

FLAGSHIP AGENDA PLAN 2004 – 2010
LSU MUSEUM OF NATURAL SCIENCE
Revised September 12, 2004

Preamble

The Museum of Natural Science is one of the most prominent departments at LSU and world-renowned for its programs.¹ The Museum is particularly productive in research and graduate student training. During the last five years, its eight faculty members have published 70 papers and raised \$3,600,000 in grants (per capita, second only to LSU's Physics Department). In the same period, its 15 to 20 Ph.D. students published 59 papers and received more than \$900,000 in grants. These graduate students come from some of the finest undergraduate institutions in the country (including, in the last five years, Harvard, Princeton, Brown, Cornell, Univ. Michigan, Univ. Minnesota, Univ. of Washington, and Reed College). While at LSU, they serve as outstanding ambassadors of the University. In the last five years, eight different students have won nine outstanding presentation awards at national meetings. One of our students, Jessica Light, was elected this summer to the board of directors of the American Society of Mammalogists. When they leave LSU, Museum students typically assume prestigious academic jobs. Virtually every major museum in the country, including the Smithsonian Institution, American Museum of Natural History in New York, and Field Museum in Chicago, has curators who received degrees from LSU. Currently, one of our former students, Terry Chesser, who won LSU's outstanding dissertation award in 1995, is a finalist for a position at the Smithsonian that would make him the second curator of birds from LSU at that world-renowned institution. Former Museum students are also professors at prestigious colleges and universities, including Amherst, Oberlin, University of Minnesota, and University of Florida.

By these measures of productivity and reputation, as well as its cultural contributions to LSU and the state, the Museum of Natural Science is a classic hallmark of a flagship institution. However, the Museum is remarkably underappreciated in Louisiana, and even at LSU. Its local anonymity is largely the fault of its faculty (curators), who have not adequately promoted the Museum in the state. Moreover, the Museum has not reached its full potential as an educational resource for LSU undergraduates or school children in Louisiana. Although housed in a prominent campus building and, thus, benefiting from its centralized location, the Museum does not provide adequate exhibit-based educational programming. Therefore, much of our plan for the years 2004 – 2010 is focused on (1) improving the Museum's image at the University and in Louisiana, (2) increasing its effectiveness as an educational center for K-12 students and undergraduates, (3) solidifying its position as a graduate research institution through the development of an endowment for student and postdoctoral support, and (4) developing its physical plant into a state-of-the-art teaching and research facility.

¹ Measuring prominence is difficult, but we have reasonable confidence in the following assertions. If one were to request from any university in the country a list of the 10 best university natural history museums, LSU Museum would be on it. If one requested a ranking of ornithology programs, LSU would be number two behind Cornell University

Objective 1: Increase research productivity in support of long-term economic development.

Museum research focuses on the evolution of organisms, and this emphasis on basic science appears irreconcilable with the pervasive goal of LSU to increase the economic impact of its programs. However, Museum research programs already contribute economically to LSU, and with some refocusing of resources, may contribute substantially to the economic development of Louisiana.

Examples of planned Museum programs with economic impact.

1. *Increase in the capacity of our molecular genetics laboratory:* In the last five years, the Museum's DNA sequencing facility has played a key role in raising more than \$5M in research grants (\$4M from federal agencies) and in the instruction of more than 60 graduate and many more undergraduate students. In 2004, we raised \$126,000 from the NSF to upgrade our DNA sequencing capabilities. These improvements, implemented this past summer, will allow us to attract more funding and train more students in molecular methods for Louisiana's biotechnology industry.
2. *Development of a public-oriented ornithology program:* There are more than 70 million bird watchers in America (Cordell & Herbert, 2002, USDA Outdoor Recreation Research Unit, Athens, GA), and Louisiana is a highly desirable venue for bird watching. However, no infrastructure for bird tourism, which is potentially worth hundreds of millions of dollars per year (T. Eubanks, CEO, Fermata, Inc.), exists in Louisiana. To help develop such an infrastructure, the Museum is establishing an ornithology outreach office. This office will prepare literature and coordinate research and conservation efforts focused on birds. The office will be funded initially by a combination of \$200,000 in private donations and grants. It will act as a centralized clearinghouse for information on Louisiana birds for the many stakeholders in bird research, conservation, and tourism in Louisiana, including the Audubon Society, bird clubs, The Nature Conservancy, Department of Culture, Recreation, & Tourism, Department of Natural Resources, and research groups at several Louisiana Universities. In the summer of 2004, the LSU Board of Supervisors and the Louisiana Board of Regents approved our plan for a Louisiana Bird Center at the Museum.
3. *Development of modern educational programs and exhibits:* Under our Director of Education, Dr. Sophie Warny, we have several initiatives aimed at improving our public education programs, including an exhibit on Antarctic research being conducted at LSU and an NSF-sponsored research training program for science teachers. In 2004, Dr. Warny raised more than \$100,000 to establish the Antarctic exhibit, which will meet modern educational standards set by the federal government for K-12 students. The growth of educational programs (and particularly exhibits) in the Museum should dovetail effectively with tourist and related business expansion in the south Baton Rouge area. *A key step in this*

process will be to obtain a full-time, tenure track position for Dr. Warny, who currently supports herself on half-time pay and NSF grants.

