

# Marine park monitoring and research methods

1

## Diver surveys

Diver surveys are used to assess the size and composition of fish and invertebrate species. The type and condition of macroalgae habitats is also recorded. Using this method, divers can assess the hidden and cryptic species that are not often recorded by baited remote underwater video systems (see number 6). The data from dive surveys can be used to assess any differences between protected and non-protected areas.

2

## Autonomous Underwater Vehicles

Unmanned vehicles are deployed to take comprehensive imagery of seafloor habitats. This enables scientists to characterise and map deep water reefs that are not accessible to divers.

3

## Multi-beam swath mapping

Swath mapping is used to record images of seafloor structures using sonar. This mapping is complementary to the inventory mapping (see number 4). Details such as depth and seafloor contour are used to generate 3D bathymetric and texture maps of the geological features. This detailed imagery is used for marine park management and helps with selecting monitoring sites, assisting with the interpretation of monitoring data and assessing if marine parks are in appropriate places.

4

## Habitat inventory mapping

Inventory mapping is used to map large areas of seabed quickly. This mapping is complementary to the swath mapping (see number 3). An underwater camera is towed 1m above the seafloor for 50m at 2km grid intervals. Footage is then sent via a live feed to computers on board the research vessel where scientist can view what type of habitats are in the area (e.g. reef, sand, seagrass or mud).

5

## Acoustic receivers

Acoustic receivers are deployed on the seafloor at key locations where they collect data for months until they are retrieved. These acoustic receivers (or listening stations) collect information whenever an acoustically tagged fish or shark swims nearby. The receivers provide data on residency and migratory patterns, and can reveal if fish and sharks are using multiple marine parks (marine park connectivity).

6

## Baited Remote Underwater Video Systems (BRUVS)

Underwater cameras are lowered to the sea floor along with a bait bag to attract fish and invertebrates. Footage from the videos is viewed and species, size and abundance is recorded. This method is particularly useful at locations where diving is not appropriate. It can also be used in the pelagic zone. BRUVS are complimentary to diver surveys (see number 1) as this method can detect species that are 'diver-shy' and not seen during diver surveys. Results from BRUVS are used to monitor changes over time and compare protected and unprotected areas.