



ARTIFICIAL REEFS

A practical guide to aid community groups in deciding whether an artificial reef is necessary; and, where they can be placed in an environmentally sustainable manner.

Determine the Goal

In order to create a successful artificial reef, there must be a goal for having it. Artificial reefs should always be used in response to a problem. Common situations for building an artificial reef include:

- Reducing tourism damage on natural reefs by building an artificial reef;
- Increasing fish biomass in degraded areas;
- Establishing new areas for coral growth;
- To rehabilitate a dying reef by increasing reef complexity.

Each of these goals will come with a slightly different strategy, they will use different species of coral, having different management plans and be placed in different areas.

If the artificial reef is being placed in an area that has been degraded, you must first try to solve the source of the degradation. Restoring the natural reef should be your first priority, as without solving the source of stress, any reef, natural or artificial may die.

Identify the appropriate area

In order for the artificial reef to thrive, without causing negative effects to nearby natural reefs, a suitable area must be chosen. The following criteria will guide you:

- The artificial reef must not be placed too close to a natural reef (at least 300m away) to avoid the artificial reef “stealing” coral recruits and larvae. This will also reduce damages that can occur to the natural reef during typhoons.
- Make sure that the area has the appropriate conditions for corals to grow:
 - Sunlight,
 - Low nutrients (far from points of waste water discharge),
 - Low sedimentation (far from the mouth of rivers),
 - Low storm impacts (a naturally sheltered area like a bay).
- Make sure the artificial reef is placed at the same depth as the reef where you will transplant corals from

These guidelines will help you to make the most effective and environmentally sustainable decisions when it comes to placing and maintaining the artificial reef.

Choose the material

The material you choose for the reef largely depends on the environmental conditions. The underwater environment has a number of pressures you must take into account, it is always moving and can be very turbulent in typhoons, it also naturally degrades many materials like plastics and metals. The material you choose should be selected with specific stresses in mind, otherwise it will break and the artificial reef will collapse.

Above all, the material must be sturdy enough to withstand storms, options include:

- Rebar: the weld must be strong and the structure must be securely pegged into the seafloor;
- Concrete: the structure must have a strong hold on the bottom and the material must be pH balanced so that corals can attach to it.

These materials are the best for the Philippine environmental conditions primarily because the country is often affected by typhoons which will destroy weaker structures. Do not choose weaker materials as when they are destroyed the debris can easily crash into nearby natural reefs and cause even greater damage to the environment, and local fisheries.

Effective Management

Management should be very similar if not the same as the management of an MPA, this includes:

- Representing the community fairly
- Openly discussing the rules and penalties
- Choosing appropriate members of the community to fill specific roles (enforcement, monitoring etc)
- Setting major dates (monitoring dates, patrol schedules etc)