stayed overnight)	405,854,303	8.75
Food and Beverages from a store	138,439,943	2.98
Souvenirs (t-shirts, posters, gifts, etc.)	73,979,306	1.59
Parking	34,392,082	0.74
Museum, aquarium, or other entrance fee	37,544,550	0.81
Car rental	19,628,239	0.42
Sundries (sunscreen, surf wax, motion sickness pills, batteries, film and processing, etc.)	12,043,386	0.26
Boat rental	11,221,540	0.24
Charter fee (whale watching, etc.)	9,944,065	0.21
Bike rental	7,726,651	0.17
Lessons, clinics, camps	7,419,702	0.16
Kayak rental	6,191,727	0.13
Dive equipment rental and air fills	6,286,112	0.14
Boat fuel	5,155,052	0.11
Bait and tackle	4,616,626	0.10
One-day fishing license fee	3,280,060	0.07
Surfboard or body board rental	3,209,205	0.07
Ramp fees	1,482,981	0.03
Hang glide rental	344,774	0.01
Total	1,203,553,828	25.94

Recreating Visitors – Non-consumptive Recreation

On average, those that did non-consumptive recreation in the entire NCC Region spent \$31.14 per person-day, while those that did the activities in GFNMS spent \$31.48 and those in the northern portion of MBNMS spent \$26.68. Food & beverage and lodging accounted for 80.3% of spending in the NCC Region, 71.6% in the GFNMS and 65.7% in the northern portion of MBNMS (Table 4.2).

Table 4.2 Average Expenditures Per Person-day by Study Area: Non-Consumptive Recreation Only, 2011 (2011\$)

Expenditure Type	NCC Region	GFNMS	northern portion of MBNMS
Food and Beverages at a restaurant or bar	10.79	9.15	8.56
Lodging (if you stayed overnight)	10.59	9.15	5.52
Food and Beverages from a store	3.63	4.25	3.46
Souvenirs (t-shirts, posters, gifts, etc.)	1.95	2.05	1.64
Parking	0.86	1.08	0.94
Museum, aquarium, or other entrance fee	0.98	1.16	1.45
Car rental	0.50	0.51	0.33
Sundries (sunscreen, surf wax, motion sickness pills, batteries, film and processing, etc.)	0.32	0.55	0.74
Boat rental	0.29	0.72	0.37
Charter fee (whale watching, etc.)	0.25	0.45	0.74
Bike rental	0.20	0.31	0.36
Lessons, clinics, camps	0.18	0.10	0.70
Kayak rental	0.16	0.65	0.66
Dive equipment rental and air fills	0.17	0.52	0.00
Boat fuel	0.12	0.39	0.44
Surfboard or body board rental	0.08	0.26	0.64
Ramp fees	0.04	0.09	0.02
Hang glide rental	0.01	0.08	0.10
Total	31.14	31.48	26.68

Total spending for non-consumptive recreation was estimated at \$1.15 billion for the entire NCC Region, \$86.25 million in the GFNMS, and \$40.82 million in the northern portion of MBNMS (Table 4.3). The two sanctuary areas accounted for almost 11 percent of the spending in the entire NCC Region for non-consumptive recreation, while the GFNMS accounted for 7.46% and the northern portion of MBNMS accounted for 3.53% (Table 4.4).

Table 4.3 Total Expenditures by Study Area: Non-Consumptive Recreation Only, 2011 (2011\$)

Expenditure Type	NCC Region	GFNMS	northern portion of MBNMS
Food and Beverages at a restaurant or bar	400,649,755	25,060,289	13,104,406
Lodging (if you stayed overnight)	393,438,488	25,082,388	8,439,012
Food and Beverages from a store	134,786,316	11,635,134	5,294,330
Souvenirs (t-shirts, posters, gifts, etc.)	72,304,854	5,613,151	2,515,745
Parking	32,059,206	2,972,318	1,436,228
Museum, aquarium, or other entrance fee	36,493,670	3,171,209	2,224,745
Car rental	18,558,877	1,403,288	506,904
Sundries (sunscreen, surf wax, motion sickness pills, batteries, film and processing, etc.)	12,042,320	1,502,733	1,126,453
Boat rental	10,868,851	1,977,862	572,614
Charter fee (whale watching, etc.)	9,224,772	1,237,545	1,135,840
Bike rental	7,585,786	850,812	553,839
Lessons, clinics, camps	6,840,483	287,287	1,070,131
Kayak rental	6,122,684	1,790,021	1,004,421
Dive equipment rental and air fills	6,172,937	1,425,387	0
Boat fuel	4,470,116	1,071,802	666,485
Surfboard or body board rental	3,088,506	718,218	985,647
Ramp fees	1,435,938	243,089	37,548
Hang glide rental	334,113	209,941	150,194
Total	1,156,477,672	86,252,475	40,824,541

Table 4.4 Estimated Proportion of Expenditures for Non-Consumptive Recreation Accounted for by Sanctuaries in the NCC Region

