

Key Considerations for Potential Reef Projects

Many Department of Defense installations or units have donated materials or services to help develop local reef projects. These are popular and highly visible opportunities to cooperate with and assist local communities. Key planning considerations include:

- Suitability of available materials for potential reef sites
- Legal aspects of property transfer and demilitarization
- Preparation, transportation, and placement requirements
- Benefits to DoD and local communities
- Coordination with permit holders and resource agencies



How Constructed Reefs Function to Enhance Fish Habitat

Constructed reefs provide shelter, food, and orientation cues that contribute to increasing local populations of selected species of fish or shellfish. They function in essentially the same manner as natural reefs.

Reefs create shelter or refuge for many reef-associated fish and shellfish species. Midwater fish are attracted to higher profile reefs for feeding.

Reefs provide hard surfaces that are colonized by encrusting communities. Many fish feed directly on this attached forage or on the mobile organisms that occupy this microhabitat. Reefs also alter current flows and passively concentrate plankton that are consumed by other species.

Reefs also provide spawning areas or egg deposition sites for some species as well as shelter that enhances juvenile survival.

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Using Obsolete Armored Vehicles to Build Fish Reefs



Tanks were cleaned, prepared, and...



...placed on state-permitted reef sites...



...to create effective fish habitat

Obsolete Armored Vehicles Make Good Fish Habitat

Obsolete armored vehicles in DoD inventory were used to build reefs to enhance fish habitat. These constructed reefs were built by state and local agencies to promote recreational fishing and diving opportunities, and to develop local economies based on these activities.

A joint program involving the Defense Logistics Agency and Army and Navy Reserve units placed over 1200 armored vehicles at more than 60 locations in 10 states along the Atlantic and Gulf of Mexico coasts. The Department of Defense Legacy Resource Management Program supported research to evaluate the performance of these reefs and recommend program improvements and future opportunities.

The results of the evaluation confirm that armored vehicles can be used to make stable, durable, and effective fish habitat and are well received by fishers and divers. To provide a higher profile, temporary midwater fish attractors (net sections anchored to the tanks and extended vertically using trap floats) augmented some of the reefs. FAD-enhanced reefs attracted greater numbers of midwater fish and also increased some bottom species.

Studies comparing fish abundance and diversity on armored vehicle, comparison reefs, and local natural bottom indicated that target species density was greater than on many other types of scrap material reefs, and equal to or greater than several types of designed reef modules.



Goliath Grouper under an M-60 Tank

Benefits from Reusing Obsolete Materials for Reefs

- Creation of new reef fish habitat that promotes fishing, diving, and local tourist economies
- Reduction of pressure on natural reef habitat
- Potential cost-effective disposal of obsolete items
- Removal of potential sources of contamination via cleanup and preparation
- Partnerships between DOD and cooperating local communities and natural resource agencies
- Training opportunities (including joint training)
- Additional useful applications for mitigation, restoration, and conservation

What Types of Materials Are Suitable for Reefs?

Dense nontoxic materials that may be cost-effectively prepared for use in reef construction include:

- Armored vehicles such as tanks, personnel carriers, and recovery vehicles
- Ships, boats, landing craft, barges, and port construction items
- Concrete precast items such as culvert, junction boxes, road barriers, and utility poles
- Structural steel configurations such as towers, bridge sections, gantries, and gangways

Working with Permit Holders and Resource Agencies

Constructing reefs requires close coordination with permit holders and permitting agencies. In most cases, permit holders are state or county natural resource agencies and recreational fishing or diving organizations.

Permitting agencies include the Army Corps of Engineers and federal, state, and local agencies. DoD is normally involved with donating materials or providing preparation and transportation support to construct reefs on sites permitted by others. The Army Corps of Engineers can provide information on requirements and local permit holders.

Recommendations for Project Implementation

- Work with experienced permit holders who have sites suitable for proposed materials
- Ensure adequate material preparation to eliminate pollution and attractive nuisance concerns
- Transfer property at dockside
- Ensure accurate placement and site documentation to maximize user benefits



Diverse community living on the surface of tank turret