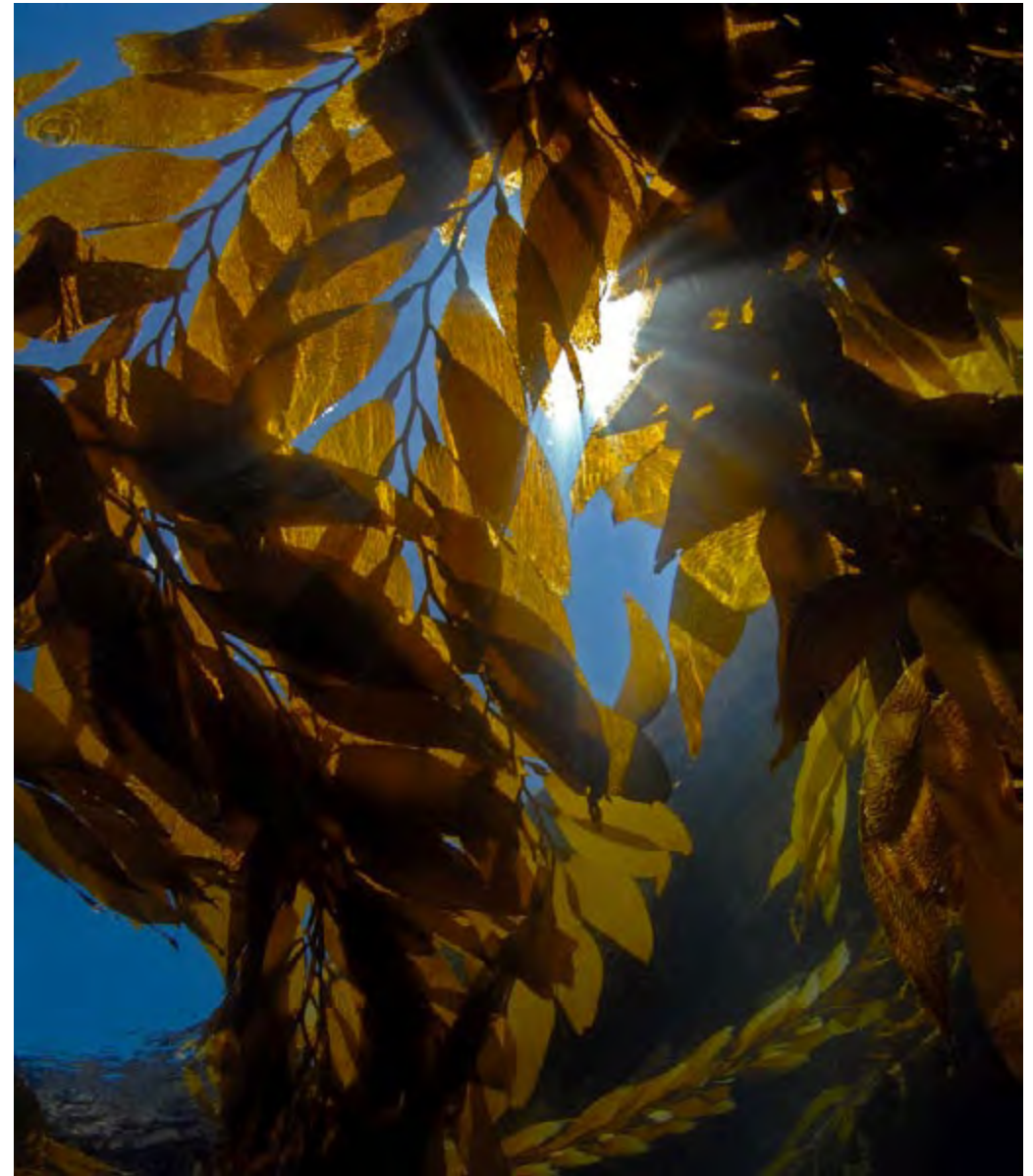


“Kelpology”

