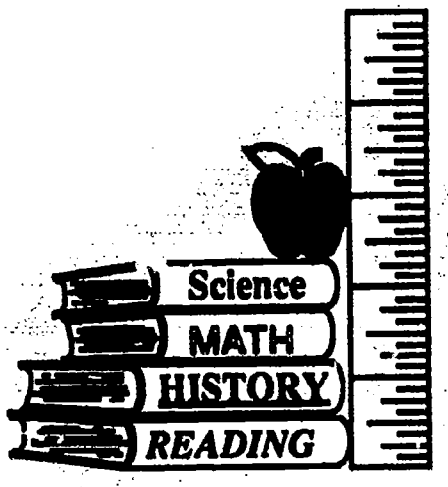
DOCUMENT RESUME

ED 316 405 SE 051 229

TITLE	Biology. Report of Student Performance. End of Course Testing, Spring 1989.
INSTITUTION	North Carolina State Dept. of Public Instruction, Div. of Accountability.
PUB DATE	89
NOTE	54p.; For a related document, see SE 051 230.
PUB TYPE	Reports - Evaluative/Feasibility (142) -- Statistical Data (110)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Academic Achievement; *Biology; Educational Assessment; *Science Tests; Scientific Concepts; Secondary Education; *Secondary School Science; State Surveys; *Statistical Data; *Student Evaluation
IDENTIFIERS	*North Carolina; *Science Achievement

ABSTRACT

The North Carolina End-of-Course Testing Program was established to provide student, school, and school system information about achievement in high school courses. This report describes: (1) "Characteristics of Biology Students"; (2) "Student Performance on the Core Test"; (3) "Anticipated Final Grades and Scores on the Core Test"; and (4) "Average Performance on the Curriculum Test." Each Biology student took a test containing 66 common or core items and one of five different sets of 34 items during the final days of the school year. The average core score was 39.2, or 59.4 percent correct. Average scores differed by parental education, ethnic group, grade level in school, and anticip ed final course grade. The select group of students taking Biology in the ninth grade had higher average scores than students at any other grade level. Performance in educational regions and public school systems, and state percentile tables for 1987-1989 are provided in the appendices.(YP)



End Of Course Testing

Report of Student Performance

BIOLOGY

Spring 1989

BOB ETHERIDGE
STATE SUPERINTENDENT OF PUBLIC INSTRUCTION

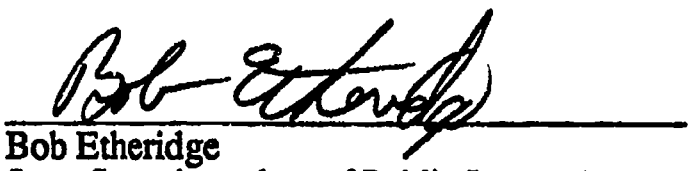
DIVISION OF ACCOUNTABILITY
NORTH CAROLINA DEPARTMENT OF PUBLIC INSTRUCTION
RALEIGH, NC 27603-1332

Published 1989

FOREWORD

The End-of-Course Testing Program was established in 1985-86 to provide comparative information about student performance and curricular information about school and school system performance on the goals and objectives outlined in the *Standard Course of Study* and the *Teacher Handbook*. By assessing student achievement in this manner, state and local educators can determine the degree to which students are meeting the expectations set forth in the *Standard Course of Study*.

Biology was first assessed in 1987 and is a course taken by most high school students to fulfill their life science requirement for high school graduation. As such, it is an important indicator for science achievement in North Carolina. Statewide, the average Biology score has increased by 1.2 points since the initial administration in 1987. Continued progress should be expected as school units put forth their best efforts to improve secondary education in North Carolina.



Bob Etheridge
State Superintendent of Public Instruction

ABSTRACT

The North Carolina End-of-Course Testing Program was established to provide student, school, and school system information about achievement in high school courses. The first Algebra I End-of-Course Test was administered in 1985-86. Algebra II and Biology were added to the testing program in 1986-87 and U.S. History was added in 1987-88. Geometry and Chemistry were added in 1988-89. Other high school courses will be added in future years.

Most high school students take Biology to fulfill their life science requirement for graduation. Approximately 84.0 percent of the 72,898 students who took the Biology test were in the tenth grade. Students taking Biology in the ninth grade are on an accelerated track in which Chemistry or Physics is taken to fulfill the physical science requirement and three advanced science courses can be completed after the ninth grade.

Each Biology student took a test containing 66 common or core items and one of five different sets of 34 items during the final days of the school year. The average core score was 39.2 or 59.4 percent correct. On average, the 1989 Biology students scored 0.2 raw score points higher than 1988 Biology students and 1.2 raw points higher than 1987 Biology students. Average scores differed by parental education, ethnic group, grade level in school, and anticipated final course grade. The select group of students taking Biology in the ninth grade had higher average scores than students at any other grade level.

Schools and school systems can examine relative performance on the 8 Biology goals and 33 Biology objectives to identify patterns of strengths and weaknesses. Each objective was measured by at least 6 items within each classroom.

Report of Student Performance

Biology

Spring 1989

Prepared by Chris Averett, Andrew McEachern, and Robert C. Evans, Jr.
Division of Accountability Services
North Carolina Department of Public Instruction
Raleigh, NC 27603-1332

Bob Etheridge
State Superintendent of Public Instruction

Published 1989

ACKNOWLEDGEMENTS

Development of a comprehensive report of student and school system performance in Biology requires the effort of many individuals. We would like to thank Kevin Kirby for producing the plots and graphs; George Stubblefield for producing many of the tables; and Faye Atkinson and Stephanie Moultrie for insuring that the final copies were made, collated, and distributed.

TABLE OF CONTENTS

List of Tables

List of Figures

Introduction

North Carolina has developed six end-of-course tests and is in the process of developing additional end-of-course tests within a number of subject areas. The purposes of the tests are twofold:

1. The tests provide information about each individual student's performance relative to that of other students in North Carolina.

2. The tests provide information about school and school system achievement on the subject area goals and objectives specified in the Standard Course of Study and the Teacher Handbook.

The development of all the end-of-course tests will require many years of effort. End-of-course tests are the final product of a process which includes: curriculum development and review; statewide curriculum surveys; test specification; the writing, review, and field-testing of a large pool of test items matched to objectives in the Teacher Handbook; test construction using selected items from the pool; and review, field-testing, and equating of different forms of each test. Several forms of each end-of-course test are developed so that the same tests are not administered in subsequent years.

