The world of a Sea Urchin Diver

On-board the Kuroshio with David McRae

BY JIM CRAWFORD

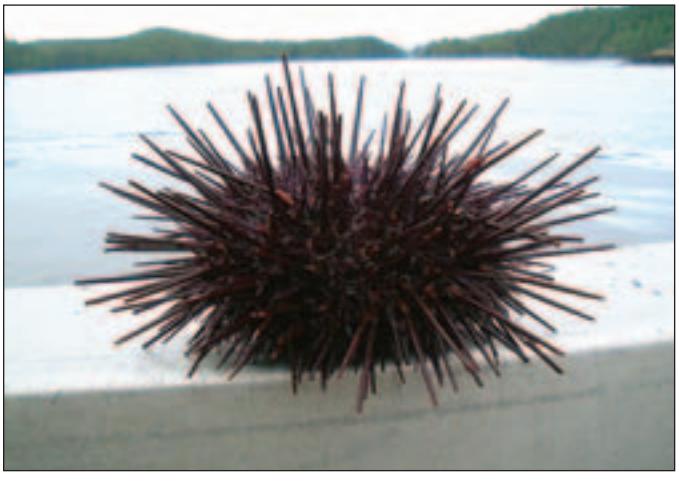
The first thought that comes to mind when you learn a bit about commercial fishing for sea urchins is, what a tough way to make a living! Diving down to a rocky seabed that might be 20m below, fighting kelp and strong currents that can tumble you along the bottom, temperatures at the surface that might be minus 25C, and all for a small strip of roe from a creature that looks like a porcupine…and hurts you like one if you get careless. What a way to make a living, indeed. But David McRae has been diving since he was 15, and except for a six-year hiatus to get a degree in Economics from University of Victoria, he has done pretty well in the urchin business. His boat, the Kuroshio, is consistently the top boat in the industry. And by the way, it's no longer called urchin 'fishing.' Now it's seafood harvesting. "The dive ticket from Workman's Compensation Board (WCB) is for seafood harvesting, so now we are kind of referred to as underwater seafood harvesters," says McRae, with a wide smile.

The Red Urchin Fishery (DFO Archives)

The red sea urchin is one of three urchin species in B.C. waters. Red and green sea urchins are fished commercially under a limited category "Z" licence, category "ZC" for

reds and category "ZA" for greens. Fisheries and Oceans Canada is also currently reviewing the potential for a purple sea urchin fishery.

Red sea urchins, by far the most valued, are harvested for their roe (gonad). Urchins are removed from the ocean floor by divers using short, specialized steel rakes, put in large mesh bags, and packer vessels or trucks deliver the product whole to plants for processing. The roe is extracted and processed in B.C., and marketed fresh almost exclusively in Japan, where it is sold as "uni." A small market for red urchin roe is developing in other Asian countries and in North America. The yield of roe ranges from five to 15 percent of total urchin body weight. Red sea urchins are also important to coastal First Nations people who harvest them for food, social and ceremonial purposes. The extent of recreational harvest of red sea urchins is undocumented, but considered to be minimal.



The commercial dive fishery began in the late 1970s and grew most rapidly after 1982. In 1996 and 1997, the red sea urchin fishery ranged second in volume and fourth in value of all invertebrate fisheries in B.C. At its peak in 1997/98 the fishery here was valued at $14 million, but it has declined since that time. The fishery has limited data, and while stock assessments are undertaken in many areas, the fishery continues to be managed under a precautionary regime that includes limited entry licensing, a minimum size limit, conservative harvest quotas, area licensing and an individual quota (IQ) program. There are 110 licences for this fishery. Red sea urchin individual licence quotas are set at 1/110 of the annual coastwide commercial TAC.

A consultative process was initiated for the fishery in 1989 and is a major part of the sustainability planning process. The primary consultative body in B.C. is the Red Sea Urchin Sectoral Committee, and includes representatives from DFO, commercial licence holders, processors, First Nations, B.C. Ministry of Fisheries, and the Sport Fishing Advisory Board. Members of the Pacific Urchin Harvesters Association (PUHA) represent commercial fishers on the Committee, which meets annually in the spring to review and provide advice regarding the proposed management plan. David McRae is a Director of PUHA.

