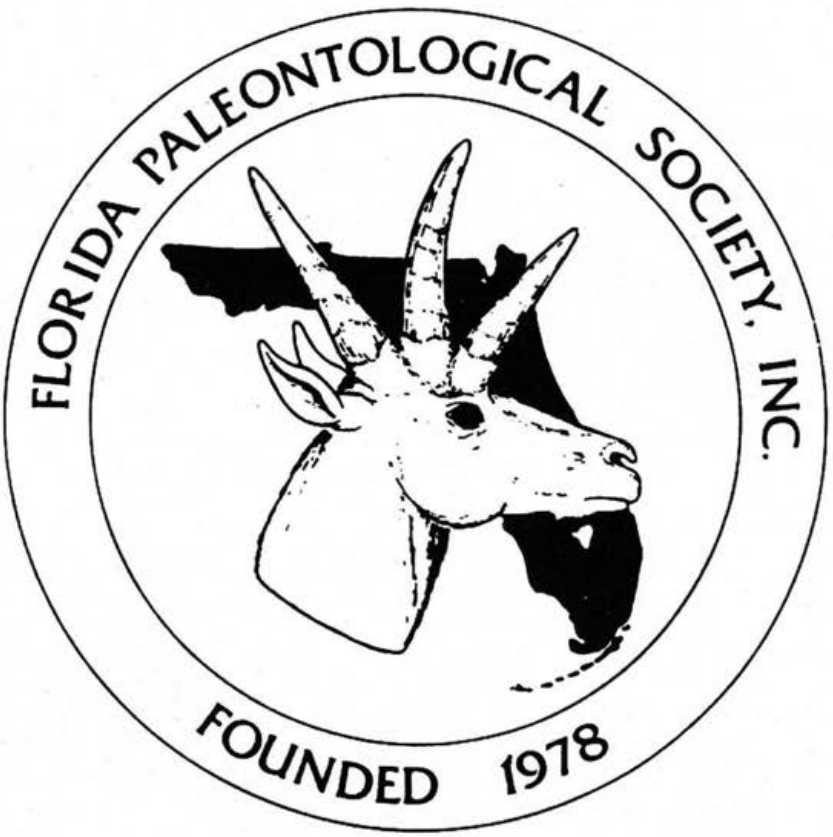
Florida Paleontological Society, Inc.

Newsletter



Volume 11 Number 2 Spring Quarter 1994

FLORIDA PALEONTOLOGICAL SOCIETY, INC.

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INFORMATION, MEMBERSHIP, AND PUBLICATION INFORMATION

Please Address: Secretary, Florida Paleontological Society, Inc.
Florida Museum of Natural History
University of Florida
Gainesville, FL 32611

FLORIDA PALEONTOLOGICAL SOCIETY INC. NEWSLETTER

Volume 11, Number 2 Spring Quarter 1994

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Mark Your Calendars!

Florida Paleontological Society Fall Meeting
October 29-30, 1994
Gainesville, Florida

Watch for details in next quarter's Newsletter

GA/FL game weekend--Make your reservations ***early!***

F.P.S. Happenings

From the Secretary...

by Eric Taylor

Member Notes

This is the time of year when those who have forgotten to pay their dues to the FPS feature (sadly) in my thoughts. With postage and printing costs being as high as they are, those who do not renew their membership prior to the printing of this quarter's newsletter do not receive the newsletter but a reminder that their membership has expired. As was the case last year, we are going to print a list of missing members along with the list of the active ones. If you see a friends name on the missing members list, remind them to send in his dues! Those who renew prior to the Fall Meeting will receive all publications for this year. Fossil clubs and societies around the state are always looking for speakers and presenters for their meetings. If you have a good collection of stories or have been on an interesting trip that might be of use and interest to other enthusiasts, let me know and I will contact the program chairmen in the appropriate clubs. Your presentation doesn't have to be professional, full of visual aids and canned speeches. In recent months members of the FPS have spoken to clubs in Orlando, Lakeland, Port Charlotte, and Tampa. The level of expertise ranged from Dr. David Webb (honorary member and arguably the best known professional paleontologist in Florida) to enthusiasts such as myself and Terry Sellari from Tampa. One thing that has arisen from my visits to Fossil Fairs and meetings of local clubs is a keen knowledge that there are outstanding tales of paleontological adventure that need to be told out there! If you have ever made an unusual discovery ranging from a new locality to a reevaluation of a previously collected item, write it up and send it to us! We want to publish your tale! Details for the Fall Meeting in Gainesville are coming together nicely. Make sure you set aside the weekend of October 29-30, 1994 for a great meeting featuring the Thomas Farm early Miocene site! Full details will be in the next newsletter, but right now it looks as though October 29 will feature the membership meeting, talks about Thomas farm's place in the fossil history, a banquet and auction. October 30 will feature a guided tour of the Thomas Farm site and on-site presentations about the finds that have come from there over the years.

New members since March 1994:

CHAPMAN, PAUL D., Stoud Ontario, Canada
ELDRIDGE, DAVID & PRICILLA, Hobe Sound, FL
(We are sadly short on members from this area of the state and hope that David and Pricilla can bring some of their friends with them to our Society!).
BURDETTE, DEBORAH J., Laurel, MD
(Deborah is the latest of many from the state o f Maryland who belong to the FPS. I hope they all can come visit sometime!).
COOKE, RUSSELL B., Sarasota, FL
PALUMBE, DEBORAH, Tampa, FL
HAVENSTEIN, MARK and KAREN, Charleston, SC
LEVELL, JULIE, Port Charlotte, FL
(Julie is the President of the SW Florida Fossil Club)
LONG, DR. GLENN A., Coral Gables, FL
KAIRIS, BILL & HELEN and FAMILY, Venice, FL
(Bill and Helen joined us in time to come to t h e Spring meeting in Tampa)
LYTTON III, ROME G., New Orleans, LA
(Rome is a micropaleontologist with Texaco in New Orleans)
ROCHELLE, LYNN, Tamarac, FL
EATON, MICHAEL G., Largo, FL
PAGE, ED & MCCLUGHAN, YVONNE, Largo, FL
KROSLAK, JOSEPH, Riverview, FL
KLINE, WILLIAM, St. Petersburg, FL
GIDDINGS, JEFFERSON B., Delray Beach, FL
JACKSON, JOYCE D., Ponte Vedra Beach, FL
HAYKIN, MICHAEL, Key West, FL
(Michael was given a guest membership by some friends and is the southernmost member of the FPS!)
GULF STUDIES FOUNDATION, Sarasota, FL
(The Gulf Studies Foundation is investigating a deposit well off the coast of Sarasota that seems to have numerous dugong skeletons in it!)
WATKINS, NANCY R., Gulfport, MS
WOODARD, DONALD W. Clearwater, FL
COOK, JOHN W. & MARJORIE A., Waterford, MI
SINIBALDI, DR. ROBERT, St. Petersburg, FL

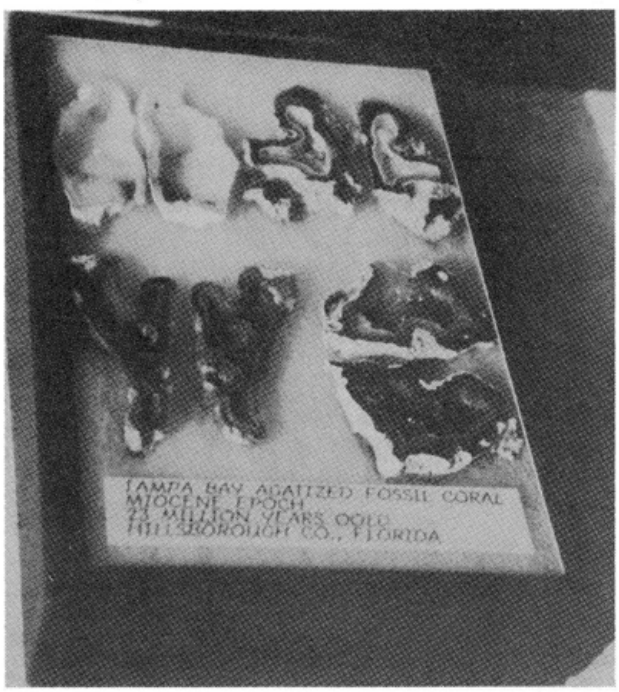
Welcome to all of the above! Remember, if you need to contact another member, let me know and I will pass a message to the member to contact you! That way, privacy will be protected for all.

Spring Meeting Highlights

The Spring Meeting of the Florida Paleontological Society was held in Tampa the weekend of May 14-15, 1994. It was graciously hosted by our friends in the Tampa Bay Fossil Club.

The weekend festivities kicked-off with a Saturday morning collecting trip to Ballast Point in Tampa. Ballast Point is a classic collecting site for Miocene agatized corals, which locally erode from the underlying Hawthorn Group. In years past, large and beautiful silicified coral heads were frequent finds here. Today the finds are much smaller and require more diligent searching. Unfortunately, the City covered much of the original outcrop with concrete sea-wall during construction of Ballast Point Park.

FPS member and Tampa resident Tony Estevez, a veteran of collecting the Point, was on hand to answer questions and guide the collecting efforts. He presented a short talk on the history of the area and also displayed some of his coral finds. Most



Typical Tampa Bay agatized coral geodes from the collection of Tony Estevez.

attendees searched the small, rubble-strewn beach or waded the shallows. FPS member Tim Cassidy, from Marianna, snorkeled offshore and discovered some old bottles among the rocks. Although exceptional finds were, for the most part lacking, the weather was beautiful and it was a very enjoyable outing.

Saturday evening we were treated to an outstanding Spanish buffet dinner at a local restaurant. We greatly appreciate all the effort in planning the feast and decorating the room with paleo-decorations, generously carried out by Rena Jacobson and Sharon Blinder. Terry Sellari served as our master of ceremonies and part-time auctioneer. Following the meal, FPS President Frank Rupert presented one of the two 1994 FPS Annual Student Research Awards, a check for $250, to member Eric Prokopi. The money will be used to aid in his Graduate research on the fossil sharks and rays of Florida. Frank also moved to make Gary Morgan an Honorary Member of the FPS in recognition of his service to the FLMNH and amateur groups statewide. This motion was passed unanimously.

With the business portion of the meeting concluded, we proceeded with the fossil auction. Many individuals, some anonymous, donated an interesting variety of items to the sale. These ranged from miscellaneous fossil shells and bones to books to a beautifully cast replica of a sabercat skull, generously provided by Tony Estevez. Proceeds from the auction will go towards the FPS Student Research Award fund.

For those who stayed over, the weekend ended with an optional collecting trip to Apollo Beach, south of Tampa, on Sunday. Once again, our special thanks to the Tampa Bay Fossil Club for the successful meeting weekend.

Field trip participants search the beach for agatized material

News Notes...

by Frank Rupert

New Publications Update

At our Spring Meeting in May, our tireless volunteer representative to the publishing world, Roger Portell, reported progress on two upcoming new FPS publications. First, the volume on the Geology and Paleontology of the Leisey Shell pits is about to go to press. If all goes well, we should see it later this year. Also, the text portion of Richard Hurlbert's book on the Fossil Vertebrates of Florida is complete, and the plates are about 85% completed. We will keep our readers updated on the progress and availability of these books.

1994 FPS Student Research Award Winners Announced

The winners of the second annual FPS Student Research Award were announced in May. Two students will share this year's award. Eric Prokopi, from the University of Florida and Brian Schnirel, at Florida Atlantic University, will each receive $250 to be used in funding some aspect of their research. Eric is studying the Fossil Sharks and Rays of Florida. Brian is working on a project involving New Species of Pleistocene Fresh Water Mollusks from Florida. We hope to see a presentation on each student's work at future FPS meetings or as articles in the newsletter.