Based on statewide enrollment patterns and recommendations made by two commissions on education, the subject areas chosen for initial test development were Biology and Algebra I. Item pools for these two courses were built in the spring of 1985. The results of the item development phase indicated that the Algebra I items were sufficient in quality and quantity to merit building end-of-course tests. Additional Biology items and an item bank for Algebra II were developed during the 1985-86 school year, including field-testing in selected sites in May of 1986. In addition to Algebra I, both Biology and Algebra II End-of-Course Tests were administered statewide at the end of the 1986-87 school year. Since then, tests in additional courses have been added to the End-of-Course Testing Program at the rate of one or two a year. The State Board of Education's schedule for development of end-of-course tests through the 1991-92 school year is displayed in a chart on the final page of this report.

Although end-of-course tests for different subject areas will vary in length, 110 minutes will be sufficient for administration of the multiple-choice tests in all subjects. The State Board of Education requires that end-of-course tests be administered during 110-minute periods within the last 10 days of school, and recommends that they be administered during final exam periods. In order for scores to be returned to school systems prior to the end of the school year, the proofs portion of the Geometry test is administered during regular class periods in the spring. Also, when implemented in 1991-92, the English II essay test may be administered during the spring for scoring to occur prior to the end of the year.

The first North Carolina Biology End-of-Course Test was administered at the end of the 1986-87 school year. Five forms of the Biology test were administered within each classroom. Each form consisted of 66 common items (the core test) and 34 variable items. Each year, five new forms are administered within each classroom. Each form includes a new, statistically equivalent, core test (66 items) and 34 new variable items. Comparisons of performance on the core items are appropriately made across individual students. Average core scores at the initial administration of the test in 1987 provide a baseline with which to compare subsequent performance. Statewide performance on the entire set of items (the 236-item curriculum test) provides a standard to which school and school system achievement of goals and objectives can be compared.

Characteristics of Biology Students

Other North Carolina testing programs assess achievement in basic subject areas of an entire cohort or class of students. End-of-course assessments are different in two ways. First, some of the courses are offered to students at different grade levels. Second, some courses are not required of all students; the students who do take the courses are a subgroup of the total student population.

Table 1 compares certain characteristics of Biology students with the population of all enrolled students. The top portion of the table provides the distribution of Biology students at various grade levels compared with the average daily membership in those grades. Most high school students take Biology to fulfill their life science requirement for graduation. Approximately 84.0 percent of the 72,898 students who took the Biology test were in the tenth grade. Students taking Biology in the ninth grade are on an accelerated track in which Chemistry or Physics is taken to fulfill the physical science requirement and three advanced science courses can be completed after the ninth grade.

In an independent study using a random sample of eleventh-grade students, 99.6 percent of North Carolina's students report having taken Biology.[1] The percentage taking Biology does not vary substantially by sex, ethnic group, or parental education. The second section of Table 1 compares the ethnic composition of Biology classes with the ethnic composition of K-12 pupil membership.[2] The ethnic distribution in Biology is similar to the ethnic distribution in overall student membership.

The third section of Table 1 compares parental education levels of Biology students with parental education levels of students in the eighth grade statewide.[3]

---

[1]Southern Regional Education Board (1987) and National Assessment of Educational Progress (1986) Assessment of Mathematics.

[2]Obtained from Table 11, North Carolina Public Schools, *Statistical Profile 1989*.

[3]Teachers recorded education level of the most educated parent of eighth-grade students taking the California Achievement Tests in 1988-89. Biology students recorded education level of their most educated parent.

Table 1

North Carolina Biology Students[1] Compared with 1988-89 First-Month Average Daily Membership in Ninth, Tenth, and Eleventh Grades

GRADE	ADM	Biology Students[1]	Percent of ADM	Percent of Biology Students
Ninth	87,675	5,802	6.6	8.0
Tenth	82,375	61,244	74.3	84.0
Eleventh	74,622	4,087	5.5	5.6
Other		1,765		2.4
TOTAL	244,672	72,893	29.8	100.0

1988-89 K-12 Pupil Membership[2] and Biology Students by Ethnic Group

Ethnic Group	Membership	Percent of Membership	Biology Students[1]	Percent of Biology
American Indian	17,403	1.6	1,189	1.6
Black	328,395	30.4	21,665	29.8
White	720,698	66.7	48,494	66.8
Other	13,989	1.3	1,246	1.7
TOTAL	1,080,485	100.0	72,594	99.9

Parental Education of Eighth-Grade and Biology Students

Parental Education	Eighth Grade Students[3]	Percent of Students[3]	Biology Students[1]	Percent of Biology
Eighth Grade or Less	2,091	2.7	933	1.3
8th to 12th	10,814	14.0	8,795	12.2
High School Graduate	31,213	40.3	22,507	31.3
More Than High School	33,345	43.0	39,567	55.1
TOTAL	77,463	100.0	71,802	99.9

[1]As identified in the 1988-89 administration of the Biology End-of-Course Test.
[2]Obtained from Table 11, North Carolina Public Schools, *Statistical Profile 1989*.
[3]As identified in 1988-89 administration of the California Achievement Test.