Area	Total Expenditure	Proportion Accounted for By Sanctuaries (%)
NCC Region	1,156,477,672	n/a
GFNMS	86,252,475	7.46
northern portion of MBNMS	40,824,541	3.53
All Sanctuaries	127,077,016	10.99

The following figure presents pie charts for each region by the proportion of expenditures on these four primary categories; food & beverage, lodging, transportation and all other activities. All other activities include the remainder of the expenditure categories such as boat rental, charter fees, sundries, kayak rental, etc. Figure 4.2 below shows that the biggest difference in

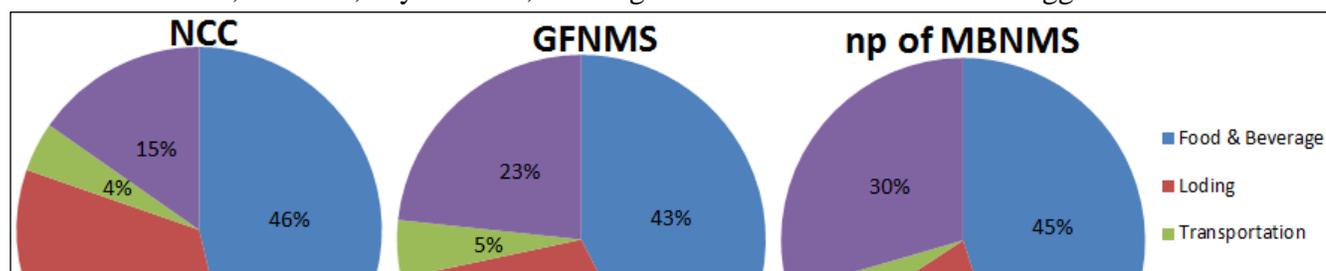


Figure 4.2 Distribution of Non-Consumptive Expenditures by Region

5. Economic Impact/Contribution to the Local Economy

The Study Areas for Economic Impact

To estimate the economic impacts of recreational activities for the NCC Region and within GFNMS and the northern portion of MBNMS the study area must be identified and defined. Though the multiplier process, theoretically one could include all areas in the chain of producing goods and services used. This could even include other countries, i.e. a rod or reel or outboard motor could have been produced outside the country. In Chapter 1, we defined the study areas for economic impact for each sanctuary limiting our impact areas to more local area counties that capture the majority of the local economic impact.

The first step to determining the study areas were to identify the coastal counties that are adjacent to the sanctuaries. These are called the primary counties. The non-coastal counties included in the study areas were identified by analyzing data from the American Community Survey regarding inter-county commuter data. The non-coastal counties are referred to as secondary counties in this report. If roughly 5,000 or more residents lived in a non-coastal county, but commuted to a primary county for work, then that non-coastal county was included in the study area.

These secondary counties are included in the study area to prevent leakage. Leakage occurs when money leaves the study area resulting in that money not being multiplied throughout the study area when calculating impacts. By including counties that have a large amount of residents working in coastal counties, the study area is including these significant secondary economic impacts and prevents leakage. The study areas for NCC, GFNMS and the northern portion of MBNMS are presented below.

Table 5.1 Primary and Secondary Counties in the Study Area for the Economic Impact Analysis NCC Region

Primary Counties (5) ¹	Secondary Counties (5) ²
Mendocino	Alameda
Sonoma	Contra Costa
Marin	Napa
San Francisco	Santa Clara
San Mateo	Solano

¹ Ocean adjacent counties where primary economic impact take place.

² Counties where significant secondary economic impacts take place.

Source: US Department of Commerce, Bureau of the Census, Inter-county Commuters.

Table 5.2 Primary and Secondary Counties in the Study Area for the Economic Impact Analysis GFNMS

Primary Counties (3) ¹	Secondary Counties (5) ²
Mendocino	Alameda
Sonoma	Contra Costa
Marin	Napa
	San Francisco
	Solano

¹ Ocean adjacent counties where primary economic impact take place.

² Counties where significant secondary economic impacts take place.

Source: US Department of Commerce, Bureau of the Census, Inter-county Commuters.

Table 5.3 Primary and Secondary Counties in the Study Area for the Economic Impact Analysis northern portion of MBNMS

Primary Counties (2) ¹	Secondary Counties (6) ²
Marin	Alameda
San Mateo	Contra Costa
	San Francisco
	Santa Clara
	Solano
	Sonoma

¹ Ocean adjacent counties where primary economic impact take place.

² Counties where significant secondary economic impacts take place.

Source: US Department of Commerce, Bureau of the Census, Inter-county Commuters.

IMPLAN

Using the expenditures profiles developed in Chapter 4 of this report, the economic impacts of recreational activities in the sanctuaries and along North Central Coast of California can be estimated. Table 5.4 provides a more detailed explanation of the terminology used in this report, as defined by IMPLAN.

