PAPER

Understanding the Potential Economic Impacts of Sinking Ships for SCUBA Recreation

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ABSTRACT

Ships, planes, and other large structures are finding their way to the bottom of the sea along coasts in North America, Europe, Australia, and elsewhere. More and more, coastal communities and even not-for-profit organizations (e.g. the San Diego Oceans Foundation and Artificial Reef Society of British Columbia) are actively promoting and financing "ships to reefs" projects as a means of providing new destinations for recreational SCUBA diving tourists.

Creating a "ships to reef" site can be costly. The cost to prepare a ship for reefing can range from $46,000 to $2 million, depending on the size of the vessel (Hess et al., 2001). The benefits, however, can be equally large or larger. In order to get a better idea of the potential economic value of ships to reefs, I review the literature on the value of recreational diving to artificial reefs in the United States. Using data from the literature, I estimate that potential net present value of expenditures associated with the recently placed *Yukon* ship to reef site in Southern California could be on the order of $46 million and the potential net present non-market value of the sunken ship could be as high as $13 million. These estimates are within an order of magnitude of estimates based on a preliminary survey of divers at the *Yukon*.

INTRODUCTION

Ships, planes, and other large structures are finding their way to the bottom of the sea along coasts in North America, Europe, Australia and elsewhere. While many purists see the scuttling of ships and planes in coastal waters as something akin to dumping, more and more coastal communities are turning to these structures as a means of protecting shoreline, creating habitat for fish and sea life, and providing new destinations for recreational fishing and SCUBA diving tourists (Baine, 2001). In many cases (e.g. the sinking of the Yukon off the San Diego coast), the goal of "ships to reefs" is exclusively to create new destinations for non-consumptive SCUBA diving; in some cases ships to reefs are even designated as "no fishing zones". Despite the success of these regional organizations in raising funds to support ships to reefs, it is never certain that any one ship to reef site represents a good economic investment—especially when the intended goal of a "ship to reef" is limited to SCUBA recreation alone.

The scale and pace of sinking ships to create artificial reefs, especially reefs designed for recreational diving, is increasing rapidly. In Florida, over 380 vessels have been sunk to create artificial reefs. In 2004 the U.S.S. *Spiegel*, a 510-foot naval vessel, was sunk in the Florida Keys National Marine Sanctuary. To date, over 700 vessels serve as artificial reefs in the waters off the continental U.S. coastline. The majority of these ships are found off the coast of Florida (380), New Jersey (129), South Carolina (100), and New York (65) (http://njscuba.net/reefs/index.html accessed 9.18.2004). Other states lag far behind in the creation of artificial reef structures. For instance, while steps have been made to increase the use of artificial reefs in California, the state has only ten ships currently in place as artificial reefs intended for recreational diving.

While the attention paid to artificial reef development has increased dramatically in the past decade, artificial reefs are not a modern development. Two thousand years ago, the Greek geographer Strabo recorded that the Persian Kingdoms built reefs across the Tigris River (Hess et al., 2001). In the United States, artificial reefs have been around for over 150 years; as long ago as 1830 log huts were sunk off the coast of South Carolina to improve fishing (Hess et al., 2001). What differentiates modern artificial reefs from past reef making is the scale and cost of artificial reefs and the potential economic benefits that could be produced by the strategic placement and marketing of artificial reefs.

Creating a ship to reef site can be costly. The cost to prepare a ship for reefing can range from $46,000 to $2 million, depending on the size of the vessel (Hess et al., 2001). These costs represent direct outlays by cities, counties, states or not-for-profit organizations and are considered an investment that is expected to produce economic returns. For governments, especially local governments, ships to reefs are intended as new recreational revenue sources that will stimulate tourism, increase local expenditures, and support new tax revenues. For

diving groups and not-for-profits, the returns from these investments need not be so obvious. Acting on behalf of the diving public, these groups seek to create new recreational resources that increase the quantity and quality of dive opportunities for their members. The benefits these users derive may not be apparent in the market and include the value of these ship-based dive experiences beyond what divers spend in the market. These latter values, known as non-market values, can be significant, but often are difficult to measure.