Objective 2: Increase number and quality of graduate students and programs.

Our graduate student training program is already the best at LSU in terms of quality of students enrolled and their placement in academic jobs. It benefits particularly from the largess of our cognate academic departments, Biological Sciences, Geology & Geophysics, and Geography & Anthropology, which support Museum students with fellowships and assistantships. However, there are concrete ways to improve the Museum's graduate student program.

1. *Offer Ph.D. degrees in Anthropology:* Currently, seven M.S. students work under the direction of our Curator of Archaeology, Dr. Rebecca Saunders, in the Department of Geography & Anthropology. The prestige of the University and the productivity of Dr. Saunders and other anthropologists at LSU would be increased immeasurably if the Department of Geography and Anthropology would institute a Ph.D. program in Anthropology. LSU is an appropriate venue for such a program, as the premier institution for the study southern Mississippi Native American culture and one of the leading institutions for studies of southeastern US prehistory. Without Ph.D. students, Dr. Saunders is at a disadvantage compared to all the other Museum curators. Despite this handicap, she is a highly productive researcher, having obtained both NSF and National Geographic funding for her work.
2. *Provide the Museum with more funding for assistantships.* The Museum's budget for graduate assistants has not increased in 20 years, but we are forced to increase our graduate student stipends each year to keep pace with our portfolio academic departments, Biological Sciences and Geology & Geophysics, where all of our Ph.D. students are enrolled. Regular increases in stipends have forced the Museum to cut its assistantships from nine to seven in the last three years. *Such a reduction is contrary to the National Flagship Agenda's promotion of more assistantships.* In an effort to stem this tide, we have increased our NSF-supported research assistantships (currently four of our students are RA's), but we need help from the University for our graduate curatorial assistantships.
3. *Obtain a full-time position for field training of graduate students.* The Museum's *modus operandi* in graduate training is to expose our students to a combination of traditional field work in foreign countries and 21st century molecular genetics in our laboratory. For 30 years our field operations were directed *gratis* by Dr. John P. O'Neill. He trained countless numbers of students in the forests of Peru and, in the process, discovered 25 new species of birds that made LSU the world leader in field ornithology. Dr. O'Neill has now retired, and we need to replace him with a young energetic biologist.

Objective 3: Increase quality of undergraduate students and programs

Museum curators reach undergraduates in two main ways: (1) Many undergraduates participate in our research programs, largely as a result of funding through LSU's generous work-study programs. (2) The Museum curators are responsible for teaching the "-ology" courses, including ornithology, mammalogy, herpetology, ichthyology, and paleontology, as well as many other courses taken by students in Biological Sciences, Geology & Geophysics, Geography & Anthropology, Renewable Natural Resources, Oceanography, Entomology, and Curriculum & Instruction.

Examples of ways in which we plan to improve our undergraduate programs:

1. *Increase the number of exhibits designed for undergraduate education:* Undergraduates regularly visit the Museum's exhibits as part of their science and art courses. However, our exhibits are largely outdated. Planned exhibits include material aimed specifically at beginning undergraduates (e.g., see Objective 1.3).
2. *Increase efforts to obtain REU funds:* Most of our curators have NSF grants but tend not to take advantage of the NSF's "Research Experiences for Undergraduates" program because of the ample supply of student labor at LSU. This shortcoming is easily rectified.
3. *Increase the inclusion of undergraduates in field programs:* The Museum is famous for its exploratory expeditions to Latin America, Africa, and Southeast Asia. Undergraduates regularly participate in these expeditions, but funds for this purpose are short. We have begun a more aggressive program of private fundraising for field work, and are targeting money specifically for undergraduate participation.

Objective 4: Improve quality of campus life

The Museum will attempt to improve campus life in at least two ways:

1. A natural history exhibit museum is fundamental to a flagship institution. LSU has one, but it is small and the exhibits outdated. The construction of a new specifically designed natural history exhibit building on campus should be a high priority for the University. We have begun a campaign to convince the LSU administration and governing officials as to the importance of this endeavor.
2. The Museum is actively recruiting students from overseas. In particular, we emphasize the recruitment of students from Latin American, African, and SE Asian countries where much of our research is conducted. Currently we have students from Uruguay, Peru, Argentina, and Malaysia studying for Ph.D. degrees. These foreign students add to the diversity of students on campus and, hence, the quality of campus life.

