The Dilemma of Lake Victoria

A troubled look appeared on the face of Kassahun as he gazed across the small inlet of the lake. The area of hyacinth mats in the inlet had dramatically increased since he stood at this spot three months ago. Off to one side a Luo fisherman poled his plank canoe into an opening hacked through the clogged shallows. Six of his comrades grabbed the bowline of his vessel and began pulling the canoe to shore. "Harambee, harambee, harambee, ayaaah," they sang as they pulled on the line, "together, together, together." Luo fisherman had poled these waters for as long as time, Kassahun thought, but times were changing. The men fished longer and caught fewer fish. This time was no exception, a dozen or so fish laid on the bottom of the canoe, a few Nile tilapia and the remainder two to four inch long haplochromine cichlids, a fish that not long ago dominated these waters. Kassahun's frown grew even deeper. How would these people survive on this meager catch. Things certainly were changing. In the past catches would fill the bottom of the boats. The women would take the catches and carefully lay them in the sun to dry. Everyone's bellies would be full. Not anymore. Since the introduction of the Nile Perch the whole system had changed. Kassahun would have to find some solution to the continuing problems in the lake. As a new researcher with the Kenya Marine Fisheries Research Institute he wasn't in a position to make many decisions but he was determined to make something happen. The question was "what could he do." He didn't have a clue as to what that might be but he was determined to do something. People that did have the power hadn't done anything for a long time. If he every was in a position of power he wasn't going to be like them, he thought to himself. The lake was truly beautiful. As you looked across it's magnificent expanse there was no indication of the serious problem below the surface.

Soon Brian McKensie would be arriving. Brian was the new exchange intern from the U.S. He was a graduate student from the University of Oregon and new to the Lake Victoria program. The two would be working together on a number of fisheries issues. Kassahun was to show him the ropes. When they spoke briefly on the phone Brian seems a little cautious. He listened to an analysis of the problems in the lake but hadn't said much. It was like he didn't agree with the analysis but didn't want to say so. Kassahun wondered what he would be really like and whether he would understand all of the issues in the Lake Victoria dilemma. How could he? Someone coming from the rich U.S. might understand the science issues but could he understand their impact on the surrounding region. Would he bring new ideas? Kassahun rather doubted it. Many that had come in the past had their own agendas, gathered their data and hustled back to their homes. Kassahun musing was soon interrupted by the sound of an approaching car. Brian would soon be here.

Brian approached the meeting with a certain amount of trepidation. He had spoke with Kassahun last night on the phone. Kassahun was certainly enthusiastic and seemed to understand some of what was going on in the lake. Before coming to Kenya, Brian had read everything he could put his hands on about Lake Victoria. He had called every expert in the States he could find. The information he found was much more complex that Kassahun seemed to think. Maybe that impression would change when they had worked together for a while. That Nile Perch issue for example. That is an easy one to put all the blame on. The British sure had made a mistake when the stocked the lake with that predator. But that was the British. They had done the same type of thing all over the world. Stocking fish in streams and lakes for their recreational enjoyment. The first had appeared in 1954. By the mid 60's they were pretty well established so the decision was made to add more to move from recreational to commercial fishing. Seemed to make sense at the time. The Nile Perch grew to lengths of 6 feet and were in great demand from all the important restaurants in Africa. Also the native fish were declining in the lake at a record

pace. Maybe the British thought the perch would become a replacement source of food for the locals as well as a commercial boon . What a mistake there. The Nile Perch are very fatty and can't be dried in the sun like the locals were used to doing with their catch of fish. That was if they could catch them with the flimsy nets and rickety canoes and they sure couldn't afford to buy them from the commercial enterprises that had sprung up around the lake. Kassahun was probably right about the serious impact the perch are having now but that's not the whole picture. He sure didn't seem to understand many of the other conditions that led up to the lake's problems.

Hadn't Bob Hecky's drill core studies proved that a number of the conditions had started more than 90 years ago. Its not as simple as a predator fish being introduced. Probably finished things off, certainly sped thing up, but the only cause, no that can't be right. Brian had seen too many similar cases to ever simplify an answer. Massive eutrophication of the lake had begun about 1900. Sewage runoff from plantations and later industries were probably the cause adding pesticides and fertilizers. the lake bottom became oxygen poor forcing fish into upper levels and shallows. At the same time fishing pressure on the lake had intensified. The British had introduced flax gill nets, which replaced the local papyrus nets and fish traps. New small mesh nets decimated both breeding adults and young of many species. By the 1920's increased levels of nitrogen and phosphorus were causing the diatoms to decrease. Since some of the most prized fish in the lake, the negege were diatom eaters they became endangered early on. I wonder why not very much is said about them thought Brian. Well he would soon be there and he could ask Kassahun about some of those issues.

