

Penjalin (30th Nov - 2nd Dec 2006)	N	E	satellite image
SV <i>Infinity's</i> anchorage	03° 22.1910'	106° 25.7850'	
rocks with fringing reef, west side Penjalin Besar	03° 22.8764'	106° 25.9743'	1
bay on east side Penjalin Besar	03° 20.5266'	106° 26.5829'	2
Penjalin Besar: beach at north end of channel	03° 22.9654'	106° 26.4810'	3
beginning of dive Dec 1st	03° 22.6788'	106° 26.6691'	4a
end of dive Dec 1st	03° 22.8456'	106° 26.8193'	4b
beginning of dive Nov 30th	03°22.4374'	106° 26.2588'	5a
end of dive Nov 30th	03° 22.7535'	106° 26.6362'	5b
Penjalin Besar: reef patch off SE point	03° 22.0758'	106° 27.0186'	6
transect site	03° 22.6027'	106° 26.3842'	7



Expeditions

From SV *Infinity's* anchorage just off the south west beach of Penjalin Besar, we made one snorkeling expedition circumnavigating the island, five dives including one transect survey and two expeditions to the land.

Island observations

Penjalin is actually two islands – Penjalin Besar (big) and Penjalin Kecil (small) that are both uninhabited. There is a channel running between them, about 20 meters deep with a clean sand substrate. Pulau Setuju is a very aesthetic rock just to the NE of Penjalin Besar. The channel between Penjalin Besar and

Pulau Setuju is about 1 meter deep with patchy (approximately 50%) coral coverage. The rest of the substrate is rock. SV *Infinity* anchored on the SW side of Penjalin Besar, made observational dives and snorkels on the reefs and took expeditions to the island of Penjalin Besar (photo to the right: Penjalin Beach). Three monkeys were sighted on the island plus many small lizards and a domestic cat. There is good soil. On the beach inside the channel between the two islands there is a banana plantation, planted by the former caretakers of the land. Nobody lives there now. Several dwarf coconut trees surround a foundation just behind the beach where there probably used to be a small dwelling. There is also pandanus growing on the island and mint-like shrubs. Several coconut trees have lost all their palms and a few are showing signs of withering. There is a lot of trash on the beach; plastic bottles, flip-flops, ropes.





There is a small shelter on the SW beach of Penjalin Besar. Two fishermen were onshore as we dropped our anchor. The next morning, two men were manning a fire on the island. In general, fishermen were unperturbed by our presence and did not stop at the ship or offer to sell us their catch. There are oil deposits washing up on this beach and some of the boulders are caked in dried oil (see photo to the left).

Beach access: On the east side of the channel on Penjalin Kecil, the bay has sandy shallows and the fine white sand beach is landable. There are some coral heads close to the shore and there are rocks just off the end of the beach. One patch on the east side comprises solely soft coral with no hard coral, about 10 meters deep. There is a distinct change here to a green color of water. On the SW side of Penjalin Besar, the beach is inaccessible due to dense coral coverage in the shallows, however, the long beach inside the channel is approachable with sandy shallows. The north side of Penjalin Besar is pretty rough right now in the NE monsoon and looks more inhospitable. There is a small beach.

Reef 1: reef fringing the east side of Penjalin Besar

Due to time restrictions, we opted to conduct a rapid assessment transect which does not provide a full data set for analysis but gives a general indication of diversity and population of corals, fish and invertebrates.

Coral observations: Corals observed include *Merulina* spp., *Hydnophora* spp., *Porites* spp., *Montipora* spp., *Acropora* spp., *Seriatopora* spp., *Echinopora horrida*, *Echniopora lamellosa*, *Porites* spp. fingers, *Pocillopora* spp., *Astreopora* spp., *Lobophyllia* spp., *Goniopora* spp., *Galaxea* spp., *Turbinaria* spp., *Pachyseris* spp., *Echinophyllia* spp., *Mycedium* spp., *Stylophora* spp., *Favia* spp., *Gardineroseris* spp., *Porites rus*, *Polyphyllia* spp., *Herpolitha* spp., *Fungia* spp., *Lobophyllia* spp. There is one very large monospecific area of green *Porites* spp. fingers on the reef crest.

Fish observations: On most of the dives in this channel when the current was setting NE we sighted very few predatory fish; a few jacks and small schools of fusiliers, two tarpons and one sweetlips with a few juvenile groupers in the shallows. An interesting fish sighting was four longnose filefish (*Oxymonacanthus longirostris*) swimming together in the shallows. During the transect dive, early morning, the current was setting SE. At this time, there were larger numbers of fish than we had seen on our other dives here when the current was running in the opposite direction. There was a healthy diversity in damselfish, butterflyfish and angelfish. Also a reasonable number of groupers and fusiliers, plus several jacks and a bumphead parrotfish. On two consecutive days we observed large schools of bonito jumping around the island for an hour.