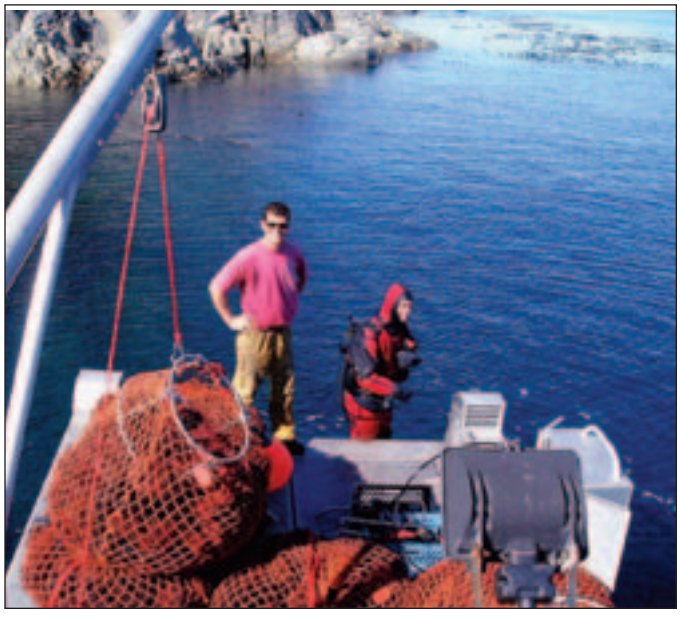
David McRae

Born in 1963 in Victoria, David McRae began diving in 1978. “I started out just diving for fun when I was a kid, and then realized I could make a little ‘reward’ money diving for things the tourists accidentally dropped off the docks. I really liked diving and discovered I was good at it, so it just developed from there.”

“I was always a good student, too,” he recalls. “In 1982 I enrolled at U Vic and six years later I graduated with a Science degree in Economics. I’d probably still be going there if I didn’t have to earn a living,” he laughs. “I really love school and the social life. In retrospect, given the way the fishing industry seems to be heading, it’s probably a good thing I have my education to fall back on,” says McRae, giving a hint of his views on the future of this business.

“My first urchin diving was around Victoria, but seasons were pretty short down here so I started going farther north in order to make more money. It didn’t take me long to figure out that each season builds on the previous one and you find you have to make at least as much as last year, or more,” explains McRae, “so you go farther afield and work more days. Today, you have to work as many days as possible with as many licences as possible, just to keep up.”

The supply and demand law of economics has truly invaded the urchin industry. According to McRae the Economist, “We’re at a point where we already maximize our time, and in order to make any real money now the



price we receive for the product has to go up. But there are too many constraints and a lot of competition from Chile and Russia and the U.S. all vying for the same small market, which keeps the price of urchin roe depressed. I have one urchin licence that I own, plus I lease four more from the buyer, other fishermen, and First Nations. I couldn't make it today without those extra licences, even though it costs me over $100,000 a year to lease them," says McRae seriously. "Currently there are only 110 licences in the industry, and about 35 to 40 boats actively fishing."

"I'm not sure how fair the original distribution was, either. If a guy had, say, five boats, but wasn't doing as well as a good fisherman with one boat, he still got the biggest licence and quota. In the spirit of fair competition you'd think the best guy would win, but the DFO doesn't see it that way apparently," says a disappointed McRae.

Each licence is designated North or South coast, but that can change from year to year. "My own licence covers the entire south end of Vancouver Island, which is in the South Coast. Over the years I've covered virtually every foot of this area underwater," McRae exclaims, shaking his head in wonder. "Now there are so many rules and regulations for both divers and boat pilots that it's tough to find people who have the right tickets – first aid, CPR, oxygen therapy, WCB dive requirements, Coast Guard and RCMP policies, so I don't dive much any more. I just handle the boat and all the work that goes on with driving, loading, setting up dive tanks, etc. I have my Fishing Master's IV Licence, plus a couple of good divers who have been with me for several seasons, so we make a good team.

"In addition to the southern end of the Island, we also work our way up to East Point, Active Pass, and Porlier Pass on the other licences I lease. it's kind of a route we take as the openings occur. Often we start the season up towards Bamfield and Ucluelet, and around Tofino. Beyond Tofino, from Kyuquot all the way up the west side of the Island to Cape Scott the otters have pretty well cleaned out everything. After that we usually head up north to Rupert,

then work our way back down towards Vancouver Island, or we might even double back to pick up what we didn't get," he concludes.

"What we're after is the undeveloped urchin roe, when the female sexual organs are mature but before they actually start producing eggs. If they are ready to spawn, then the roe is no good…it's mushy. There is no sure way to tell underwater whether or not they are in full spawn," explains McRae, "so there is some wastage, but not too much because we manage our timing. Summer is usually when they spawn, so we try to only work from September to April. Much of our fishing is done in winter, but the best months for making money are in the fall when the weather is still good.

