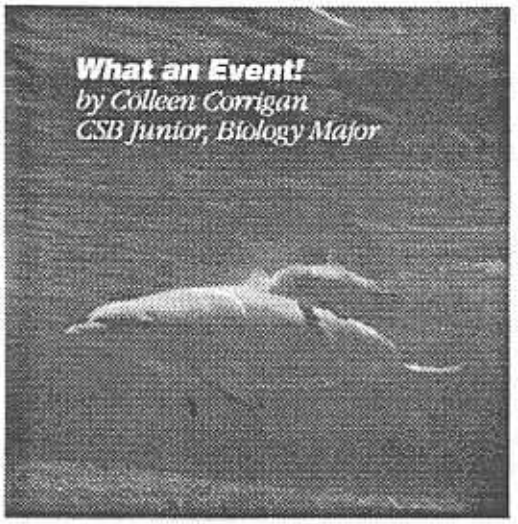
BIOFEEDBACK

Newsletter of the Biology Department and BioClub of Saint John's University and the College of Saint Benedict



What an Event!

by Colleen Corrigan
CSB Junior, Biology Major

July 23, 1992 was probably one of the most exciting and eventful days at the Minnesota Zoo since it opened in 1978. That morning, at precisely 11:03 A.M., one of the two female dolphins at the zoo, Rio, delivered her first calf, a healthy 30 pound male. Mindy, the other female, is pregnant and due to deliver in late September or October.

Dolphins have a gestation period of about 12 months and nurse their young for up to two years after birth. Due to the minimally studied pregnancy and birth processes of dolphins, dolphin calf mortality rates are very high in captivity, around 51% for the first born, and are even higher in the wild. Males have been known to attack mothers and their calves in the wild so as a precaution, the two males at the zoo, Semo and Flipper, were separated from the females before birth and will remain separated until the calves reach about six months of age. At this time they will be large enough to interact safely with the adult males.

Dolphins, being mammals, give live birth, and the newly born calf swims to the surface for its first breath. When the dolphin is born, it is usually darker than the mother and has light vertical lines running down its sides, called fetal folds, resulting from being folded in the womb. They disappear in about 4-8 weeks. Calves are not very buoyant and, as a result, swim beside the mother's dorsal fin, allowing them to be carried along in her slipstream in order to conserve energy.

The Minnesota Zoo has been conducting a 24-hour continuous observation of the dolphin calf since its birth. The goal of the study is to learn more about the process of dolphin reproduction and breeding in the hope of increasing dolphin calf survival rates in the wild. The emphasis of the observations is on nursing behaviors of the calf, particularly how often and from which nipple he nurses. So far, it has been observed that the calf nurses from 10-15 seconds in 60-70 minute intervals. The calf has also been noted to spend more time every day away from his mother, developing the musculature and buoyancy vital to proper development and success as an adult.

Anyone who has the chance to visit the zoo or witness the birth of Mindy's calf (which will take place on exhibit) should take advantage of this opportunity. Once you see the calf, your eyes will be stuck to the aquarium glass. No fooling—mine are still there!

Summer Courses at Itasca

by Chris Dahling
SJU Sophomore, Biology Major

I took a very interesting class called ecological genetics at the University of Minnesota Biology and Forestry Station in Itasca State Park. This course was taught by Dr. Jim Curtsinger during the second summer term, from July 23 to August 24. Although there were only eight students in the class, it was a diverse group of both graduates and undergraduates. We learned about the techniques of cellulose acetate and agarose gel electrophoresis, DNA isolation, restriction enzymes, polymerase chain reactions, and DNA fingerprinting. Classes ran eight hours a day, from 8:00 a.m. to 5:00 p.m., and

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gave us the time and instruction to use these techniques. We also completed a final project.

In addition to ecological genetics, the University of Minnesota teaches other biology courses during the summer at the field station. These courses offer an excellent opportunity to do field work and experiments that is not readily available in a normal class setting. As a biology major interested in genetics, I really had a good time and would recommend classes at Itasca for people in search of summer biology courses.

A Bewitching Controversy

by Dr. Stephen G. Saupe
CSB/SJU Biology Department

This is an outstanding year for anniversaries - 200th of the White House, 500th of the Columbus expedition and, my current favorite, 300th for the Salem Witchcraft trials.