As Brian approached the inlet he saw a tall man staring out at the lake. That must be Kassahun, Brian thought. He certainly looks the part of a dedicated limnologist. When Brian had made arrangements to come to Kenya he spoke with Peter Ochumba who had told Brian that he would be working with Kassahun. He said Kassahun was a very promising young scientist who began working at the KMFRI when he was 12 doing odd job. After going of to college and completing two degrees he had return to a the institute as a researcher. Well now that he was here he would begin finding out how well they could work together.

Kassahun turned and watched the land rover come to a stop. A young blond man with a red face exited the car. I have to keep this guy out of the sun as much as possible thought Kassahun. Why isn't he wearing a hat? He has a lot to learn about Kenya and Lake Victoria. Kassahun, keeping these thoughts to himself, smiled and extended his hand in greeting. "Welcome to Lake Victoria!" Brian shook Kassahun hand and looked out over the lake. It was much more beautiful than he had expected and he said as much to Kassahun. Other small talk about the trip, how the lake was alike and different from anywhere Brian had been occupied the two for about a half hour. Brian sure is enthused and open, Kassahun thought. Maybe we will get along. As Kassahun began filling Brian in on the type of research they would be doing, Brian thought Kassahun seems to be a very competent scientist. At least he said the right things. Maybe they could work together. Looking at the water hyacinths in the lagoon, Brian noted how beautiful this setting was. Kassahun agreed. "But there is a dark side to their beauty. They are not natural to the lake. We first noticed then growing in the lake in 1990. One of our biologist has traced their introduction to one of the feeder rivers on the north end of the lake. They are expanding at a very fast rate." Reaching down, Kassahun pulls up a tangled mat of vegetation. "The hyaciths form dense mats that pile up and rot in the lake. That lowers the oxygen levels in the lake." This was Brian's opening. He might as well get the concerns about multiple causes rather than one single cause into the open. He needed to see if Kassahun recognized the multiple causes he had identified since he started reading about the lake. "Hasn't the oxygen level in the lake been seriously depleted for a very long time," he asked Kassahun.

"Yes this is true," Kassahun responded. "The lake has been abused for many decades. People did not seem concerned about what they put into the lake. You see it is 255 miles long by 155 miles wide so people think it is unchangeable because it is so large. What most do not understand is that because of the slow moving streams and rivers that feed and drain the lake take about 100 years to flush and replace the lake waters. Because of this the lake should have collapsed earlier but the haplochromine cichlids acted as a self cleaning system." "Hadn't the cichlids declined dramatically due to man-made pollution and over fishing," Brian asked. "A UN survey in 1971 found haplochromines still made up 80% of the fish biomass in the lake," Kassahun responded. "By 1980 things had changed and now the Nile Perch made up 80% of the fish biomass in the lake." "Your voice becomes angry when you speak of the Nile Perch," Brian noted. "Haven't they been a commercial success at least?" Kassahun stopped talking and looked across the lake and slowly responded. "For some it has been very profitable but the perch live in the deeper parts of the lake and must be fished from large boats. The locals do not have such boats and they can't afford to buy the fish from the commercial fisherman because the outside demand has pushed the price very high. It is sad to recognize that protein malnutrition is beginning to become common in a region that exports 200,000 tons of fish a year. The locals do buy the heads and other remains after the fish is filleted so they do get some benefit from the industry. But that will change too," Kassahun mused. "The Nile Perch being caught are much smaller than they used to be and we have found through our studies at the institute that the perch are eating each other since other food sources have disappeared or declined dramatically in the lake." "Is this decline directly due to the Nile Perch or are other things causing it? Brian asked stubbornly. "Certainly there are other thing happening on, in and around the lake," Kassahun replied. "For example the Nile Perch parts that the people can buy cannot be dried on the rocks because they are too fatty. They must be smoked. The locals have cut down large sections of the forest to do that. These areas have begun to erode into the lake making the water more cloudy. Certainly this is not directly the fault of the perch but the people must eat and that results in further problems for the lake. If the cichlids were there this might not be happening." Maybe Kassahun does understand this situation, Brian thought to himself. I need to think about the thing he has said.

The two silently looked across the lake for a while more until Kassahun said "we must be leaving for our meeting with Peter. He will tell you other thinks about the lake." Brian didn't respond but thought there is much more to learn and I need to listen and observe a great deal before I jump to any more conclusions.

Article directions and questions:

1. Write a short summary of what happened in the article-talk about the main points.
2. Define the articles issue including the ecosystem, producers, consumers and habitat.
3. Explain Brians's and Kassahun's background-where are they coming from and what experience do they bring to the solution of the issue.
4. What is the cause/affect of the problem as far as you can tell-give examples.
5. What other problems are being caused/affected by the main problem-give examples.
6. What benefits are happening in this scenario.
7. How do you think this problem can be fixed-be very specific and give examples.
8. How would this same issue affect us in our part of the world today-Colorado.