To better understand the potential economic benefits of artificial reefs generally, a number of studies have been undertaken to estimate both the market and non-market values of artificial reefs. In the late 1970s, studies began to quantify the economic benefit of recreational fishing and diving on artificial reefs (Daniel, 1976). Over time, the accuracy and comprehensiveness of these studies have grown to provide a more complete picture of the potential economic benefit of artificial reefs.

Ships to reefs potentially could support a number of diverse uses and values including shoreline protection and fishery enhancement or concentration. Nevertheless, ships to reefs projects are increasingly undertaken with the primary purpose of supporting recreational, non-consumptive diving. I focus on this limited use of ships to reefs as a conservative estimate of their value. (Further, I limit the scope of the research to diving in order to keep the demonstration of values straightforward and clear.) Recreational diving is a rapidly growing industry and increasingly artificial reefs are being prepared, sunk, and maintained for the express use of recreational diving. Leeworthy et al. (2005) estimate that 2.86 million people over the age of sixteen years participated in SCUBA diving activities in 2000. Of nineteen settings/activities for which participation was estimated, SCUBA diving was estimated to be the fastest growing recreational activity in the United States.

In the paper that follows, I review the literature to develop a better understanding of the potential economic value of ships to reefs for recreational SCUBA diving. Increasingly, studies from both the peer reviewed and gray literature are easily available on the Web. The National Ocean Economics Program provides a literature portal that includes a searchable bibliographic database of marine non-market valuation studies (www.oceaneconomics.org). Similarly, the National Oceanic and Atmospheric Administration (NOAA) has a Web site that contains many technical reports on the economic valuation of marine resources (www.marineeconomics.noaa.gov). Economists can use data from these studies and on-site data regarding environmental and socio-economic conditions to estimate the economic value of marine resources that have not yet been valued rigorously. Less formally, these studies can be used by non-economists to better understand the potential range of values that may be associated with a marine resource or policy.

In this paper, I assess the state of the art in the quantification of the recreational values of artificial reefs that may provide recreational experiences that are similar to ships to reefs. I provide an overview of the literature, describe the kinds of estimated values in the literature, and provide a non-technical demonstration of how these values could be used to gain a better knowledge of the potential economic returns of sinking ships for SCUBA tourism.

II. The Economic Value of Artificial Reefs for SCUBA Recreation

Artificial reefs yield economic benefits through the enhancement of shoreline protection, fishery resources, and recreational fishing and diving opportunities. The values of these benefits are difficult to quantify because they involve both market and non-market values. The market impact of a reef resource usually is assessed by examining how much money artificial reef users contribute to the local economy by spending money to participate in activities on the reef (such as recreational fishing and diving). Commonly, the focus of market-based studies is on gross expenditures with fewer studies focusing on profits or taxes. While gross expenditures do not represent net benefits to the economy, gross expenditures do capture the magnitude of importance that artificial reefs may have in the overall local economy. Further, gross expenditures represent the base upon which tax revenues can be generated. The promise of increased tax revenues may lead local, state, and even federal agencies (e.g. National Marine Sanctuaries) to approve the sinking of ships and the creation of other artificial reef structures. The lure of increased expenditures on dive charters and hotel stays can encourage local businesses to support such endeavors.

The non-market value of recreational diving is more difficult to determine. Non-market values represent the value reef users place on a reef, beyond what they have to pay to use the reef. Non-market values are often associated with outdoor recreational resources, including dive sites, and have been shown to generate substantial economic value beyond the expenditures generated by these resources (see Cesar, 2000 and Pendleton, 1995). These non-market values represent a true net economic value of reefs to divers; these values capture the increase in economic well-being that divers enjoy as a result of access to reefs. At a minimum, funds raised directly from divers to support the creation of artificial reefs reflect a lower bound for these non-market values. These funds are only a lower bound, however, because most artificial reefs, including ships to reefs, are open access public resources; many reef users will be able to "free ride" on the creation of ships to reefs.

