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Some seriously exciting times: The beginning of fieldwork, 1977

By October 6, 1977, the Skipjack Survey and Assessment Programme had already afforded me many memorable moments, and the fieldwork of the programme, clearly the 'fun part', had not yet even started. Not all the memorable moments had been highs. But to that day, none of the highs had come close to the level of sheer joy and elation of standing on the bridge of the *Hatsutori Maru No. 1* and looking out across the enormity and magnificence of the western Pacific Ocean as we sailed out of Kavieng Harbour on New Ireland in the north of Papua New Guinea.

We were about to commence what I had, for the last three years, assumed would be a fabulous adventure. And it would turn out to be. My dream had blossomed into reality. I had designed this huge scientific experiment, raised the necessary millions of dollars, recruited the staff and chartered the vessel on which we were now entering my laboratory, all 50 million square kilometres of magnificent blue ocean: 30 million square kilometres inside the area of the SPC and about 20 million in international waters outside that area. And I was not alone or unprepared. I had the personnel, tools and equipment, all of my choosing, including a very large research vessel, to test my hypothesis that yes, we could release and recover enough tagged skipjack over the whole of the area of greatest interest to enable accurate assessment of the skipjack resources of the entirety of the central and western Pacific

Ocean. The survey of the baitfish resources was not a hypothesis. I did not doubt that it would work. It was merely a matter of accurately compiling and analysing the data that inevitably would be collected.

We were embarking on a fisheries research experiment for which there had been no equal. It was to be conducted under my direction in an environment that was, for all intents and purposes, limitless. How privileged was I? For what more could a relatively young fisheries scientist ask?

Standing two metres to my right, and clearly absorbing the highs of the occasion on this fine sunny day, was my friend and colleague from Papua New Guinea skipjack tagging days, Tony Lewis. As we passed out of the harbour, Tony looked my way. We both just smiled, absorbing what was a truly spell-binding occasion, for both of us. Nothing was said. Tony came up to me, and we shook hands. The moment was of itself so big, for both of us, that talking could only be a distraction. Another noise was far more reassuring: the sound of the heavy-duty, diesel main engine of the *Hatsutori Maru No. 1*. *Ker chunk a chunk, ker chunk a chunk, ker chunk a chunk* … a loud, heavy-base noise that was constant. Boring, even challenging, if you were not a seafarer. You could not get away from it anywhere on the boat. But if you were a mariner, it was calming. Its consistency and reliability were reassuring. It was the heartbeat of our adventure. Without it, we were not going anywhere; we were nothing.

It was indeed a grand occasion. But also, it was a time to concentrate on the uncertainties that lay ahead. It was a bit late to address any major deficiencies in my planning, but not too late to review our preparedness for the inevitable variability of nature.

During the fundraising period, several of the donor governments had expressed concern that assurances that the Skipjack Programme would work were disproportionately dependent on my opinion. At least some of them were mindful that tagging had not been used anywhere in the world to obtain an estimate of the size of a tuna population. This was not just any tuna population we were setting out to measure, but what I suspected was the biggest in the world. The area of the distribution of the population we were going to measure was enormous. Even the number of fish that would need to be tagged – 100,000 – was an estimate of mine that could rightly be challenged. Was it enough? Could we catch that many and get them back in the water in sufficiently good health for their behaviour to be truly representative of the broader population? Would the analytical scientists

I had yet to recruit be capable of developing the models that were going to be necessary to accurately interpret the mass of data we would, hopefully, accumulate? On my own, I had convinced the donor governments that this experiment was worth investing in. Now I had to deliver. And now I had what I believed was the necessary equipment and help to do so.