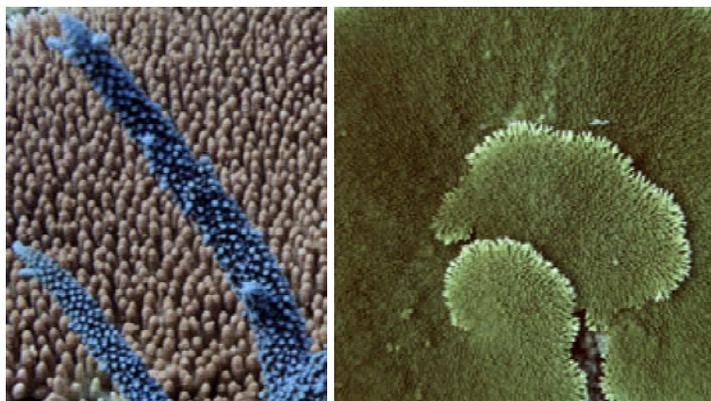
Reef health and vitality observations: We drifted over three small areas where plate coral formations had been broken. The damage was not recent and could have been caused in some cases by dynamite fishing but in one case it appeared to be a dragging anchor track. Up to 10 crown of thorns were observed on this reef. A significant number of table *Acropora* spp. colonies were suffering from disease; white band disease and possibly white pox disease. Dense dark grey filamentous algae is overgrowing the diseased patches swiftly and there are many table *Acropora* spp. colonies which have been entirely overgrown by this algae. Two sections of old fishing net snagged on the reef a while ago were sighted. One was about 1.5 meters long, the other about 3 meters.

Turtle sightings: Two turtles were sighted; one 80cm hawksbill and another too far away to be identified. We saw no sharks at Penjalin. The reef in the shallows, at about a meter deep, is very dense and very diverse in terms of hard coral coverage. Some areas are particularly colorful and diverse.

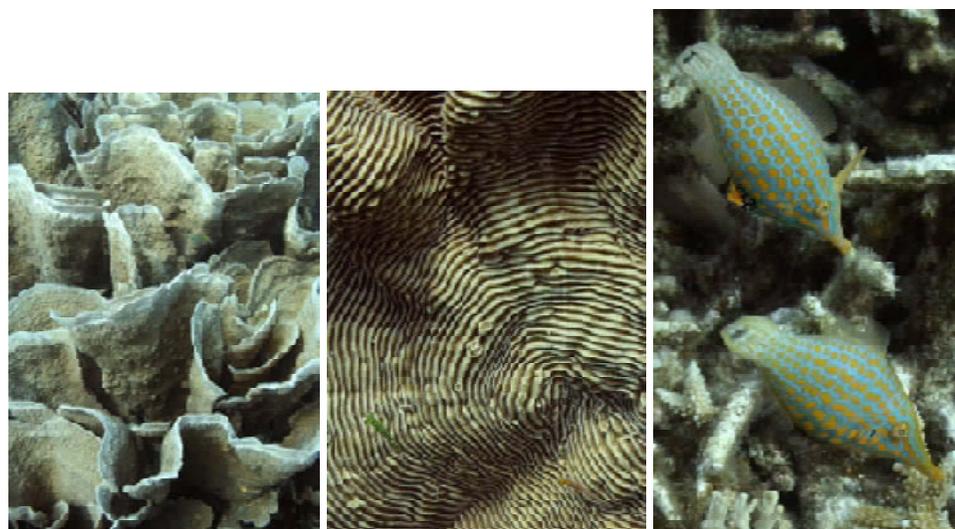




dense scleractinian coral coverage on the reef fringing the east side of Penjalin Besar



high diversity of Acropora spp. in the shallows



Echinopora lamellosa; Pachyseris speciosa; longnose filefish in the shallows



white band disease on a table Acropora colony; healthy scleractinian coral



rubble from damaged plate corals; damage from old dynamite blast shattering a colony



a large table *Acropora* colony suffering from white band disease in the transect zone

