The Lazarette Gazette

NEWS FROM
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MARINE SCIENCE INSTITUTE
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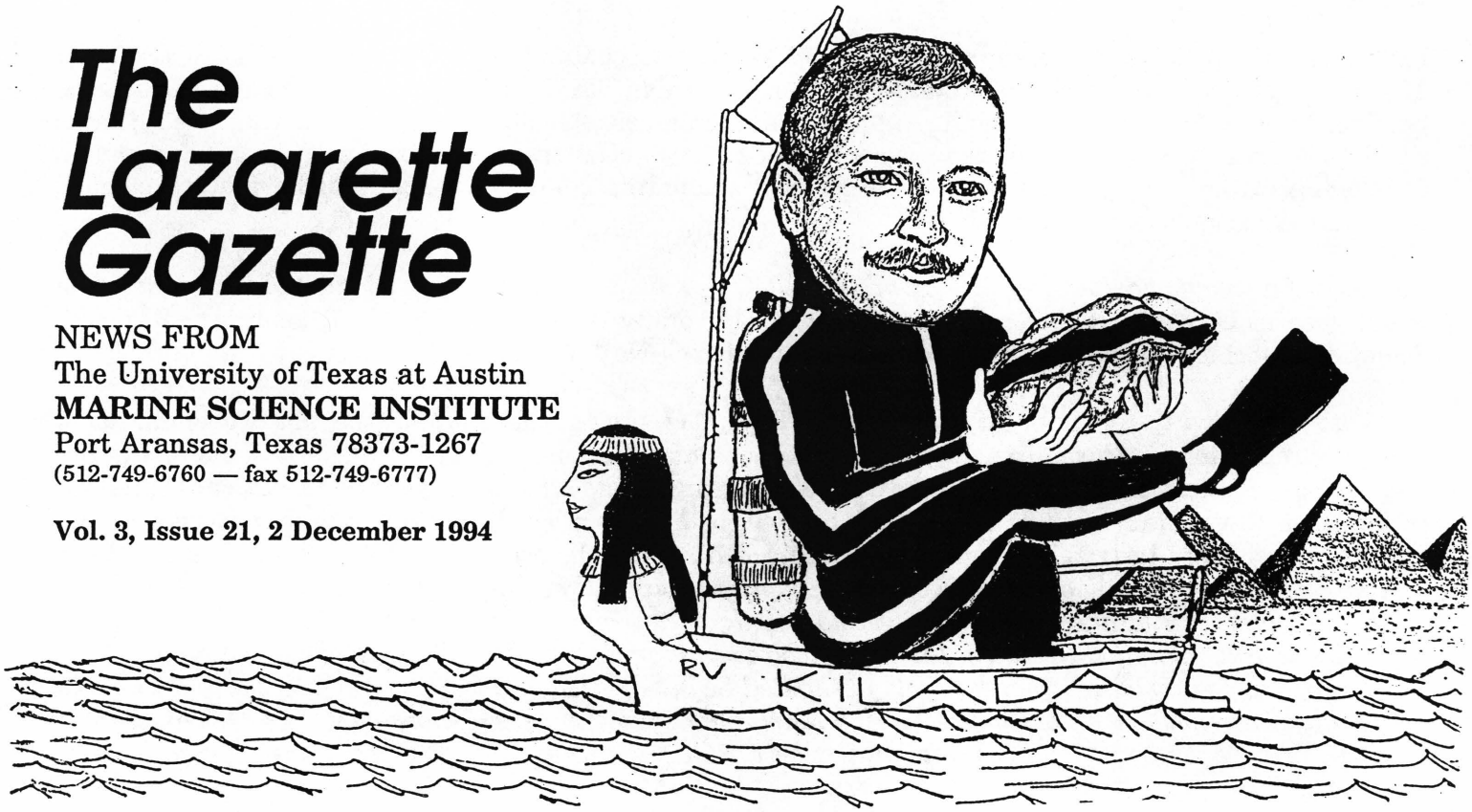