I never had serious doubts that the survey components or the programme, both for skipjack and baitfish, could be more than adequately covered in three years. The 18-month fundraising period had afforded me more than ample time to describe how analyses of the skipjack growth and migration data that would inevitably result from whatever number of tag recaptures we were able to achieve could be used to make a significant contribution to global knowledge of skipjack biology and resource dynamics. There had been no structured baitfish surveys in most of the island countries and territories of the region, so it would not be hard to demonstrate that the baitfish data we were certain to gather would, on their own, likely justify the expenditure on the programme. But I had gone to great lengths to hide my concerns that the skipjack stock assessment component of the objectives of the programme was by no means 'a given'. The reality was that at this stage of the programme, the concept that the size and dynamics of the greater western Pacific skipjack population could be determined by tagging was still little more than my hypothesis. In early 1977, I had given a talk to the regions' fisheries officers entitled 'Some Hypotheses on Skipjack (*Katsuwonus pelamis*) in the Pacific Ocean' which was published a year later (Kearney 1978). It describes the uncertainty surrounding skipjack population dynamics that I had openly acknowledged leading up to the start of the Skipjack Programme.

Even the pillars of the work program, such as the programme's stated target of 100,000 tagged fish in three years, were hardly precise. The first public exposure of this figure was at the opening meeting of the Expert Committee on Tropical Skipjack. I justified 100,000 based, primarily, on my three years of tagging skipjack in Papua New Guinea, the tagging results from the National Marine Fisheries Service work in Hawaii, and detailed scrutiny of the distribution and catches of the Japanese distant-water pole and line fishery in the Pacific. It was a balance between the minimum number I thought would be necessary to support the analyses that I hoped we would be able to do, and my best estimate of the number we could realistically expect to tag in three years. The chairman of the Expert Committee, Richard Shomura, canvassed suggestions for alternative numbers. As there were none, 100,000 became doctrine. When questioned by potential

donors to the programme about its adequacy, I displayed no hesitation in confirming that the data that underpinned it were as good as were available at the time. But were they adequate? Did they really amount to more than just my opinion? At this early stage in the programme, this issue still left me with some apprehension.

I never held serious concerns that, provided our research vessel performed as expected, we could tag 100,000 skipjack in three years. But concerns that we may not be able to have the tagged fish sufficiently uniformly distributed, both at the time of release and at recapture, were to remain at the front of my mind right through until about the middle of the second year of the programme. Up to that time, I kept a very anxious watch on the tag recovery data. I had always believed that, provided our tagged fish moved the great distances in virtually all directions, as the ones we had tagged in Papua New Guinea did, the problem of uniform distribution of releases would diminish with every tag release.

My long-standing concern that we may have difficulty catching enough fish to tag in all areas would only go away by demonstrating that we had done it. I had always anticipated that we would encounter areas where either skipjack or bait would be disproportionately difficult to catch. I was optimistic that by detailed monitoring of the distribution of tag releases and recaptures and maintaining flexibility in scheduling where we fished, it would all come together. The programme was, after all, research. We were about to find out. The experiment had just begun.

Kavieng had always been my first choice as the place to start the fieldwork of the programme. The reasons were many. To begin, the biggest pole and line skipjack fishery in the SPC area was based there. It was well documented to be among the best skipjack fishing areas in Papua New Guinea, and Papua New Guinea was, at the time, the most productive area in the whole of the area of the SPC. But perhaps most importantly, Barney Smith, Tony Lewis and I had tagged several thousand skipjack in the vicinity of Kavieng and conducted very successful aerial surveys of the greater area during our Papua New Guinea skipjack project. Plus, we knew the best bait-fishing grounds, and they were good. Should skipjack be hard to find, we had the full cooperation of the Australian–Japanese joint-venture skipjack fishing company, Gollin Kyokuyo, that was based in Kavieng. They had agreed to keep in touch with the *Hatsutori Maru* and to give us their daily fishing reports if we needed them.

I had done a lot of homework on the scheduling of our cruises and had gone to great lengths to make sure that the first month, in particular, was spent in areas where there were proven stocks of skipjack and bait was relatively easy to catch. I had gone over the detailed catch records of all four Papua New Guinea joint-venture companies for the six years since they started operating, and around Kavieng was clearly a premium location. These same catch records confirmed that October was a good month to be fishing in this area. I believed that I had done all that was possible to ensure that our first month of fishing would be successful, that it would impress our new staff and would set the tone for the next three years.