"Fossil Horses" now in paperback

For those vertebrate enthusiasts on a budget, Bruce MacFadden's outstanding book on Fossil Horses is now available in paperback. The publisher, Cambridge University Press, is offering a special introductory price to FPS members. See the advertisement page in this issue for details.

Old Plaster Jackets Wanted

Many issues of the *Plaster Jacket*, the original publication of the FPS, are out of print and hard to find. From time to time, we get requests for older issues but are unable to supply them. If any members have copies they no longer need, please send them to FPS Treasurer Phil Whisler at the Museum address (inside the front cover of Newsletter).

Upcoming Events

July 18-23 **Conchologists of America Convention,** Corpus Christi, Texas. Contact Jean Roe, P.O. Box 45, Portland, TX 78374, (512) 643-2056.

Aug. 5-7 **Jacksonville Shell Show,** Jacksonville Beach, FL. Contact Elizabeth Hunter, 6362 David Drive, Jacksonville, FL 32210, (904) 786-6845.

Aug. 13-14 **Venice Shark Tooth and Seafood Festival,** Venice, Florida.

Aug. 20-21 **Panama City Shell Show,** Panama City, Fl. Contact Jim or Linda Brunner, P.O. Box 8188, Southport, FL 32409, (904) 265-5557.

Sept. 17-18 **Central Florida Shell Show,** Orlando, FL. Contact Larry Stiles, 1505 N. Carolwood Blvd., Fern Park, FL 32730, (407) 834-2176.

Oct. 8-9 **Florida Fossil Hunters 4th Annual Fossil Fair,** Orlando, FL.

Oct. 22-23 **Eleventh Annual Bone Valley Fossil Fair,** Lake Mirror Center, 800 E. Main St., Lakeland, FL. For info., (813) 665-3426.

Oct. 29-30 **FPS Fall Meeting,** Gainesville, FL. Details forthcoming.

Nov. 4-6 **Imperial Polk County Gem and Mineral Show,** Winter Haven, FL. Held at Latt Maxcy Citrus Center, Polk County Fairgrounds, 2640 SR 542, Winter Haven, FL. Contact Mr. Win Shutt, 1403 Neptune Drive, Lakeland, FL 33801, (813) 665-3343.

1994 Florida Paleontological Society Membership Roster

The following roster lists FPS members with paid-up dues through June, 1994. If you paid prior to June and are not on the list you may wish to contact FPS Secretary Eric Taylor, at the Museum address, to make sure he received your payment. We apologize for any typographical errors or omissions that may have occurred during the re-typing process.

Ahern, Brian P., Temple Terrace, FL
Ahern, Thomas R., Temple Terrace, FL
Albury, Shirley Faye, Tavernier, FL
Alexander, Dr. Barbara & David, Port Orange, FL
Allen, Dr. Hayden, Tarpon Springs
Allen, Steven N., Melbourne, FL
Archibold Biological Station, Venus, FL
Armentrout, Ed, Hot Springs, SD
Arnell, Michael, Clewsiton, FL
Arnold, Thomas & Linda, Richlandtown, PA
Ashby, Wallace L., Point Republic, MD
Astronaut Trail Shell Club, W. Melbourne, FL
Austin Paleontological Society, Austin, TX
Barker, Jody and Family, Orlando, FL
Bell, Billy L., Naples, FL
Bergmann, Henry C., Tallahassee, FL
Bickner, Henry C., Jacksonville, FL
Bierworth, Michael A., Tampa, FL
Billybeck, Madelynne M., Moline, IL
Black, Adam, Jupiter, FL
Bone Valley Fossil Society, Orlando, FL
Boyette, Will, Orange Park, FL
Boyette, Mary Catherine, Orange Park, FL
Brayfield, Bill, Port Charlotte, FL
Brayfield, Mary Jane, Port Charlotte, FL
Bridell, A.M. and Mary, Sanibel, FL
British Museum of Natural History, London, England
Brooks, Joseph, Gainesville, FL
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Brown, Anita W., Lake City, FL
Brown, Donald, Gulfport, FL
Brown, Jim, Okeechobee, FL
Brown, Mary E., Sarasota, FL
Brown, Robin C., Ft. Myers, FL
Bryan, Jonathan R., Niceville, FL
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Butler, James D., Live Oak, FL
Butler, John J. and Family, Leesburg, FL
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Canadian Museum of Nature, Ottawa, Canada
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Cassady, Tim, Bascom, FL
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Conner, Suzanne, Hollywood, FL
Conway, Harriet T., Naples, FL
Cook, Harold A., Miami, FL
Cook, John and Marjorie, Waterford, MI
Cook, Lenda and Roy, Fernandina Beach, FL
Cooke, Russell B., Sarasota, FL
Cornish, Kenton, Scottsbluff, NE
Cozzini, Helen, Temple Terrace, FL
Crabb, Alan, Independence, IA
Dabbs, Clyde, Ft. Myers, FL
Dean, Cynthia, North Babylon, NY
DeRouin, Ed, Altamonte Springs, FL
Dew, Dr. Douglas K. and Erica, East Palatka, FL
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Dibrino, William J., Tampa, FL
Dillon, Anne C., Bryn Mawr, PA
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Dumas, Ruth S., Tequesta, FL
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Dyer, Harold D., Phoenix, AZ
Dykeman, Ray, San Antonio, FL
Dykes, Wiley and Joyce, Orlando, FL

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Eldridge, David and Priscilla, Hobe Sound, FL
Ellis, Larry, Winter Park, FL
Escoffier, Jim, Merritt Island, FL
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Geyer, Hillary, Madiera Beach, FL
Giddings, Jefferson B., Delray Beach, FL
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Goodman, Bobby A., St. Petersburg, FL
Grabda, David W., Myrtle Beach, SC
Greater Miami Shell Club, N. Miami, FL
Grubbs, Jeffrey L., Sarasota, FL
Gulf Coast Shell Club, Panama City, FL
Gulf Studies Foundation, Sarasota, FL
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Hartstein, Eugene, Orland Park, IL
Harvey, Louise M., Orlando, FL
Havenstein, Mark & Karen, Charleston, SC
Hayek, Charles & Bobbie, Seminole, FL
Haykin, Michael, Key West, FL
Heard, John K., Savannah, GA
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Hilas, Patty, St. Augustine, FL
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Howe, Jerry J., Spartenburg, SC
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Hyde, Jerry J., Jacksonville, FL
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Jacksonville Shell Club, Jacksonville, FL
Jacobson, Rena & Stephen, Tampa, FL
Jeremiah, Clifford, Jacksonville, FL
Johnson, Richard A., Tallahassee, FL
Johnson, Richard E., Vero Beach, FL
Johnson, Rudi, Tampa, FL
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Kindt, Eugene A., Fremont, OH
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Korn, Annette, Gainesville, FL
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Michelman, George R., Orlando, FL
Michaels, Stuart, Lutz, FL
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Miller, Mary C., Frostproof, FL
Miller, Robert, Ocala, FL
Miller, Robyn R., Jacksonville Beach, FL
Monroe, Don, Gainesville, FL
Moore, Ralph R., Sanibel, FL
Morey, Jerry & Sara and Family, Longwood, FL
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Morgan, Robert N., Miami, FL
Moseley, John, Gainesville, FL
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Naples Shell Club, Naples, FL
North Carolina Fossil Club, Durham, NC
Northwest Florida Shell Club, Shalimar, FL
Ober, Lewis D., Miami, FL
Oklahoma Geological Survey, Norman, OK
Ohlrich, Karl, Wimauma, FL
Oryktologika Nea-News on Minerals, Hellas, Greece
Oyen, Craig, Gainesville, FL
Palm Beach Shell Club, West Palm Beach, FL
Pendergraft, Susan and Jim, Largo, FL
Portell, Roger, Gainesville, FL
Page, Ed & McClughan, Yvonne, Largo, FL
Paleo. Society of Lee County, Alva, FL
Palumbe, Deborah, Temple Terrace, FL
Pankowski, Mark, Tallahassee, FL
Peterson, Robert M., Royal Palm Beach, FL
Pezzulich, William, Bartow, FL
Phillips, George, Artesia, MS
Powell, John R., Kernersville, NC
Powell, Peggy, Jacksonville, FL
Princeton University Library, Princeton, NJ
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Prusak, Zackary A., Clearmont, FL
Quina, Charlotte K., Lakeland, FL
Rhein, Frank, Stuart, FL
Ridgeway, Ray and Family, Tampa, FL
Ritter, Mrs. Henry W., N. Fort Myers, FL
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Robinson, Nelly, St. Petersburg, FL
Robinson, Ray, St. Petersburg, FL
Rochelle, Lynn, Tamarac, FL
Rollason, Liz, Inverness, FL
Rupert, Frank R., Tallahassee, FL
St. Petersburg Shell Club, St. Pete., FL
Sanibel-Captiva Shell Club, Sanibel, FL
Savoie, Lauren, Palm Bay, FL
Schafer, Edwin T., Sr., Omaha, NE
Schmelz, Gary W., Naples, FL
Schmidt, Dr. Walter, Tallahassee, FL
Schultz, Corinne M., Fort Myers, FL
Scott, Vaughn T., Jacksonville, FL
Shaak, Lester M., Harrisburg, PA
Shambaugh, Ronald B., Clearwater, FL
Shaw, Christopher A., Los Angeles, CA

Siegert, David O., Pasadena, MD
Sinibaldi, Dr. Robert, St. Petersburg, FL
Sizemore, Hunter, Largo, FL
Sizemore, Jon, Largo, FL
Skog, Judith E., Fairfax, VA
Sligh, Dean L., Orlando, FL
Smith, Jeremy & Diane and Family, Orlando, FL
Smith, Warren A., Roswell, GA
Smith, Wesley, Tampa, FL
Smithsonian Institution, Washington D.C.
Sobh, Dr. Atta Y., Beruit, Lebanon
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Southwest Florida Conchologist Society, Ft. Myers
Southwest Florida Fossil Club, Murdock, FL
Spitzkeit, James W., Gonzales, LA
Stacey, Roger B., Venice, FL
Steinker, Don C., Bowling Green, OH
Stephens, George & Harding, Lisa, Jacksonville
Stephens, Susan B., Sanibel, FL
Sullivan, Martha, Seminole, FL
Sullivan, Mary K., Frostproof, FL
Summerfield, Donald C., Jacksonville, FL
Suncoast Archaeological & Paleontological Society, St. Pete., FL
Tampa Bay Fossil Club, Tampa, FL
Tatum, Jim, Tampa, FL
Taylor, Andrew, Metairie, LA
Taylor, Craig C., Austin, TX
Taylor, Eric, Lake City, FL
Taylor, Scott, Dallas, TX
Thayer, Bill, Jupiter, FL
Thomas, Alice L., Punta Gorda, FL
Thomas, George R., Jacksonville, FL
Thomas, Margaret C., Hendersonville, NC
Thomas, Richard, Jacksonville, FL
Tillis, Rollin H., Norristown, PA
Time Sifters Archaeological Society, Sarasota, FL
Toomey, James K. and Lori, Bradenton, FL
Toomey, Barbara and Reed, Sanibel, FL
Treasure Coast Shell Club, Tequesta, FL
U.S. Geological Survey, Reston, VA
Valade, James A. & Vicky, Jacksonville, FL
Vandergronden, Bob, Tampa, FL
Van Valen, Leigh M., Chicago, IL
Vance, Robert R., Miami, FL
Vierra, Virginia M., Lutz, FL
Wagers, Charles, Fairfield, OH
Wagner, Ron, Apopka, FL
Wallbank, Bonnie L., Forrest City, FL
Waldrop, John, Lake Wales, FL
Walkuski, Thomas, Port Charlotte, FL
Ward, Patricia and Larry, Orlando, FL
Watkins, Nancy R., Gulfport, MS
Watson, Thomas C., Panama City, FL
Webb, S. David, Gainesville, FL
Webber, Eric, Panama City Beach, FL
Webster, Joyce, Branford, FL
Webster, William, Branford, FL
Weiland, Dr. Alan, Clewiston, FL
Whetzel, Marilyn, Bonita Springs, FL
Whisler, Phillip M., Gainesville, FL
Wierzbicki, Paul A., W. Palm Beach, FL
Wilder, Ruth H., Sarasota, FL
Wildfong, Bill and Cheryl, Maitland, FL
Wilson, Stephen and Roxanne, Arcadia, FL
Wilson, William L., Casselberry, FL
Winne, Clay & Brenda, Silver Springs, FL
Winner, Margaret J., Sarasota, FL
Winterbottom, Mark, St. Petersburg, FL
Wisenbaker, Michael, Tallahassee, FL
Wood, Art, Miami, FL
Woodard, Donald W., Clearwater, FL
Woodworth, Lewis A., Wesley Chapel, FL
Young, H.D. & W.D., Seattle, WA
Young, James S., Port St. Lucie, FL
Young, Norman C., Windsor, Ontario, Canada
Yule, John M. and Family, Lecanto, FL
Zack, Richard T., Plano, TX
Zack, Shawn P., Plano, TX
Zotti, Sandra, Coconut Creek, FL