The Salem Witchcraft affair began in April, 1692 and continued until September when the Governor of Massachussetts put a stop to it (not surprisingly, right after his wife was accused of witchcraft). In the final analysis, 20 people died - 19 people (14 women, 5 men) were exucuted and one person was tortured to death. Historians have been unable to satisfactorily explain cause of this tragic event in American history.

The most commonly accepted idea is that the affair was the result of social and political factors that lead to a search for a scapegoat(s) to alleviate evil and community suffering. Rooting out the "witches" presumably provided just such a outlet.

Although aspects of this explanation are attractive, I find it inadequate. I can't believe that the symptoms of many of the bewitched individuals were simply "an act". Rather, I support a hypothesis suggested by Linnda Caporeal and Mary Matossian that there is an underlying biological explanation for the strange behavior of the witches.

Caporeal and Matossian postulate that the bewitched had eaten rye grain that was contaminated with ergot, a fungus that parasitizes the flowers. The fungus produces a black, overwintering structure called a sclerotium that contains derivatives of lysergic acid. Many of these compounds, such as the infamous LSD, are psychoactive and could be responsible for the bewitched behaviors.

When I discussed this hypothesis with Dr. Martha Blauveit of the CSB/SJU History department, she expressed serious reservations but grudingly admitted that ergot "may be" involved. Who knows what is the real cause of the Witchcraft trials. One thing for certain, ergot has had a very real impact on many human societies in the past - and you don't need a crystal ball to prove it.

For more information on ergot and the trials see Science 192:21 (1976) and American Scientist 70:355 (1982). A good, mainstream view of the affair is found in a recent Newsweek (31 August, 1992).

Ecology Summer Camp

by Dr. N. Zaczkowski; CSB/SJU Biology Department

Dr. Wurdak and I team-taught an ecologically-oriented course for the academic summer camp program at SJU. Five communities were investigated—lake, stream, marsh, forest and prairie. At each site, both physical and biological parameters were measured and recorded. On Lake Sag, for example, water temperatures, dissolved oxygen, pH and turbidity were determined and plankton collected and identified. We had lots of fun working with young energetic students. Hopefully, they will see nature in a new light as a result of these experiences on our campus.

Biology Club News

by Erin Lane
CSB, Senior Biology Major

Monday, Sept. 14, was the Bio. Club's first official meeting of the year. This year's board is: Co-presidents - Tom Dudley & Erin Lane; Secretary - Terry Panvica; Treasurer - Jon Krook; and Public Relations - Kelly Wolfe. Along with general introductions of all the new and returning members, a brainstorming session gave the club about 30 ideas of things to do between now and May. A camping trip was tentatively slated for Oct. 17 or 24 down to Lake City (home of Randy Brewer who is now playing Italian Basketball, the widest port on the Mississippi, the birthplace of waterskiing and the home of Tom Dudley). Keep your eyes peeled for signs. If you missed the first

Bio. Club meeting, never fear, there will be another one on October 5, 7 p.m. at CSB. See you there!

Small Mammal Research at St. John's

This summer, Dr. Marianna Wood and three CSB/SJU student assistants - Jill Krueger (CSB Senior, Biology Major), Renee Ochs, and Tom Scheider (SJU Senior, Biology Major), completed a research project on the SJU campus. They studied the small mammal communities in two habitats - an area of oak savanna that had been burned to promote native vegetation and an unburned area in which oaks and maples predominate. They live-trapped, marked, and released the small mammals to determine the species present in each habitat and their relative abundance. They also placed peanut butter and corn mixed with color-coded plastic in different parts of the habitat. The small mammals consumed the mixture, and the plastic passed through their digestive systems and was deposited in the live-traps. Tom and Jill had the exciting task of examining the fecal samples for colored plastic and determining where individuals had fed. Preliminary results suggest that the burned oak savanna supports a more diverse small mammals community. It also appears that squirrels and white-footed mice found and consumed food in trees more than deer- mice, and chipmunks did. A departmental seminar on this study will be given later this semester.

Where's Waldo?