In this issue of *Lazarette Gazette* —

Personnel

Robby Moore Retires — Professor James Robert Moore has announced his retirement from the Department of Marine Science effective January 15, 1995. Dr. Moore first came to The University of Texas in 1979 as Director of the Marine Science Institute and Chairman of The Department of Marine Science (then Marine Studies). At that time the Marine Science Institute consisted of both the Port Aransas Marine Laboratory and the Galveston Geophysics Laboratory, with Dr. Moore and the Marine Science Institute administrative office located in Austin. Dr. Moore resigned the positions of Director and Chairman in August of 1982, and has continued since as a Professor in the Department of Marine Science. Dr. Moore was born in Temple, Texas and served in the U. S. Navy during World War II in anti-submarine warfare in the North Atlantic. He received his MA from Harvard in Marine Geology and his Ph.D. from the University of Wales in Geology-Oceanography. His research in underwater mineral resources and exploration took him to the waters of the Bering Sea, Great Lakes, Irish Sea, Gulf of Mexico, Southeast Atlantic and the Central Pacific. Immediately before coming to The University of Texas, he was Director of the Institute of Marine Science of the University of Alaska and before that was for many years a

Professor of Geological Oceanography at the University of Wisconsin. At The University of Texas, Professor Moore has taught undergraduate courses in Marine Mining, Exploration and Exploitation of the Sea, Seafloor Mining, Marine Geology, and graduate courses in Marine Geology and Ocean Mining. He initiated the MSI Marine Minerals Program in the summer of 1980. His research most recently has focused on developing exploration guidelines for locating and evaluating commercial-size marine placers of gold, platinum group metals and rare earths.

Susan Schonberg receives her MS from TAMUCC — Susan Schonberg has completed her work for an MS degree in Computer Science at Texas A & M University — Corpus Christi. (Susan is a Research Scientist Associate I, spouse of Ken Dunton, and mother of Nathan, Karli, and Matt.)

Kiladas to return to Egypt — After working in Paul Montagna's laboratory for the last two years, Raouf Kilada is returning to Alexandria, Egypt. The Kiladas have become an important part of the laboratory and the Port Aransas community. Mervat has been working in the MSI Library and Christina has attended H. G. Olsen Elementary School. All the Kiladas will be greatly missed by their friends in Port Aransas. The following letter to *LazGaz* readers was received from Raouf: *Mervat, Christina, Marina and I are looking forward to meeting our family back in Egypt. Mervat will go back to her real job as a Pharmacist in the Hospital of Alexandria University and I will be working as a lecturer in the Marine Biology Department, Suez Canal University. I will be involved in marine benthic stuff (research and teaching) and will also try to be involved in joint projects in the Red Sea with scientists I met here. Mervat and I will go back with a new member in our small family, Marina (one year and three months). We have enjoyed our time in Port Aransas and we'll miss its atmosphere. After spending two years here, we have to prepare ourselves again to live in a big city, Alexandria.*

Abstract

BIOLOGICAL AND ECOLOGICAL STUDIES ON THE GIANT CLAMS IN THE NORTHERN RED SEA

Raouf Kilada, M.S.
Suez Canal University, Egypt
Supervisor: M. E. Farghalli

In recent years there has been growing interest in the mariculture of giant clams in the Indo-Pacific region for both restocking reefs and commercial farming. The Family, Tridacnidae has two genera and eight species, and exists in the Indo-Pacific region. *Tridacna maxima* and *T. squamosa* have the widest distribution, extending from the extremities of the tropical Indian Ocean (including the Red Sea) to the Central South Pacific. A lack of information on giant clam distribution and abundance, reproductive biology and population structure in its northern most-distribution in the Red sea, initiated this work.