In the literature, two primary methods are used to estimate the non-market value of artificial reefs. Travel cost methods are used to estimate a demand curve for recreational diving to artificial reefs by modeling the influence of travel cost and travel time on the frequency of visitation by divers. Travel cost methods use real diver behavior to estimate the consumer surplus of recreational diving (the value divers place on a reef visit beyond what they have to pay), but the method can only estimate the value of current uses by non-resident divers. When travel cost methods are inappropriate, authors have used contingent methods to estimate values for

artificial reef maintenance or abundance. Specifically, several authors use contingent valuation methods to ask divers to place a value on their current recreational use of a) existing artificial reefs and/or b) proposed new artificial reefs.

Below I summarize studies that provide estimates of both market values (expenditures) and non-market values associated with recreational uses of artificial reefs. Most of the comparable studies focus on sunken ships or oil rigs. It is important for the reader to note that the methods for finding these market and non-market values often differ between studies. In the following I provide these estimates (all converted to US$ in 2004, all figures greater than $10 are rounded to the nearest dollar) with brief explanations of the basic methods. Further, when possible, I break down the value estimates based on the value per visitor per day. By doing so, I hope the reader will be able to better compare these results across studies and also understand how these values may compare to the values that would be generated by future artificial "ships to reefs" valuation studies.

The Market Value of Recreational Diving At Artificial Reefs

Gross expenditures by divers generate net revenues for local firms and businesses and also have substantial secondary impacts. Expenditures by divers support jobs and wages for dive charter captains and crews, employees at local hotels and eateries, and numerous other ancillary services.

While much of the literature focuses on the economic value of recreational angling and diving combined, many of these studies also provide data on the independent value of artificial reefs for recreational diving. (Of course, many recreational divers may also spearfish. We do not attempt to differentiate between non-consumptive and consumptive recreational diving.) Two studies estimate the expenditures associated with recreational SCUBA diving at oil rigs. Hiett & Milon (2002) surveyed divers that went diving or fishing within 300 feet of offshore oil and gas structures in the Gulf of Mexico; the authors calculate that the average per person-day expenditures at artificial reefs in Alabama, Mississippi, and Louisiana was $119, and total annual spending for the three states combined was over $7.4 million. Following a similar approach, McGinnis et al. (2001) calculate the average per person-day expenditures of divers visiting decommissioned oil rigs in California to be $64, with a total annual spending of $10,700 for all rig diving in the state.

Expenditures by divers visiting artificial reefs are similar to divers visiting oil rigs (see Table 1). Hess et al. (2001) provide gross revenue estimates for a variety of artificial reef sites made from sunken ships. The authors find that these reef sites, located around the world, generate an average of $3.4 million annually per reef site. Ditton et al. (2001) and Ditton and Baker (1999) find that non-resident divers who visited an artificial reef on at least one dive trip each year spent just over $193 per person-day on their last trip to a dive site in coastal Texas waters; residents spent over $184 per person-day. Brock (1994) surveyed a dive-tour operator in Hawaii who conducted trips exclusively on a surplus yard oiler and calculated the total gross annual income generated by these trips to be $494,840. Bell et al. (1998) also provide a breakdown of expenditures per person-day for divers visiting artificial reefs in Northwest Florida. The authors find that divers spend $50 to approximately $90 per person-day (for residents and non-residents respectively), a value that lies within the range of the other studies; together, resident and non-resident divers visiting artificial reefs spend more than $14 million annually in Northwest Florida. Johns et al. find even higher levels of expenditures by SCUBA divers and snorkelers visiting artificial reefs in Southeast Florida. The authors estimate the per person-day expenditures of $61 to $204 for residents and non-residents respectively.

