

THE PRAWN RIGS

South China Sea

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A 'FAD' IS A FISH ATTRACTING (OR, FOR THE VERBALLY ADVANTAGED) AGGREGATING DEVICE. THEY'VE BEEN USED FOR CENTURIES IN ASIA AND COME IN ALL SHAPES AND SIZES. SOME ARE MERELY ANCHORED RAFTS OR PLATFORMS UNDER WHICH FISH SHELTER. OTHERS ARE LARGE AND ELABORATE WITH SMALL HUTS TOPPING THE RAFTS – THE SUPPORTING STRUTS OR FRAMES BELOW PROVIDE AN INFRASTRUCTURE FOR MARINE CREATURES TO COLONISE. THEY ATTRACT MARINE ALGAE AND INVERTEBRATES WHICH ATTRACT SMALL FISH THAT ATTRACT LARGER FISH THE FISHERMEN CAN CATCH. OTHER FADS MAY BE JUST A FEW BAMBOO POLES STUCK INTO THE OCEAN SEDIMENT, WITH PALM FROND MARKERS WAVING FROM THE SUPERSTRUCTURE.

sweepstakes dispersal



Although a FAD is a man-made device specifically designed to attract fish, with a little literary licence we could call many things FADs. Ship wrecks, jetty piles, human refuse, cantilevers and oil rigs are, in my book, FADs. In fact oil rigs are the great big FADs of the oceans. These FADs attract algae and invertebrates which attract small fish that attract large fish that attract fishermen and divers!

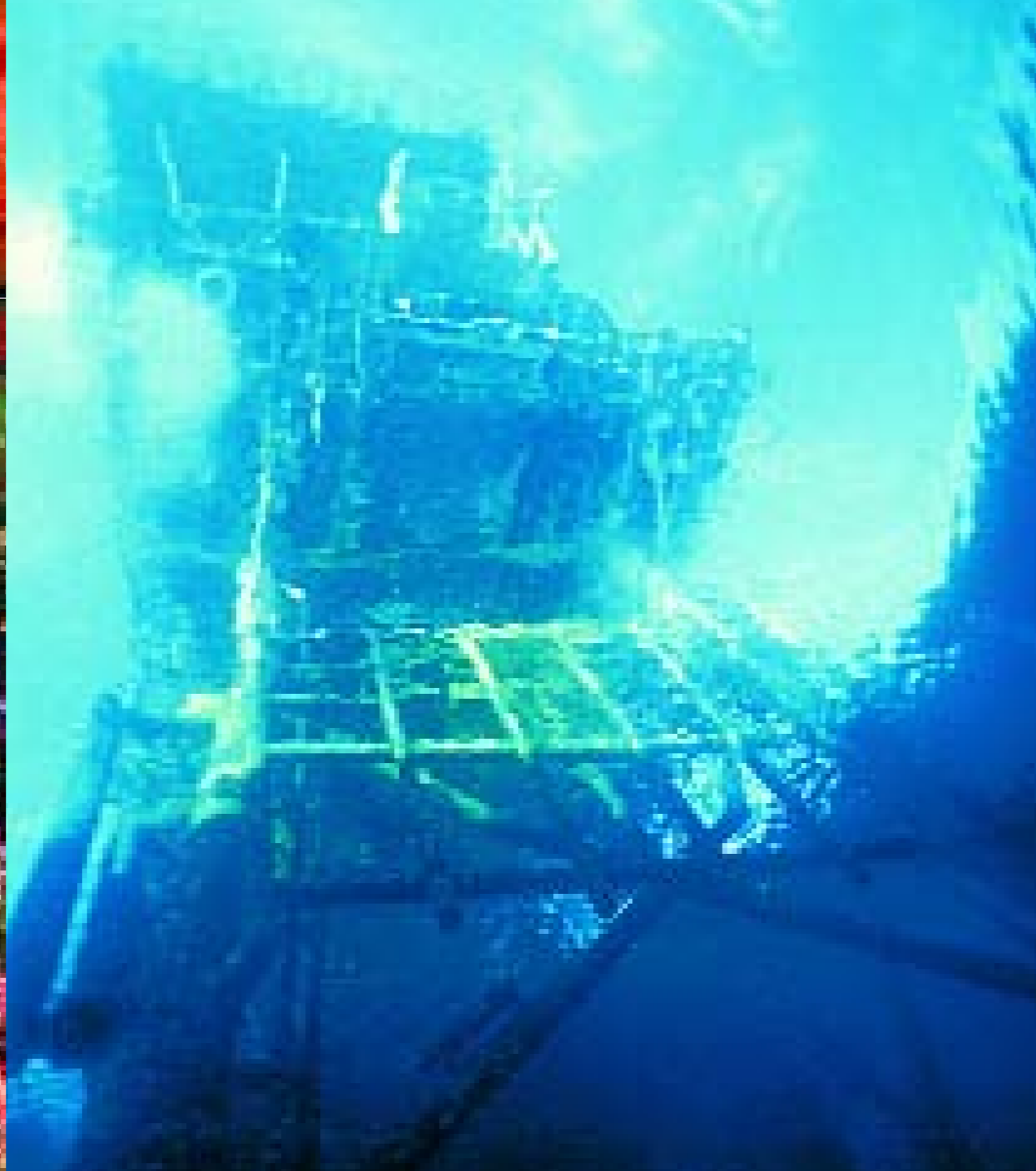
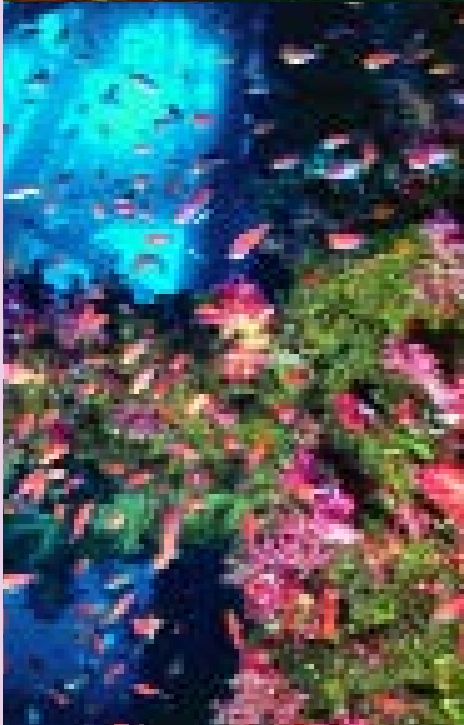
Two of my favourite FADS are disused oil rigs in the South China Sea. Udang A and Udang B (the Prawn rigs) are about the best great big FADs divers will encounter. They rise from the bottom at 85 metres, 70 kilometres north of the Anambas Islands. That puts them about 350 kilometres from the east coast of Malaysia in the middle of an oil and gas field called the South Natuna Sea, Block B. Now that you know exactly where we are – in the middle of nowhere, roughly mid-way between Malaysia and Sarawak. Many rigs operate in this area – over 341 billion British Thermal Units (BTU) of gas are sold per day to Singapore and another 263 billion to Malaysia from the South Natuna Sea block. Luckily the working rigs aren't within cooee.