"Weather is our biggest deterrent…the great environmental equalizer," continues McRae. "You work in about ten to twenty feet of water most of the time, in amongst rocks and heavy currents, so it can be a bit dicey. While tending the boat I have to keep one eye on the Pacific Ocean behind me and the other on the rocks only a few feet away in front of me and just hope a big wave doesn't roll in and spoil my day. This year our season starts in September,

but whether or not we'll be able to sell our catch for a decent price is the big question. If we don't, I'll be moving onto the boat to live," laughs McRae, only half joking.

"Fortunately my boat, Kuroshio, is consistently the top urchin boat in BC. I had it built and outfitted specifically for this type of work about eight years ago with special gear. It has a davit (hoist) outfitted with a hydraulic power pack to bring the mesh sacks of urchins aboard, a high pressure air compressor for filling scuba tanks, a high-performance Volvo engine turning an ASD 10 (Arneson Surface Drive supplied by Pacific Surface Drives), and no boat beats us to wherever we are going. Go with Arneson and you go fast," states McRae with conviction. "I also have DVD on the laptop computers for entertainment when we're camping onboard. Weight and space are both an issue in such cramped quarters, and the laptops and DVD's take up much less room than regular VCR's and TV sets. Plus all my navigation is on-screen as well. The laptop sits in a special cradle near the wheel, and I use a wireless mouse for my charts and GPS because when you're running 25 knots or so, there's no way you can control the touch-pad on the computer to bring up what you need."

McRae gave his boat the Japanese name Kuroshio because virtually his entire product goes to Japan. "I felt it was prudent to have a Japanese name for my boat," he says. "In Japanese it means, 'Black Tide,' or as I choose to say in economic terms, you're in the black instead of the red," he laughs. "It's apparently also an ocean current that shows where deep water starts, plus there was an aircraft carrier named the Kuroshio, and an island too, I think. All in all, it carries a lot of meaning for the Japanese." Currently, the urchin roe markets are supplied by Canada, Russia, the U.S. and Chile. However, urchin roe from each different place on the globe has a unique flavour. Genetically the urchins might be the same, but even within the same species tastes differ from each part of the world. For example, Chilean green urchin roe looks good, and there is a good supply, but they aren't as prized as North American urchins because consumers don't like how they taste. Green urchins are also a prevalent species in B.C. but have a very limited market. They are smaller with less-lethal spines, but heavy supply from Russia impacts the demand. Currently Japan is the only market in the world that supports the urchin fishery. Europe does somewhat, but economically the real player is Japan, and the consumer market there is fully developed.

McRae is looking forward to China coming on-stream as an economic power. The potential market there for all the world's products is staggering. But the perception is that while it may be a huge market in future, right now the average person can't afford North American products, particularly luxury foods like urchin roe. But imagine if only one percent of the estimated one billion two hundred and fifty million Chinese population decided they liked B.C. urchin. That one percent market alone would equal the approximately ten percent of Japan's 126,000,000 population who buy such food products.

But for now it's back to reality. The average price per pound to urchin fishermen is around fifty cents to a high of eighty cents gross weight in the round. "We average about 6,500 lbs. a day during the season," declares McRae,

"and the best day on Kuroshio was 12,500 lbs. We only produce the raw product, so no trucking or cleaning. We turn the catch over to packer boats, or if it's not too far to run we will unload at the dock. The weight is validated, and we are paid on that value. In short…it's on the boat, off the boat, clean the boat, the day is done. Quick and neat. You can make a living doing this, but it's getting tougher," states McRae, slowly shaking his head. "And as I said, it's all dependent on the economics of supply and demand. Right now there's so much product available that prices are in a pretty sad state. My numbers might sound impressive, but I have a heavy-duty overhead to manage."

He continued. "The way you get paid, or not, is kind of interesting in itself. You turn your catch over to a buyer or packer, who validates it for weight and quality, then they take it to the processor, and if everything goes as it should, eventually you get paid. But if anything happens to interrupt the sequence, you're out of luck. The packer's boat may sink, as one did earlier this year with 70,000 pounds of urchins on the deck, or there might be bad weather and the product doesn't get to the dock in time and the catch spoils, or the guy goes bankrupt or runs off with the money. There are a dozen things that can happen, but fortunately most of the people in the industry are honest working guys just like us," says McRae with sincerity. "But still it pays to know who you're dealing with, and the ones in my circle are pretty good."