The Non-Market Value of Recreational Diving At Artificial Reefs

Artificial reefs, including sunken ships, can generate substantial non-market values for recreational divers (Table 2). Roberts et al. (1985) use contingent valuation methods to estimate the mean annual per diver non-market value of oil rig diving in the Gulf of Mexico to be $339, with a total annual value ranging from $905,216 to $1,264,640 for all sites. Other studies provide estimates of per person-day non-market values. Bell et al. (1998) use both travel cost and contingent valuation methods (specifically Turnbull and Dichotomous Choice analyses) to estimate per person-day non-market

TABLE 1

Market Value (Expenditure) Estimates for Diving at Artificial Reefs

Author	Location	Habitat Type	Market Value Per Person-Day ($2004, figures are rounded)
Hiett & Milon (2002)	Gulf of Mexico	Oil and Gas Structures	$119
McGinnis et al. (2001)	Southern California	Platform Grace (Oil Rig)	$64
Ditton and Baker (1999)	Texas	Various types of artificial reefs	$185 for resident $194 for non-residents
Ditton et al. (2001)			
Bell et al. (1998)	North West Florida	Ships, reef balls, and other private and public artificial reefs	$50 for residents $90 for visitors
Johns et al. (2003)	South East Florida	Ships, reef balls, and other private and public artificial reefs	$61 for residents $204 for visitors
Wilhelmsson et al. (1998)	Eliat, Israel	Navy Ship	$28
Brock (1994)	Waikiki	Surplus yard oiler	$26-$60

values. The authors find that the value for visitors may be as high as $11/ person-day for non-residents and $4.30/ person-day for residents. Ditton and Baker (1999) estimate the non-market value of diving in Texas waters, for divers that visited at least one artificial reef in the past year, to be between $45 and $75 per person-day for non-residents. The values estimated by Ditton and Baker, however, are not exclusively for artificial reef divers.

Johns et al. estimate the value of maintaining artificial reefs and creating new artificial reefs; the authors conclude that the non-market use value per person-day for maintaining existing artificial reefs ($3.41-$14 for residents and non-residents respectively) was generally higher than for creating new artificial reefs ($0.80 - $5.61 for residents and non-residents respectively); the finding suggests that there are declining marginal returns to increasing the supply of reefs in an area in which reefs (artificial or natural) already were abundant. Milon (1989) also estimates the economic value of new artificial reefs, what the author calls "option" values." Milon finds that estimates for the option value of new artificial reefs range from $4.48 to $128 per visitor per year, depending on the method used. In these cases, reef diving opportunities are not as scarce as in other locations (e.g. Southern California or the Mid-Atlantic United States). Where reef diving opportunities are scarce, it is likely that the non-market value of new artificial reefs will be relatively higher initially, but the value of additional artificial reefs should be expected to decline (a common tenet of economics known as declining marginal returns).

At least two studies find that artificial reefs are not perfect recreational substitutes for natural reefs when both types of reefs exist together. Johns, et al. found a preference among boaters, fishers, and divers for natural reefs; the per person-day use value for natural reefs averaged $14 compared to the value for artificial reefs that averaged $9.18. In addition to the higher willingness to pay for natural reefs, the Johns et al. study also shows that in most counties in Florida, the percent of dives conducted on natural reefs was much higher than that of dives conducted on artificial reefs. In an unpublished manuscript (personal communication), Ditton also finds that artificial reefs are not as highly valued as natural reefs; Ditton estimates the per trip value for artificial reefs is $76 lower than that of natural reefs ($114 and $190 respectively).