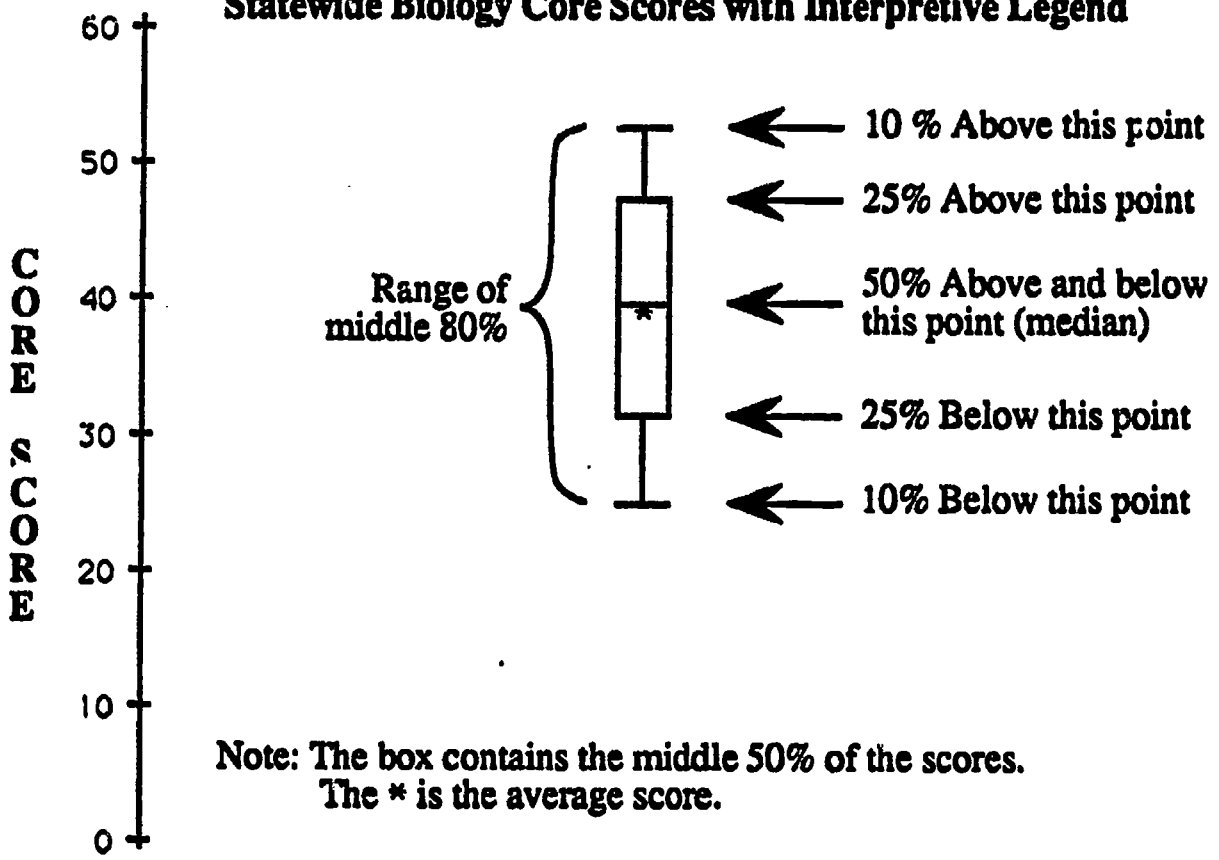
Student Performance on the Core Test

Summary scores for the 1989 core test, and for comparison, summary scores for the 1987 and 1988 administrations, are presented in Table 2. In 1989, the average score for the 72,898 students taking the core test was 39.2, or 59.4 percent correct. The 1989 average score is slightly higher than the 1988 average score and approximately 1.2 raw score points higher than the 1987 average score. See the Appendix for the 1987, 1988 and 1989 state percentile distributions.

Group achievement on tests, whether for schools, school systems, or the state, is usually reported using summary numbers such as the average or median which indicate typical performance for the group. One number, whether it is the average or the median score, provides limited information about performance. ***Box and whisker plots*** are graphs which describe not only typical performance, but also the performance of most of the students by showing the spread of scores. Box and whisker plots allow the comparison of the high and low scores for different groups as well as the middle scores.

Figure 1 shows how to interpret the box and whisker plots using statewide Biology scores for 1989. The *box* represents the middle 50 percent of scores with the median represented by a horizontal line inside the box. An 'x' inside the box shows the location of the average (mean) score. The *whiskers* extend up to the 90th percentile and down to the 10th percentile. The entire figure shows the range of the middle 80 percent of scores. As can be seen in Figure 1, the middle 50 percent of Biology students answered more than 31 and less than 48 items correctly. Approximately 10 percent of the students scored above 52 and 10 percent scored below 25.

Figure 1. Box and Whisker Plot of Distribution of 1989 Statewide Biology Core Scores with Interpretive Legend



Note: The box contains the middle 50% of the scores.
The * is the average score.

Table 2

Average Performance on Biology Core Test

	1987			1988			1989		
	Number Tested	Average Score	Average Percent Correct	Number Tested	Average Score	Average Percent Correct	Number Tested	Average Score	Average Percent Correct
State	82,646	38.0	57.6	77,154	39.0	59.1	72,898	39.2	59.4
Sex									
Male	40,715	38.1	57.8	38,329	39.2	59.4	36,115	39.1	59.2
Female	41,312	38.0	57.6	38,534	38.8	58.9	36,540	39.3	59.6
Ethnic Group									
American Indian	1,253	33.4	50.6	1,220	35.3	53.6	1,189	35.2	53.4
Black	23,219	32.8	49.6	22,270	33.3	50.4	21,665	34.0	51.4
White	56,626	40.3	61.1	52,185	41.5	62.9	48,494	41.6	63.1
Other	1,021	40.4	61.2	1,138	40.4	61.2	1,246	40.5	61.4
Parental Education									
Less than Eighth Grade	1,137	31.7	48.1	1,074	32.1	48.6	933	32.8	49.8
Eighth to Twelfth	9,744	32.6	49.4	9,413	33.3	50.4	8,795	33.8	51.1
High School Graduate	25,563	35.7	54.1	24,059	36.2	54.9	22,507	36.6	55.4
More than Twelfth	42,218	41.3	62.6	41,297	42.3	64.1	39,567	42.2	64.0
Grade in School									
Nine	6,261	43.5	65.8	6,431	45.6	69.1	5,802	46.5	70.4
Ten	69,888	37.9	57.5	64,314	38.9	58.9	61,244	38.9	59.0
Eleven	4,581	33.6	50.9	4,682	33.6	50.9	4,087	34.5	52.3
Other	1,916	34.3	52.0	1,727	34.1	51.6	1,765	35.1	53.1
Type of Class									
Applied/Technical	21,651	33.5	50.8	20,520	33.2	50.3	19,540	33.6	50.9
Academic	54,109	40.1	60.8	53,288	41.2	62.4	52,477	40.6	61.5

Table 2 also shows average performance on the 66-item core test by sex, parental education, ethnic group, grade in school, and type of class. Figures 2 through 5 show the distributions of Biology scores by various groups using box and whisker plots. Average performance for males was similar to average performance for females, but the range of scores for females is somewhat narrower than the range for males.

On average, white students and 'other' students scored higher than American Indian students and black students. The average score and score distribution for students who have parents educated beyond high school are higher than those for students who have less educated parents.

The largest difference in average core scores appeared among students taking Biology in different grade levels. Only 6.6 percent of the ninth-grade class took Biology; this select group of high achieving students scored higher than any other group. The average score for ninth-grade students was 46.5, more than 7 points higher than the average score for tenth-grade students, and 12 points higher than the average score for eleventh-grade students. In Figure 5 it can be seen that more than 75 percent of the ninth grade Biology students scored 40 or more while less than 50 percent of tenth grade students scored above this point. Just over 25 percent of eleventh grade students scored above this point.

