

CORALS



Acropora hyacinthus, a fast-growing table-top form common on many reefs.

Coral reefs are invertebrates belonging to the Order Scleractinia. Their life-cycle is in two phases—the temporary free-living planula larva and the permanent benthic polyp form which forms colonies containing thousands of polyps encased within a calcareous skeleton. These skeletons are of diverse shapes and sizes and form the framework of coral reefs throughout the world.

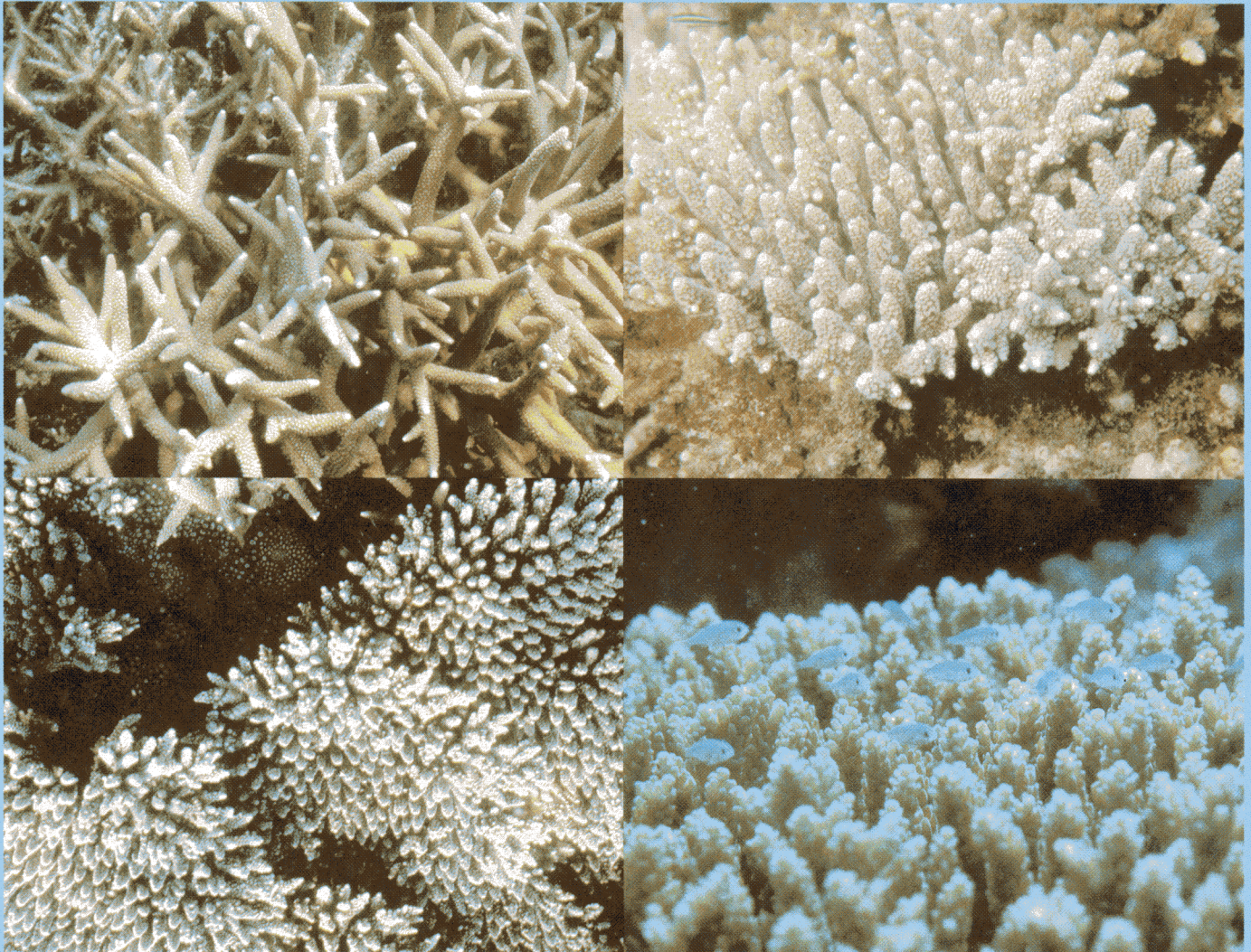
by Jeffrey Low
& L.M. Chou

They not only provide a place of anchorage, but also serve to protect the soft-bodied animal. One of the most unique and distinctive of skeletons belongs to the genus *Acropora*

of the family Acroporidae, which also includes three other genera, *Montipora*, *Anacropora*, and *Astreopora*.

Acropora has a typical growth pattern unlike those of other corals. The axial polyp (the polyp at the tip of a branch) builds a corallite of increasing length as it grows and radial polyps bud off along its length. The radial polyp, in turn, has the potential of becoming an axial polyp

THE GENUS ACROPORA



which results in the formation of new branches.