III. Conclusion

Our base of knowledge regarding the economic value of dive recreation at ship-based artificial reefs is still limited. In the published literature, only a handful of studies examine the economic impacts of ship-based artificial reefs and most of those studies focus on ship-based artificial reefs in coastal Florida. Clearly, there is a need to know more about the economic impacts of the more than 300 ship-based artificial reefs in place around North America, but outside of Florida. The potential economic value of a ship-based artificial reef depends both on the value of a reef to the individual diver (which is a function of diver interest, the

TABLE 2

Non-Market Value Estimates for Diving at Artificial Reefs

Author	Method	Location	Habitat Type	Market Value Per Person-Day ($2004, figures are rounded)
STUDIES OF DIVING ON ARTIFICIAL REEFS				
Ditton and Baker (1999) Ditton et al. (2001)	Contingent Valuation: 1.dichotom-ous choice 2. open-ended	Texas	Various types of artificial reefs	1. $752. $45
Bell et al. (1998)	Travel Cost	North West Florida	Ships, reef balls, and other structures	$11
	Contigent Valuation			Residents: $3.50 - 4.30 Visitors: $6.30-7.70
Roberts et al. (1985)	Contingent Valuation	Gulf of Mexico	Petroleum Structures	($339 annually per diver)
Johns, et al. (2003)	Contingent Valuation (dichotomous choice)	Southeast Florida	Ships, reef balls, and other private and public artificial reefs	Residents: $3.40 (to maintain existing artificial reefs) $0.80 (new artificial reefs) Visitors: $14 (to maintain existing artificial reefs) $5.60 (new artificial reefs)
STUDIES OF DIVING AND FISHING ON ARTIFICIAL REEFS				
Milon (1988)	Contingent Valuation	Florida	Network of 7 different reefs from various materials	$29.04 to $42.77 per year
Milon (1989)	Contingent Valuation	Florida	Ships and steel debris	$4.48 to 127.56 per year

quality of the artificial reef, and substitute dive sites) and the total number of divers that are expected to use a ship to reef site. Individual value, individual expenditures, and the total numbers of visitors will vary from region to region.

In 2000, The San Diego Oceans Foundation (SDOF), paid $238,000 to acquire the 366 foot, Canadian Destroyer Escort *Yukon*. The Foundation also paid an additional $97,000 to prepare the vessel and $100,000 for towing, mooring, and sinking. Can the values taken from the literature give us an idea of the potential economic benefit of this "ship to reef" project?

The San Diego Oceans Foundation estimates that 10,000 divers made 26,700 day visits to the *Yukon* "ship to reef" site between August 2002 and August 2003; roughly 6,000 of these diver trips were made by out-of-town visitors accounting for 15,600 person-days (Pendleton, 2005). Conservative estimates from diving in Florida (Bell et al., 1998 and Johns et al., 2003) suggest that divers to the *Yukon* might spend on the order of $50 per dive day for residents and $200 for non-residents. A non-random survey of 814 divers to the *Yukon* revealed that expenditures associated with trips to the wreck were approximately $95 for dive-related expenditures with out-of-town divers spending an additional $580 on food and lodging. The literature provides estimates of potential expenditures that are well within an order of magnitude of what are likely to be the actual expenditures by divers.

A similar transfer of values from the literature can also be used to estimate the potential non-market value of visits to the sunken *Yukon*. Bell et al. (1998) and Johns et al. (2003) find only modest non-market values for artificial reef diving (ranging from approximately $3/person-day for residents to $13/person-day for non-residents) while other authors find much more substantial values for diving on rigs (on the order of $50 per person-day). A travel cost study by Pendleton (2005), using a non-random sample of 4,256 diver day trips to the *Yukon* over 3 years, estimated that the non-market value of diving at the *Yukon* was on the order of $110/person-day. Estimates from the literature are clearly a conservative estimate of the potential non-market value, but they still provide a guide for considering the potential non-market economic value of the site to divers. The non-market value of artificial reefs to local divers may explain the increasing role of diver-based "not-for-profit" organizations in the creation of new artificial reefs.