Approximately 72.9 percent of Biology students are in an academic course while 27.1 percent are in an applied/technical course. The difference between the academic and applied/technical Biology courses is not in curricular goals and objectives, but in depth of coverage, emphasis on mathematics, and emphasis on applications in everyday life and work. On average, students in academic Biology classes scored significantly higher than students in applied/technical Biology classes.

Anticipated Final Grades and Scores on the Core Test

Biology teachers were asked to record each student's anticipated final grade on each answer sheet after the test was administered. Final grades were recorded for 71,957 of 72,898 Biology students. Table 3 gives the average score for various grade groups on the core test and the percentages of students who received the various grades for 1987, 1988 and 1989. A consistent difference of 4 to 5 raw score points exists between score averages for different anticipated final grades. This pattern is an indication of test validity in that the results parallel the grading practices of teachers. The average for 'C' students was similar to the statewide average, placing these students in the middle of the score distribution.

Box and whisker plots for the score distributions for each letter grade are displayed in Figure 6. The plot illustrates the spread of score points within letter grades and overlap in distributions across letter grades. For example, while the typical 'D' student scored well below the typical 'C' student, more than 25 percent of 'D' students received an above average core score.

Figure 2. Distributions of Biology Core Scores by Sex -- 1989

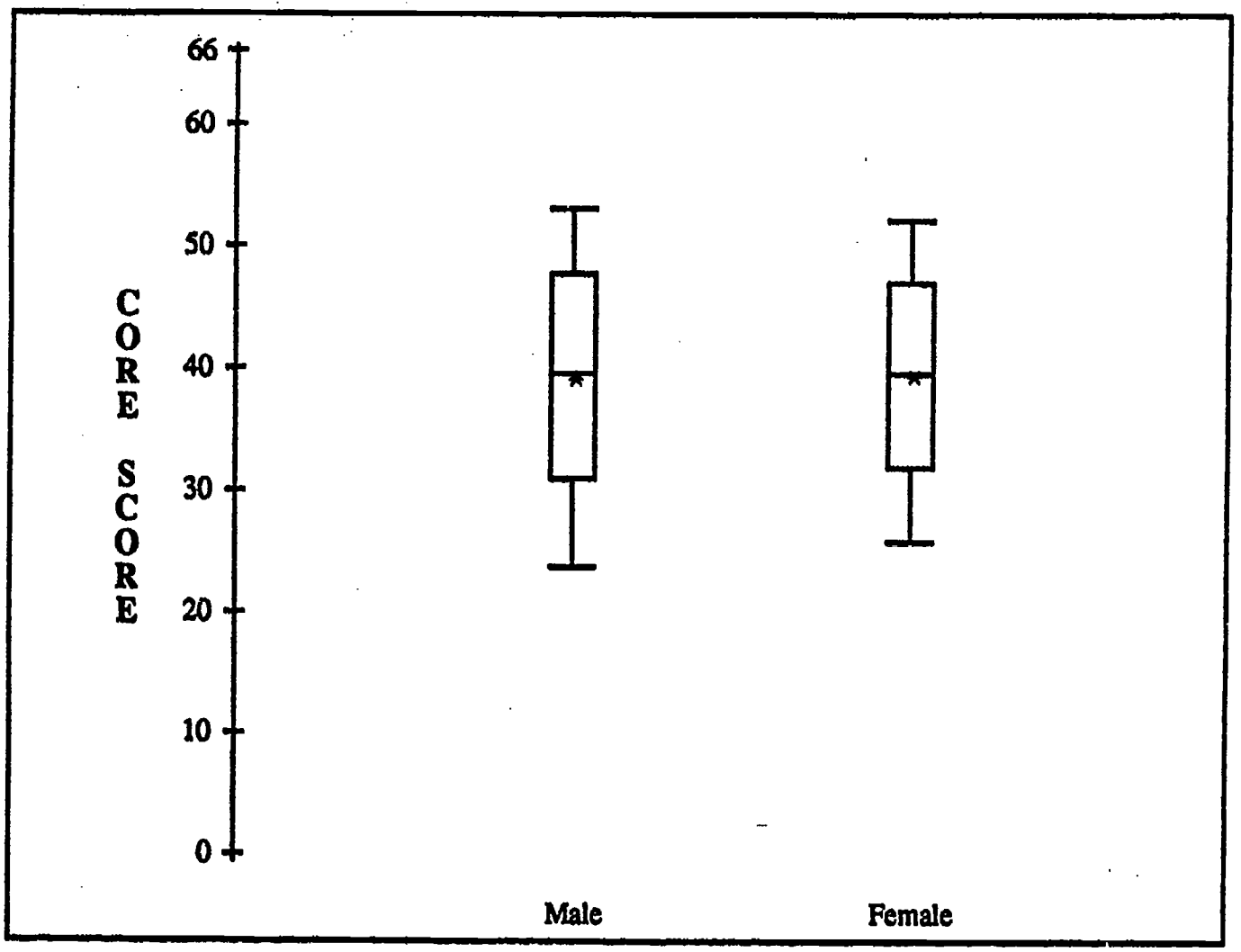


Figure 3. Distributions of Biology Core Scores by Ethnic Group -- 1989