Udang A and B are about four kilometres apart. They were built by the Indonesian company, CONOCO in 1972, but proved to be uneconomic. They were closed around 1993, but most of the superstructure was left intact. Underwater, the piles would have become great big FADs within weeks of construction and they're now very well colonised. Though the rigs are close together and of similar size and structure, they have subtly different habitats for marine life that observant divers will appreciate.

Marine life colonisation of FADs depends on many factors. For example, the distance of the FAD from reefs, shore and other structures, plus currents, tidal movements, water clarity and the type of material used in the construction of the FAD itself all determine which animals and plants can initially reach and settle on it. Biological factors such as predation and competition for space between the different species then occur in the subtly changing communities.

Our Udang oil rigs are well away from reefs, land and other structures, so currents were the main means by which plants

Sunset on Udang A oil rig in the South China Sea. • Delicate, well camouflaged ovulids live among the soft coral polyyps. • Diver explores under Udang A



and animals initially arrived at the rigs. Algal spores plus the eggs and larvae of corals, hydroids, crabs, other invertebrates and fish travelled in the plankton until they settled on the rigs. 'Sweepstakes dispersal' is the term zoogeographers use to describe this type of colonisation – it refers to the organisms that got there first and were able to establish themselves on the structure. These communities change over time as more species, predators and organisms more suited to the FAD's environment arrive, a process known as 'succession'. Our oil rigs are excellent examples of this ongoing process.