Giant clam populations were compared in five sites, varying in substrata and degree of exposure to the prevailing surface currents on the southern coast of Sinai peninsula, at the Northern Red Sea. Eight depths (between the reef flat and 20 m deep) were surveyed in each site. The dominant species was *Tridacna maxima*, while *T. squamosa* was rare. There were only 45 individuals of the latter species, compared with 6709 of the former found during this study. Clam abundance varied significantly among sites, depths and sites-depths interaction (two-way ANOVA, $P<0.0001$). Site 1 was the most sheltered site from the prevailing southern surface current, compared with the other sites in this study, while site 5 was the most exposed one. Mean clam density varied between 1.58 and 0.09 clam m^{-2} in sites 1 and 5, respectively, due to the effect of the larvae dispersion by the current. These densities were comparable to other places in the Indo-

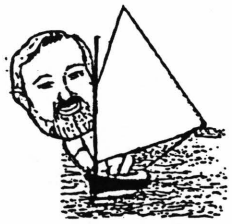
Pacific region. About 95% of the recorded clams were found between the reef flat and 5 m, which is explained by the clam symbionts (the zooxanthellae) dependence on the light intensity. Clam sizes were between 0.4 and 32.2 cm, and there was a significant difference in sizes among different sites ($P<0.01$), and depths ($P<0.05$). Site 2 is protected by cliffs that makes it difficult to reach, has clams with the largest mean size and highest shell biomass compared with the other sites. Although the clam abundance in site 1 was higher than any other site, it had the least biomass in terms of empty shell. This was explained by the intensive fishing taking place by the people using the numerous hotels on site 1.

To study the reproductive behavior, monthly samples of *T. maxima* gonads were collected from the reef edge in site 2, between October 1989 and December 1990 for the histological study. This place was chosen as it has high abundant population covering all size classes and the collection of some clams every month will not affect the population seriously. Tridacnid clams are protandrous hermaphrodites (they possess a male gonad, which then converts to a hermaphorodite status), and then turns to simultaneous hermaphrodites (both male and female portions in the gonads grow simultaneously). All-male clams were between 5.5 and 12.0 cm in length, but some immature ova were noticed in clams of sizes 9.0 and 11.4 cm. No clams were all-female, although the area occupied by the female portion in the hermaphrodite animal increased with the increase in length. Early gametogenesis was not recorded in any of the clam samples, while late stages in both ovaries and testes were found every month over the study period. Within the testes of any clam, all developmental stages exist, however, early stages in the ovary were not accompanied by fully ripe stages at the same time. Spent gonads were found between June and October which indicate that spawning may have happened in this period. These findings were consistent with the results of the gonado-somatic index (GSI) which had the maximum value in May (46%) and then decreased to 2% in June. Reproductive scores (between 0 and 5) were assigned to the clams having different maturity stages, so as, the clam with score 0 is a spent animal, and that with score 5 is in the early gametogenic stage. The results of reproductive scores showed that there is synchronization in the release of both eggs and sperm. The maximum values were 4.0 and 3.5 in May for the testes and ovaries, respectively. These values declined in June to 0.2 and 0.4 for the testes and ovaries, respectively.

The age and growth of *T. maxima* were determined by using two techniques: band count in the thin shell section and length-frequency analysis using the computer software MULTIFAN 3. A one-year old clam is 37.2 and 22.5 cm in size, estimated by the ring count and MULTIFAN, 3, respectively. The von Bertalanffy Growth Parameters ($L\infty$ and k) were estimated using both techniques. The asymptotic length ($L\infty$) was 15.8 cm and 19.2 cm and the growth coefficient (k) was 0.105 y^{-1} and 0.150 y^{-1}, obtained from the band counts and MULTIFAN, 3, respectively. The growth rates obtained from both methods were 15.4 mm $month^{-1}$ and 19.3 mm $month^{-1}$ for one-year old clam, estimated by ring counts and MULTIFAN, 3, respectively. Results obtained from both methods had the same trend in which the clam growth is faster in small animals, and decreases in larger ones.

The high densities of *T. maxima* in the Northern Red Sea indicate that the giant clam may be considered as a new fishery resource after adopting a firm policy against overexploitation, and creating appropriate markets (internal and external). Moreover, in order to establish an economical plan for giant clam mariculture industry, further studies are needed in more southern sites in the Red Sea, which may support higher growth rates for these tridacnids.