"Fortunately, we have fairly good input into management in our industry, too," declares McRae. "We do our own research and hire our own biologists to work together with DFO. We found DFO uses incorrect sampling assumptions concerning the distribution of the sea urchin populations, which leads to inaccurate estimates. They estimate urchin populations by taking in an entire chart area and averaging it out. If the area happens to include large barren areas, say sand or mud, everyone knows urchins don't inhabit those areas, yet it's included in DFO science studies. From that they conclude there are only so many urchins per square meter, or whatever numerical formula they use, and the quotas are set according to those numbers. It's ridiculous to do it that way, but it's how they choose to sample," says a frustrated McRae. "We go to the planning sessions and present our statistics, and usually come to some sort of a compromise. Now they hire guys like me to work with their scientists to show them what we feel are the proper guidelines for sampling, and I guess maybe they are slowly getting it."

"Generally, though, I'd have to say the DFO is doing a great job with our industry," says a complimentary McRae. "But there is one issue I don't agree with, and I'm not certain it's even the DFO that's responsible. As I mentioned, from Kyuquot all the way up to Cape Scott there are no urchins, or much of anything else. The sea otters that were transplanted there from Alaska in 1972 have cleaned out everything. I've heard that certain groups, I won't mention names, actually shoot them because there are so many. Rats with furry tails they call them," he says, smirking.

"South of Kyuquot, in Barkley Sound, are the Broken Group Islands between Ucluelet and Bamfield. There are no otters anywhere in that region. The entire area is also closed to urchin harvesting, so with no predators there are so many urchins the sea floor is literally crawling with them. Now the environmentalists want to transplant otters there to balance and control the urchins. What kind of sense does that make?" says an incredulous McRae, throwing up his hands. "Sure otters are cute, and that was part of their historical territory, but if they put otters in the Broken Group they'll be starting out with a disproportionate amount of food, the population will probably explode, and it won't take long they'll run out of food for the numbers of otters. What they should do is let us in first to cut down the urchin population, and then put their otters in. It will be a better balance to the ecology in the long run," concludes McRae confidently.

Future

Right now the future of urchin harvesting doesn't look all that promising, especially for new growth. According to McRae and others, unless China becomes a consumer country, the market has reached its maximum potential.

Awhile back McRae read an article about a company that was going to try urchin farming. "Of course all my friends called and said, 'we're going to be out of business,' which made me laugh," says McRae. "I mean, we can't even sell what we gather now for a sustainable price, so what makes anyone think urchin farms can make it? Back when there weren't any quotas we sold all we could harvest. Then as the market became known, other countries entered the picture, and now the market is saturated. My boat still makes fairly good money, but each year it gets harder. If urchin farms do come into the mix, it's going to be tough for anyone to make a profit."

"Sadly, what's happening too," reflects McRae, "is the only market in the world is in Japan, and the older Japanese who buy this type of seafood are dying off. The younger people there don't always follow the traditions their parents have of eating that kind of fare. It seems they'd rather go to McDonald's. I'm afraid what we're seeing is the end of an era."

Jason, one of McRae's young diver friends who has worked in several different fisheries to earn money so he could continue in school, adds, "I enjoy the fishing life, but I just don't see a future in any kind of fishing for a young person now. Just the cost of starting up is out of reach for most guys, plus who wants to work for someone where the bottom might fall out at any time? I have my 4th Class machinist's ticket," says Jason, "so I'm planning to go into that line of work."

"That's typical of what's going on now," stresses McRae. "How many people are going to want to go into a business that has a severely limited income and such a high entry price? The cost of just learning how to do this work is staggering. Probably $5,000 to get all the proper tickets for diving now. And then where do you get a licence? In the past I was approached by North Island College to teach a course on urchin fishing and diving, but again, the economics dictate there just won't be anyone to come into this business. Besides, I'd have to be honest with students and tell them, 'You really don't want to do this…or if you do you'll have to get a real paying job just so you can do this one,'" he laughs.

Then, McRae turns Economist again, blue eyes flashing. "If the urchin market does go south, probably what will happen is the industry will lose most of the real experienced guys through economic contraction. There will be a large turnover, and the guys who are left will have an advantage for awhile, especially over any newcomers who might try to get in because of some perceived potential."

Then, finishing on a somber note, McRae says, "It's the old-timers especially that I feel badly about…the guys who have been in fishing all their lives and don't have anything else. At my age and with my background at least I can shift gears if I have to and go back to school and learn something new. Maybe get an actuarial degree and become a data collector with DFO," he says with a grin. "But for now, well, I'll stick it out. I may be the last guy standing, and as I said, have to go live on my boat if things get too bad, but I've done that before, too."

For more on urchin diving, go to David McRae's website: ***www.kuroshio.com.***

All photos in this article provided by David McRae.