I was particularly mindful that most of the scientific staff on board were new to skipjack fishing. Only Tony and I had handled a skipjack, let alone tagged one. Pole and line fishing for skipjack is tremendously exciting: fish flying through the air on and off lines, live baitfish being thrown over the side in scoops-full, tuna splashing at the live feed, fishermen revelling in the excitement of hooking large fish and swinging them around to the tagging assistants, fish being tagged and returned to the water, scientists calling the numbers on the tags and the corresponding length of each fish to tape recorders, the chummers anxiously yelling instructions to other crew to transfer more bait to their 'pilot' tanks from which it could be thrown into the beautiful clear-blue Pacific Ocean – and these were only the short-term attractions. I needed the new scientists and crew to feel that excitement as soon as possible, as part of the inspiration and proactive reward for the hard work that was ahead of them.

Let the adventure begin.

The fishing on the first day did not live up to expectations. We saw only one school of skipjack and tagged only seven. The high I had experienced as we left the port of Kavieng had been challenged. I was seriously disappointed, but I knew the vagaries of fishing.

But worse was to come. In the next 10 days, only four fish were tagged.

We expanded our search area by progressively moving north. The joint-venture vessels based in Kavieng were not catching any more than we were, so we needed to try somewhere else. Around New Hanover, Mussau and Manus Islands were our new targets. Going there achieved little more than to confirm that the extremely low abundance of skipjack was common to

at least a much bigger area than just the immediate vicinity of Kavieng. In 10 days of searching in this area, we did not sight a single school of skipjack.

In the first 20 days of the cruise, only 28 skipjack were tagged. No end to our dilemma was apparent. The word we got from the joint-venture vessels based in Rabaul was that the fishing there was just as bad.

To say I was disappointed by these results grossly diminishes the impact they had on me. Papua New Guinea was the one area about which I had held no fear of really poor fishing. My expectation for the first month of the cruise had been 5,000 fish tagged. I was worried about some other places we would need to fish, but not this one.

The only positive I could find in the extremely low abundance of skipjack in the whole area was that it was abnormal. It represented new information. It was an experience I had not had before. Perhaps even more remarkable was that the few skipjack we did catch were the smallest I had ever seen in Papua New Guinea – less than half the average size. And we found them by strikes on troll lines we had out behind the boat while we were steaming. This itself was extremely unusual. We were witnessing a major aberration in skipjack behaviour that we had to assume was due to a significant oceanographic event, about which we knew nothing except that we could not fix it. It was hard to maintain enthusiasm for collecting data on events that we wished were not occurring.

What to do? By day 10, morale on the boat had fallen to a worrying level. With normal skipjack fishing, the ship's bridge would be a hive of activity, fuelled predominantly by scientists and crew intensely scanning the horizon with binoculars for signs of splashing schools of fish, or birds circling and diving. On the first three days after leaving Kavieng, it had been hard to get a spot in the wheelhouse to search from. Plus, there was always at least one person scanning the ship's radar screen for the slightest blip that might indicate bird activity a long way off. By the end of the second week, there was nobody on the bridge except the captain and me. The record of school sightings showed that of the first eight schools we sighted, I had been the first to detect six of them. My eyesight was no better than average, and there were more than 20 scientists and crew on board; nobody else was looking with enthusiasm.

I could have drawn up a schedule for all crew to take a turn looking for schools, but you cannot roster enthusiasm. Having more people asleep in the wheelhouse with binoculars propped up in front of them, as many had been, was not going to solve our problem. The Japanese and Fijian crew had all fished this general area for at least a year or two, and none of them had ever seen fishing so bad. They found it very hard to maintain interest.

I was greatly concerned for the morale of our newly recruited scientists, particularly Jean Pierre Hallier and Bob Gillet, whom I had marked as potential leaders of future cruises. This was not what I had promised them. They had every right to be concerned about what the future held for them. My repeated assurances that the fishing would soon improve were being delivered with less and less conviction. My authority on this topic, and by inference other topics, was quickly being diminished.