Marine Education Services



A Global Change Videoconference held at the J.L. Scott Marine Education Center in Biloxi, Mississippi on November 14-16 was sponsored by NOAA. NOAA paid all participant support, travel and resources. I was asked to attend and make a presentation, and I was also able to take two middle school teachers, Andrea Cantu, Brundrett Middle School Science teacher here in Port A and Linda Maston, Pease Middle School in San Antonio. There were over 60 middle school teachers and informal educators from Texas, Louisiana, Mississippi, Alabama and Florida in attendance. The Mississippi site was only one of six that included Hawaii, Washington, Nebraska, Wisconsin, and Virginia. Simultaneous video presentations were broadcast from Nebraska to the remote sites via satellite downlinks. Using phone lines, we were able to ask questions and communicate with the presenters and the other sites during the broadcasts. In between the two broadcasts each day, presentations of regional interest and impact were made by researchers from NOAA, Stennis Space Center and other resources.

The simultaneous videobroadcast was an effective tool for presenting information to large groups at widely separated sites. I hope that after we get our MSI video site on line we can further investigate a satellite dish and downlink capabilities. This has great potential for improving our ability to interact with other faculty, students and research programs.

I was asked to develop a presentation on Terrestrial Response to Global Warming. Being a person with a biased marine perspective, this was a real challenge. I approached the topic as I supposed the teachers in attendance might, using resources provided during the workshop. I summarized a variety of research papers, government reports and journal articles concerning the predicted effect of a doubling of CO_2 levels in the next 50 years. What became apparent was the wide disparity of opinions in the scientific literature. Some scientists don't believe a problem exists, while some acknowledge an increase in global temperatures and CO_2 levels in the recent past and call for more research to define affirmative steps to be taken now to slow the process. A third group are more zealous in their gloom and doom predictions including 7 meter rises in sea level, major shifts in agricultural zones and an increase in catastrophic weather on a global scale. They issue calls for immediate action before its too late. The real eye opener was that each group of opinions was based on the same data sets. It points out that as consumers of information, we need to be sure we investigate all sides of an issue before we set an appropriate course on future research leading to policy development and action plans. That is an especially appropriate message for those of us who teach.

—Rick Tinnin

Trip Reports & Travel

Travel ending between November 19 and December 2

✈*Rick Tinnin*, November 18—21, Los Fresnos, Texas, to conduct teacher's in-service training as provided in SEDL-Blue Planet grant.

✈*Joan Holt*, November 28, College Station, Texas, present seminar for the Department of Oceanography at Texas A & M University, *Do events in early life history regulate temporate variation in fish population?*

✈*Connie Arnold,* November 28—29, College Station, Texas, to consult with John Gold and Don Lewis at Texas A & M University concerning ongoing research.

Computer Corner

Pine and Pico — After I got the SUN SPARCstation 20 online, I had a few complaints about command line mail and the difficulty in learning VI editor. I started looking for a good menu type mail program and editor. Matt Cottrell sent me an e-mail message from the ATLANTIS II on the Pacific Ocean in which he said the Computer Systems Administrator on the vessel told him we could get *Pine* & *Pico* by anonymous file transfer from the University of Washington. After checking out *Pine*, the e-mail program and *Pico*, the editor, it looked like just what we needed. So thanks to the people at the University of Washington, we now have a nice editor and e-mail program. We have Version 3.91, dated October, 1994. To use *Pine*, type "Pine" at the prompt. All commands are listed at the bottom of the screen so give it a try. *Pine* and *Pico* are both trademarks of the University of Washington, copyright 1989-1994. The following describes their origin. —*John Shedd*