by Joseph C. Dovala

It is difficult to describe the feeling of security one feels when the first strands of kelp come into view. The feeling of vulnerability washes away once inside the undulating greenish brown curtain. Kelps as seen from underwater provide an amazing habitat which can not be appreciated from a topside vantage point. The beach goer wrinkles their nose and scurries by the piles of giant brown algae unceremoniously dumped on the sand by waves. But just like the grandeur of a redwood forest cannot be gleaned from a truck loaded with chain-sawed logs, these odorous mounds of vegetation belie the vast riches and beauty of the kelp forest hidden beneath its canopy. Kelps love cold water and typically grow only along a very narrow belt within temperate seas. This includes North America, Northern Europe, South Africa, Australia, New Zealand and Japan. By far the biggest concentration is off the Pacific Coast from Alaska through California into northern Baja California. Many ocean critters depend on these amazing stands of algae for food, shelter and as a nursery.

When baby kelps begin their life, they start out as plankton - free floating, drifting with the currents until they find a suitable place for attachment where they can grow. This is usually rocks, but can be virtually any hard substrate including everything from automobile tires to ship wrecks. A structure called a holdfast forms and secures the young kelp to the bottom. The holdfast is often confused with a root structure, but kelp is an alga (not a plant), and as such, does not have roots. It takes in nutrients throughout its structure and gas filled floats called pneumatocysts buoy up the stipes and blades (analogous to branches and leaves in plants) toward the sun to allow for maximum photosynthesis. Some kelp can grow at phenomenal rates. Researchers have observed nearly two feet per day under ideal conditions in giant brown kelp (*Macrocystis pyrifera*). While the holdfasts are tenacious, they can be broken loose by strong surges or from feeding activities of animals like sea urchins. Once the kelp loses its anchor, it begins to drift and can actually yank other kelps from their attachments.



Kelp canopies just beg to be shot at an upward angle in silhouette. The sunburst pattern works well as long as you partially block the sun ball; even more important when using digital capture. Add a touch of strobe and the modified silhouette becomes “stained glass.” Subal ND2 housing, Nikon D2x, Nikkor 10.5mm FE, f/18, 1/200sec, ISO 200, available light. Anacapa Island, visibility about 30ft.



Color images also work well providing the same “rules” are followed. Sometimes including a hint of bubbles gives the viewer a feeling of being there. Aquatica AD700 housing, Nikon D700, Nikkor 16mm FE, f/16, 1/320sec, ISO 400, available light. Anacapa Island, visibility about 30ft. Some shadow areas burned in Photoshop Elements.

After winter storms the beaches can be wall-to-wall algae.

The holdfasts, stipes, and blades together create a living canopy that directly provides shelter and food for a number of animals. Blacksmith, a type of damselfish, are often seen in non-polarized schools in and under the kelp. Blue rockfish also spend much of their lives in the kelp canopy. Gobies, wrasses, greenlings, rays,

flatfish, surf perch, and scores of other finned critters depend on the kelp stand.

A kelp community is much more than “seaweed and fish.” In fact, up to a thousand or more species may inhabit a healthy kelp bed stand. Besides the fishes and their young, it includes mollusks, anemones, gorgonians, bryozoans, sea stars, brittle stars, urchins, sponges,



Underwater silhouettes seem simple in their concept, but execution can be difficult. Kelp silhouettes are very dramatic as long as you keep the composition fairly simple. Shooting directly into the sun usually is better if you’re able to block out a portion of the sun ball. This minimizes flares and sharpens subject edges. Also the higher range of f-stops is preferable. Subal ND2 housing, Nikon D2x, Nikkor 10.5mm FE, f/14, 1/100sec, ISO 200, available light. Anacapa Island, visibility about 40ft. Some shadow areas burned in Photoshop Elements.

tunicates, annelida (worms), and the list could go on and on. Nudibranchs are nothing more than marine snails but are some of the most colorful critters in the sea. Gorgonians and sea anemones may appear to be plants but are actually animals. Their beautiful tentacles are quite deadly to plankton and other small marine life.