This year, the biology department faculty will be a little like Waldo who is constantly on the move, hidden among the masses. Returning students may have asked "Where's Jessica?" or Where's Phyllis?" or "Where's Cyprian?" or Where's Liisa?"

Ms. Jessica Sutherland left the department in June to begin work towards a PhD in environmental studies at the Univesity of Wisconsin - Madison. Sister Phyllis Plantenberg is on sabbatical for the year. She will be visiting a variety of environmental facilities around the country and is working on an environmental studies curriculum. Father Cyprian Weaver spent last year in England doing neurobiological research. This semester he is in China and will return to Collegeville at least for a while in the spring. Liisa Mannikko, our greenhouse specialist, resigned this summer to devote more time to her toddler. Please visit the Greenhouse and say hello to our new specialist, Ms. Kathy Powell. She is there daily from about 12:00-4:00 P.M.

Later this year your may ask, "Where's Poff?" Dr. Poff will be taking a sabbatical during the spring semester. You may find him hiding among the bugs. And, this semester we welcomed Dr.'s Henry and Wurdak back from year-long sabbaticals.

Summer Acquisitions

by Dr. Cheryl Knox; CSB/SJU Biology Department

This past summer I worked toward editing a Biology text and was given a small fee for my time. I chose to donate the money to the department with the understanding that I would then be able to spend it on some lab equipment. After much thought, I chose to purchase a VGA color monitor and card for my office computer. I have a teaching software package that requires enhanced graphics. Having this monitor will allow Biochemistry and Molecular Biology students to run this program.

An additional departmental acquisition over the summer was a small -80 C freezer. It is located in the stockroom between the biochemistry and genetics labs. Such a freezer is required for storing research and recombinant strains of bacteria and phage, packaging reactions, certain reactive reagents, long-term storage of DNA and RNA and antisera. Biology faculty had been using Chemistry's -80 C freezer, but it moved!

Biological Control Conference

The University of Minnesota will be hosting a conference entitled "Ecological Interactions and Biological Control" at the Radisson Hotel Metrodome in Minneapolis October 25-27, 1992. For more information contact the College of Biological Sciences at 612-624-3636 or Fax: 612-625-5299.

BIOFEEDBACK

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Ford Leads Bird Hike

Dr. Norm Ford, CSB/SJU Biology Dept., recently lead a bird walk around the St. John's campus. Several enthusiastic birdwatchers joined Dr. Ford for this event sponsored by the Biology Club.

Saupe on the Mushroom Lecture Circuit

Dr. Stephen Saupe, CSB/SJU Biology Dept., recently visited the St. Cloud Garden Club and the Central Minnesota Audubon Society to give a presentation on "Edible and Poisonous Mushrooms". After the participants dissected a fresh mushroom, Dr. Saupe led a discussion concerning basic mushroom structures and their functions. This was followed by a series of slides which illustrated the general life cycle of a mushroom and described some common edible and poisonous mushrooms of the area. Dr. Saupe cautioned that mushroom hunters should be careful because, as the old saying goes, "There are old mushroom hunters/ And there are bold mushroom hunters/ But, there are no old and bold mushroom hunters."

Insects and Plants for Elementary Teachers

This summer Dr. J. Poff (CSB/SJU Biology Department), Dr. S. Saupe (Biology) and Dr. B. Dickau (Education Department) presented a three week workshop on "life cycles" to elementary teachers. Dr. Poff was the bug nut. Among other things, he helped the participants build insect flight cages and raise Painted Lady butterflies. Dr. Saupe, the plant nut, helped the group make mini growth chambers from five gallon pails and grow "Fast Plants" (type of mustard plant with a quick life cycle). Dr. Dickau, the education nut, served as the expert on educational methods. The workshop was a great success and will be repeated during summer 1993.

Job Opening

The position of Preserve Ecologist is available at the Minnesota Field Office of the Nature Conservany. The Preserve Ecologist will help create technical and presentation maps of landscape areas and Nature Conservancy Preserves, help develop a plan for monitoring the indicators of biological health at top priority landscape areas and preserves, and assist in technical aspects of preserve restoration. The position lasts 6 months. Contact Sara Meyer, Administrative Coordinator at 612-331-0750 for more information. The application deadline is October 16, 1992.

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