Since I've already described Udang A and B as the 'best great big FADs' of the oceans, it isn't surprising that the first underwater creatures that divers usually notice are the fish. BIG SCHOOLS OF BIG FISH! Barracuda, trevally, mackerel, tuna, batfish, scad, red bass and seapike are a few examples. It's not

uncommon to have three or four different species all swirling close together around the piles. Then there are the small schools and solitary hunters. From the boat we watched sailfish or marlin jumping well clear of the surface. Underwater, rainbow runners darted through the piles, scattering schools of anthias and bullseyes. Mammals were not to be outdone as a dolphin swam past with a fish in its mouth – I have witnesses! Manta rays and turtles were also seen and whale sharks have been known to cruise by. Well, so much for the big fish and other pelagics attracted to these FADs; let's get down to the really interesting colonisers on the piles!

Several types of algae grow on the upper well-lit portions of both rigs. The green grape weed *Caulerpa racemosa* is prolific on Udang B, but not so on Udang A though it could take off there at any time. Algae

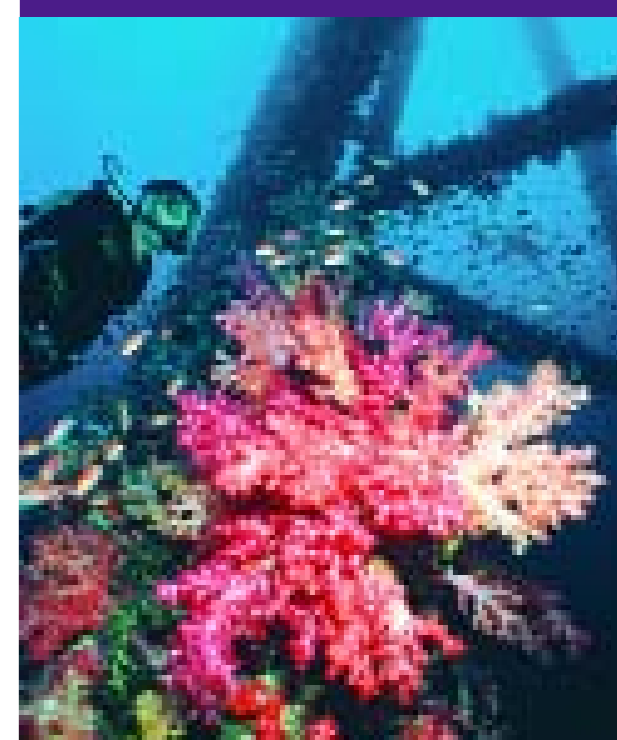


forms the important base of many food chains as it's the sole diet of a number of animals. Sea urchins, seastars, many molluscs, crustaceans and herbivorous fish feed on algae. An attractive cousin of nudibranchs, a sarcoglossan named *Elysia ornata* was found on both rigs feeding on the feathery green algae, *Bryopsis* sp. This sea slug is bright green with white spots and an orange margin along its large, voluptuous parapodia (flap-like 'wings' that arise vertically on either side of the body). Only three or four other species of sea slugs were found during two trips and several dives at the rigs, but these did include two very interesting nudibranchs. *Risbecia tryoni* are beautiful nudibranchs sometimes found in pairs travelling one behind the other, which is exactly what they were doing on Udang A. They were large specimens and will, no doubt, create many offspring in the near future. The flamboyant Spanish dancer on Udang B was crawling towards a small moray eel peering from a crevice formed by the growth of invertebrates and algae on the pile. The Spanish dancer pushed past the eel and disappeared into the top half of the eel's crevice! Competition for space?

Looked like a symbiotic relationship to me, probably from a lack of more Spanish dancers!

From algal depth to well below my deepest dive were *Dendronephthya* soft corals. When a slight current runs through the rigs – and at night – the piles are almost completely covered with dazzling colour as these corals expand and extend their tentacles. These amazing colonies of coral polyps come in shades of red, pink, purple, orange and yellow. Each 'fluffy' eight-tentacled polyp is supported by a fleshy 'stem' that consists of a matrix containing microscopic particles called sclerites. The sclerites together with water pressure support the 'stems' of the colony. These stems can expand or contract by taking in, or expelling water through the polyps' mouths. They expand when feeding on the plankton that is plentiful at night, or when it's whisked past their tentacles by a current. These corals usually close in bright sunlight, but here they often continue to feed during the day in the shade of the rig's superstructure. To contract, they

Left: Beautiful tubastrea corals open out at night to feed; Colourful anthias are prolific on both rigs; Several species of scorpionfish have made their homes on the rigs; Udang B from approximately 10 metres. This page: Udang B above and below the surface; Soft corals extend their tentacles in the slight current at Udang B.