Prep Talk

by Russ McCarty

Greetings from the bone lab! Spring has sprung--although, lately, it feels like summer has sprung too. 'Global warming' in action - who knows? I suppose it's all relative. Those cosmological human beings, astrophysicists, such as the totally cerebral Stephen Hawkings, who spends his life in the confines of a wheelchair pondering the universe, say that the average temperature of the universe and everything in it (stars, planets, galaxies, nebulae, dust clouds, assorted and sundry 'holes'- black, white and worm, and all other matter and energy in the universe, including green chili peppers and Florida) is one degree above absolute zero (-273.16 C +1 = -272.16 C.....that's about a minus 492 Fahrenheit for you traditionalists. Now, fellow antiquarians, let me say that at -272.16 C below 0, the universe, overall, is not a very warm place! I suppose the point I'm trying to make is that when the rest of the universe is a frozen hell, we should be grateful for a small hot corner like Florida.

Spring is also the time when our thoughts turn to reproduction. Of course, I'm referring to moldmaking and casting. Every collector has a few treasured specimens which they would like to have copied. A careful moldmaker can produce casts which are not only faithful reproductions of the original specimen, but once painted, are hard to distinguish from the original. At the Florida Museum of Natural History, we make casts of specimens with different goals in mind. Since the material and labor required to make a cast is not cheap, we have to be selective and choose wisely from the numerous choices available to us. Our primary reason for casting is to share valuable specimens. We send copies to researchers at other institutions, and also provide copies for display at small museums and nature exhibits within the state, and of course provide copies for display at the Florida Museum of Natural History. To a great extent, our casting effort is focused on providing amateurs with a copies of specimens they have donated to the museum. Profit is another motivation for casting specimens. Visit the gift shop of any large museum in the world and you will find beautiful reproductions of their most important specimens.

In the next few FPS Newsletters, I will introduce the reader to techniques and materials used in moldmaking and casting of paleontological specimens and cultural artifacts. Although strictly speaking moldmaking and casting are two different operations, I use the term "casting" to refer to the complete process (from making the mold to pouring the cast) of reproducing a specimen. For the purposes of this article, I will describe the use of silicone rubber molding compounds. They are safe, easy to use, and have long shelf lives compared to latex, and unlike urethanes, have less need of separators. Many companies make silicone rubber, Dow, General Electric, Rhone Poulenc, to name a few. I can recommend Silicone Inc., P.O. Box 363, 211 Woodbine, High Point, NC, 27261, Tel. (919) 886-5018. Call them for a catalog.

Moldmaking in a few easy lessons (or so)

To Cast or Not to Cast- That is the (first) question a moldmaker must consider before casting a specimen. It's an easy decision if the specimen is a clam shell or a cannon ball, but, a fossil cormorant skull can be another matter. Some specimens are so evidently fragile that staring at them can cause damage, while others, such as projectile points, or clams, seem virtually indestructible (unless you drop them on a cement floor). Moldmaking is always hard on specimens, some more than others. At the museum, curators and graduate students often request a cast of a specimen, but upon closer inspection, it is apparent that casting the specimen would either destroy it or cause serious damage. With complicated molds like those for skulls, vertebrae, or any object with multiple openings, holes, or recesses -- the unusual configurations that moldmakers call ***undercuts***, the act of removing the finished mold from the specimen can damage the specimen as parts of the rubber mold try to pull free from these undercuts. There is also a problem with molding rubber sticking tightly to porous surfaces of exposed bone. When the mold is removed from the original

specimen, portions of your mold can be left behind on the specimen. To add insult to injury, the moldmaker introduces exotic chemicals to the specimen -- acids, strong bases, and long, unpronounceable organic polymers. These chemicals probably do little harm to the specimen, but will sometimes dissolve the glue with which a specimen has been repaired. However, with care and the use of a good separator on the specimen, most specimens can be successfully cast.

As the Furry Freak Brothers said back in the 60's: "Words are Birds". If you want to learn how to do something, don't just read about it -- do it! With that said, let's start a simple mold. I will choose a projectile point as our first project. This specimen represents a large set of shapes that are frequently cast. I'm not referring to the triangular shape, but rather the fact that projectile points present the moldmaker with two symmetrical halves that do not have any troublesome undercuts. Similar objects (as far as moldmaking is concerned) are spherical things, shells, many limb bones, toe bones, medals, coins, and numerous other objects, which can be divided into two approximately equal halves. Such objects can be cast in two piece molds, with or without pour spouts. Our projectile point mold will not have a pour spout.

Prepping the Specimen- Preparing the specimen for casting is an important step towards making a mold that doesn't stress the specimen or rip apart as you try to remove it. Prepping is custom tailored for each specimen, since each presents different problems. The projectile point we are going to cast requires no prepping at all. However, an object like a bone that has numerous blood vessel and nerve foramina, or deep fossae can take up considerable prep time. To prevent the molding rubber from getting inside of a specimen, every hole, crack, or orifice of any kind must be plugged with clay or wax. We'll talk more about prepping specimens when we discuss more complex molds.

Set-Up- Since the projectile point doesn't need any prepping, we are ready to set it up for molding. It's best to set your specimens up on a sheet or board made of rigid material. This can be metal, plastic, plywood, glass, or any material on hand. The only requirements are that the sheet be several inches longer and wider than the specimen. This is to allow room for our border and keys. The specimen could be set up on a table or desk, but the advantages of having it on a board are that the specimen can be turned around to work on all sides.

If you lay the projectile point flat on the board, you will see that the edges of the point are not perfectly flush with the board, and if you were to pour rubber over the point, it would run under this edge. We must therefore fill in this undercut. In Figure 1, this area has been filled in with clay, or microcrystalline wax. You will also notice the keys in Figure 1. In this case, they are elongated, flattened (truncated) pyramids, 1 1/2" long, 1/2" high, and 1/3" wide. I usually make them from clay, however, wood will do as well. Clay keys will adhere to your setup board. With wooden keys, you will have to tack them down with a reversible adhesive, such as hot glue. Keys should follow the outline of the projectile point and be no more than 1/2" - 3/4" away from the edge. Keys lock the different pieces of a mold together and align the edges of the actual impression. **McCarty's 1st Law of Casting** is: "You can't have too many keys!"

Pour Spouts- Molds for thin flat objects, like our projectile point, are not usually made with pour spouts. Without a pour spout there is only one way to get casting resin into the mold, and that is to pour resin into both halves. If the resin has not been thickened by addition of a filler material, putting two halves of the resin filled mold together can be tricky. Pour spouts can be made out of clay, wax, or other materials. They are usually shaped like inverted cones or pyramids that have been flattened. Since a pour spout will become part of the cast (and is normally trimmed off) it must be so placed on the specimen that it will not cover or obscure any important feature. They are often placed so that they lie in the seam of a two piece mold, and each mold half contains half of the pour spout. We will demonstrate pour spouts when we tackle more complex molds later.

Dams- Besides being expletives uttered by frustrated moldmakers, dams, by confining the rubber which we pour over a specimen, determine the shapes of our molds. Normally, I roll out a clay strip, and cut it to proper length and width, and erect this wall

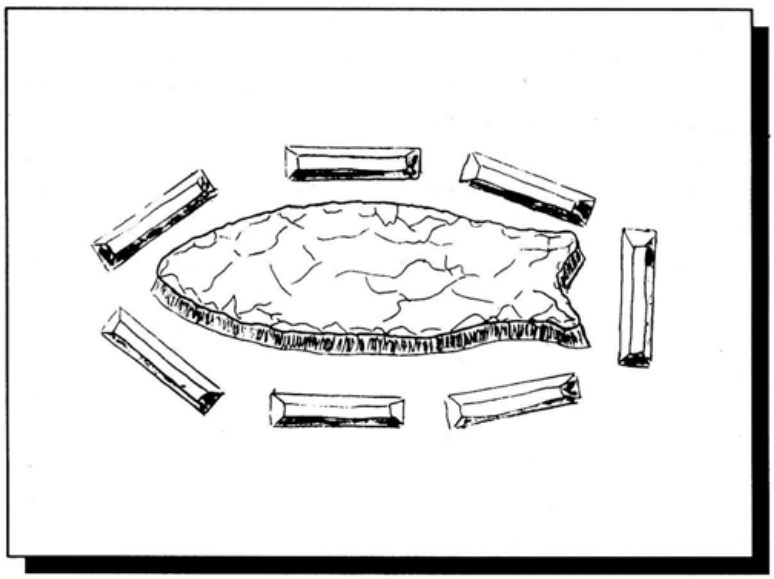

Figure 1. Projectile point is set up on a board that is big enough for the point and a two inch border around the point. This border will contain the keys and the dam, which determine the shape of the mold. Undercuts beneath the point's edge are filled with clay or micro-crystalline wax. Keys, shaped like flat-topped pyramids and made from clay or wax, are placed around the border. These will cause the two mold halves to interlock.

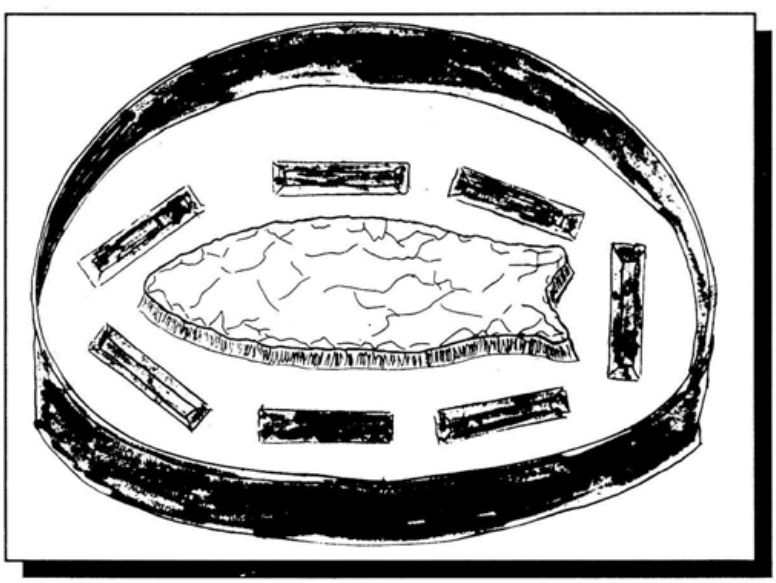

Figure 2. A clay dam is constructed around the specimen and keys. To insure proper thickness of the mold, the height of the dam should be at least one inch higher than the highest point of the specimen (as it is laid out on the board).

around the specimen and keys (see Figure 2). Since I am stingy with casting rubber, I place the dam pretty close to the keys (no more than 1" away from them). This makes the mold smaller, but does not effect its quality. A word of caution about clays, here. I use modeling clay extensively in the casting process, but not all clays will work. Many modeling clays available from art stores contain sulfur compounds which retard silicone rubber's curing. Permoplast Modeling Clay, manufactured by the American Art Clay company, is a "clean" clay which is widely available. If you're unsure about the clay, try a small amount of rubber in a clay mold. If it cures normally, the clay is clean.