*Pine was originally conceived in 1989 as a simple, easy-to-use mailer for administrative staff at the University of Washington in Seattle. Our goal was to provide a mailer that naive users could use without fear of making mistakes. We wanted to cater to users who were less interested in learning the mechanics of using electronic mail than in doing their jobs; users who perhaps had some computer anxiety. We felt the way to do this was to have a system that didn't do surprising things and provided immediate feedback on each operation; a mailer that had a limited set of carefully selected functions. At that time, we could not find any Unix mailer (commercial or freely available) that met our requirements. Consequently, we reluctantly concluded that we would need to develop our own. The Elm mailer seemed like a reasonable starting point since its source code was freely available, so we started modifying it. Today there is virtually no Elm code left, and Pine has evolved so that many "power-user" features may be (optionally) enabled. We have tried to remain true to our original simplicity and ease-of-use goals by providing *optional* features for sophisticated users. In fact, if none of Pine's options are enabled, the latest version has almost the same look-and-feel as the very first version. One of the greatest problems with most mailers on Unix systems is the editor. One can normally choose between emacs and VI. We experimented with some versions of emacs and settled on a hacked version of micro emacs. Eventually it became heavily modified and tightly integrated with the rest of Pine. One of the main features of having a tightly coupled editor is that it can guide the user through editing the header of the message, and Pine takes great care to do this. A very simple and efficient interface to the Unix spell command was also added. The emacs-style key bindings were retained, though most of the other wild and wonderful emacs functions were not. The Pine composition editor is also available as a very simple stand alone editor named "pico".* (Pine Technical Notes)

Cruise Reports & Boat Operations

THREE MSI SMALLCRAFT BEING REPOWERED —

■ ***R/V JEFFERSON*** — The *SPONGE* (the informal "affectionate" name by which the 21 ft. Lafitte Skiff is known—especially by those who have operated her in less than ideal conditions) has recently received a new 125 hp. Johnson outboard motor. Ken Dunton and associates took her on their Port Isabel trip earlier in the month. Ken reported that the new motor operated perfectly on the long trip. And its a good thing it did. The other MSI boat on the trip, the *R/V ETTA ARMSTRONG*, suffered two breakdowns (see below), requiring the *JEFFERSON (SPONGE)* to be put into service as a tow boat. The *JEFFERSON* was built for MSI in late 1986 by the Jefferson Fiberglass Company of Harvey, Louisiana. This is the third motor for the boat, which has been heavily utilized despite her *wet* reputation.

■ ***R/V CAESAR KLEBERG*** —The 24 ft. *KLEBERG* was also purchased from Jefferson Fiberglass Company in late 1986. Next to the *BIG WHALER,* the *KLEBERG* is the most heavily utilized of all MSI small boats. She is currently out-of-service for replacement of her inboard/outboard engine and drive unit. Previously she was repowered in 1989. The old motor and outdrive (a Volvo/Penta) has already been removed, and a new Cobra (OMC) will soon take its place. The Cobra was already on hand, having been ordered some months ago for routine replacement.

■ ***R/V ETTA ARMSTRONG*** —The *ETTA*, at 32 ft. (and 12 ft. beam) is the largest "small boat" in the MSI fleet. *ETTA* is another vessel built for MSI by the Jefferson Fiberglass Company. Sea trials were completed in January 1988 and the *ETTA* brought from Louisiana to Port Aransas via boat trailer by the MSI boat staff. Although not one of the busiest small boats at MSI, *ETTA* has seen sufficient service so that after six years she is ready for a new engine. On recent work in the Laguna Madre she had two breakdowns. The first was minor and easily repaired after a quick trip to the scene by Senior Captain Gibson. The second incident proved to be terminal. (However, it was possible to complete her duties as a small floating laboratory by being towed to station.) The *ETTA* was ignominiously returned to Port Aransas behind a towline from the *R/V LONGHORN*, which was fortunately in the vicinity for other work. An emergency order has been issued for a new Cobra. The new motor will be larger than the old Volvo/Penta, and should provide better performance. It is expected to have the *ETTA* back in service in time for scheduled work in February.

Attaboys

■ *....This is the first session we've attended since sponsorship was assumed by The University of Texas, and we are very impressed by the addition of the trip on the Marine Science Institute boat with Bob Huntington. UT's involvement will offer immense potential for improving the content and variety of the programs. We've signed up to host another session with Judy in April, 1995....*
(excerpted from letter to Wayne Hunt, Coordinator, Texas State Elderhostel, from Ray and Vi Taylor)

CHRISTMAS GIFTS A PROBLEM???? — NOT ANY MORE.

