



The Nucleus

*Official Quarterly Newsletter of the
Texas Association of Biology Teachers*

Volume 18, Issue I

Spring, 2005

President's Message:

Legislative Update

During this legislative session there are a number of bills to watch and to inform your legislators of your opinions. TABT does not speak for you on these issues, because we know that our membership includes diverse opinions, but we do want to provide you information to speak for yourself. The following is information you might find helpful.

Texas House leaders laid out a school reform plan Thursday (2/03/05) that would create one of the largest teacher merit pay plans in the nation, force all school districts to begin classes after Labor Day and overhaul student testing. House Speaker Tom Craddick said on Wednesday that a voucher amendment to the bill would come later. This story is found at:

<http://www.dallasnews.com/sharedcontent/dws/news/texasouthwest/stories/020405dntexschools.686de.html>.

More stories can be found at:

<http://www.chron.com/cs/CDA/ssistory.mpl/metropolitan/3023836>

<http://www.dfw.com/mld/dfw/news/legislature/10815914.htm>

<http://www.statesman.com/news/content/shared/tx/legislature/stories/02/4edreform.html>

http://www.mysanantonio.com/news/stategov/stories/MYSA020405.1A.education_bill.73240e6e.html

HB 515 Deletes Space Requirements for Science Classrooms

Sec. 46.008. STANDARDS. The commissioner shall establish standards for adequacy of school facili

ties. The standards must include requirements related to [space,] educational adequacy [,] and construction quality. The standards may not include requirements related to space or square footage for a facility or any part of a facility. All new facilities [constructed after September 1, 1998,] must meet the standards to be eligible to be financed with state or local tax funds.

A bill similar to that proposed in the special session last year has again been introduced. If passed, it would prevent TEA from adopting facility standards that included minimum room size requirements on classrooms, science rooms, computer rooms, libraries, gyms, etc. The bill is House Bill 515. You can get more information at the following link: <http://www.capitol.state.tx.us/cgi-bin/db2www/tlo/billhist/billhist.d2w/report?=LEG=79&SESS=R&CHAMBER=H&BILLTYPE=B&BILLSUFFIX=00515>. You can sign up to be alerted to action on this bill at: <http://www.capitol.state.tx.us/cgi-bin/db2www/tlo/billhist/billhist.d2w/report?=LEG=79&SESS=R&CHAMBER=H&BILLTYPE=B&BILLSUFFIX=00515>.

This bill, according to Representative Madden's office is designed to "remove unfunded mandates for districts & that the loss of this safety requirement will not prevent districts from doing the right thing." Even when other safety requirements, such as from the fire marshal's office, is in place to protect students and teachers, Representative Madden's rationale is that this safety requirement is not needed.

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National Association of Science Teachers
March 31 - April 3, 2005
Dallas, Texas

Science Teachers Association of Texas
October 27 - 29, 2005
Houston, Texas

National Association of Biology Teachers
October 5 - 8, 2005
Milwaukee, Wisconsin



FRIEND OF TABT AWARD PRESENTED

Don Allen accepts the Friend of TABT Award for Ward's Natural Science Establishment. The award is given to corporate or sustaining members who have shown a high degree of corporate citizenry by supporting the activities of TABT. Congratulations to Ward's Natural Science Establishment. TABT thanks you for your efforts on our behalf.



Joe Restivo is handed the TABT Outstanding Biology Teaching Award at CAST in Corpus Christi by Alton Biggs. Joe has been a member of TABT since its inception in 1985. He has served TABT in a variety of ways, including being one of three presidents who served for two terms.

In addition to his service as TABT's president, Joe served as the Texas OBTA Director before handing the reins over to Robert Dennison. He has also attended several NABT Conventions.

Joe has an enviable position of teaching alongside his wife, Evelyn, a physics teacher. They have both taught in Maypearl, a district south of Dallas, for a number of years. Both have been strong advocates for raising the bar for schoolchildren.

