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1973 (10th) Technology Today and Tomorrow

Apr 1st, 8:00 AM

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Richard B. Stone

National Marine Fisheries Service, Atlantic Estuarine Fisheries Center, Beaufort, North Carolina 28516

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Artificial Reefs and Coastal Fishery Resources

Richard B. Stone
National Marine Fisheries Service
Atlantic Estuarine Fisheries Center
Beaufort, North Carolina 28516

ABSTRACT

Fishes congregate around coral reefs, rock outcrops and other areas with irregular, hard bottom. These areas provide shelter, food, orientation, and spawning grounds for fishes and are vital to the existence of encrusting organisms. However, much of the continental shelf area off the Atlantic and Gulf coasts of the United States is relatively barren.

Studies by National Marine Fisheries Service biologists from the Atlantic Estuarine Fisheries Center, Beaufort, North Carolina, on reefs off New Jersey, South Carolina and Florida have demonstrated that artificial reefs effectively provide additional food and cover for fishes. Artificial reefs have a great potential as a management tool that States and the Federal Government can use to conserve and develop recreational and commercial fishery resources.

INTRODUCTION

In 1970, over nine million salt water anglers (age 12 and over) spent 1.3 billion dollars catching nearly 1.6 billion pounds of fish (Deuel, 1973). With projected population growth and increases in leisure time, we can expect the number of anglers to more than double by the year 2000. This increase in the number of marine sport fishermen plus the continuing pressure by U.S. and foreign fishing fleets may tax our fishery resources beyond their ability to sustain present yields unless adequate management practices based on sound research are developed and implemented. Artificial reefs appear to be an important management tool that can be used by States and the Federal Government to conserve and develop recreational and commercial fishery resources. However, some questions remain that need definitive answers before the full potential of artificial reefs can be realized. The most important problem is the determination of how artificial reefs effect the stock size of fishes. We are now gathering quantitative information to answer this question.

DISCUSSION

Artificial reefs are man's attempt to duplicate what nature has done successfully for thousands of years: to provide areas of favorable habitat for fishes and invertebrates. Coral reefs, rock outcrops, shipwrecks and other hard, irregular substrate provide shelter, food, reference points,

and spawning grounds for many fishes and are necessary for the survival of numerous species of invertebrates. However, much of the continental shelf area off the Atlantic and Gulf coasts of the United States is rather bleak in appearance because of the lack of hard substrate. Thorson (1957) states that epifauna, those animals living on or associated with hard substrate, occupy on an average less than 10% of the ocean bottom. In a study of fishing grounds off the New York Bight, Buchanan (1972) found that less than 5% of the 755 mi² sampled could be considered hard, irregular bottom. Off some of the coastal states, anglers must go 20 to 40 miles to find extensive areas of rough bottom and the associated concentrations of gamefishes.

Artificial reefs can and are being used to develop recreational and commercial fisheries. Over 100 artificial reefs have been built on the east coast of the United States alone. A small artificial reef constructed off Murrells Inlet, S.C. is providing a productive fishing site 3 miles from the inlet where the closest natural rough bottom fishing ground is 7 miles away. Almost 40% of all the fish caught by private boat anglers off Murrells Inlet last year were caught on the artificial reef. The reef increased the fish carrying capacity of the area 300 to 1800 times over that of the open bottom prior to reef construction (Stone, Buchanan and Parker, 1973).

In addition to developing fisheries and beneficially effecting anglers and the economy of coastal communities, artificial reefs are beneficial to fishes. Reefs increase the favorable habitat of an area which allows an increase in the standing crop. Artificial reefs provide the public with an effective management tool that can be used to improve habitats and fisheries.

REFERENCES

- (1) Buchanan, C. C., A comparison of sport fishing statistics from man-made and natural habitats in the New York Bight, Coastal Plains Center for Marine Development Services, Sem. Series No. 1, 1972, p. 27-37.
- (2) Deuel, D. G., The 1970 salt-water angling survey, C.F.S. Pub., Dept. of Commerce, NOAA, NMFS, Wash., D.C., In Press.

(3) Stone, R. B., C. C. Buchanan and R. O. Parker, Jr., Expansion and evaluation of an artificial reef off Murrells Inlet, S.C., Final Report to Coastal Plains Regional Commission, 2000 L St. N.W. Suite 414, Wash. D.C. 20036, 1973, p. 55.

(4) Thorson, G., Bottom communities, In Hedgpeth, J. W. ed., Treatise on marine ecology and paleoecology. The Geol. Soc. of America, Mem. 67, Vol. 1, 1957, p. 461-534.