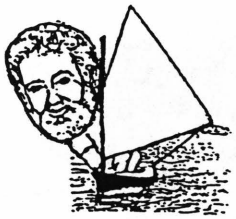
COME VISIT US AT THE OCEAN EMPORIUM IN THE VISITORS CENTER AND SEE FOR YOURSELF.

Just arrived — A NEW DESIGN: "TWO COMMON LOONS" FOR OUR WINTER SWEATSHIRTS. IT COMES IN TWO COLORS, NATURAL AND JADE AND IS ALSO AVAILABLE IN A LONG SLEEVED TEE, NATURAL COLOR. WE ALSO HAVE A SELECTION OF REGULAR TEES, TOTE BAGS, FANNY PACKS, MUGS, NOTECARDS, PUZZLES, DISCOVERY SCOPES, SEA-LIFE MODELS, POSTERS, AND AN ABUNDANCE OF EDUCATIONAL BOOKS TO SUIT ALL AGES. AT PRICES YOU WOULDN'T BELIEVE!

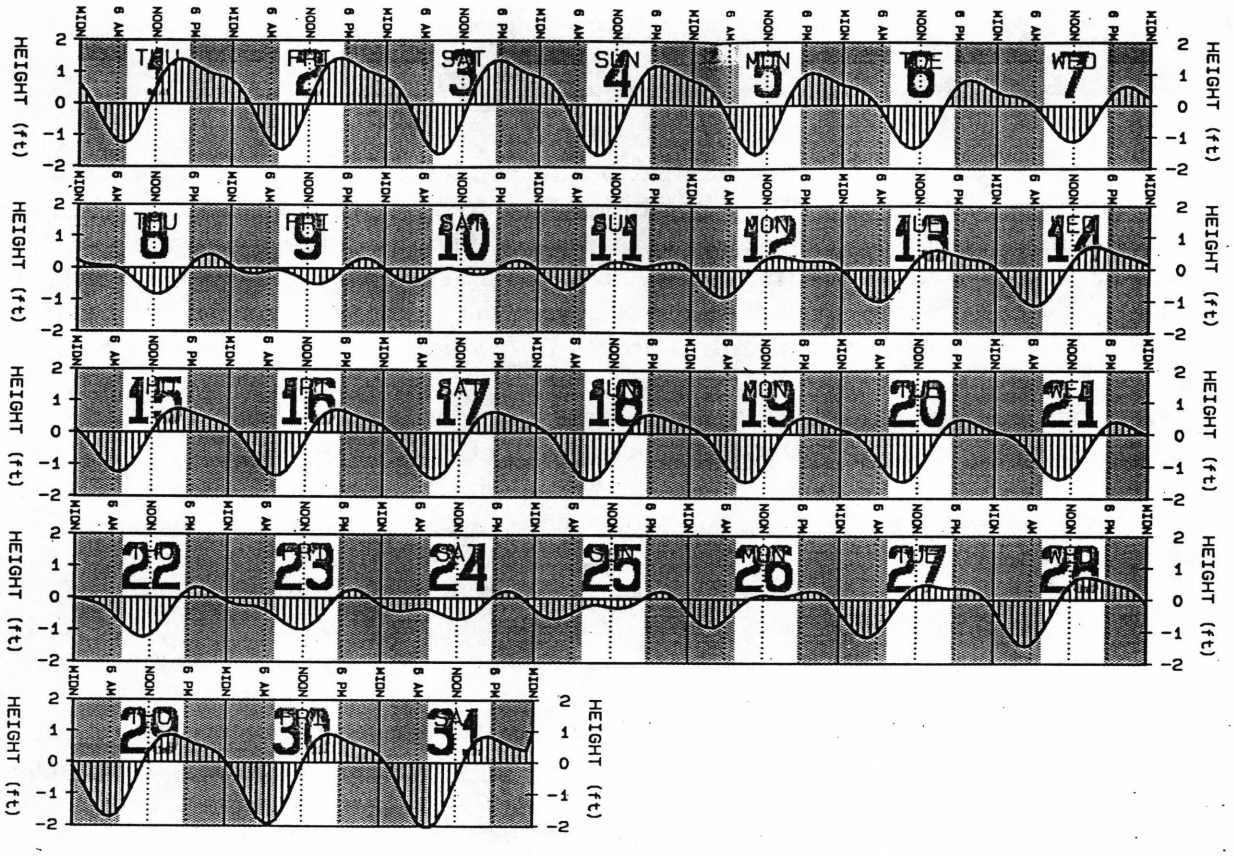
BUY NOW WHILE STOCKS LAST!!