TABT thanks Joe for his years of outstanding service to TABT and children in Texas!

Did You Know?

The flow of the Colorado River, once a wild and dangerous river, is now one of the most highly regulated rivers on Earth? Riding the river is not the experience that it once was.

Next year 10 billion cubic meters of water must pass through the dam to ensure that downriver states are supplied with water. This is not just a nice thing to do - it is the law!

Because the dam operators allow only about 145 cubic meters per second during the evening hours, but 283 cubic meters per second during the day, 386 kilometers of shoreline along Lake Powell and Lake Mead experience artificial "tides".

Faced with these conditions, native fish have declined while non-native ones have thrived. Sandbars have washed away.

Facts from: *Science*, Vol. 306, 10 December 2004, p. 1884-5.

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New Voucher Bill Filed

Three legislators (Linda Harper-Brown, R-Irving; Jodi Laubenberg, R-Parker; and Carl Isett, R-Lubbock) have filed a new and vastly expensive voucher bill that would drain money from neighborhood public schools to pay for tuition at private and religious schools. House Bill 1263 creates a pilot voucher program for educationally disadvantaged students in counties with a population of more than 800,000 people. Those counties include Harris (Houston), Dallas, Tarrant (Fort Worth), Bexar (San Antonio) and Travis (Austin). District eligibility requirements are so broad that nearly all the school districts in San Antonio, for example, would be pulled into the voucher program. Eligible students would include those who have dropped out of school, are at-risk of dropping out, come from low-income families, are victims of certain acts of violence, and are eligible to participate in a district's special education program or have limited English proficiency. A copy of H.B. 1263 can be found at <http://www.capitol.state.tx.us/cgi-bin/tlo/texframe.cmd?LEG=79&SESS=R&CHAMBER=H&BILLTYPE=B&BILLSUFFIX=01263&VERSION=1&TYPE=B>.

TABT Strand at CAST

STAT is requesting proposals for CAST in Houston. All proposals are entered on line this year. If you are planning to present, please put TABT Strand on your proposal. This ensures that sessions of interest to Biology teachers will be located in one area and minimize travel from one site to another for sessions. Too many people have missed sessions they wanted to attend.

TABT Drive-in Conference

Information will be coming soon in the weekly "TABT Update and URL of the Week".

TABT Supports Science in Africa

A former TABT member and leader of science education in Texas, Marla Stone, is now teaching educators in Kenya. She approached STAT and other affiliates with a proposal to support a Mini-CAST in Kenya. The Executive Board of TABT voted to support the Kenyan Science Conference with a \$500 contribution. An upcoming issue of *The Nucleus* will have pictures of the conference to share with you.

-Anita Gordon, TABT President

Using Primary Sources in Biology I Classroom Activities

by Alton L. Biggs

When I taught AP Biology, one of the few activities that I believe helped every student was the assignment of reading and analyzing primary sources from such journals as *Science*, *Nature*, *Journal of Heredity*, *Scientific American*, as well as a host of others. I still have students telling me more than twenty years later that this activity helped them learn to think more than any other. Having said that, I did a very poor job of introducing the same skills to my Biology I students. Of course a part of the reason was that they howled any time they were required to do anything more than the basics.

Now, however, we have No Child Left Behind, or as some teachers have dubbed it - No Child Left Untested! As a result, we also have the more stringent TAKS testing. One of the skills is the interpretation of scientific illustrations and data. I don't know why more teachers aren't spending a lot more time on this skill, but as I visit classrooms across the United States I don't see many.

On the next page, I'm including an example (*How Many Elephant Species Are There?*) of how original source material might be introduced into a Biology I classroom. The page might be used during the classification chapter, the ecology unit, or even a mammal chapter. There are ways to include graphical data as well. Perhaps we'll include some examples of these in the next issue of *The Nucleus*. Until then, why don't you share a trick you use in class with us?