Objective 5: Assess LSU's progress and communicate achievement

The Museum has instituted an aggressive program of public outreach designed to raise its profile by communicating initiatives and successes. We send to our alumni, supporters,

and members of the public who are interested in natural history mailings designed to raise awareness, including three newsletters and at least two information (fundraising) letters per year. We also have instituted a "Saturday brunch" program, designed to inform local corporate executives and their families about the research and educational programs at the Museum. Among new (or refurbished) initiatives to promote our research programs may be the re-establishment of the "Mardi Gras Symposium," a national event held at LSU in 1996 during Mardi Gras to highlight LSU's outstanding interdepartmental program in evolutionary biology.

Because the Museum is a small research institution, keeping track of our progress and learning outcomes has been fairly simple. In addition to the usual tracking of grant funding and publications (see preamble), we measure success largely by the placement of our graduate students in high quality jobs and our undergraduates in high quality graduate programs. However, we will institute tracking procedures for new initiatives as appropriate. Two examples are given below.

1. *Ornithology outreach office*: Success of this project will be evaluated in the short term by the following outcomes: (1) Publication of a *Guide to Birding in Louisiana* by January 2006; (2) Publication of *The Birds of Louisiana* by January 2007; (3) Designation of several globally important bird areas (IBA's) in Louisiana by January 2005; (4) A functional online database system for bird nesting records by June 2004--the first of its kind in the US. A prototype of the latter has already been placed on our website (<http://test002.lsu.edu/natsci/NestingBirds.nsf/MainPage?OpenForm>). Assessing increases in ecotourism in Louisiana is more difficult, but possible. Private, state, and federal public lands generally keep records of visitations, and the Department of Culture, Recreation, and Tourism keeps data on trends in tourism. We will seek to document ecotourism patterns by securing summaries of visitation records on a quarterly basis from these agencies.
2. *Educational exhibits*: The effectiveness of new exhibits will be evaluated in several ways. For example, all teachers who have used the exhibits will be surveyed, and teachers at the LSU Laboratory School will be interviewed. We will also examine LEAP test scores for science in appropriate grades and compare results with scores from years prior to the creation of the exhibit. NCLB legislation requires that annual tests be conducted by the states annually as part of an effort to increase accountability and these results will be analyzed as well. Upon review, we will decide what areas of our exhibits need improvement.

Objective 6: Increase funding sources to support Objectives 1-5

The Museum has an outstanding record in grant support (see preamble), but during the last 20 years we have not raised much private money. To improve private fundraising, we have taken several steps: (1) development of a well maintained database of alumni, donors, museum members, and other interested parties; (2) the establishment of an annual fall fundraising drive; (3) refinement of our spring "birdathon" fundraising drive; and (4) immediate concentration of fundraising on our main strength, ornithology. In addition to

these basic efforts, we are also in the process of identifying members for a newly constituted fundraising advisory board, and we have requested the LSU Foundation to assign a part-time development officer to the Museum. This latter effort was originally the idea of former provost Dan Fogel and supported in principle by LSU Foundation director Cecil Phillips, but the 2000-2001 economic downturn stalled it.

The Museum's major fundraising goals are as follows:

1. *Increase endowment for field research--\$1,000,000:* Currently, the Museum has a research endowment of about \$250,000, but we need at least \$50,000/year in income to meet our field research needs. This level of income would require \$1,000,000 of endowment.
2. *Establish an endowed postdoctoral fellowship --\$1,000,000:* Only a few institutions have endowed postdoctoral positions in natural history--most notably the Smithsonian, American Museum of Natural History, and U.C. Berkeley. Having such a position at LSU would immediately put the Museum in competition with these prestigious institutions. For a salary of \$30,000 - \$35,000 per year, plus fringe benefits and research money, the required endowment would be \$1,000,000.
3. *Increase endowment for collection support--\$1,000,000 each:*
4. *Establish graduate student fellowships--\$400,000 each:* Endowment required to fund fellowships of \$20,000 would be about \$400,000; endowment for graduate supplements would range from \$60,000 - \$100,000.
5. *Renovation of Murphy J. Foster Hall--\$12 million.* When the Art Department moves to its new location, the Museum of Natural Science will move all of its collections into Murphy J. Foster Hall and occupy the entire building. Prior to that move would be the appropriate time to renovate this historic building and make it a state-of-the-art research and teaching facility. The Museum has already prepared an architectural program for the renovation. The architects estimate that the project will cost \$10,000,000, plus design fees and University overhead.
6. *Construction of a new natural history exhibit building--\$50 million.* This building would fulfill two functions. It would feature state-of-the-art public exhibits, and it would bring together the remaining collections of the LSU Museum of Natural History (a larger entity than the Museum of Natural Science, with collections scattered in buildings all over the campus). The perfect location for this building would be in the parking lot between Foster Hall and the Indian Mounds.