They have the ability to reproduce sexually or asexually depending on environmental conditions and cues. Brittle stars under normal conditions are cryptic and remain in the shadows. They can however over populate an area and completely take over the environment leaving no kelp and few other animals. The cause of this mass



Kelp forests are made for the underwater wide angle scenic. Having said this, they are one of the most difficult scenes to effectively capture. There's a lot going on with constant movement. Some kelps like this feather boa (Egregia laevis) can seem out to get a passer-by when the surge makes the stipes flow. Put a model in the right place, wait for the surge, and the image comes alive.

Aquatica AD700 housing, Nikon D700, Nikkor 16mm FE, f/8, 1/160sec, ISO 640, two Ikelite DS-125 stobes _ power w/ diffusers. Catalina Island, visibility about 40ft. Image dodged, burned, some backscatter removed in Photoshop Elements.

invasion appears to be linked to over fishing of several keystone species including large lobster, rockfish, and larger sheephead.

Fishes inhabit more than mid-water under the canopy. A large number have made the bottom their preferred residence. The blue banded goby, also known as a neon goby, is

a bottom dweller that can be found resting on their pectoral and ventral fins. They typically run ¾'s to just over 2 inches in length. Baby treefish, a type of rockfish, are very colorful and spend their early lives hiding in the shadows of crevices in the rocks. Kelp groves are routinely visited by transitory life too. Jack mackerel,



With the plethora of animals that call the underwater forest home, there generally isn't a shortage of subjects. Shooting conditions can be rough though. One of the big reasons the critters like it here is they can hide. In a dense kelp stand they don't have to go very far to disappear either. Two of the big fish players are the garibaldi and the sheephead (unless there's been a lot of spear fishing). Both can be approached if care is taken and you can get close enough for an environmental portrait.

Subal ND2 housing, Nikon D2x, Nikkor 10.5mm FE, f/9, 1/200sec, ISO 200, two Ikelite DS-125 stobes _ power w/ diffusers. Anacapa Island, visibility about 30ft. Some backscatter removed in Photoshop Elements.

harbor seals, and sea lions make frequent forays into the underwater jungle. Sometimes they look for food, sometimes to find cover, and once in awhile just to play amongst the swaying "vines" in the surge. Most divers are well aware of the

comfort the dense kelp forest can provide against perceived open sea marauders. Contrary to a plethora of very bad movies and T.V., kelp is very difficult to get seriously caught up in especially under the canopy. However, proper equipment configuration and



Strawberry anemones. Getting macro close opens up a world within a world. Ikelite housing, Canon F1, 100mm macro, f16, 1/60sec, Kodachrome 64, two strobes

techniques should be the norm for these visits.

Kelp is also more than a playground for divers. For thousands of years humans have used kelp both directly and indirectly. It can be used promptly as a food or when processed can be made into a host of products. The big boom began during WWI when almost half-a-million tons were harvested to make potash for gunpowder and fertilizer. By the 1930's a kelp component called algin

found its way into all kinds of goods from frozen foods to toothpaste to vitamins. As an emulsifier, algin can keep ingredients in suspension for salad dressings, dairy products, and shampoos to name a few. Algin is also heavily used in scientific applications for research and development on a daily basis. Today thousands of wet tons are still harvested for a multitude of uses in cosmetics, paints, and animal feed. As we enter into the 21st century with the unknowns of global



An advancing army of sea urchins against the kelp stand. Subal ND2 housing, Nikon D2x, Nikkor 16mm FE, f/7.1, 1/125sec, ISO 200, two Ikelite DS-125 stobes _power w/ diffusers. Anacapa Island, visibility about 40ft. Some backscatter removed in Photoshop Elements.

warming and new pollutants, more pressures will most certainly come to bear on the sea's forests.

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Photo by Janine McMurdie

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