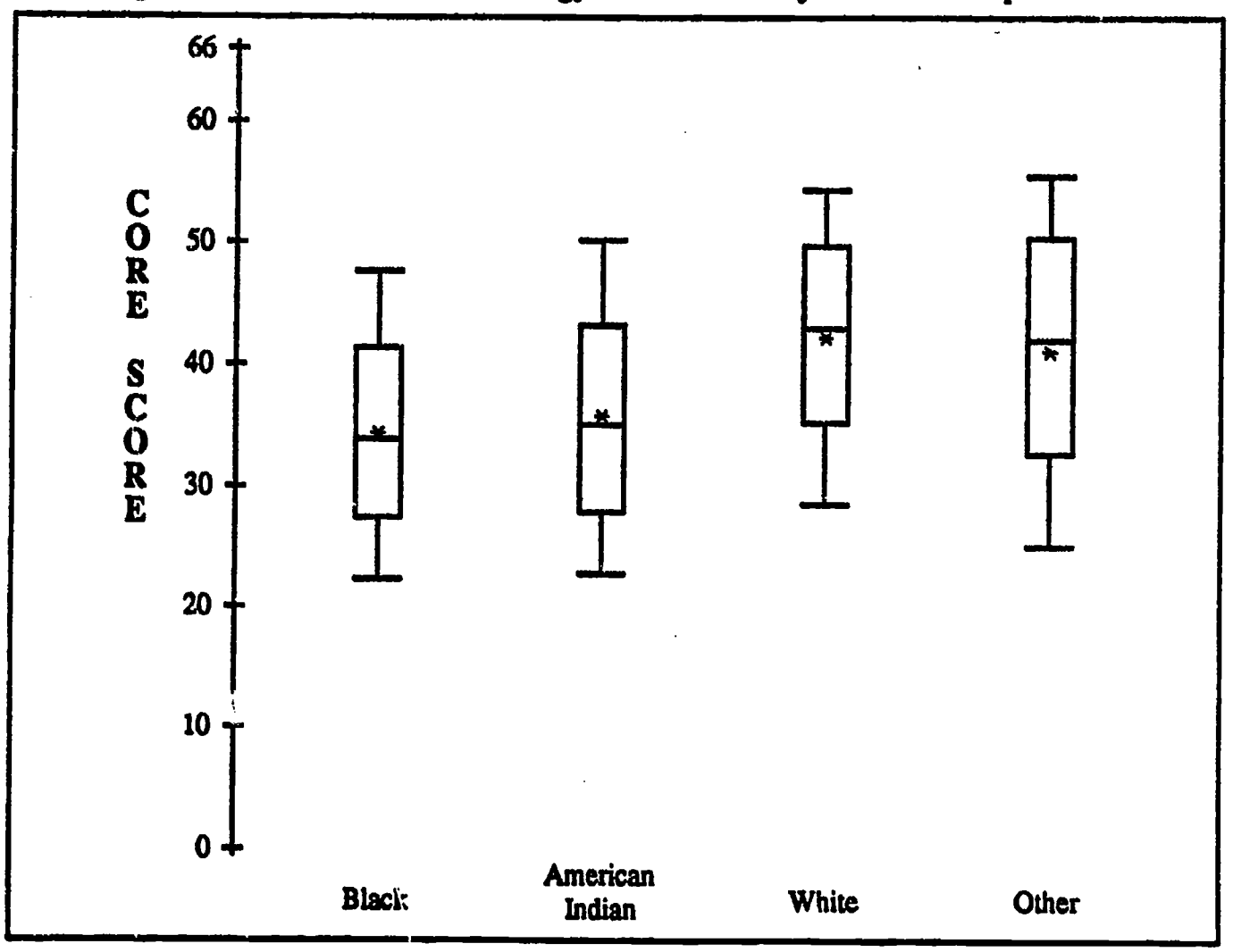


Figure 4. Distributions of Biology Core Scores by Parental Education -- 1989

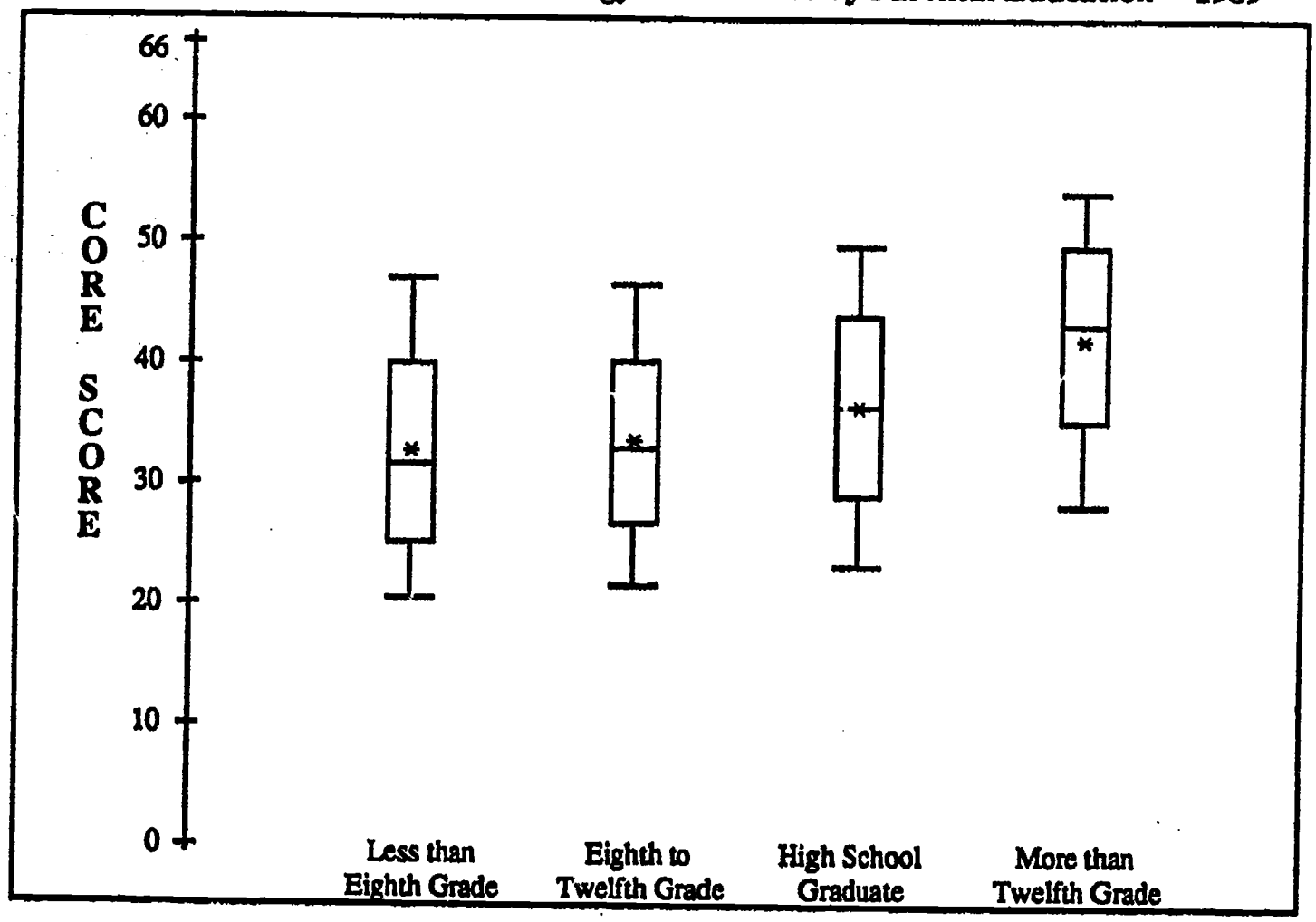


Figure 5. Distributions of Biology Core Scores by Grade Level -- 1989

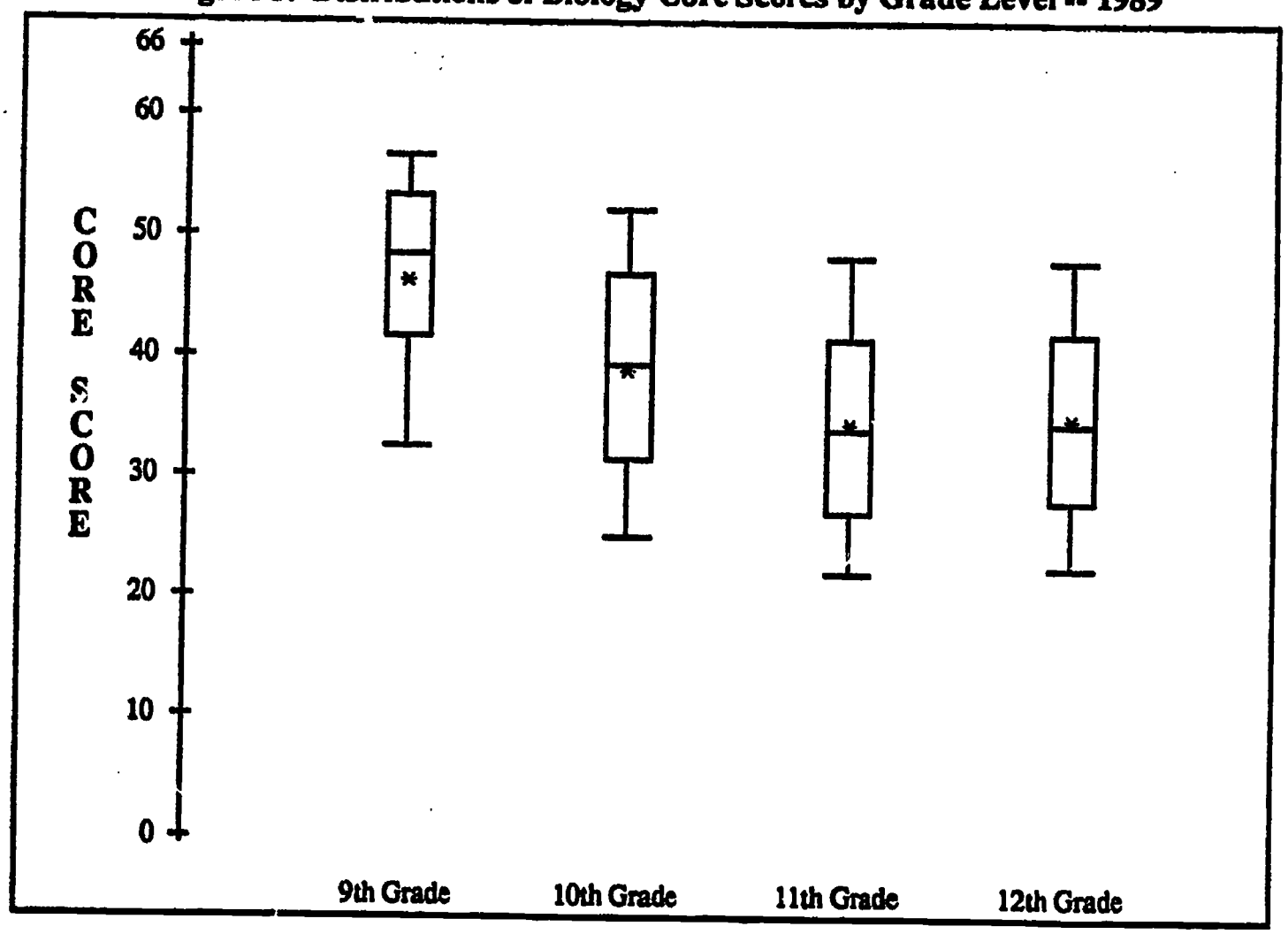


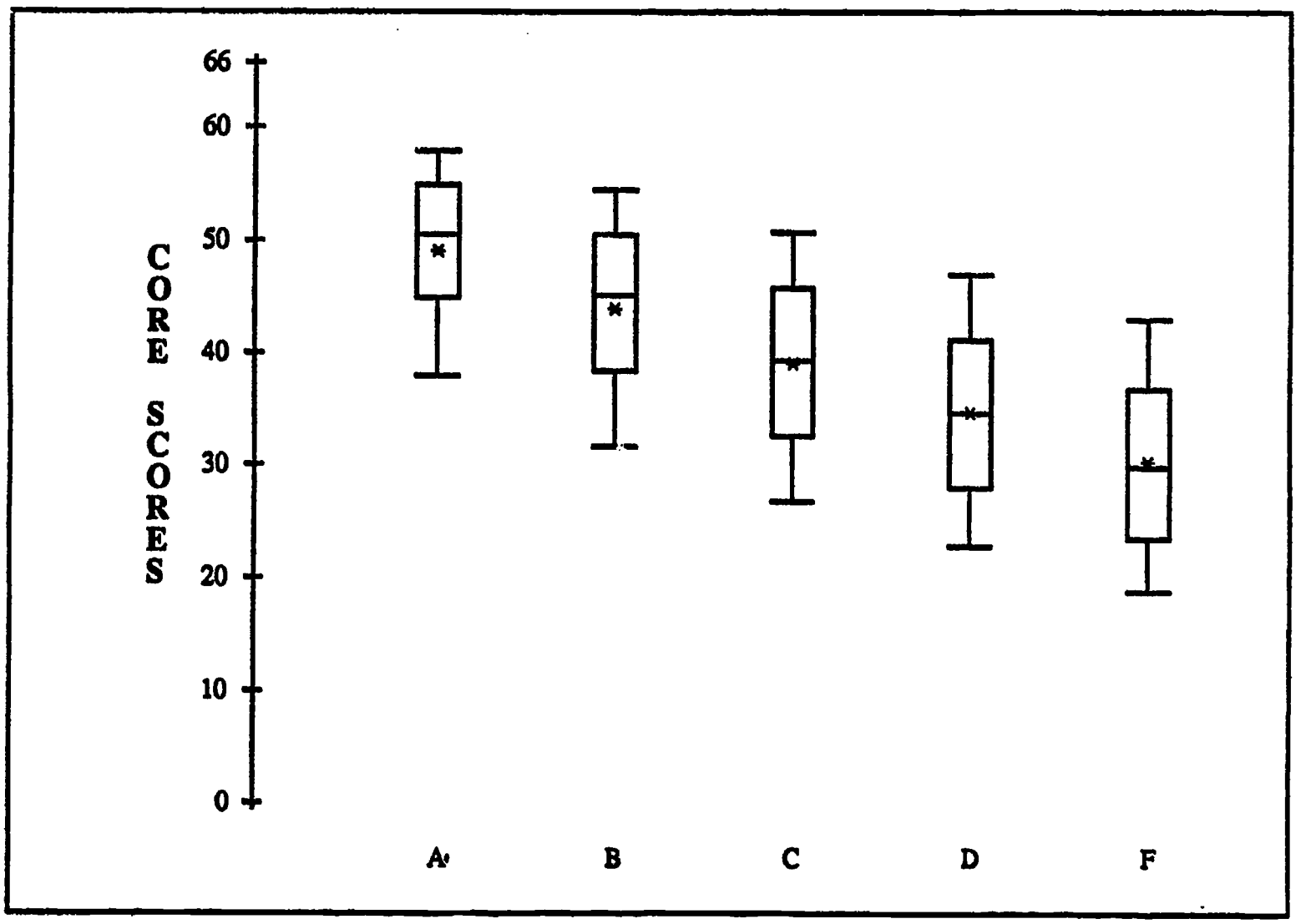
Table 3

Average 66-Item Core Scores by Anticipated Final Grade and Percentage of Students Receiving Each Grade*: Biology End-of-Course Test: 1987-1989

	1987		1988		1989	
Grades	Average Scores	Percentages	Average Scores	Percentages	Average Scores	Percentages
A	47.7	10.1	49.2	10.1	49.1	10.2
B	42.7	22.4	44.0	22.4	44.1	22.9
C	38.2	30.4	39.1	30.6	39.1	30.6
D	34.2	24.1	34.5	24.2	34.7	24.0
F	30.5	13.0	30.6	12.7	30.5	12.3

* 1987: N=72,342 1988: N=74,853 1989: N=71,957

Figure 6. Distributions of Biology Core Scores by Anticipated Final Grade -- 1989



Average Performance on the Curriculum Test

Table 4 shows statewide average performance on the 236-item curriculum test and the 8 goals of the Biology curriculum. Statewide performance on all goals and objectives is presented in Table 5. All but two objectives were measured by 7 test items. Goal and objective scores yield important information about performance within specific areas in the curriculum. The average percentage correct of all items measured was 59.9.

It is important for students to understand the nature of biology as a science and how it relates to them as human beings. Overall goal performance was high for two of the three goals which relate biology to humans: Goal 1, "understand the nature and relationship of science to human endeavor," (69.4 percent correct) and Goal 6, "understand the biology of humans," (62.7 percent correct). Objective performance within Goal 1 was highest for a critical area in learning about biology as a scientific endeavor: Objective 1.2, "understand the methods of science." However, average performance on Goal 8, "understand how the dynamics of biology are relevant to people," was the lowest of the 8 goal areas (53.2 percent correct).