As with keys, dams can also be made from other materials. Card stock thickness paper can be used, but it must be adhered to the sheet with wax or hot glue.

Separators- We are almost ready to make the first half of the mold. This is the time when we need to apply any needed separators. Whether a separator is required will depend on two factors: 1) the type of molding material being used, and 2) the material and surface texture of the specimen. Since we are using silicone rubber, which does not adhere (chemically) to anything except itself, factor #1 does not concern us. **(A Note of Warning Here! Do not confuse silicone caulking compound for silicone molding rubber.)** Silicone caulking compound, which some people use to make substandard molds, will stick to everything if a separator is not used -- glass, plastic, metal, and your specimen. As for factor #2, silicone molding rubber will lock in (physically) to certain textures, but our projectile point, with its smooth, nonporous surface of hard chert, will not require a separator. On fragile specimens, skulls, and bones with rough textured areas, I generally apply a separator of full strength green dish washing detergent (Palmolive is best).

Preparing the Molding Compound- Silicone molding rubbers are available in different types depending on hardness, elasticity, tear strength, and viscosity. The normal catalyst used with the rubber bases has a curing time of 18-24 hours. Most companies also sell rapid catalysts with curing times of 30-60 minutes and working times of 3-4 minutes. The product I prefer is the GI Series produced by Silicone Inc. A two piece mold without a pour spout, like the one we are making for the projectile point, is best made with a hard rubber, one which will resist deforming when weight is applied to the mold. GI 1000 is a moderately hard silicone rubber, and the one I will use for this project. The ratio of GI 1000 base to catalyst is 10 to 1, i.e., 10 parts rubber to 1 part catalyst **(by weight, Not volume!)** You will need a scale or balance to measure out exact quantities. Guesswork doesn't work in moldmaking. Too much or too little catalyst and the rubber never cures.

Place an empty container (I use clear plastic urine sample cups that hold about 7 ounces volume) on a scale or balance and adjust the weight back to zero to account for the container. Weigh out enough rubber to cover your specimen, the keys, and to fill an area within the dam to a uniform depth. It's wiser to weigh up several smaller batches as needed so as to not waste rubber. To make calculations easier, I weigh things out in factors of 10, e.g., to give the 10:1 ratio of GI 1000, 100 grams of rubber requires 10 grams of catalyst, 10 ounces (by weight) of rubber needs 1 ounce of catalyst, and so on. From experience, I know that it will take about 200 grams of rubber to make this half of the mold, so I will weigh out two successive batches of rubber of 100 grams each. Adding 10 grams of catalyst to a batch will bring the total weight up to 110 grams. Stir the catalyst into the rubber. Most of Silicone Inc.'s catalysts have a blue color, so when the blue is uniformly mixed, you know the catalyst is mixed. After mixing, I de-gas the mixture in a vacuum chamber to remove air bubbles. If you can't de-gas the rubber, just let it sit for 10 minutes before pouring it (with the regular catalyst you have a working time of at least an hour). Pour the rubber on one spot and let it flow slowly until it covers the specimen completely. If you can't de-gas the rubber, you should begin by pouring a small amount over the projectile point and going over it with a brush to insure that all of the point's surface and edges are free from bubbles and have a coating of rubber. Now you can pour the rest of the rubber, letting it flow over the point as described earlier. To produce a strong, durable mold which can generate many casts, you need to be sure that the level of the rubber is at least 1" above the highest point of the specimen.

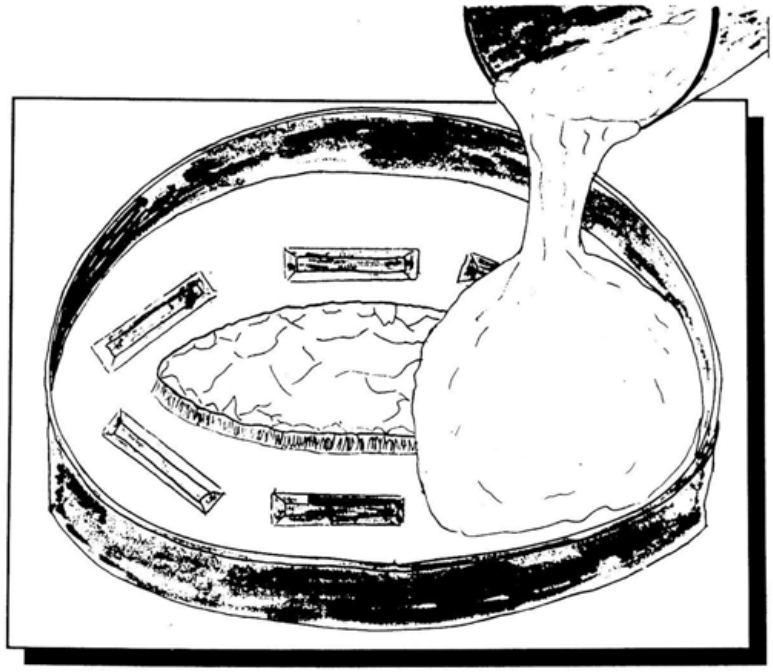

Figure 3. Molding rubber is poured onto the specimen. To minimize air bubbles, it is best to pour the rubber onto one spot and let it flow slowly over the rest of the specimen.

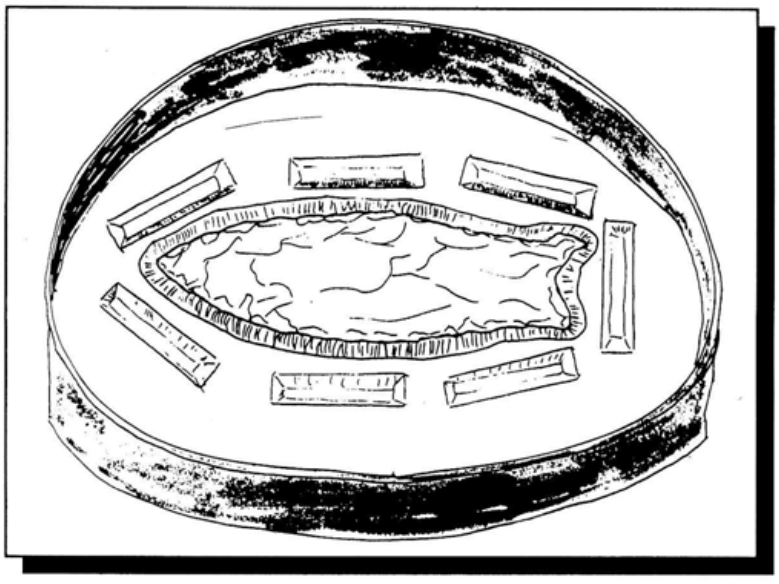

Figure 4. The completed first half of the mold is turned over and a clay dam is formed around the mold. As before, the dam should be at least an inch higher than the highest point of the specimen. Remember to coat the exposed mold half with a light coat of vaseline so that the second half doesn't stick to the first half-mold.

With the normal catalyst, the rubber will cure in 18 - 24 hours. If the rubber is soft and still a bit sticky, wait a few hours, even a day. You may have gotten your proportions of base and catalyst a bit wrong. When the rubber is cured and hard, remove the dam, and gently lift the mold from the sheet. Turn the mold over and lay it on its back with the reverse side of the projectile point facing you. The projectile point should remain embedded in the rubber; if not, put it back into position. **At this point, it is very important to apply a thin coat of vaseline to the exposed mold half and keys.** We are going to pour a new layer of rubber over this face of the mold. Vaseline will prevent this new layer from sticking to the old layer and turning our two piece mold into an unopenable one piece mold. Once a separator has been applied, the old dam can be replaced around the mold half, as shown in Figure 4. Now, a new batch of rubber is mixed and poured as was done for the first side. After this side cures, the dam can be removed and the two halves separated. Sometimes, when the dam is not too tight around the first half mold, a thin layer of rubber will leak down the side and hide the seam between the two halves. You can avoid this by putting vaseline around the edge of the first mold half before securing the dam to it. Regardless, as long as you haven't forgotten to vaseline the surface of the first half mold, you will be able to find the seam and work your finger through it until both halves separate. Figure 5 shows the completed two piece mold. The keys will lock the two halves together tightly and keep the edges of the specimen in true alignment. Since our mold is fairly thick, and made from a hard rubber, we need not concern ourselves with "mother molds", the rigid plaster or plastic shells which help thin molds retain their shape. More about mother molds later.

In the next newsletter, we will produce a cast and look at different casting materials such as urethane resins, epoxies, and polyesters.

Please address questions or comments to:

Russ McCarty
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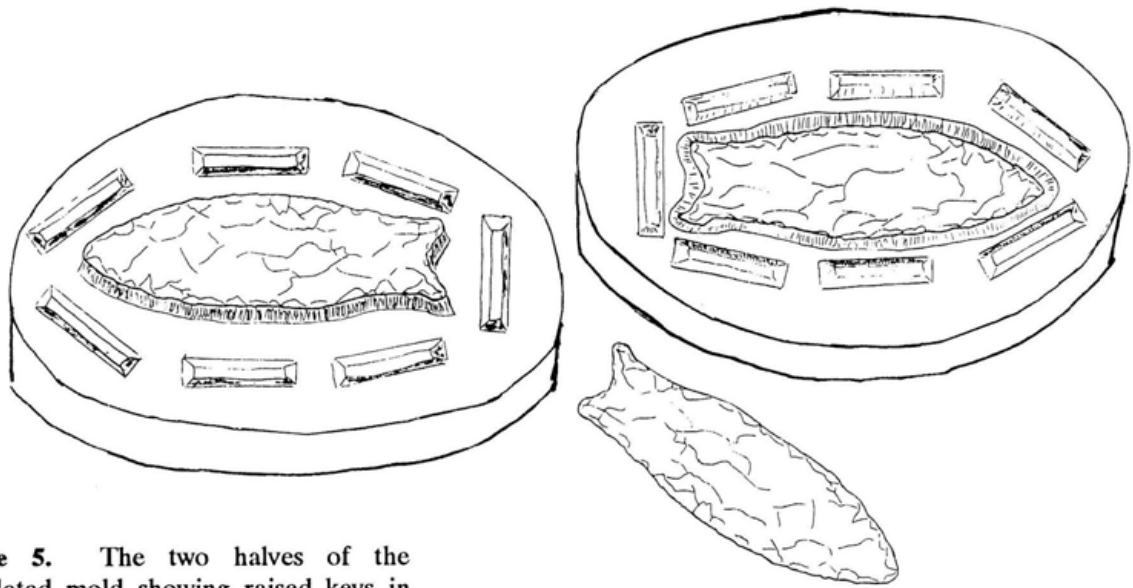

Figure 5. The two halves of the completed mold showing raised keys in one half and negative depressions in the other half. These features serve to accurately register and line up the two halves of the mold.

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DEMONSTRATION by FRANK GARCIA. Frank is a Smithsonian Research Collaborator and a noted paleontologist from the Tampa Bay Area. He will demonstrate how to prepare fossil remains found in the field for movement to an indoor workshop. Time of demonstration and lecture: Saturday, Oct. 22 at 10:00 a.m.

DEMONSTRATION by TONY ESTEVEZ. Tony is an amateur fossil hunter and dealer. He is well known in the Tampa Bay Area. He will demonstrate Paleo Preparatory Techniques (fossil repair). Time of his workshop: Sunday, Oct. 23 at 2:00 p.m.

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Fossils Are Where You Find Them!
(But Sometimes You Shouldn't Keep Them!)

by Eric Taylor

Instead of spending this quarter's FAWYFT talking about the further adventures of an intrepid fossil finder and Indiana Jones wannabe, I thought it would be appropriate to climb aboard my mighty laundry detergent bucket and sound off about a couple of troubling trends that I have observed around the state and nation over the past couple of years.

