

25 April, 2001

From: Tim Baumgartner

To: Participants, Tri-national Sardine Forum

Subject: **Preliminary report on sardine sampling off Baja California, Mexico**

IMECOCAL/CUFES SURVEY 0104:

The B/O Ulloa departed Ensenada on 5 April to begin the IMECOCAL cruise 0104. Unfortunately the cruise (and Cufes sampling) was terminated at line 117 just north of Cedros Island due to failure of the CTD winch. I was not informed of the breakdown (difficulty with communications during Easter Week vacation at CICESE) and the people in charge of the cruise did not continue the underway sampling with the result that the ship returned to Ensenada without a complete Cufes survey. The cruise track and station plan had also been interrupted and altered due to heavy weather between Ensenada and Punta Baja. We are not able to count the eggs during the IMECOCAL cruises and cannot provide a real-time report as does CalCOFI, but the onboard personnel in charge of the Cufes sampling reported that sardine eggs did not start to become identifiable (by handlens) in the Cufes samples until the final line (117). If this is true, then there was little to no spawning of sardines in the IMECOCAL region from line 100 off Ensenada down to the area just north of Cedros Island. This, of course, remains to be verified by the examination of the Cufes samples in the laboratory at CICESE.

SEARCHING FOR ADULTS:

The sardine processors and fishing boat owners from Ensenada volunteered to make available up to six purse-seiner vessels for offshore fishing during mid-April when the phase of the moon would begin to favor night fishing. To aid in the search for adult sardines offshore and to reduce uncertainty in sending the fleet to fish offshore where there are no traditional fishing grounds, I rented a small spotter plane (Cesna 172) with funds from IAI and IMECOCAL. We flew a daytime search pattern on 17 and 18 April, beginning both days around noon. On 17 April, we flew a zig-zag pattern from 25 to 80 nautical miles offshore, passing over Sixty-mile bank (approximately 30 nm south of the heavy concentration of eggs reported by CalCOFI from the Cufes samples along line 93 from 7 April) and ending just south of Ensenada. I went along as observer and spotter along with an experienced pilot used to working with the tuna, anchovy and now sardine fleets. On 18 April we flew from Ensenada to just north of Cedros Island and back on two long legs. The southbound leg was located from between 10 to 15 miles offshore down to Punta Baja (30 N) then we followed coast down to Punta Canoas (approx. 29 N) in the northern area of Bahia Vizcaino, then out to around the 200 m isobath, until we were over line 117 (on this southbound leg we also went onshore at points where fishery is usually located, i.e., Colnett, San Quintin, Pta Baja). We followed the line 117 until crossing the area of Ranger Bank and then turned north and flew at a distance roughly 30-40 mi offshore with a jog towards the coast and back at Punta Baja, then on to Ensenada (6.5 hours).

The result of all this flying was that we found no sardines offshore, only onshore: both days in Bahia Todos Santos returning to Ensenada (in the corner of the bay off Estero Beach in very shallow water first day, and on second day just inside the island of Todos Santos), and just off the beach around Punta Canoas, numerous schools in balls and ribbons, easy to spot from the air, particularly in such shallow water and close to shore. We flew the first day mainly at altitude of around 2300-2800 ft. Second day we flew from between 400ft to 2000ft depending on weather conditions encountered (which varied enormously in the 6.5 hours back and forth from Ensenada to Cedros Is). I was surprised that there were no visible sardine schools in the area around Sixty Mile bank (just south of CalCOFI line 93) which we examined thoroughly, circling for roughly 15 minutes at an altitude of around 2700 ft. Visibility was good then (1345 hours) with occasional white caps on the sea surface and regular light swell from the NW (Sea State 2). According to the pilot, we should have been able to spot schools near the surface up to a distance of three miles around the plane. The fish were either not present or were too deep to be located.

SAMPLING ADULTS:

Because we did not find sardines from the spotter plane in the offshore waters off Baja California (and there were no clear reports of eggs from the Cufes survey), I did not ask the Ensenada fleet to go offshore to fish, but rather asked the captains to bring us as fresh and undamaged a sample of 200 adults as possible from where they were finding fish (which was not very many places = around Isla Coronados, just off Tijuana, and in Bahia Todos Santos, Ensenada). As of yesterday we had obtained two samples, both from Bahia Todos Santos in shallow water off Estero Beach. The second sample (23 April) turned out to be very fresh due to hydraulic problems on the boat; the boat put out its net at 0230 and at 0800, the haul was finally abandoned--but our sample was taken (0800) and refrigerated. By 0930 the boat was back in port and at 1000 I got an ice chest full of fresh adults. This turned out to be a very good sample. Casimiro Quinones from CICIMAR was available (on sabbatical) at CICESE to lead the sampling and accomplished this with the help of Sara de la Campa and Cristina Sanchez in our laboratory there.

The total sample consisted of 203 fish, all of which were sampled and weighed. Of the total, 102 fish were also sexed and gonads collected and weighed. Otoliths were also collected from these fish. Of the 102 fish, 58 were females. Of the 58 females, 35 were hydrated females. The size of the fish ranged from 155mm (at 46.3 g) to 192mm (at 94.0 g).

All of the 58 female gonads were sampled and preserved in formaldehyde solution (buffered with borate). Some of the male gonads were also collected. According to Casimiro these samples are high quality and will allow him to do fecundities and histology--which he plans to do in his lab at CICIMAR in La Paz this summer.