Goals 2 and 3 deal with the basic processes of life. Within Goal 2, scores were highest (71.5 percent) on Objective 2.4, "understand chemical processes of life " and lowest (54.7 percent) on Objective 2.2, "know the difference between living and nonliving things." Performance on Goal 3 was 5 percentage points lower than the performance over all items. Performance on Objective 3.4, "know the diversity of life," was the highest (67.1 percent) of any objective in Goal 3.

Goal 4, "understand the nature of organisms," deals with the taxonomy of living things, including general knowledge of anatomy, physiology, and major representatives of the various kingdoms. Average performance on this goal (57.8 percent) was slightly below the average for all Biology test items.

A relatively new area in the Biology curriculum presented in the *Standard Course of Study* and the *Teacher Handbook* involves understanding the behavior of living things (Goal 5). Given that this goal was not emphasized in the previous Biology curriculum, the average performance of 60.7 shows that teachers are including this new area in their courses. As in the previous two years, average performance within this goal was weakest on Objective 5.5, "have a general understanding of plant tropism."

Understanding ecology, including the nature of populations, communities, and ecosystems, and the impact of human behavior on the environment, is the focus of Goal 7. Average performance on the entire goal was 55.0 percent, or almost 5 percentage points below the average of all Biology test items.

Statewide performance across all Biology goals and objectives shows areas of strength and areas in which improvement is needed. However, given the broad scope of the biology curriculum, average performance on the goals is consistent, indicating that, in general, teachers are covering all curricular areas and are not concentrating on a few areas at the expense of others. As schools and school systems examine their own performance on these goals and objectives, they can identify patterns of strengths and weaknesses relative to statewide performance.

Table 4

1989 Summary Results for Biology: 66-Item Core Test and 236-Item Curriculum Test

STATE REPORT

GOALS

GOAL 1: UNDERSTAND THE NATURE AND RELATIONSHIP OF SCIENCE TO HUMAN ENDEAVOR
GOAL 2: UNDERSTAND THE NATURE OF LIFE
GOAL 3: UNDERSTAND THE CONTINUITY OF LIFE
GOAL 4: UNDERSTAND THE NATURE OF ORGANISMS
GOAL 5: UNDERSTAND THE BEHAVIOR OF LIVING THINGS
GOAL 6: UNDERSTAND THE BIOLOGY OF HUMANS
GOAL 7: UNDERSTAND ECOLOGY
GOAL 8: UNDERSTAND HOW THE DYNAMICS OF BIOLOGY ARE RELEVANT TO PEOPLE

	NUMBER TESTED	GOAL 1	GOAL 2	GOAL 3	GOAL 4	GOAL 5	GOAL 6	GOAL 7	GOAL 8	AVG CORE	PCT CORE	AVG ALL ITEMS	PCT ALL ITEMS
NUMBER OF ITEMS		28	35	28	14	42	35	33	21	66	66	236	236
ALL STUDENTS TESTED	72898	69.4	62.4	54.9	57.8	60.7	62.7	55.0	53.2	39.2	59.4	141.4	59.9
SEX													
MALE	36115	69.3	62.6	54.7	58.3	61.2	61.9	55.8	52.2	39.1	59.2	141.6	60.0
FEMALE	36540	69.4	62.2	55.2	57.3	60.1	63.5	54.1	54.1	39.3	59.6	141.4	59.9
PARENTAL EDUCATION													
LESS THAN 8TH	933	58.1	52.5	45.5	48.6	50.4	52.0	43.1	45.3	32.8	49.8	117.3	49.7
8TH TO 12TH	8795	60.9	53.8	46.8	49.5	52.1	54.4	45.3	46.3	33.8	51.1	121.5	51.5
HIGH SCHOOL	22507	65.4	58.4	50.8	53.7	56.4	58.6	50.4	50.0	36.6	55.4	131.8	55.9
MORE THAN 12TH	39567	74.0	67.1	59.6	62.4	65.4	67.4	60.2	56.9	42.2	64.0	152.5	64.6