There has been a great deal of sound and fury over attempts by governmental agencies to regulate the collecting of vertebrate fossil remains from Federal and State lands in the past two years. In my position as Secretary of the FPS, it has been my pleasure to correspond with people from places like Arizona and New Mexico and to read opinions printed in newsletters and journals from here in Florida and from as far away as Greece. Some trends have emerged from all of this verbiage that I think need examining.

There has been a significant amount of overreaction on the part of many amateur collectors and dealers in paleontological material. Rumors have spread like wildfire only to be proven false after a period of time. In my opinion, some recognition needs to be granted to the facts of governmental processes. In general, all regulations are initially written up by people who know little or nothing about the impact of what they propose. An effective way to successfully influence the final nature of those regulations is through rational, logical input about the result of those regulations. Exaggeration, hyperbole, and panic probably won't have that result.

Some players in this game would have us believe that no regulation is required. While I chafe under restrictions as much as the nextbone-picker, it has become clear to me that some members of the amateur clan have brought the wrath of the regulator down on the rest of us through unscrupulous conduct that reminds me more of a bunch of bank robbers than of those with a serious interest in paleontological science. Heavy machinery has been used to extract massive amounts of material in big chunks. Sites have been raided, intact specimens destroyed to sell in small, readily marketable pieces. Scientifically critical specimens have been sold to private collectors for exorbitant sums. All of this has forced those whose entire life has been built around preserving the fossil record for the entire world to turn to regulators for assistance in curbing these excesses. Since the scientific community has no resources to compete with private funding, they really had no choice.

Despite the above, the future is not all dark for those of us who view fossils as a hobby and not a life's work. Most professional paleontologists recognize how miserable their lives would be without amateur input. All you have to do is read magazine articles, watch TV programs or read interviews with people like Bob Bakker, Bruce MacFadden or other well known figures in the science to know that they realize that many of the initial discoveries and a huge amount of the grunt work has to be done by insurance agents, construction workers and state employees. Certainly, the number of supporters of amateur involvement vastly outweighs the few who have a "Them is my rocks!" attitude.

In illustration, I would use the state of the hobby here in Florida. The professional paleontologists in the state tend to welcome the input and help of the amateur community. They are willing to share information, help identify

finds, gratefully accept donated specimens, and respond in appropriate manner to newly discovered sites. The FPS serves as a powerful conduit for exchange of views and information in this case, and it is hard to imagine what the state of the hobby would be without such an organization. Other states with good relationships between the various facets of the hobby have similar kinds of organizations. Those without such organizations as the FPS have problems.

As far as helping to stomp out the forest fires of conflict around the country goes, I urge all FPS members to take a few moments to rededicate yourself to a purer form of involvement in paleontology.

A. Pledge to let someone in the professional ranks know when you find something new and important (and it is much more likely to occur in Florida than almost anywhere else in the eastern US) and to donate, not sell, the find to the appropriate center of learning for the edification of professional and amateur scientists in all the years to come.

B. Learn all you can about the fields you are interested in. Read, study and talk to the pros whenever you get a chance.

C. Put pressure on your friends and neighbors to act responsibly.

D. Write to your legislators and explain in the clearest, most concise and logical way possible why over-regulation is just as deadly as under-regulation.

E. Don't respond to inaccurate, emotional, or false appeals. Read and understand what is really being proposed instead of what someone wants you to believe is being proposed.

Next quarter we'll talk again about the kinds of exciting and interesting things that are out there for you to find. All you have to do is look!

A Fossil Hunter's Guide to the Geology of the northern Florida peninsula

Frank R. Rupert, P.G.
Florida Geological Survey

In the last issue of this newsletter we examined the geology of the Florida panhandle, and how it influences fossil collecting localities in that region. We continue here with a discussion of the stratigraphy and paleontology of the northern peninsula of Florida.

The northern Florida peninsula extends, for our purposes, from Madison County eastward to Nassau County, and southward to a west-to-east line corresponding to the southern county boundaries of Pasco, Sumter, Lake, and Orange Counties. This region contains its own unique character, and is transitional from the hilly, topographic highlands of the panhandle to the low, flat terrain characteristic of southernmost Florida.

Based on the work of White (1970), the northern peninsula is generally subdivided into four broad geomorphic zones: the Northern Highlands, comprised of topographically higher uplands; the Gulf Coastal Lowlands, a flat, low-lying plain bordering the Gulf coast; the Central Highlands, a series of topographic ridges punctuated by elevationally-lower valleys, and the Atlantic Coastal Lowlands, a zone of low, flat topography bordering the east coast, and fringed by the persistent Atlantic Coastal Ridge system. Figure 1 is a geomorphic map of the northern peninsular region. For interested readers, White (1970) provides a more detailed discussion of many of the features mentioned herein.

The northwestern and north-central portions of the peninsula are comprised of elevational highlands of the northern Highlands zone. These stream-dissected, gently-rolling hills are remnants of an extensive upland spanning the northern edge of the state and extending into southern Alabama and Georgia. In the northern peninsula, these highlands are typically elevationally-lower vestiges of the highest hills in the state, which are situated to the west in the north-central panhandle. Madison County contains the eastern end of the Tallahassee Hills subzone of the Northern Highlands, which extend to the Madison-Hamilton County line. To the east, the remaining hills generally become lower and more gently-rolling. At the eastern edge of the Northern Highlands is a relict marine feature, possibly a beach ridge, named the Trail Ridge. This ancient sand body is mined for both quartz sand and heavy minerals.

Bounding the southern and western edges of the Northern Highlands is a relict marine escarpment named the Cody Scarp. It forms the most persistent topographic break in the state and marks the former shoreline position of a high-standing Pleistocene sea. The Cody Scarp serves as a boundary between the Northern Highlands and the elevationally-lower Gulf Coastal Lowlands to the south and southwest.

The Gulf Coastal Lowlands ring much of Florida's Gulf coast. In general, this zone consists of a flat, sandy, gently sea ward-sloping plain associated with Pleistocene marine erosion. It is a region of pine flatwoods, moist hammocky terrain, and coastal salt marshes. Surface rivers and streams flow to the Gulf in channels incised in the limestone bedrock. Some connect through sinkholes with an extensive subsurface karst drainage system, comprised of interconnected water-filled sinks, caves, and springs.

Eocene and Oligocene limestones are near or at the surface over much of the lowlands area. These limestones are typically covered by a variably-thick veneer of Quaternary sands, clayey sands, and discontinuous shelly sands left behind by high-standing Pleistocene seas. Relict marine features such as sand bars, beach ridges, and dunes are still visible in many areas of the Gulf Coastal Lowlands. Numerous limestone and dolostone mines dot the lowlands region, and where accessible, offer invertebrate fossil collecting opportunities.

The Central Highlands collectively comprise a series of coast-parallel ridges and intervening valleys. In general, the various ridges and valleys, as the names imply, are differentiated primarily on

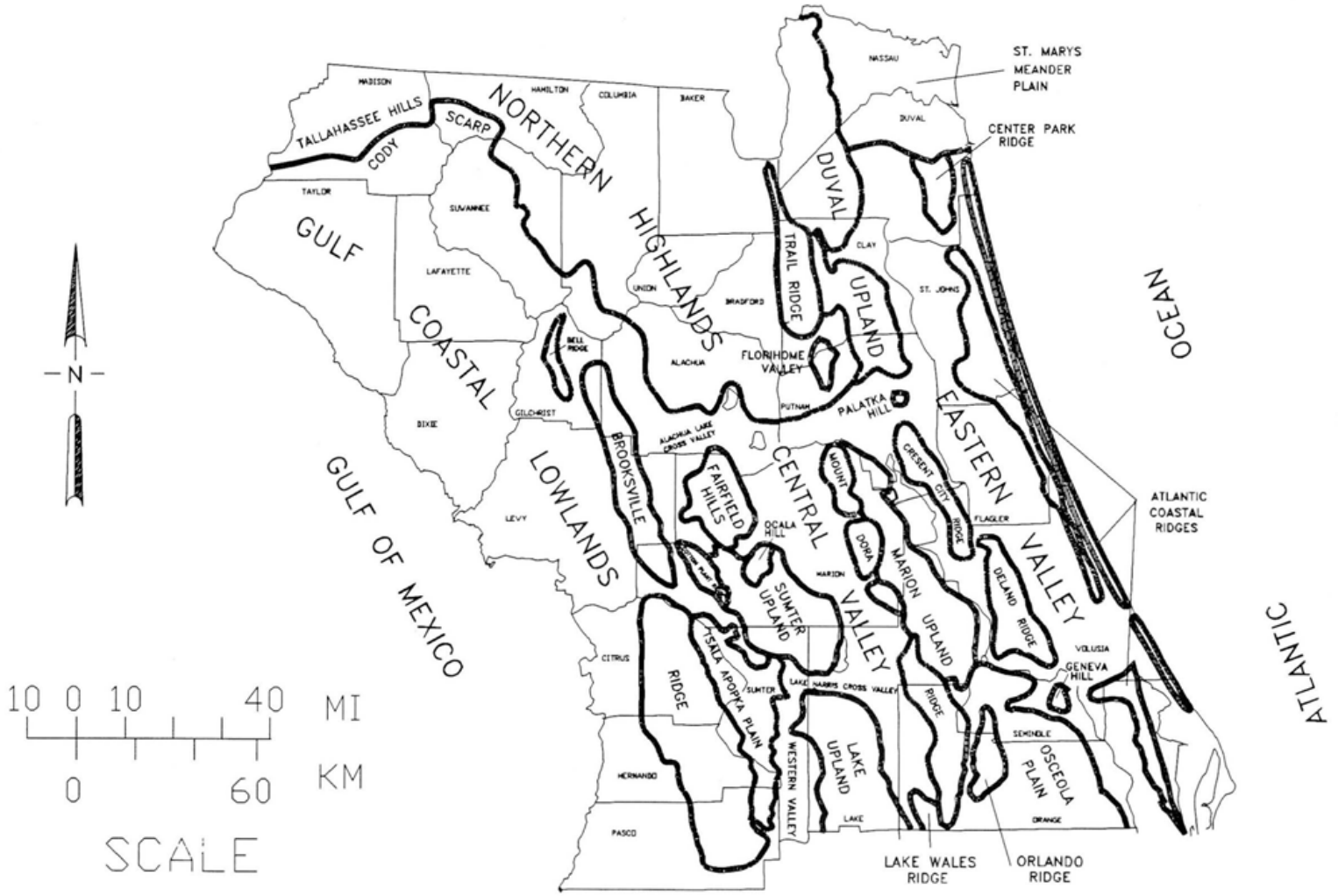

Figure 1. Geomorphic map of the northern Florida peninsula.
(modified from White, 1970)

elevation. Elevations along portions of higher ridges, such as the Brooksville Ridge reach 300 feet above mean sealevel. In the valleys, elevations between 50 and 100 feet above mean sealevel are typical.

Marine and fluvial erosion, coupled with karst dissolution of the carbonate bedrock, were major factors shaping the geomorphology of this region. In some areas, such as the Central Valley, lowering of the land surface likely occurred due to extensive dissolution of the underlying carbonate rocks. Carbonates are commonly very close to the land surface in the lowland valleys on the western side of the peninsula. Karst features, such as springs and large sinkhole lakes, occur throughout the Central Valley. Silver Springs, near Ocala is the larger of the numerous freshwater springs dotting the Central Valley area. Smaller springs, flowing crystal clear freshwater from the Ocala Limestone, provide popular swimming areas throughout the local Ocala National Forest. The valleys also typically contain the major surface water streams, such as the Oklawaha River, which snakes its way northward through central Marion County.