The value of sinking ships to create reefs depends on the degree to which the new artificial reef site generates increased diver expenditures and non-market values. The values from the literature only indicate the potential value of trips to a new reef site like that which would be created by a ship to reef project. For the *Yukon*, the analyst would need to know how the provision of the *Yukon* as a recreational destination for divers effectively changed the level of expenditures and total non-market values enjoyed by these divers. If we consider all of these trips as an upper-bound estimate of the incremental effect of the *Yukon*, we can use the literature to estimate the maximum value of the *Yukon*. The literature suggests that the potential magnitude of annual expenditures by all divers to the *Yukon* could be $3.5 million ($3 million by non-residents and over $0.5 million for residents; note that this figure is almost exactly equal to the average estimated expenditures per site from Hess et al. [2001]) for a Net Present Value of $46 million at a discount rate of 4% over twenty years—roughly one hundred times the costs of buying, preparing, and sinking the ship. Of course, only a fraction of these expenditures represents true economic benefits (net revenues). Nevertheless, the values from the literature suggest that the fiscal impact of the *Yukon* could well exceed the costs of creating the new dive site.

A similar analysis could be conducted to estimate non-market value of the *Yukon*. The literature suggests that the annual value of non-market benefits of the *Yukon* are likely to be between $80,000 and $1.3 million for a Net Present Value of between $1 million and $13 million dollars. Again, the non-market values from the literature provide evidence that the economic returns from creating a new reef site in Southern California could justify the creation of the site.

Original valuation studies and technical benefits transfer analyses are beyond the means of many organizations that might like to finance and promote ships to reefs. This paper demonstrates that estimates of market and non-market values, taken from the literature, may provide a reasonable approximation of the potential economic benefits from creating new ships to reefs, artificial reefs, or other marine and coastal projects.

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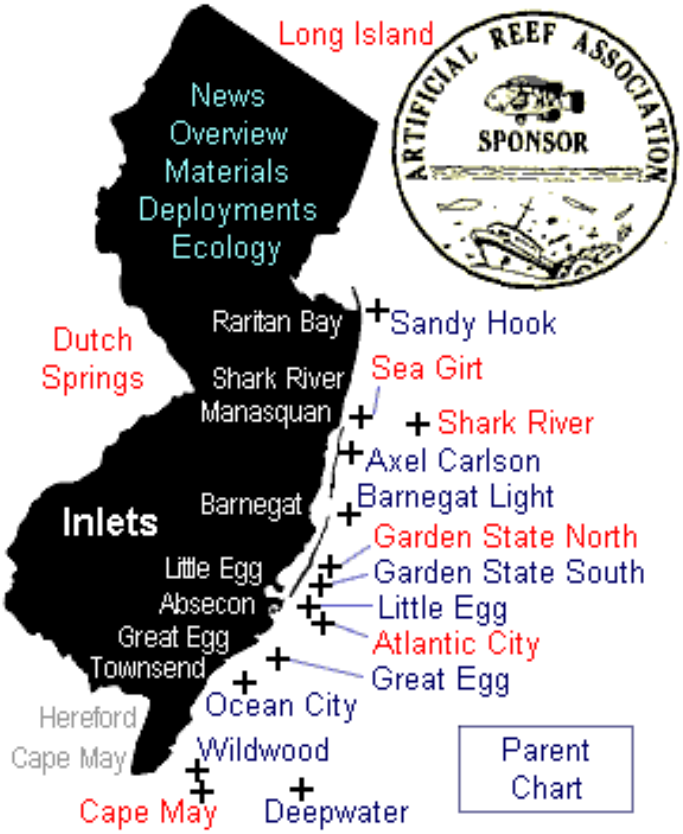
Throughout this website, you have probably found many references to artificial reefs. An **artificial reef** is any man-made object placed in the sea as a habitat for marine organisms. Sea life is drawn like a magnet to any large object in the otherwise featureless bottom sand. Almost anything will do, but objects that can withstand the corrosive effects of salt water are best.