Big schools ... barracuda, trevally, mackerel, tuna,

batfish, scad, red bass, seapike and more



Above: Spanish dancer nudibranch meets eel and crawls into its crevice; This species of nudibranch is often found travelling in pairs, one behind the other.

Next page: Even brightly coloured crabs such as these are well hidden among the algae and corals on the piles; This sarcoglossan nudibranch looks very similar to the algae upon which it feeds.

pump out their water and the individual polyps retract into the stems, turning these glorious flower animals into tiny colour blobs on the piles.

When the corals retract it's often easier to see the other creatures that live on them. Small colourful brittle stars entwine the stems, so numerous you'd think that they'd surely smother the corals. But when the polyps extend the stars are lost in the mass of waving coral tentacles. Exquisite ovulids (egg cowries) that match their colours to the particular coral

on which they live, wander between the polyps. Their camouflage is so precise, they're difficult to find, even on the coral blob. Tiny pink and orange coral crabs also live among this coral, though they're sometimes easier to find on extended coral polyps. As the crabs move, the polyps retract, so if you look for 'blobby' areas among the polyps you may find a crab.

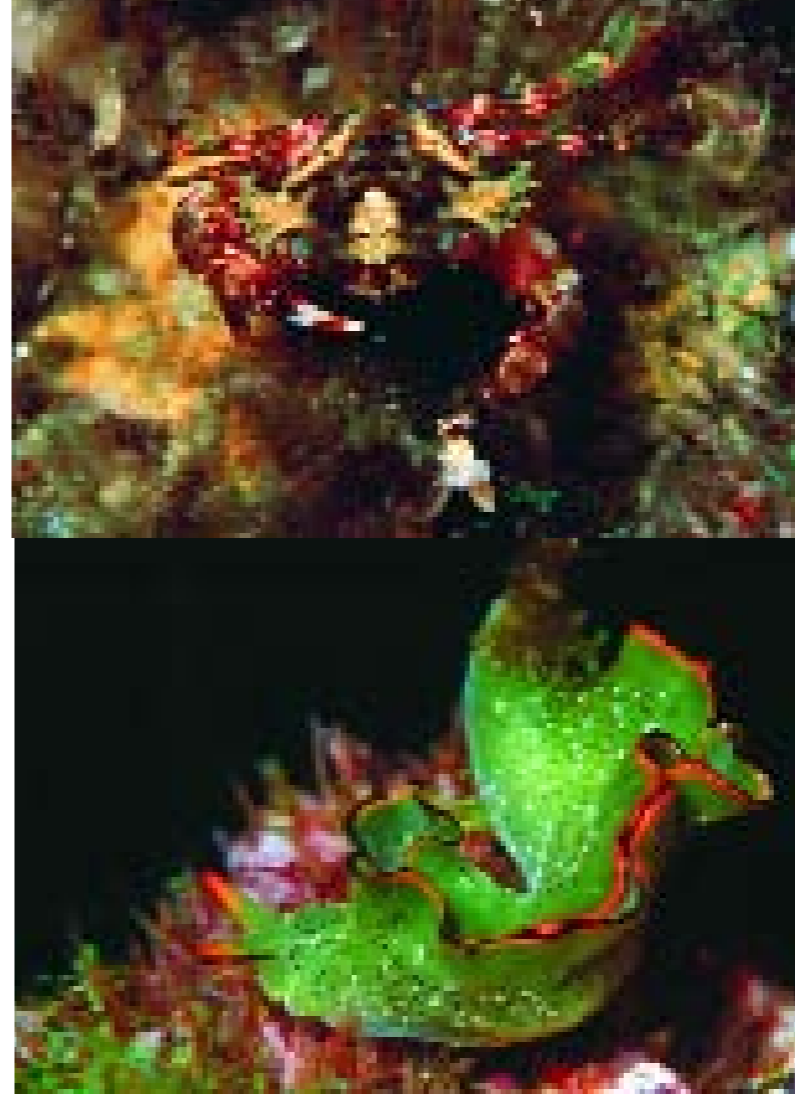
At night, you'll definitely find a crab. In fact, on both oil rigs, you will find an orgy of them. Crab copulation has now

succeeded sweepstakes dispersal for the colonisation of the rigs. You'll see crabs on top of crabs, crabs fighting crabs, and crabs eating crabs. Their numbers will eventually be restricted by the number of hiding places available, as during the day the crabs must hide in crevices and among the invertebrates to escape hungry fish. But right now there seems no limit to crab numbers and species. Besides the tiny coral crabs, there are spider crabs, including decorator and arrow crabs, large sponge crabs, swimmer crabs, shawl crabs and even lobsters. Interestingly, there were very few shrimps. Either they are very good at hiding, they are eaten by the crabs, or their symbiotic hosts such as anemones have not colonised the rigs.