The shallow nature of the carbonate bedrock in areas such as portions of the Central Valley make them suitable regions for economic mining of limestone. A number of older mines are scattered over the Central Valley, especially in Marion County, north and south of the city of Ocala. A few still operate in the vicinity of Ocala.

Many of the topographic features in the Central Highlands were shaped, at least in part, by high-standing Miocene through Pleistocene seas. Elongate highlands such as the Brooksville and Mount Dora Ridges trend southeastward at nearly the same orientation as the modern peninsula. The ridges may have, at one time, been part of an extensive highland area subsequently divided by erosional and dissolutional valleys into discreet highland segments. These ridges are typically comprised of Miocene and Pliocene siliciclastic sediments, overlain by variably-thick Quaternary sands. Interior hills and ridges such as the Fairfield Hills and Marion Upland are comprised of essentially in-place, older sediments. Others, like the Brooksville Ridge, are built in part of sediments reworked from older formations by marine currents and wave activity.

The Atlantic Coastal Lowlands are comprised of several distinct geomorphic zones. Along the eastern edge of the northern Florida peninsula, the Eocene and Miocene formations dip, and hence deepen, to the northeast. Thick deposits of undifferentiated sands, clayey sands, and shell beds are the predominant near-surface sediments. At the northeastern corner of the state, the St. Mary's Meander Plain is, as its name implies, a low, flat fluvial plain shaped largely by the meandering of the St. Mary's and Nassau Rivers. Further south, the Eastern Valley comprises a generally flat, sandy region lying 25-30 feet above mean sealevel. Numerous relict beach ridges throughout the extent of the Eastern Valley suggest it may represent a Pleistocene beach ridge plain. Bordering the Atlantic edge of the Eastern Valley is a narrow ridge comprised of sand and shelly sands named the Atlantic Coastal Ridge. This ridge extends, with a few breaks, from east-central St. Johns County southward to the vicinity of the town of Homestead, in southern Dade County. Seaward of the ridge lie the sandy beaches, barrier islands, and lagoons of the Atlantic Coast.

Both the geomorphology and the geology of the northern Florida peninsula are strongly influenced by subsurface structural features. Figure 2 illustrates the major structures affecting this region. Perhaps the most significant is a

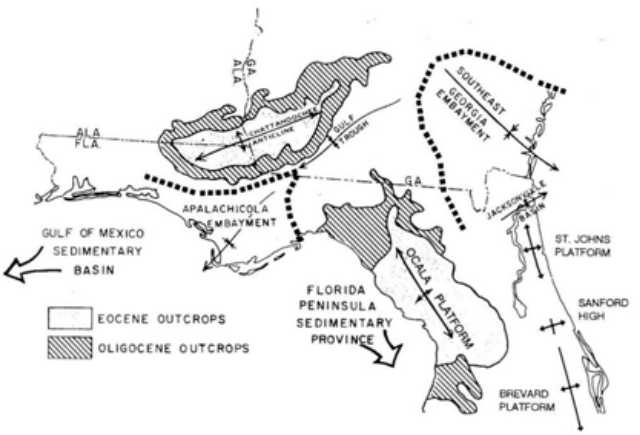

Figure 2. Geologic structures in northern Florida (from Schmidt, 1984 and Scott, 1988)

broad, structurally positive feature named the Ocala Platform (Scott, 1988), centered under the central Big Bend area. Cenozoic formations lap up onto the western flank of this feature, and dip

northeastward off the eastern flank into a broad sedimentary basin named the Southeast Georgia Embayment. The Ocala Platform brings Eocene carbonate rocks to the surface over the crest of the structure in Levy and Citrus Counties. Oligocene and Miocene units lap up onto the edges of the platform in a younger-outward concentric pattern. The shallow Eocene and Oligocene carbonates form extensive karst plains over much of the western portion of the northern peninsula. To the east the Oligocene sediments are absent. As the Eocene carbonates and overlying Miocene sediments dip away off the eastern flank of the platform, siliciclastic sediments become the predominate near surface sediments.

Three other positive structural features, situated along the eastern edge of the northern peninsula, also influence the Eocene and younger sediments. The Sanford High is located under Seminole and Volusia Counties; Ocala Limestone and Hawthorn Group sediments are missing from the crest of this feature, presumably due to erosion. The Avon Park Formation directly underlies the thick Plio-Pleistocene sediments in this area. The St. Johns Platform and Brevard Platform are low, broad ridges on the erosional surface of the Ocala Limestone. None of these features directly influence the surface geology.

Figure 3 is a generalized geologic map of the northern peninsula, and Figure 4 illustrates two cross sections through the area. The geologic map,is constructed to show the extent of the formations as they occur within 20 feet of land surface. Each formation may be more extensive in the subsurface, but because each eventually dips below the arbitrary 20 foot depth or pinches out, their entire extent is hidden by shallower units shown on the map. Areas underlain by more than 20 feet of undifferentiated Quaternary sands are shown as white areas on the map.

Cross section A-A' in Figure 4 curves southward from Jefferson County, approximately following the eastern periphery of the Ocala Platform. This section shows the "high" attained by the top of the Eocene Ocala Limestone over the flank of the platform, as well as the on-lap of the Oligocene Suwannee Limestone at the western edge of the platform. Section B-B' trends southwest-to-northeast across the peninsula, illustrating the northeastward dip of the Eocene Avon Park Formation, the Ocala Limestone, and the overlying Miocene Hawthorn Group as they lap off the eastern edge of the Ocala Platform. A cursory comparison of Figures 1 and 3 reveals coincidence between many of the geomorphic zones and features and the areal extent of certain geologic units. For example, the Gulf Coastal Lowlands and the interior valleys are largely underlain by Eocene and Oligocene carbonates, while the Northern Highlands and many of the upland areas of the Central Highlands are comprised of Miocene or Pliocene siliciclastics.

The karst plain areas of the Big Bend coast are primarily composed of Middle Eocene to Oligocene marine limestones and dolostones. The oldest exposed rock in Florida, the Middle Eocene Avon Park Formation, occurs near the surface over the crest of the Ocala Platform in southern Levy and northern Citrus Counties. Here it is typically a cream to tan dolostone. The Upper Eocene Ocala Limestone unconformably overlies the Avon Park Formation, and comprises the bedrock over a broad area of the coastal Big Bend. It also floors many of the valleys of the western part of the Central Highlands zone. This white to cream-colored marine limestone typically contain abundant foraminifera, bryozoans, mollusks, and echinoids. It is mined in many of the counties situated over the Ocala Platform for use in cement and as roadbed material. Paleo-sinkholes and crevices encountered during mining may contain Pleistocene sediment fill, which has proved to be a source for excellent Pleistocene vertebrate material. Most of the karst plain areas in the Big Bend are overlain by undifferentiated sands of variable thickness. These sands may locally be thick enough to form mappable units.

The Oligocene Suwannee Limestone is brought to the surface along the northwestern flank of the Ocala Platform, in Taylor, Madison and Hamilton Counties, and at the southern edge of the platform in Pasco and Hernando Counties. It forms the shallow bedrock in most of Taylor County, and crops out along the Suwannee River between the towns of White Springs and Ellaville. This unit is also mined for roadbase material in Taylor, Hernando, and Pasco Counties. The Suwannee is typically a fossiliferous marine limestone containing mollusk molds and occasional specimens of the characteristic guide fossil

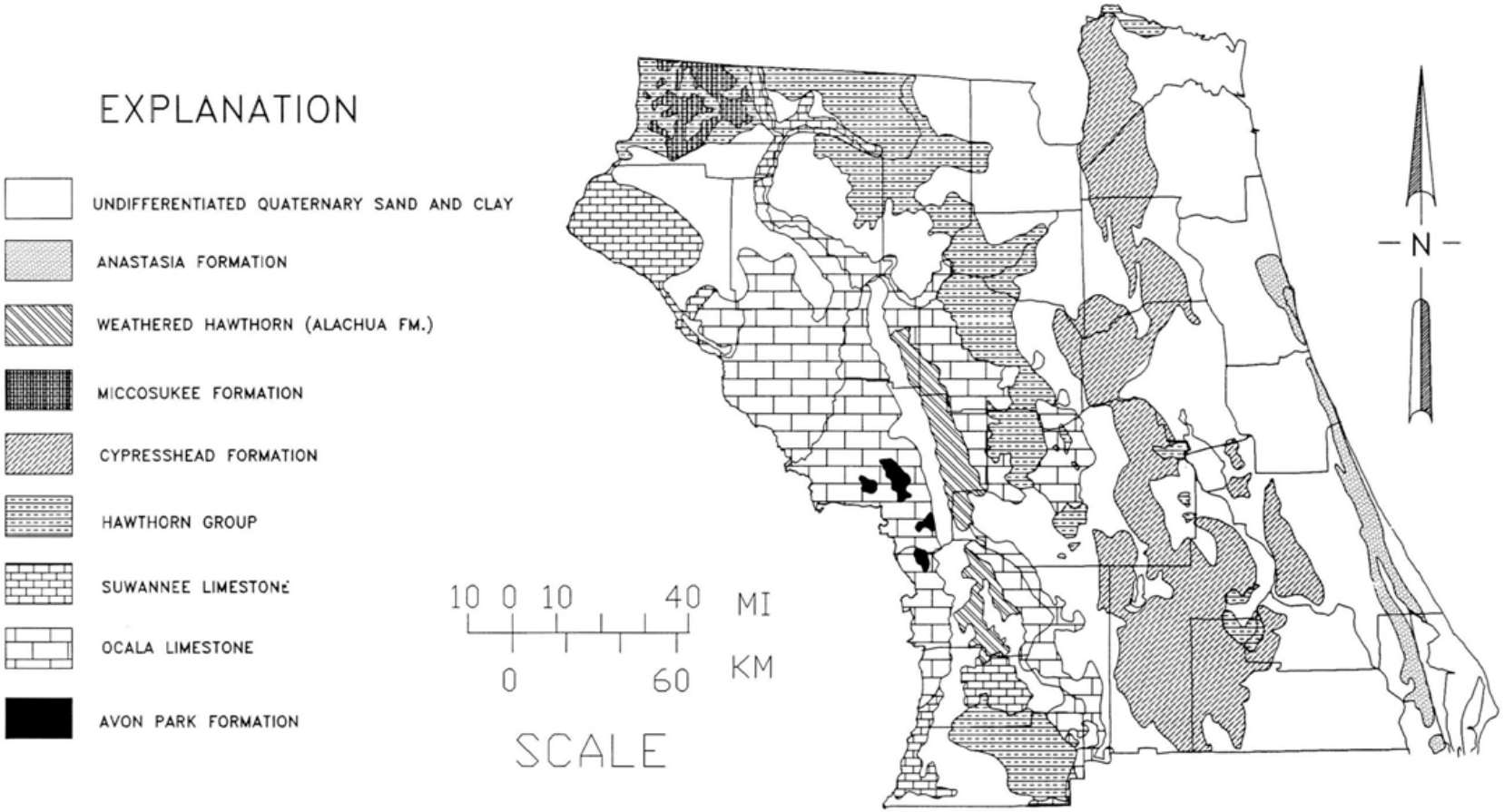

Figure 3. Geologic map of the northern Florida peninsula.