Table 5.4 IMPLAN Economic Indicators' Definitions

<i>Indicator</i>	<i>Definitions and Relationships</i>
Employment	Total annual average jobs. This includes self-employed and wage and salary employees, and all full-time, part-time and seasonal jobs, based on a count of full-time/part-time averages over 12 months
Labor Income	Defines the total value paid to local workers within a region. Labor income is the income source for induced household spending estimations. $\text{Labor Income} = \text{Employee Compensation} + \text{Proprietor Income}$

Value Added	Comprised of Labor Income, Indirect Business Taxes (IBT), and Other Property Type Income (OPTI), Value Added demonstrates an industry's value of production over the cost of its purchasing the goods and services required to make its products. Value Added is often referred to as Gross Regional Product (GRP). Value Added = Labor Income + IBT + OPTI
Output	The total value of an industry's production, comprised of the value of Intermediate Inputs and Value Added. In IMPLAN, this is typically viewed as the value of a change in sales or the value of increased production. However, annual production is not always equal to annual sales. If production levels are higher than sales, surpluses become inventory. Because inventory does not drive additional impacts in the year it was produced, in IMPLAN, Direct industry sales = Direct Output. Output = Intermediate Inputs + Value Added

Source: Day, 2011

Impacts/contributions are defined as direct, indirect or induced. In short, direct effects are those that occur within the sector of the expenditure. Indirect effects occur as a result of spending within the primary sector on goods and services from other sectors. Induced impacts result from the wage earners within the study area spending money on goods and services within the region. The indirect plus induced make-up what is generally referred to as the "multiplier" effects. Table 5.5 explains these types of impacts in more detail.

Table 5.5 Impact Type Definitions

<i>Type of Impact</i>	<i>Definition</i>
Direct Effect	The effect of spending by recreators at each business they purchase goods or services from within the study area.
Indirect Effect	The result of a sector purchasing goods and services to produce their product from other industries located within the study area.
Induced Effect	Results from spending of employee wages that stem from both the direct and indirect effects within the study area.

Total Output/Sales, Value-added, Income and Employment - NCC Region

The following table presents the total economic impact of visitor spending on the North Central California region for both consumptive and non-consumptive use. The total output of resident and non-resident visitor expenditures is \$2.1 billion dollars, generating more than 16,000 jobs.

Table 5.6 Total Economic Impacts for All Visitors to the NCC Region (2015 \$)

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	11,081	441,927,490	682,553,510	1,163,479,193
Indirect Effect	2,332	168,159,167	283,430,574	487,303,916
Induced Effect	2,589	162,274,954	293,857,102	468,946,736
Total effect	16,002	772,361,612	1,259,841,185	2,119,729,846

The next table presents the results of only the expenditures that are associated with non-consumptive use of the resources. When only considering non-consumptive expenditures, total output is slightly more than \$2 billion. The total number of jobs generated from these expenditures, both full and part-time, is roughly 15,300 jobs.

Table 5.7 Total Economic Impacts for All Visitors to the NCC Region, Non-Consumptive Recreation Only (2015 \$)

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	10,632	422,307,205	653,464,592	1,115,656,925
Indirect Effect	2,243	161,816,948	272,642,837	468,809,531
Induced Effect	2,479	155,373,256	281,359,426	449,001,011
Total effect	15,354	739,497,409	1,207,466,856	2,033,467,466

Total Output/Sales, Value-added, Income and Employment – GFNMS Region

The total economic impacts were estimated for GFNMS for non-consumptive recreation expenditures only. Additionally, expenditures are not differentiated between residents and non-residents due to the smaller sample size of those who recreate within GFNMS. Non-consumptive recreational activities that occurred within GFNMS resulted in spending of \$86.25 million (2011\$) which generated an estimated total output of \$145.8 million (2015\$), value added of \$87.2 million, income of \$53.8 million and 1.1 thousand jobs (Table 5.8).

Table 5.8 GFNMS Non-Consumptive Recreation Only Impacts (2015 \$)

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	777	31,455,346	48,068,461	80,796,050
Indirect Effect	163	11,017,910	18,628,425	32,211,667
Induced Effect	190	11,356,179	20,536,704	32,802,479
Total effect	1,131	53,829,435	87,233,590	145,810,197

Total Output/Sales, Value-added, Income and Employment – northern portion of MBNMS

The total economic impacts were estimated for the northern portion of MBNMS for non-consumptive recreation expenditures only. Additionally, expenditures are not differentiated between residents and non-residents due to the smaller sample size of those who recreate within the northern portion of MBNMS. As a result of recreational activities that occurred within the northern portion of MBNMS resulted in spending of \$40.82 Million (2011\$) which generated an estimated total output of about \$69.4 million (2015\$), \$41.75 million in value added, \$26.2 million in income and 542 jobs (Table 5.9).

Table 5.9 northern portion of MBNMS Non-Consumptive Recreation Only Impacts (2015 \$)

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	381	15,393,331	22,703,916	38,037,303
Indirect Effect	74	5,326,774	9,124,524	15,521,321
Induced Effect	87	5,472,957	9,920,114	15,807,385
Total effect	542	26,193,062	41,748,553	69,366,010

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