Reef 2: fringing the west side of Penjalin Kecil

Coral observations: Just off the SW point of Penjalin Kecil there is a sand bottom which becomes increasingly populated by coral bommies as you move NE towards the channel. Here there are large coral colonies, especially massive *Porites* spp., foliaceous *Montipora* spp. and *Porites rus*. We found one very large colony of foliaceous *Turbinaria* spp., approximately 15 by 10 meters. This colony marked the end of one section of the reef. We then passed over a 15 meter deep sand channel with a single anemone in it. After a few minutes we came to another section of the reef which had an extremely different population of hard corals and 100% hard coral coverage as we moved further northwards along the reef; massive *Porites* spp., extraordinary formations of *Montipora* spp. with foliaceous layers surrounding the base of the colony, extending upwards in fingers. Some of these *Montipora* spp. colonies were approximately 10 meters in diameter. Also some *Diploastrea heliophora* colonies in very good health. Our dive here ended over a monospecific area of a branching *Acropora* sp., approximately 50 by 50 meters.

Fish observations: About six small (approximately 20cm) Indonesian sweetlips (*Diagramma melanacrum*) were under a coral bommie. We found a school of rabbit and parrotfish, also drummers (*Kyphosus* spp.) in small groups, plus a few substantially sized harlequin sweetlips. However, it still felt like the fish observed were a mere fraction of the density of fish life that this substrate is able to support.

Invertebrate observations: There is a much higher coverage of soft corals on this side of the channel than on the west side, especially mushroom leather (*Sarcophyton* spp.) corals. There are many blue seastars (*Linckia laevigata*), a general observation on all reefs in the Anambas Islands, and many of the smaller species of giant clams, plus feather stars and sea fans. This would indicate that the current is more dynamic on this side of the channel.

Health and Vitality observations: One table *Acropora* spp. colony appeared to be suffering from white pox disease. There was an area with clusters of sea whips *Juncella* spp. One gorgonian sea fan was withering away. We made one observation of an unusual condition on a massive *Porites* sp. colony; a small area of white with an extremely bright white edge, approximately three corallites in width.



soft corals, feather stars and gorgonian sea fans at approximate depths 10-20 meters



Reef 3: reef fringing rocks on west side of Penjalin Besar

The reef here is shallow, about 5 meters maximum depth. It extends away from the island and then drops off to about 40 meters where it is mostly rubble. We snorkeled at this site.

Coral observations: The shallow reef is made up of patches of mostly massive *Porites* spp., *Acropora* spp., *Astreopora* spp., and *Heliopora coerulea* (blue coral). (Photo on the left: an enormous formation of *Montipora* spp.)

Fish observations: A single bonito leapt three times in front of the zodiac in a high arc as we were approaching the dive site. One blacktip reef shark was seen close to the dropoff. In the shallows one jack, orangespine unicorn fish, some rabbitfish, rudderfish and several sweetlips comprised the larger reef fish.

Health and vitality observations: Although there were several pretty scenes, the overall impression of this reef was that it is flawed. At least one colony in a cluster of about ten would be either diseased, ravaged by a crown of thorns or dead and covered in dark grey filamentous algae. Table *Acropora* spp. colonies were suffering from a curious condition in which part of the colony was bright white with the tissue removed, resembling extremely recent damage by a crown of thorns, but the rest of the colony was absolutely dead and overgrown with dark filamentous algae. It is possible that this particular algae is rampant and overgrows damaged patches of coral extremely quickly. One table *Acropora* spp. colony had a narrow white band in which the tissue and cilia were still visible. This band separated healthy coral tissues from dead tissue overgrown with dark grey filamentous algae. Another table *Acropora* spp. colony had lost its edges which had fallen to the ground in small pieces. The 'new' edge on the colony appeared to be wasting away rather than broken and the fragments on the seafloor were still alive and looked healthy. We sighted five crown of thorns here. A large *Astreopora* spp. colony had a very large section freshly killed by a crown of thorns. The seastar was anchored just beside the colony. We found a length of fishing line on the reef and a 5cm diameter length of cable.



*white band disease afflicting many table *Acropora* colonies on this reef*



reef scenes on the west side of Penjalin Besar



an Acropora colony; a large Astreopora colony with fresh tracks from a feeding crown of thorns seastar

Reef 4: reef fringing SW point of Penjalin Besar

We took a very brief look at this area from the surface. The reef is about 10-15 meters deep, comprising mostly table *Acropora* spp. colonies interspersed with rock substrate.

Reef 5: reef patch SE corner of Penjalin Besar

On the SE corner of Penjalin Besar, there is a sand patch with some hard coral coverage; large colonies of *Goniopora* spp., massive *Porites* spp., *Porites* spp. fingers. Some colonies are broken, some have been knocked over. This could be due to natural degradation or storm action. In places this area is very shallow. The reef extends at least 50 feet.