***HAPPY HOLIDAYS FROM** Rick, Linda, and Bob.*

Tony's Tidings...



Tide Predictions for December *(For tidal heights at the tide tower, South Jetty, the Aransas Pass. Heights are in feet above or below mean sea level. The shaded area is nighttime. Remember, this is tidal height, not tidal current. Slack water is when the wiggly line crosses the MSL line, not at peaks and valleys, where the tidal current will be a full flood or ebb.)*

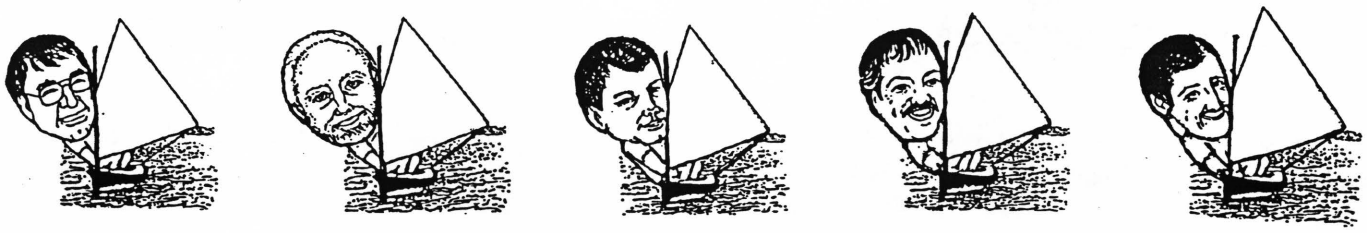


Weather Report November 14—27

14 - 20 NOV 1994	MON	TUE	WED	THU	FRI	SAT	SUN	MEAN
DATE	14	15	16	17	18	19	20	
AIR TEMP . . HIGH	82.2	75.2	70.5	78.8	80.0	80.4	80.7	78.3
AIR TEMP . . . LOW	70.5	60.8	60.6	64.2	72.1	73.0	69.0	67.2
SEA TEMP . . . LOW	--	--	--	71.1	--	--	--	--
RAINFALL . TOTAL	.--	--	--	--	--	--	--	--

21 - 27 NOV 1994	MON	TUE	WED	THU	FRI	SAT	SUN	MEAN
DATE	21	22	23	24	25	26	27	
AIR TEMP . . HIGH	77.3	79.5	72.8	66.2	72.6	78.0	--	74.4
AIR TEMP . . . LOW	65.1	71.9	55.9	54.5	59.9	71.6	--	63.2
SEA TEMP . . . LOW	--	--	--	--	--	--	--	--
RAINFALL . TOTAL	--	--	--	--	--	--	--	--