(modified from Arthur, 1993; Campbell, 1992a-c; Campbell, 1993a-c; Campbell and Scott, 1992 and 1993; Rupert and Campbell, 1993; Rupert et al., 1993; Scott, 1992a-j; Scott, 1993a-d; Scott and Campbell, 1992)

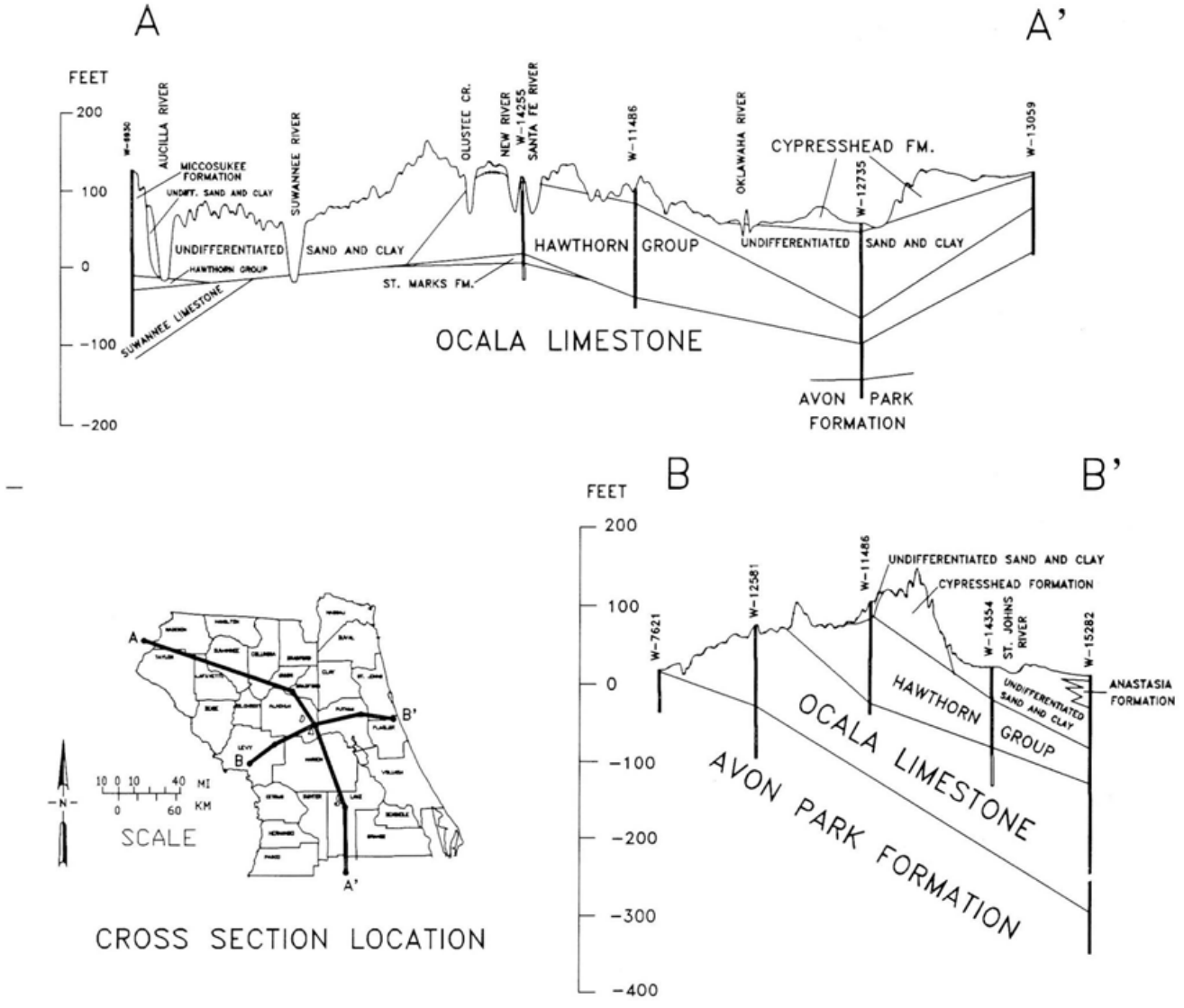

Figure 4. Geologic cross sections in the northern Florida peninsula.

echinoid *Rynchol ampus gouldii*.

The Miocene Hawthorn Group overlies the Ocala Limestone and, where present, the Suwannee Limestone. It forms the hilly terrain of the Northern Highlands and comprises selected ridges in the Central Highlands, including the Fairfield Hills, Ocala Hill, and the southern end of the Brooksville Ridge. The Hawthorn is generally missing in the Gulf coastal portions of the northern peninsula, and dips and thickens under northeastern Florida. Commercial deposits of phosphate are mined from the Hawthorn in Hamilton County. Fullers earth clay, which is crushed to make cat litter, is also mined from the Hawthorn in central Marion County. Numerous vertebrate fossils have been found in Hawthorn sediments statewide. These range from shark teeth and dugong bones to horse fossils to the famous gomphotheres of the Moss Acres site in Marion County. The Hawthorn is commonly exposed in stream banks in the Northern Highlands zone, offering some easily-accessible fossil hunting sites.

Many of the ridges of the eastern part of the Central Highlands are comprised of the Pliocene Cypresshead Formation. This generally unfossiliferous unit consists primarily of clayey, gravelly sands, thought to be an ancient marginal marine deposit. The deeper water equivalent of the Cypresshead Formation is a molluskan-fossiliferous shelly sand named the Nashua Formation. The Nashua crops out in a small area along the St. John's River, near the town of Nashua in Putnam County.

A similar age unit, the Miccosukee Formation, caps hill tops in Madison County, at the eastern end of the Tallahassee Hills. As with the Cypresshead Formation, the clayey sands of the Miccosukee Formation are generally unfossiliferous, although Olsen (1963) reports one vertebrate fossil site in this unit in Jefferson County.

The northern portion of the Brooksville Ridge is comprised of interbedded clay, sand, and sandy clay of varying lithologic character, and containing vertebrate fossils ranging from Middle Miocene to Plio-Pleistocene in age. Older literature assigned these sediments to a unit named the Alachua Formation. These diverse sediments are now thought to represent weathered and/or reworked Hawthorn Group sediments (Scott, 1988).

Large areas of the eastern half of the northern Florida peninsula are mapped as undifferentiated Quaternary deposits, primarily sands and clays. These sediments attain substantial thicknesses as the older Eocene through Miocene units dip northeastward into the Southeast Georgia Embayment. Portions of the Atlantic Coastal Ridges, are formed of sands, shelly sands, and mollusk coquina of the Pleistocene Anastasia Formation. Anastasia coquina is comprised largely of fossil mollusk shells cemented together into a porous rock. It was quarried on Anastasia Island by the Spaniards and used to build the Castillo de San Marcos, a 17th century fort in St. Augustine. The Anastasia Formation crops out sporadically along the Atlantic coast. An excellent exposure is present on the beach at Washington Oaks State Park, south of Marineland in Flagler County.

Fossil Hunting Opportunities

Fossil collecting sites in the northern Florida peninsula are many and varied, but typically require diligent searching on the part of the fossil hunter. The region offers both invertebrate collecting, particularly in quarries and along river banks, and vertebrate fossils in river beds, on beaches and in sinkhole fill material from quarries. Figure 5 provides a generalized location map for some of the ideas presented here. Some additional detail is provided by Figure 6, a figure from Puri and Vernon (1964) showing classic geologic sites of the region. Keep in mind that the latter figure is 30 years old, and was prepared as a field trip guide. Much of the site ownership and access information is likely obsolete.

As with most of the state, many potential fossil sites are on private property, or else require traversing private property to get to them. Therefore, please use discretion and common sense when hunting, and respect the property rights of others. Always seek permission before entering anyone's land, posted or not. Once there, respect the integrity of the land, avoid destructive digging, and leave it as you found it. This will ensure continued future access to the sites, a very important consideration in these days of rapidly dwindling collecting areas.

For those seeking Eocene and Oligocene invertebrates such as mollusks and echinoids,

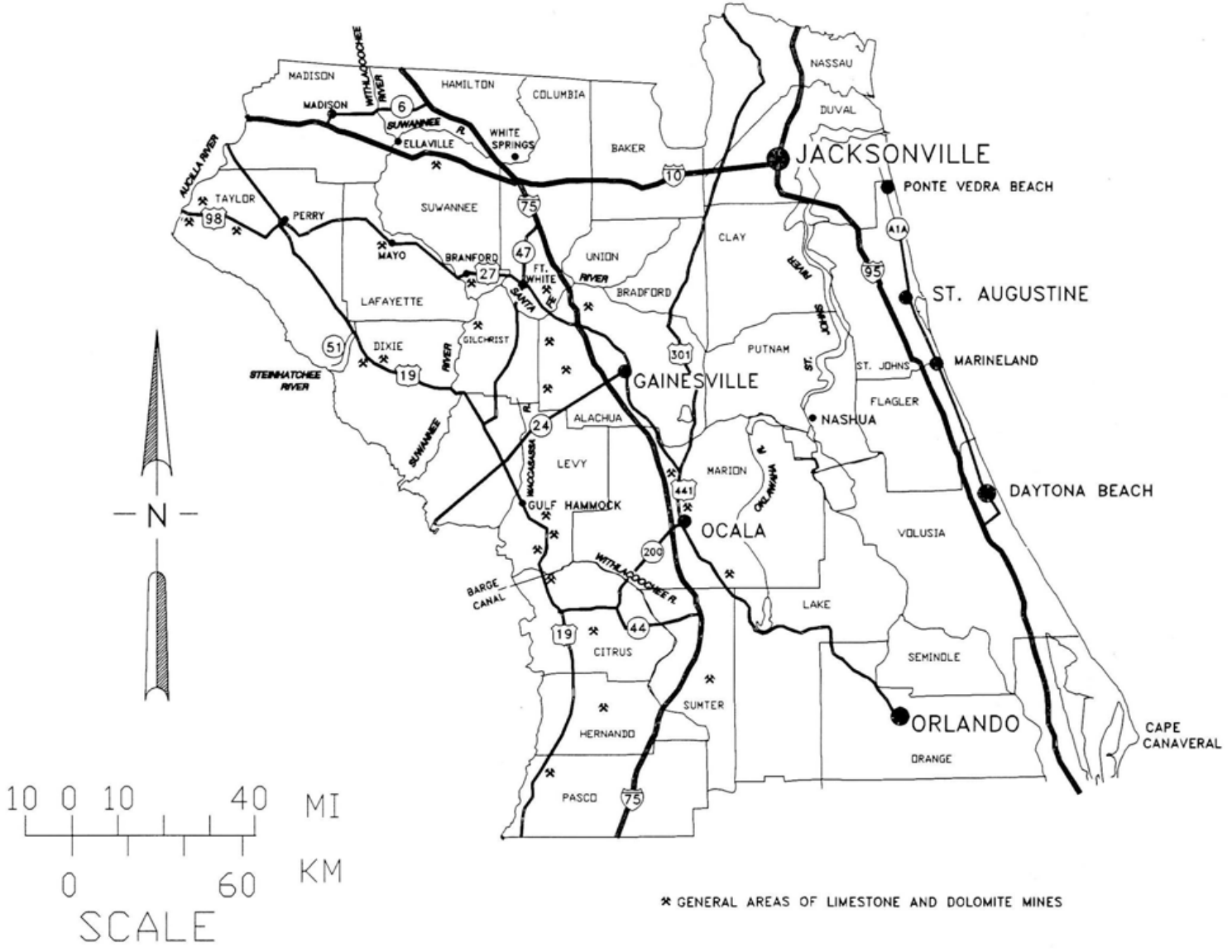

Figure 5. Generalized road and location map for fossil collecting sites described in text.