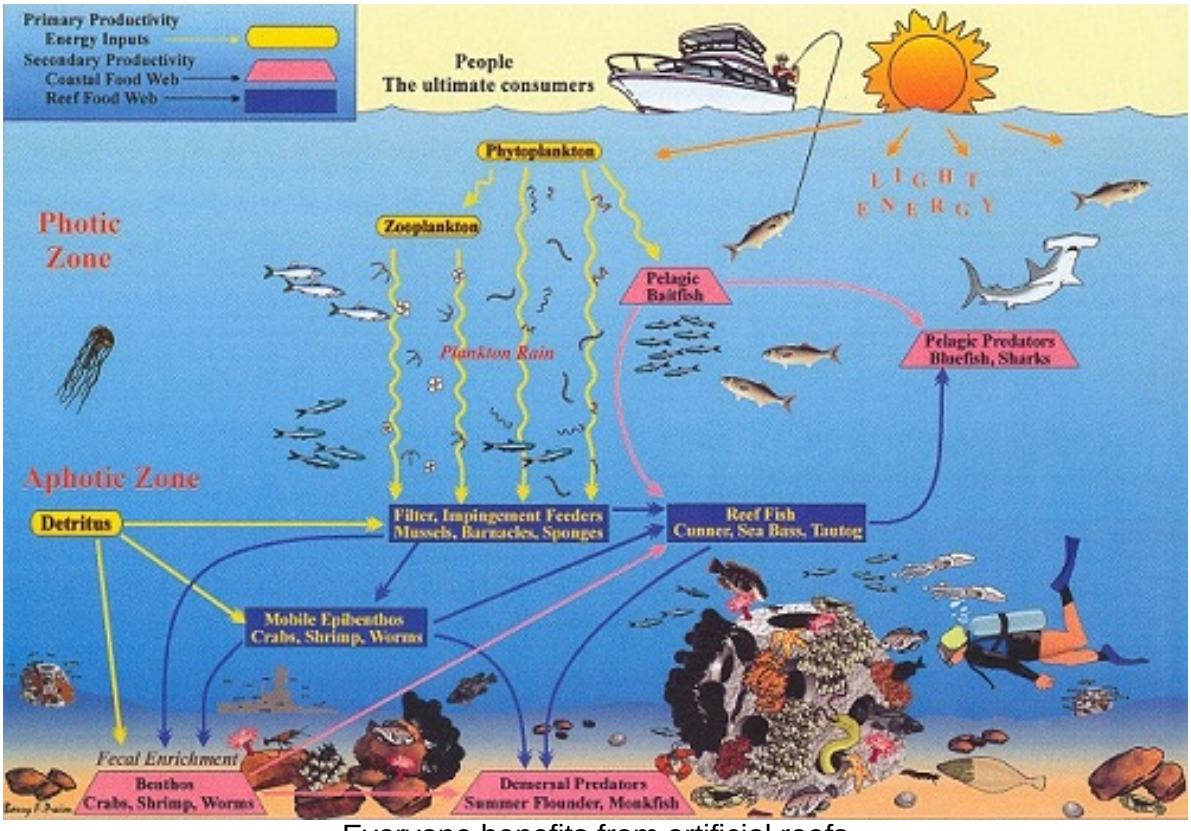
Since 1984, the New Jersey Artificial Reef Program has constructed over 1000 reefs, including over 100 vessels, on its network of 14 ocean sites located from Sandy Hook to Cape May. Reefs are constructed from ships and barges, concrete demolition debris, dredge rock, concrete-ballasted tire units and a variety of other dense materials.

The objective of the program is to create hard structure habitat for Mussels, Sea Bass, Blackfish, Porgy, lobster and many other species of marine life. Once fish and shellfish establish themselves in their new homes - and it doesn't take long - the reefs produce excellent catches of fish for anglers and provide underwater attractions for scuba divers.

New Jersey's Artificial Reef Program is one of the biggest and most successful of any, especially from a diver's perspective. In comparison with most other Atlantic Coast states, New Jersey's Artificial Reef Program has placed more **vessels** per person and per mile of coastline than any other state. New Jersey's Artificial Reef Program has also placed **millions** of tons of rock and concrete rubble.

