



# LOBSTER SURVEY FACT SHEET: Economic Valuation of Alternative Recreational Bag Limits for Spiny Lobsters in the Florida Keys National Marine Sanctuary

The Florida Fish and Wildlife Conservation Commission (FWCC) has management responsibility for spiny lobsters (*Panulirus argus*) in Florida. The Florida Keys National Marine Sanctuary (FKNMS) provides advice on the management of spiny lobsters to the FWCC and partners with FWCC on scientific efforts, including research and monitoring.

The Recreational Lobster Survey is part of an ongoing effort to value the recreational fishery for spiny lobster. The primary purpose of the survey is to support the management of spiny lobsters through valuation of potential changes in recreational bag limits, estimation of recreational catch, and estimation of economic impact of recreational lobster fishing. This report focuses on economic valuation of alternative recreational bag limits within the State of Florida and FKNMS, conducted by Milon (2004).



**Roadside attraction: giant model of a spiny lobster at Treasure Village, Florida Keys**

**Existing Regulations:** In Florida, the recreational lobster season is split into a 2-day sport season, usually occurring in July, and the regular season, which runs from August to March. In order to fish for lobsters each year, individuals must purchase a State saltwater fishing license and an additional \$2.00 crawfish stamp. Bag limits are in place to control the number of lobsters harvested per day. During the 2-day sport season, the bag limits are 6 lobsters per person per day in Monroe County (Florida Keys) and Biscayne National Park and 12 lobsters per person per day for the rest of Florida. During the regular season, lobster bag limits are 6 lobsters per person per day for all of Florida.

**Recreational Lobster Survey:** In order to evaluate potential increases or decreases in recreational bag limits, recreational lobster fishers were surveyed. **The survey explored the recreational lobster fishers' willingness to pay (WTP) for a special permit to avoid a decrease in bag limits and WTP for a special permit to allow an increase in bag limits.** The special permit was described in the survey as an additional stamp that would be purchased along with the existing license stamp required to harvest spiny lobster. Three WTP surveys have been conducted to date, including the 2001 regular season, the 2001 2-day sport season, and a survey conducted in 1992.

Table 1: Lower bound (most conservative) estimates of willingness to pay per lobster			
	1992 survey in 2001 \$USD*	2001 2- day sport season	2001 regular season
WTP per lobster to avoid decrease in bag limit	\$ 1.20	\$0.69	\$1.04
WTP per lobster for an increase in bag limit	\$ 0.48	\$0.35	\$1.03
*note: the WTP figures for 1992 have been adjusted for inflation to 2001 dollars. Actual WTP results in 1992 dollars were \$0.94 per lobster to avoid a decrease in bag limits and \$0.37 per lobster for an increase in bag limits.			

**Willingness to Pay per Lobster:** Overall, estimates for WTP per lobster ranged from \$0.35 to \$2.31, depending on the method of calculation, season (2-day sport versus regular season) and whether the estimate was for avoidance of a bag limit decrease or WTP for a bag limit increase. [\[1\]](#)

Lower bound, or most conservative, estimates of WTP are shown in Table 1. These values ranged from \$0.69 to \$1.20 per lobster to avoid a decrease in bag limits and from \$0.35 to \$1.03 per lobster for an increase in bag limits. Other methods of calculation yielded higher WTP; these less conservative methods ranged from \$1.23 to \$2.31.





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**Total Willingness to Pay Among all Lobster Fishers:** For 2001, the total WTP to avoid a 2-lobster per day decrease in bag limits was \$166,100 for licensed lobster fishers statewide and \$103,120 for those who fished in the FKNMS. This figure includes both the 2-day sport season and the regular season and means that the licensed recreational lobster fishers throughout the State of Florida would collectively be willing to pay an estimated \$166,100 per year to avoid a decrease in recreational bag limits of 2 lobsters per day for both the sport season and the regular season. The total WTP for a 6-lobster increase in bag limits during the sport season was an estimated \$94,500 per year statewide and \$58,800 for those who fished in the FKNMS, while the total WTP for a 2-lobster increase in bag limits during the regular season was an estimated \$103,000 per year statewide and \$63,860 for those who fished in the FKNMS.<sup>[2]</sup> Those who fished in the FKNMS accounted for about 62 percent of the value. See Table 2 for a summary of less conservative estimates.

**Table 2: Estimates of total willingness to pay (WTP) for bag limit increase among all Florida lobster fishers in 2001 (WTP for those who fished in FKNMS are presented in parentheses)**

	Lower bound estimate (most conservative)	Conditional mean estimate- full sample	Conditional mean estimate- restricted sample
Total WTP to avoid a 2-lobster bag limit decrease (for both seasons)	\$166,100 (\$103,120)	\$233,700 (\$145,140)	\$239,933 (\$149,009)
Total WTP for a 2-lobster bag limit increase during 2001 regular season	\$103,000 (\$63,860)	\$123,000 (\$76,260)	\$126,281 (\$78,293)
Total WTP for a 6-lobster bag limit increase during 2001 sport season	\$94,500 (\$58,800)	\$332,100 (\$206,640)	\$340,958 (\$212,148)

**Other Values for Spiny Lobsters:** It should be noted that there are alternative values for spiny lobsters in the FKNMS, including non-consumptive use values. Specifically, other reef users such as divers and snorkelers value observing the lobsters alive and in their natural habitat. Although difficult to quantify, these alternative values should be considered against the consumptive values generated by this study. A 2001 study of recreational divers in the Turks and Caicos Islands indicated that spiny lobsters do have a non-extractive value. Although the study did not yield a clear WTP per lobster, the study did show that presence of spiny lobsters resulted in an increased market share for a more expensive dive trip compared with a lower priced dive with no lobsters.<sup>[3]</sup> Other considerations in valuing spiny lobsters should include the impacts of spending by lobster fishers versus spending by those engaging in non-consumptive recreation (e.g. divers and snorkelers) on the local economy and the impacts that changing bag limits may have on lobster population dynamics.

In sum, recreational lobster fishers in the Florida Keys have exhibited a willingness to pay for higher bag limits on spiny lobsters as well as a willingness to pay to avoid decreases in these bag limits. This willingness to pay should be balanced, however, against competing uses of the lobsters, such as wildlife viewing by divers and snorkelers.

[1] Milon, Walter J. 2004. Statistical Analysis to Support the Socioeconomic Research and Monitoring Program for the Florida Keys National Marine Sanctuary, Final Report, Summary Econometric Models and Economic Valuation of Alternative Recreational Bag Limits for Spiny Lobster. University of Central Florida, Dept. of Economics, Orlando, Florida under contract DG133C-03-SE-1210, NOAA, Silver Spring, Maryland.

[2] These totals use 2001 estimates of statewide licensed lobster fishers generated by the Florida Marine Research Institute of 45,000 fishers for the sport season (28,000 in FKNMS) and 50,000 fishers for the regular season (31,000 in FKNMS). Lower bound, or most conservative, estimates of WTP are used in the calculations. Values in parentheses are the estimated proportion for the FKNMS, about 62%.

[3] Rudd, M.A. 2001. The non-extractive economic value of spiny lobster, *Panulirus argus*, in the Turks and Caicos Islands. Environmental Conservation 28 (3): 226-234.

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