I had never worked so hard on trying to find a solution to a problem in my entire life. If we could not catch skipjack there was no real point in continuing the programme. Yes, we were collecting impressive data on baitfish, which we caught at night, but there were more efficient ways to do this than spending all day, every day looking for skipjack that weren't there. After three weeks, the idea of admitting defeat from time to time darkened my mind. It would clearly be unwise, if not stupid, to continue with our current catch rates of skipjack for the whole 10 months of our charter. When is enough, enough?

I was the one who had to make the decision on what to do. And I was very much on my own. I had Tony Lewis to confide in, but our discussions on the delicate issue of what to do seldom went past reassuring each other that the fishing simply cannot continue to be this bad forever. We both knew how fickle fishing could be. But neither of us had ever seen it this bad.

I was the one who had to decide what to do about the current dilemma. The whole programme was my idea. All the implementations had been either done by me personally or at least under my direction. I had nobody else to blame, or even to share the blame with. The responsibility weighed very heavily on me. As it should have.

What were the options? Carry on as we were? For how long? What would make me admit defeat? What did defeat look like? Should I terminate the whole programme now and give the money back to the donors? My dark thoughts even went so far as to consider giving the money to the SPC so they could employ 'somebody really good to run the programme' (see the SPC's

director of programmes' statement in Chapter 11). It was the realisation that I had reached such a low point as this that jolted me into reminding myself that giving in was not in my nature. I remained convinced that the design of the programme was sound, but was 'as good as it could be' good enough? There were ample data to confirm that skipjack were usually abundant in most parts of the western Pacific, even if not uniformly spread in time and space. What we were experiencing was an aberration. Unfortunately, there was another side to this 'aberration'; we had no idea how widespread this low abundance of skipjack might be and how long it would last. What if the same lack of skipjack was occurring over the whole of the central and western Pacific Ocean? I remained confident that with normal levels of skipjack abundance, the programme would work. But what if 'normal levels' never returned? This was too frightening to dwell on. The only thing we could do was just try harder to find some skipjack. My anxiety would remain until we did.

Even though my faith was being tested, I had not yet lost confidence that the programme would work and that I was the right person to run it. The scientist in me kept revisiting the data. Sparse though they were, the available statistics strongly indicated that there should be lots of skipjack where we were, even if not all the time.

We did not know then, but subsequent examination of the catch returns from the whole Papua New Guinea commercial tuna fleet revealed that October 1977 was the worst month in the seven-year history of the fishery. Statistically, it could not stay like it was. Our luck would change!

On October 19, I decided to abandon our search north of Kavieng and go south, perhaps as far as the Solomon Islands, which was the next country we were scheduled to visit.

On October 25, approaching the Shortland Islands and Bougainville, we finally found a school of skipjack that wanted to bite, even if only for a short while: we tagged 113. The next day, we tagged 455. There was a crowd in the wheelhouse again, looking for schools of skipjack.

The fishing did not suddenly become great, but at least there were signs that our luck was changing. The four-week cruise in Papua New Guinea resulted in 1,167 skipjack and 24 yellowfin tuna being tagged, mostly in the last week. Some excellent bait-fishing results were obtained and analysed. Our new scientific crew had at least some training in the processes that underpinned the programme.

History would show that we had survived the worst skipjack fishing that we would encounter in the whole three years of the programme. I still had a job – and my sanity. History would also confirm how abnormal our first month in Papua New Guinea really was. When the *Hatsutori Maru* returned to Papua New Guinea in May 1979, a total of 7,683 skipjack and 784 yellowfin tuna were tagged.

Fortunately, the fishing improved very quickly from the end of October 1977. The Solomon Islands and our short visit to Vanuatu were kind to us. Little more than a month later, in December and early January, in New Caledonia, 10,272 skipjack were tagged.

The programme's first annual report, for calendar year 1977, detailed that in a little less than three months, to December 31, a total of 10,045 skipjack and 187 yellowfin tuna had been tagged and released (Kearney 1978). At this rate, in the three years of the programme, we should release 100,450 skipjack, very slightly in excess of our stated target for the whole of the programme of 100,000. After a disastrous start, we were back on track. We were confident we could catch and tag enough fish. The basic principles underpinning the programme were indeed sound.

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