Answers to Questions for *How Many Elephant Species Are There?*

1. Finding differences almost half as large as those between two genera indicates that the elephants are two different species.
2. DNA sequences
3. Yes, the Asia and African elephants are placed in separate genera. With half the genetic distance, it is reasonable that the African populations be separated into two species.
4. The forest-dwelling species of African elephant, *Loxodonta cyclotis*, would be in danger of poaching for ivory. Because of a loophole in the law, they would be unprotected.

How Many Species of Elephants Are There?

Draw a Conclusion

Are the African elephants separate species? Scientists find new species all the time, but you'd think that the largest land mammals on Earth wouldn't be that difficult to spot. However, as biologists use new techniques for studying classification, sometimes their thinking changes.



African Elephant (Savannah)

African Elephant (Forest)

Asian Elephant

Solve the problem

Biologists have known for more than 100 years that there are two species of elephants in Asia (*Elephas maximus*) and Africa (*Loxodonta africana*). In Africa, one population of elephants lives on the savannah, while the other is a forest-dweller. Until now, scientists have classified them as the same species, based on their belief that they freely interbred at the margins of their ranges.

Recently a group of scientists studied DNA variation in four genes in 21 elephant populations. As expected, the data indicated a 58% difference between the African and Asiatic species. They found that there was more than half that difference between the savannah populations and the forest-dwelling populations. Further studies found that the two African elephant groups interbreed only occasionally. Since the Asiatic elephant and African elephant are in separate genera, the scientists propose that the African elephants should be reclassified as separate species. These would be *L. africanus*, the savannah population, and *L. cyclotis*, the forest-dwelling population.

Thinking Critically

1. **Inferring** – A species can be defined as a group of organisms that can mate with each other to produce fertile offspring, but cannot mate with other groups to produce fertile offspring. Explain the evidence that there are two species of elephants in Africa.
2. **Classifying** – What type of evidence was used in the study?
3. **Analyzing** – If you supported the research, would you use three different scientific names for elephants? Explain why or why not.
4. **Analyzing** - At present only *L. africanus*, the savanna population of African elephants is protected from those who would kill them for their ivory. If the law is not changed quickly, how could this leave the forest elephants at risk?

Sources:

Gretchen Vogel, "African Elephant Species Splits in Two," *Science*, Volume 293, 24 August 2001, page 1414.
Alfred L. Roca, *et. al.*, "Genetic Evidence for Two Species of Elephant in Africa," *Science*, Volume 293, 24 August 2001, pages 1473-1476.

(Answers to questions can be found on Page 4)



Texas Association of Biology Teachers
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 1002 Madera Court
 Allen, Texas 75013-3639



Membership Application (Please Print All Information)

Name: _____ Telephone: (____) _____

Home Street Address, City, State, Zip: _____

E-mail address (*very important*): _____

Type of membership: Active (\$10) Student (\$5) Retired (\$5) Life (\$250)

Please complete the following to assure balanced representation in planning TABT activities

1. Professional Class (**Check one only**)

- Biology Teacher Department Chairman Curator/Interpreter
 Supervisor/Administrator Teacher Training Student
 Other _____

2. Male Female (**OPTIONAL**)

3. Have you ever received the OBTA? No Yes If yes, what year? _____

4. Number of years teaching? _____

5. Organizational Class (**Check one only**)

- Elementary Middle/Junior High Secondary College/University Zoo/Aquarium
 Business/Institution Other _____

6. Special Interests (**Check no more than 2**)

- Cellular/Molecular Botany/Plant Science Laboratory Science Reproduction/Evolution Zoology
 Computer Instruction Environmental Biology Teaching Materials Other _____

7. I am also a member of (**Check all that apply**): National Association of Biology Teachers (NABT)

National Science Teachers Association (NSTA) Science Teacher Association of Texas (STAT)

Please send membership application and dues to: Alton L. Biggs, TABT Records Clerk
 1002 Madera Court, Allen, TX 75013-3639

Make all checks payable to: Texas Association of Biology Teachers