

ADOM

4 Fundamental Steps in Artificial Reef Construction

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We recommend following four fundamental steps in the design and construction of artificial reefs.

Discussing these steps with the stakeholders involved can also be beneficial as they help set realistic expectations.

The FOUR key steps are outlined below in Figure 1 and form the acronym ADOM.

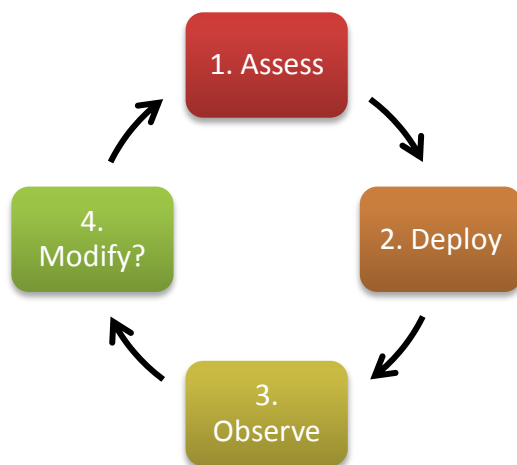


Figure 1. Four fundamental steps in the design and construction of reefs.

1. Assess

The initial ASSESSMENT can provide some of the best guiding info for a proposed artificial reef and has the goal of finding out what is already known about the proposed site and nearby comparable sites or habitat/reef.

The assessment should include a review of the existing knowledge/experience of how marine life, currents and waves are interacting with

nearby natural reefs, existing artificial reefs, jetties, breakwaters or even mooring blocks.

Assessment should include identification of the species that are caught in the area or the types of habitat the target species you want to attract are found around.

The initial assessment can include discussions with fishers, dive centres, researchers, area managers, locals, universities and actual dives on the site.

2. Deploy (and Design)

Incorporate knowledge gained from the local assessment into the design of the layout of the reef, the type of modules to be used and special nooks or crannies that may be required.

And deploy the modules.

3. Observe

After deployment it's time to observe how the reef functions and how the various marine critters are using different parts and features of the reef.

No matter how much information is gained beforehand, until the reef modules are actually deployed it is impossible to be 100% accurate on how the reef will behave.

Observations of sinking or scouring may be important or whether target species are using the reef.

We sometimes use a strategy of deploying just a handful of modules first in order to make key observations before deploying the full quota of modules.

It's important stakeholders appreciate that colonization of reefs by fauna and flora is a progressive process and what is inhabiting the reef today may not be there next month or next year for example.

Studies have shown it can take 8 or more years before populations stabilize.

If it's a fishing reef, then it is best to discourage fishing for the first 6 months at least.

Timing of deployment also dictates which animals (and flora) will arrive and take up residence.

TECHNOTE

Reefs deployed during the winter can seem relatively 'quiet' compared to reefs deployed during spring and summer which can boast an abundance of residents within hours.

Some of the best lessons can be gained from this first deployment.

Observe, take notes and if applicable modify future deployments accordingly.

Observation timeframes will vary from project to project.

Here in Australia the New South Wales government conducted two years of monitoring of their Reef Ball reefs before scaling up the program. In other programs we have been involved with, observations over a one week period were sufficient.

4. Modify (add More)?

We are not suggesting that more modules have to be added or the design or module type has to be changed.

However, lessons learned from the previous deployment are extremely valuable and should be incorporated into future deployments and documented in case there are changes in staff.

Sometimes it is beneficial to change future layout, module design or size or number of units.

Diversity of habitat is a primary driver of diversity of marine life and subsequent deployments may need to be varied to provide smaller or larger nooks and crannies.

Building reefs is analogous to building satellite towns/cities which are rarely built in one go but progressively over time as needs are identified (or change) and resources become available.

The same is true with constructed reefs...additional resources such as funds can take time to raise and the ASSESSMENT and OBSERVATION steps may confirm features that are working really well. Additional needs of users may also change and need to be factored into future deployments.

See our other Tech Notes for more tips – 'Guide to AR Design' and 'Green Zones in Constructed Reefs'.

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