—Andi Wickham



Egabrag Wocs

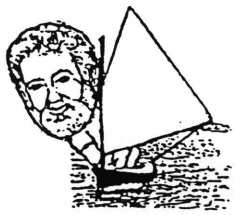
Boat Basin Basics — Improvements are planned for the boat basin, moving the *R/V KATY* to a new slip and constructing restrooms and a pavilion for student groups receiving instructions prior to boarding. These changes will enhance the experience of the thousands of students voyaging on the *R/V KATY* each year and provide a safer place to exit their bus and await embarkation. The pavilion and slip will be located in the area Jerry Clanton and I call *Watson Park*. For several years Dick Watson (Ph.D., 1975) moored his large classic wooden sailboat in this area. *Watson Park* has an interesting past; it was once the location of a Dolphin show. In the *LazGaz* a few weeks back, the Witch Lady (Venus) advised Wondering Weirdo that as a general rule employees are not allowed to mutilate visitors to UTMSI — unless *they ask about the Dolphin show*. Actually, this was truly a problem during the tenure of the Dolphin show. People were often coming in to ask when the next show would be and how much were the tickets. The boat basin was also home of a western dance pavilion where seaside kickers congregated to dance and drink beer every Saturday night. After UT acquired the boat basin the pavilion was turned into a warehouse and then into a residence and finally back into a warehouse (and is probably right now the most decrepit building in the UT System). I never patronized the dance hall or the Dolphin show, but was a regular customer at the boat basin restaurant, a counter affair which served great beef stew, located where we now park the boat operations truck. To complete the marina there was a tackle and bait store and filling station. This is all recent history. Before 1960 there was no boat basin; instead, bachelor brothers Sam and Joe Gampert lived amongst the low dunes in a small tent, making their living pole fishing in the ship channel and dutifully paying their annual *rent* of one large redfish to owner Sam McNamara. Then in 1959 a small area where the entrance channel and the boathouse are located was given to UT by McNamara, who retained the right to utilize the entrance channel later. So originally the UT boat basin stopped before the Aransas Pilots Association property. It was a great place to swim, although Hurricane Carla filled up the swimming hole temporarily with sand. Carla also removed the boat shop which was to the North of the boat house as well as all the walls in the boat house.

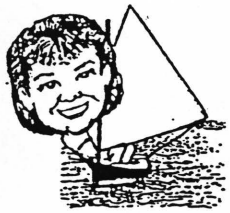
—John Thompson

Letters to the editor

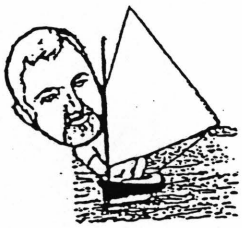
■ *Tell John I enjoyed the pictures of Pats retirement party, but where did he get all those old people with the same names as Pat's students?*
(message from Richard Moore, Ph.D., 1973)

■ *I was recently introduced to UTMSI's publication, The Lazarette Gazette. Browsing through this auspicious chronicle of the "going's on" of our local intellectual megacenter, I found it interesting and informative, and was delighted to learn you were its editor. As a close neighbor and interested in what's "going on down the street", I wonder if you could include me on your subscription list?*
(from Clay Rushing, Channelview Drive, Port Aransas)




Editor's Note



Many thanks to Raouf Kilada for his abstract. Huge clams! How is it we have itty bitty clams in Texas and the big gigantic ones are in the Red Sea. Isn't it supposed to be the other way around? Thanks also to Rick Tinnin for his news on the Global Change Videoconference. Reading Rick's report increased my own enthusiasm (which was already pretty high) about the telecommunications classroom we will soon have at MSI. John Shedd's article on *Pine* (the e-mail program) was also something in which I have a special interest. A mailer for "naive users" is just what I need. Much more could have been said about the UT Boat Basin (*Egabrac Wocs*). Our hurricane routine now calls for us to leave the *R/V LONGHORN* and *R/V KATY* moored (with special precautions, of course) in the boat basin rather than taken to another location. One reason for this is that in preparation for Hurricane Celia (August 3, 1970) we moved the *R/V MARCIA K* and the *R/V LORENE* to the Corpus Christi turning basin. There at the *safe refuge* the *MARCIA* was beat up beyond repair and the *LORENE* later had to be completely rebuilt with an all new cabin. Meanwhile, a 30 foot privately owned motor yacht, of no particular distinction or special construction, survived unscathed at the UT Boat Basin. Thanks to Patty Baker, JoAnn Page, Linda Yates, Linda Fuiman, Tony Amos, Andi Wickham, Kathy Quade, and Lynn Amos for their help with this issue of the *Lazarette Gazette* .

—John Thompson