There are approximately 80 species of *Acropora* worldwide. They can be broadly divided into five groups by their growth form: staghorn, heads, tables, bottle-brush and humps. The staghorn type proliferates rapidly, with its widely interconnecting branches forming

extensive fields of about 12 m depth. The heads type *Acropora* is usually found growing in isolated colonies on the reef flat. Table-top types grow well on steep slopes and reef flats. The colony is attached to a rock or even another coral colony and it 'fans out' horizontally from a central stalk as it grows, forming a platform. The bottle-brush type is very unique as its radial polyps form corallites

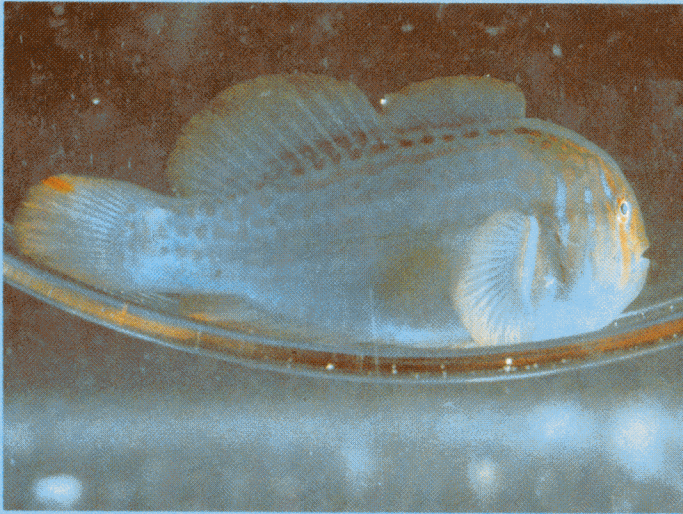
Clockwise:

Acropora nobilis forms extensive staghorn colonies.

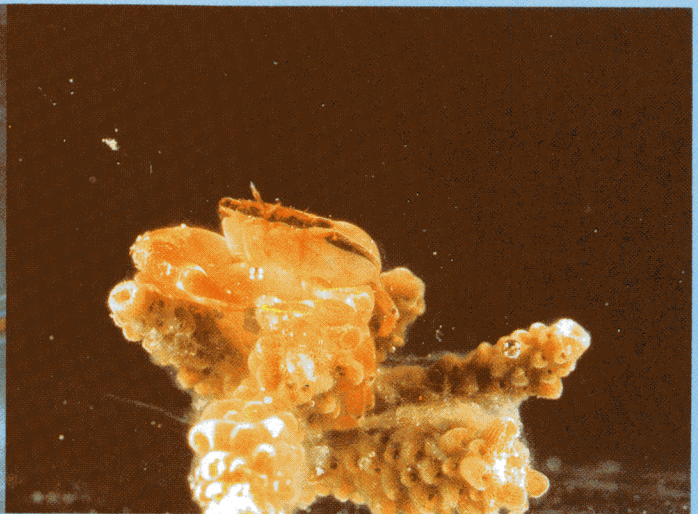
Acropora grows as small corymbose clumps.

Many *Acropora* species like *A. tenuis* shown here create favourable habitats for the growth and protection of young reef fishes.

Acropora valida is another common species of *Acropora*-dominated communities.



Gobiodon verticalis is a common gobiid symbiont of *Acropora* colonies.



The crab, *Tetralia*, a symbiont of *Acropora* colonies is never easily removed from its host.

that are extremely long and delicate, giving it an appearance of a bottle-brush. The humps type is like a deformed mass of coral, with no apparent organization to its growth.

With so many species, it is not surprising that *Acropora* can be found in every ocean and at almost every depth, even as deep as 25 m if the water is clear enough. Although *Acropora* grows best in clear water, and is easily killed by heavy sedimentation, studies have shown that at least some species are able to survive in turbid water.

The reefs of Singapore and Malaysia support a large diversity of *Acropora* species, some of which form extensive fields. The growth of *Acropora* of Singapore reefs is usually not extensive and is limited to less than 15 species. This may be due to the effect of sedimentation as reefs located furthest offshore from the mainland have a higher diversity and abundance of *Acropora* compared to the nearshore reefs.

Acropora has some interesting symbionts. For example, there are the tiny crabs, *Tetralia*, that appear like masked robbers with a black stripe across their eyes. They

are able to locate their host *Acropora* if they are physically removed to another colony. These crabs are able to escape their enemies by wedging themselves tightly in the crevices of the coral. They feed off the mucus secreted by the coral.

Another symbiont, a goby (*Gobiodon verticalis*), is a small fish of only a few centimetres in length and is either green or blue, with red markings on its side. They are easily missed because of their size. Furthermore, they are very difficult to evict from their 'homes' and cling tenaciously to the coral even if the colony is brought out of the water.

Tetralia and *G. verticalis* are believed to protect their hosts from the predation of the starfish (*Acanthaster planci*), the cushion-star (*Culcita novaeguineae*) and a gastropod corallivore, *Drupella*. Colonies without these associates are susceptible to the devastating attacks of these coral feeders.

Acropora also affords temporary hiding places for other fishes. The staghorn type especially, is a haven to many species, which use the spaces in between the many branches to evade predators. The table-top type is commonly used by the

young of coral-eating fish (eg. *Chelmon rostratus*). Not only are they protected, but they also have an abundant food source which is the coral itself.

Acropora colonies with their various sizes and shapes not only enhance the beauty of the reef, but are also important to the reef ecology in their role of providing protection and food to many other reef animals. Most of them grow very rapidly and establish themselves as the dominant group in many reef communities.

The skeletal structure of all species of *Acropora* shows the typical prominent apical corallite with numerous radial corallites. (a) *A. tenuis*, (b) *A. pulchra*, (c) *A. aspera*.