Udang B is definitely the better rig for the crabs. At around eight metres and again at 18 metres, collars surround many of the piles. I've no idea why they were originally constructed, but they now provide many hiding places for crabs and other invertebrates during the day. These basin-like collars are also very useful for holding the second 'macro' camera for that important second film of the dive when you ascend from the depths. Just be careful you don't squash a crab when you position your camera!

Of the sedentary invertebrates, there are few ascidians but plenty of colourful sponges, fluffy hydroids and tubastrea corals. These hard corals appear as a carpet of yellow when their tentacles extend at night and complement the colours of the soft corals beautifully. Enormous black coral trees grow on Udang A – a huge one sits at around 20 metres. Lower down a few more looked even larger, though this may have something to do with the exponential increase in size with depth that often occurs in conjunction with nitrogen narcosis! Bivalves such as oysters and arc clams are sandwiched between the corals and algae on the piles. The arc shell *Arca boucardi* is quite rare elsewhere, but occurs in large numbers on the rigs. These clams obviously won the initial sweepstakes, but as they die, they'll become a perfect base for small stone corals. A few species of *Hystrix* and *Seriatopora* corals have begun forming on the rigs and may eventually dominate.

Following the principle of FADS, all this life attracts reef fish, and not just small ones. There are several large moray eels living in the collars and among the



invertebrates on the piles. Several species of well camouflaged scorpionfish were found on the cross beams of the rigs and a couple of delightful species of hawkfish have also moved in. A very attractive little yellow hawkfish has proliferated nicely on both rigs, and hops brazenly along the beams picking at pieces of algae and anything that moves. Large schools of electric purple, pink and orange anthias move around the piles, bullseyes meander through the middle, a few nonchalant pufferfish mind their own business and colourful wrasse dart everywhere. The odd angelfish and butterfly fish appear, but haven't yet colonised in big numbers.

During our first visit in October, the sergeant majors and blennies were making a huge effort to dominate their



MV Empress AND THE SOUTH CHINA SEA FADS

If you're interested in seeing these amazing creatures and diving these great big South China Sea FADs, you may like to contact Vidar and Alice Skoglie aboard the *MV Empress*. The Singapore-based *Empress* isn't five star, but you can do as many dives a day as is humanly possible. Vidar can also show you numerous other FADs in the way of shipwrecks, the food is fabulous and there's a lift. That's right. You don't have to lug gear up and down steps – just jump off and catch the lift back up! Vidar can be contacted via e-mail on vidar@octa4.net.au

By the time you get to see these great big FADs, they may be colonised with a whole new set of critters. At least the big fish will probably still be there!



patch by producing thousands of eggs. On nearly every pile of Udang B, sergeant majors had laid bright yellow eggs that turned brown as they matured. Nearby, the ubiquitous maori wrasses were hovering, snapping up the eggs at every opportunity. An over-abundance of sergeant majors would never do on this great big FAD. Meanwhile, sabre-toothed blennies were laying their eggs in empty mollusc shells. These voracious little tykes would lie with their eggs, attacking anything that came within striking distance.

If you become bored with all this activity, it's worth watching the open water for the jellyfish, pelagic tunicates, and ctenophores floating by. The pelagic, or planktonic tunicates are especially numerous and bizarre; they're relatives of the sedentary ascidians, or sea squirts, with which divers are usually familiar. Two types of these mobile animals are usually floating past. One is like a little flying saucer with a tail. It may be mistaken for a jellyfish, but it is a tunicate from the class *Appendicularia*. The other consists of a number of barrel-shaped 'jelly-like' creatures attached in a long string commonly known as a salp. These are tunicates called *Thaliaceans*. Other jelly-like creatures known as *Ctenophores* belong to their own phylum and are commonly called comb jellies. They're usually oval shaped and have beautiful pulsating rows of little combs that flash iridescent colours in the light. These, plus the tunicates, have no stinging cells like jellyfish, so if you aren't sure which is which, touch them! Of the 'normal' jellyfish, the large lions-mane jellyfish or crown jelly is the one to photograph when it's filled with juvenile trevally and leatherjackets.