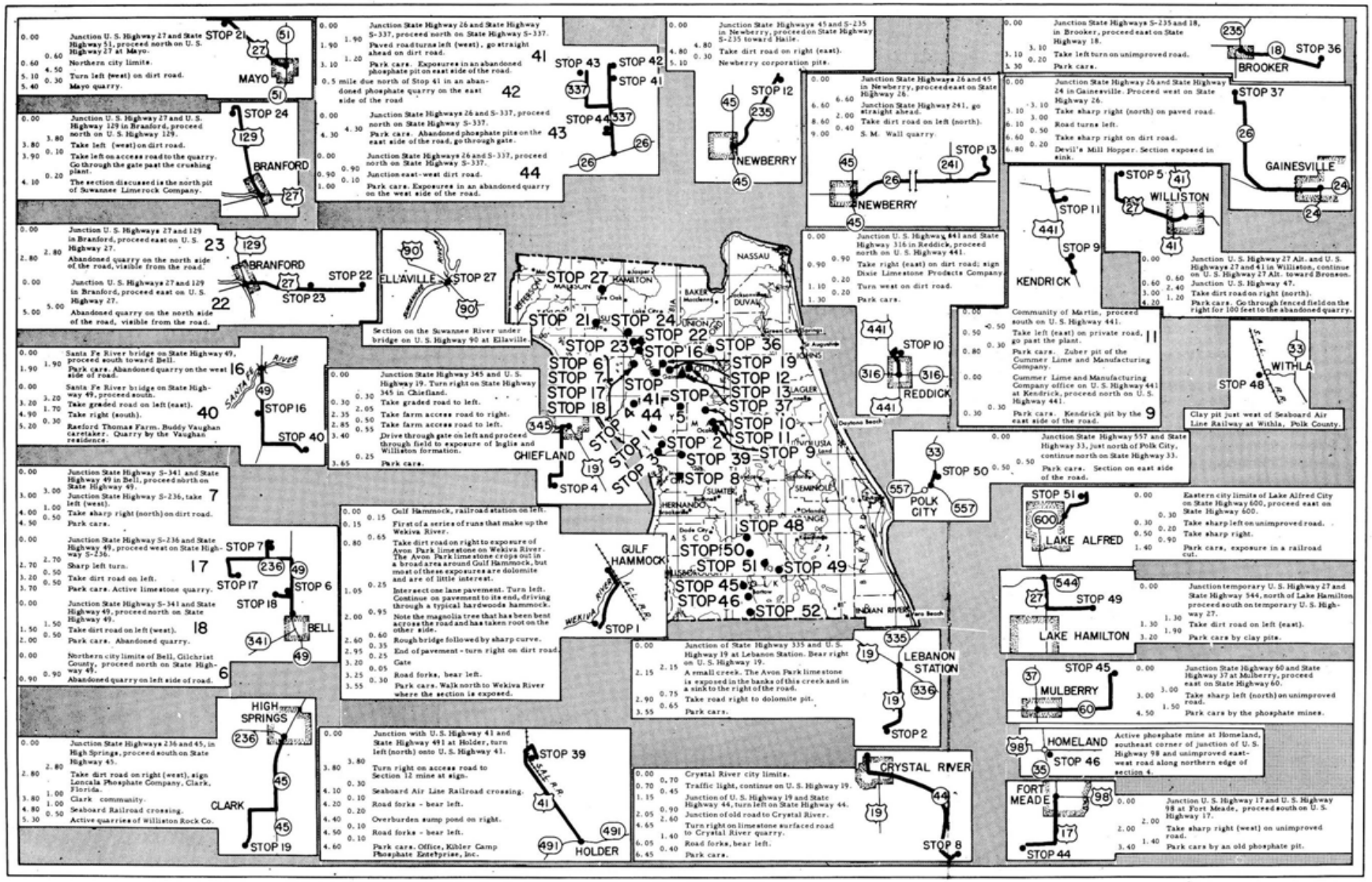

Figure 6. Classic geologic sites in the northern Florida peninsula (from Puri and Vernon, 1964)

exposures of Ocala and Suwannee Limestones occur along stream banks and in quarries. At low water, Suwannee Limestone is accessible along the Suwannee River between the towns of White Springs and Ellaville (Hamilton and Suwannee Counties). Ocala Limestone crops out along parts of the lower portion of the Suwannee River, from approximately Mayo southward.

Quarries throughout the western part of the northern peninsula expose fossiliferous limestones and may offer potential collecting sites. A few are operating; others may be abandoned, overgrown, or water filled. There are no commercial fossil hunting quarries in the region. It is essential to get permission to enter any quarry from the landowner or operator, and to use adequate caution when hunting in quarries. Active mines may refuse entry to fossil hunters due to insurance and liability concerns. Others might allow access to non-working areas upon receipt of a signed liability waiver. As quarry ownership and status changes frequently, it is not generally feasible to direct collectors to any particular site.

Middle Eocene fossil echinoids, primarily *Periarchus lyelli floridanus*, and the seagrass *Lepidodendron* have been uncovered in the Avon Park Formation in quarries near Gulf Hammock in Levy County. This small region situated in southern Levy and northernmost Citrus Counties is the only area in the state where Avon Park Formation is close to the surface.

Invertebrate fossils are abundant in the Ocala Limestone quarries, scattered throughout the Gulf coast Big Bend counties, as well as both north and south of Ocala in Marion County, and in western Alachua, and southern Columbia and Suwannee Counties. Some of these quarries are easily visible from the road. Mollusks, echinoids and the large foraminifera *Lepidocyclina* are among the most abundant fossils in the Ocala Limestone. The fossils are typically locked in the rock matrix, requiring some tedious removal. It is not uncommon, however, to find loose fossils as well, especially the larger echinoids.

During dredging of the first leg of the ill-fated Cross-Florida Barge Canal, high dredge spoil piles were created along either side of the cut near U.S. Highway 19 in Citrus County. Fossils from the lower Ocala Limestone and Avon Park Formation were once quite common in these piles; today the piles are overgrown, and in some areas fenced off. A few clear areas remain, however, and are worth checking out.

The Miocene Hawthorn Group sediments sometimes yield rare invertebrate fossils, primarily mollusks, from the carbonate portions of the unit. There are also reports of silicified corals being found in the stream banks of the Withlacoochee River (between Madison and Hamilton Counties) near where the State Road 6 bridge crosses the river.

Fossiliferous portions of the late Tertiary and Quaternary sediments along the eastern portion of the northern peninsula also provide invertebrate collecting opportunities. Both old and new shell pits alongthe eastern half of the peninsula typically penetrate molluskan-fossiliferous unts such as the Nashua Foramtion. Many of these pits are closed or are private. Another possibility is to check creeks and streams that may have cut down into these units in this area.

The northern Florida peninsula also offers the vertebrate fossil collector numerous opportunities. Although the Eocene and Oligocene limestones occasionally yield rare shark teeth or whale bones, it is the Miocene Hawthorn Group sediments and Pleistocene deposits that offer the richest finds. The Hawthorn Group sediments underlie the Northern Highlands, and comprise the core of isolated hills and ridges throughout the Central Highlands. Many of the vertebrate fossil discoveries occur along river and creek banks, where streams have cut downward into the sediments. Hawthorn exposures are common along the northern stretch of the Aucilla, Withlacoochee, Alapaha, and Suwannee Rivers, but numerous other smaller creeks dissect these sediments as well. You may remember the article in a past FPS newsletter about the woman who found the Miocene long-beaked dolphin jaw in a small creek bank in downtown Gainesville. Manatee ribs are fairly common in Alachua County as well. While there are no well known public sites as such, the sheer area covered by Miocene sediments provides exceptional opportunities to the collector willing to wade local streams.

Weathered Hawthorn Group sediments, which include the Alachua Formation, are another source of finds. These sediments commonly occur as

reworked paleo-sinkhole and channel fill materials in the underlying limestone. Perhaps the most famous such site is Thomas Farm in Gilchrist County, noted for its fossil horse fauna. The weathered Hawthorn sediments typically show a wide age range, likely owing to their reworking and redeposition through several epochs of geologic time. They are most commonly encountered west of the Northern Highlands in the Gilchrist-Alachua-Levy County area, where they may occupy karst depressions.

Younger Pliocene and Pleistocene vertebrate fossils are found primarily in two types of settings: in undifferentiated sinkhole fill material, usually discovered during mining in limerock quarries, and as streambed deposits. Some spectacular finds have come from the sediments filling ancient karst features, but finding such features in the walls of a quarry is somewhat of a hit or miss proposition. Better success is had by snorkeling or diving the numerous streams traversing the karst plain areas of the Gulf Coastal Lowlands. Here water has eroded Pliocene and Pleistocene land mammal material out of the sediments and deposited them in the gravel pockets on the streambed. Occasional Eocene shark teeth, eroded from the underlying limestone, may also be mixed in with the bottom material.

Brown (1988) describes four river sites in the area that he has worked with success; the first, the Steinhatchee, flows between Taylor and Dixie Counties. It is accessible via a small recreation area located off State Road 51. From Highway 19, turn south on S.R. 51 and proceed about 2 miles. Turn left on a dirt road, go about .3 miles, then take the right fork of the road for another mile to the park. Search the banks and bottom gravels above the falls for Pleistocene land animal and bird fossils, as well as Eocene shark teeth. A second river site is along the Santa Fe, which flows between Columbia, Alachua, and Gilchrist Counties. It may be entered at the State Road 47 bridge, 6 miles south of Ft. White. Search the gravel along the north bank, upstream of the bridge, for Eocene shark teeth and manatee teeth. The river may also be canoed by putting in at the U.S. 27 bridge and floating 10 miles to the S.R. 47 bridge. Similarly, the Wacasassa River my be explored by putting in at the S.R. 24 bridge and floating downstream to the U.S. 19 bridge. Finally, the other Withlacoochee River (there are two) between Citrus and Marion and Sumter Counties offers Pleistocene fossils in its streambed as well. One stretch allows canoe access at the S.R. 44 bridge in Sumter County and takeout at the S.R. 200 bridge in Marion County.

Vertebrate fossils are sometimes found in the undifferentiated Quaternary sediments along the eastern edge of the peninsula. An extensive bone bed, including a complete giant sloth skeleton, was accidentally discovered near Daytona Beach years ago. Such discoveries are typically found during excavation work, and surface sites are few to nil. Streams may offer some potential finds, particularily in the upper portions of shell beds. Collectors have found vertebrate material along the Atlantic beaches, predominantly in the Ponte Vedra Beach area of St. Johns County. Brown (1988) advises parking at Mickler Landing, or off Highway A1A just south of this park, and checking both the surf zone and the shell piles on the beach. Collectors have, in the past, found vertebrate material in dredge spoil material along the St. Johns River.

There are undoubtedly numerous other possible fossil sites throughout the northern peninsula. The ones presented here are just a sampling of typical sites. Many of the same fossil hunting techniques that work elsewhere will work here as well. Check stream bottoms and banks, excavations, mines, and beaches. And be prepared to do some screen washing, particularly in the Miocene sediments.

If you travel to this part of the state, be sure the visit the Florida Museum of Natural History, located on the University of Florida campus in Gainesville. Signs along I-75 in Gainesville direct you to the proper exit. The museum features outstanding natural history displays, including a recently-revamped Florida fossil exhibit.

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PLIOCENE	__	__	__	__
MIOCENE	__	__	__	__
OLIGOCENE	__	__	__	__
EOCENE	__	__	__	__
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FLORIDA PALEONTOLOGICAL SOCIETY, INC.

As stated in the Articles of Incorporation, "The purposes of this Corporation shall be to advance the science of Paleontology, especially in Florida, to disseminate knowledge of this subject and to facilitate cooperation of all persons concerned with the history, stratigraphy, evolution, ecology, anatomy, and taxonomy of Florida's past fauna and flora. The Corporation shall also be concerned with the collection and preservation of Florida fossils." (Article III, Section 1).

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ARTICLE IX

Section 1.	Members of the Florida Paleontological Society, Inc., are expected to respect all private and public properties.
Section 2.	No member shall collect without appropriate permission on private or public properties.
Section 3.	Members should make a sincere effort to keep themselves informed of laws, regulations, and rules on collecting on private or public properties.
Section 4.	Members shall not use firearms, blasting equipment, or dredging apparatuses without appropriate licenses and permits.
Section 5.	Members shall dispose of litter properly.
Section 6.	Members shall report to proper state offices any seemingly important paleontological and archaeological sites.
Section 7.	Members shall respect and cooperate with field trip leaders or designated authorities in all collecting areas.
Section 8.	Members shall appreciate and protect our heritage of natural resources.
Section 9.	Members shall conduct themselves in a manner that best represents the Florida Paleontological Society, Inc.

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