



Cheryl Bartlett,  
Executive Director  
Siasconset Beach Preservation Fund,

Subject: Reef Balls for Your Project

Dear Cheryl,

It has come to our attention that SBPF is considering the addition of Reef Balls. As you may know, we are a public, non-profit organization that works to rehabilitate oceanic ecosystems worldwide and we are often asked to evaluate ways to preserve, mitigate or rehabilitate threatened oceanic ecosystems.

Because you have considered the use of Reef Balls (and cobble rock) to mitigate/compensate for cobble reef loss would like to provide you with this letter expressing our opinions on the subject.

First, please understand that this evaluation is based on our experiences and only a single monitoring visit to Nantucket that was several years ago. Therefore this letter will be fairly general, rather than specific in our recommendations.

To that end follows is our professional opinion about mitigation equivalencies and the biological function of cobble reefs.

#### 1) Cobble Reefs

Environmentally, cobble reef systems can function as hard bottom habitats (highest quality, lower volume food chain contributions), semi-stable hard bottom habitats (medium quality, medium volume), or unstable hard bottom (high volume, lower quality food chain contribution).

Cobble reefs form hard bottom marine communities but the speed at which rocks turn over or are covered and uncovered by sand will proportionally favor rapidly colonizing members of the fouling community over slower growing members, presented here in simplistic terms a newly laid rock would typically colonize in approximately this order.

1. Turf algae
2. Encrusting algae
3. Macro algae
4. Tunicates
5. Bryozoans
6. Sponges
7. Calcium secreting (barnacles, shells)

The faster growing segments, such as the algae, supply a great deal of low quality food to the marine life chain (similar to, say grasses, on land). This is a benefit for herbivores and juvenile crabs, small fish, and baby lobster. Algae also provide some habitat cover for very tiny copepods / and other shrimp like animals that form the basis of the marine reef food chain. This larger volume of lower quality food is generated on the smaller, looser, frequently covered by sand cobble rocks. This type of habitat is fairly simple to create only requiring a hard surface area exposed in the sea. Relatively small rocks can be used just as the sea itself would bring them in because the time it takes to get to this quality of habitat from a newly laid stone is relatively short. Algae can begin appearing in just a few weeks.

The slower growing members, such as the shelled animals, provide higher quality food for adult fish and lobster but in lower abundance. This higher quality food tends to come only from the larger rock or more complex rock and the most stable cobble reefs. These habitats tend to be more cherished by fishermen for their adult fishery production. To create this type of habitat, especially in the uniquely complex and every changing environment offshore of Nantucket, is more complex requiring materials that can remain in place, without overturning and stay above the sand for longer periods of time.

The most productive (and diverse) cobble reef systems have a combination of both types of habitats. [Note: it is actually a little bit more complicated than this, as the amount of void space within the cobble (the gaps in the rocks) also determine the amount of protective space for fish and mobile marine animals but for purposes of this letter we are trying to keep it simple to understand. For a very detailed explanation of reef rehabilitation please see our “Step by Step Guide to Reef Rehabilitation for Grassroots Organizations” that can be found at our website [www.reefball.org](http://www.reefball.org) under the “Reef Building” link]

When undertaking mitigation projects, it is not necessarily your responsibility to determine what the optimal combination of the grade of the cobble reef should be but rather to target your rehabilitation efforts to match the grade of the cobble you are impacting.

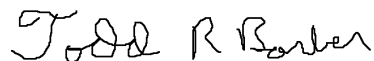
It is relatively easy to map and grade the cobble to be mitigated for by simply determining which fouling community (plants and animals that grow directly on the rock) are present overlaid on a Google GPS map. Combine this with an estimate of void spacing and it is fairly simple to determine the best combination of materials to preserve the impacted habitats.

Before you consider using Reef Balls, we suggest that you have a local biologist do these simple assessments and we'd be glad to use the results to recommend the proper ratio of Reef Balls to cobble rock for your project.

(If you are not already working with one, we have some contacts at local universities if you need a name or one of our staff could assist whatever is best for your needs. Perhaps this work has already been done?).

At any rate, we just wanted to let you know we are happy to help in any way to help ensure the success of your project.

Cordially,

A handwritten signature in black ink that reads "Todd R. Barber". The signature is written in a cursive, slightly slanted style.

Todd R. Barber  
Chairman, Reef Ball Foundation  
reefball@reefball.com