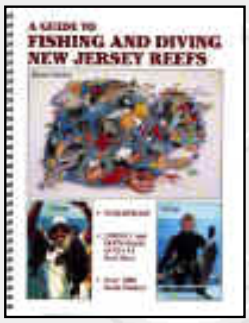
State (N to S)	Population (2001 est.)	Ocean Coastline	# Vessels (2005)
New England	[no significant artificial reef building activity]		
New York	19.0 million	127 miles	~ 65
New Jersey	**8.5 million**	**130 miles**	**131**
Delaware	0.8 million	28 miles	~ 3 ?
Maryland	5.4 million	31 miles	~ 3 ?
Virginia	7.2 million	112 miles	~ 12
North Carolina	8.2 million	301 miles	~ 35
South Carolina	4.0 million	187 miles	~ 100
Georgia	8.4 million	100 miles	~ 41
Florida (including Gulf)	16.4 million	1350 miles	~ 380
California	34.5 million	840 miles	< 10

With a very limited budget, the Reef Program has depended upon donation from anglers, divers, clubs and marine businesses to cover the costs of cleaning and preparing ships and other materials for sinking on reefs. New York also has a modest artificial reef program, and Dutch Springs in Pennsylvania must constitute one of the largest private artificial reef programs in the country.



Everyone benefits from artificial reefs

Bill Figley presides over the sinking of the HRFA reef, 2001



Support the Artificial Reef Program

For listings of all **Loran** and **GPS** coordinates of all New Jersey Artificial Reefs, get your own copy of the **Guide to Fishing and Diving New Jersey Reefs**

Purchase a reef T-shirt or decal - proceeds go towards financing continuing Artificial Reef activities.

All photos (except as noted) courtesy of:

New Jersey Division of Fish and Wildlife
Bureau of Marine Fisheries / Artificial Reef Program

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- Artificial Reef Program
- Bureau of Marine Fisheries
- NJ Division of Fish and Wildlife
- State of New Jersey
- NJ DEP | US EPA

- Herb Segars Artificial Reefs Screensaver (free download)

Artificial Reefs in Other States

Atlantic		Gulf	Pacific
ME	DE	FL	CA
NH	MD		OR
MA	VA	AL	WA
RI	NC	MS	
CN	SC	LA	AK
NY	GA	TX	HI

Technical Papers

- Underwater counts of fish and lobster inhabiting Reef Ball habitats on New Jersey ocean reef sites
- Tagging Study Of Black Sea Bass In New Jersey Ocean Waters

- Survey of New Jersey's Recreational Wreck / Artificial Reef Fisheries, 2000
- Marine Life Colonization of Experimental Reef Habitat
- Micro-Movements of Black Sea Bass on the Atlantic City Reef Site
- The Importance of Artificial Reef Epifauna to Black Sea Bass Diets
- Use of Artificial Reefs by Commercial Fish and Lobster Potters, 1995
- ASMFC Coastal Artificial Reef Planning Guide, 1998
- Guidelines for Marine Artificial Reef Materials, 1997
- New Jersey Saltwater Fishing Guide

Artificial Reef News

- 2005 | 2004 | 2003 | 2002 | 2001 | 2000 | 1999 | 1998 ... 1995 (pdf)

Disclaimer

I make no claim as to the accuracy, validity, or appropriateness of any information found in this website. I will not be responsible for the consequences of any action that is based upon information found here. Scuba diving is an adventure sport, and as always, you alone are responsible for your own safety and well being.

State of New Jersey

Nacote Creek Research Station
Bureau of Marine Fisheries
P.O. Box 418
Port Republic, NJ 08241

July 26, 2004

Mr. Anthony R. Galiano
44 Courtland Lane
Aberdeen, New Jersey 07747

Dear Mr. Galiano:

On behalf of the New Jersey Division of Fish and Wildlife, I am pleased to advise you that you have received the Reef Supporter Recognition Award. This award recognizes your support and promotion of the State's Reef Program through your Internet Website. Your efforts have made a lot of fish, fishermen and divers very happy.

Congratulations,

Bill Figley
Reef Coordinator

BF/mcf