NOTE: THE NUMBER OF ITEMS IN EACH GOAL AREA IS DIRECTLY PROPORTIONAL TO THE NUMBER OF OBJECTIVES FOR THE GOAL. FIVE FORMS OF A 100-ITEM TEST WERE ADMINISTERED IN EVERY CLASSROOM. SIXTY-SIX OF THE 100 ITEMS WERE COMMON ACROSS THE FIVE FORMS (CORE) THE REMAINING 34 ITEMS VARIED BY FORM, SO THAT 236 ITEMS WERE MEASURED IN EVERY CLASSROOM. GOAL AREAS INCLUDE BOTH CORE AND VARIABLE ITEMS.

Table 4, cont'd.

STATE REPORT

GOALS

GOAL 1: UNDERSTAND THE NATURE AND RELATIONSHIP OF SCIENCE TO HUMAN ENDEAVOR
GOAL 2: UNDERSTAND THE NATURE OF LIFE
GOAL 3: UNDERSTAND THE CONTINUITY OF LIFE
GOAL 4: UNDERSTAND THE NATURE OF ORGANISMS
GOAL 5: UNDERSTAND THE BEHAVIOR OF LIVING THINGS
GOAL 6: UNDERSTAND THE BIOLOGY OF HUMANS
GOAL 7: UNDERSTAND ECOLOGY
GOAL 8: UNDERSTAND HOW THE DYNAMICS OF BIOLOGY ARE RELEVANT TO PEOPLE

	NUMBER TESTED	GOAL 1	GOAL 2	GOAL 3	GOAL 4	GOAL 5	GOAL 6	GOAL 7	GOAL 8	AVG CORE	PCT CORE	AVG ALL ITEMS	PCT ALL ITEMS
NUMBER OF ITEMS		28	35	28	14	42	35	33	21	66	66	236	236
GRADE IN SCHOOL													
NINE	5802	78.7	74.1	67.1	69.9	71.3	73.2	67.8	62.0	46.5	70.4	167.5	71.0
TEN	61244	69.1	62.0	54.4	57.2	J.3	62.3	54.5	52.9	38.9	59.0	140.5	59.5
ELEVEN	4087	62.3	54.6	47.9	51.8	53.7	55.8	47.0	46.9	34.5	52.3	124.7	52.8
OTHER	1765	63.4	56.0	48.7	52.8	54.5	56.6	47.8	48.7	35.1	53.1	127.1	53.9
ETHNIC GROUP													
AMER.INDIAN	1189	62.2	56.3	47.8	51.6	53.9	56.3	47.0	48.1	35.2	53.4	125.7	53.2
BLACK	21665	60.3	55.2	47.0	50.1	51.3	55.0	45.9	47.9	34.0	51.4	122.4	51.9
WHITE	48494	73.6	65.7	58.6	61.3	65.0	66.3	59.1	55.6	41.6	63.1	150.3	63.7
OTHER	1246	70.3	65.8	58.1	61.1	62.2	63.6	58.8	57.0	40.5	61.4	147.3	62.4

NOTE: THE NUMBER OF ITEMS IN EACH GOAL AREA IS DIRECTLY PROPORTIONAL TO THE NUMBER OF OBJECTIVES FOR THE GOAL. FIVE FORMS OF A 100-ITEM TEST WERE ADMINISTERED IN EVERY CLASSROOM. SIXTY-SIX OF THE 100 ITEMS WERE COMMON ACROSS THE FIVE FORMS (CORE). THE REMAINING 34 ITEMS VARIED BY FORM, SO THAT 236 ITEMS WERE MEASURED IN EVERY CLASSROOM. GOAL AREAS INCLUDE BOTH CORE AND VARIABLE ITEMS.

Table 5

1989 Summary Results for Biology Goals and Objectives

		STATE
GOAL 1:	UNDERSTAND THE NATURE AND RELATIONSHIP OF SCIENCE TO HUMAN ENDEAVOR (28)	69.4
1.1:	KNOW ABOUT THE NATURE OF SCIENCE (7)	56.6
1.2:	UNDERSTAND THE METHODS OF SCIENCE (7)	77.9
1.3:	KNOW THE LIMITATIONS OF SCIENCE (7)	74.8
1.4:	KNOW ABOUT THE TECHNOLOGY OF SCIENCE (7)	68.1
GOAL 2:	UNDERSTAND THE NATURE OF LIFE (40)	62.4
2.1:	UNDERSTAND THAT BIOLOGY IS THE SCIENCE OF LIFE AND HAS MANY DIFFERENT COMPONENTS (7)	71.5
2.2:	KNOW THE DIFFERENCES BETWEEN LIVING AND NONLIVING THINGS (7)	54.7
2.3:	KNOW ABOUT THE CELL, THE BASIC UNIT OF LIVING THINGS (7)	64.4
2.4:	UNDERSTAND CHEMICAL PROCESSES OF LIFE (7)	66.0
2.5:	KNOW THAT LIVING THINGS EXIST IN A STATE OF DYNAMIC EQUILIBRIUM (7)	55.4
GOAL 3:	UNDERSTAND THE CONTINUITY OF LIFE (28)	54.9
3.1:	KNOW THAT LIVING THINGS RECEIVE CHARACTERISTICS FROM THE PARENT ORGANISM(S) (7)	50.7
3.2:	KNOW THAT GENES COMPOSED OF DNA ARE RESPONSIBLE FOR INHERITED CHARACTERISTICS (7)	44.7
3.3:	KNOW THAT ORGANIC VARIATION IS IMPORTANT AND NECESSARY FOR SPECIES SURVIVAL (7)	57.2
3.4:	KNOW ABOUT THE DIVERSITY OF LIVING THINGS (7)	67.1
GOAL 4:	UNDERSTAND THE NATURE OF ORGANISMS (14)	57.8
4.1:	HAVE A GENERAL KNOWLEDGE OF ANATOMY AND PHYSIOLOGY OF ORGANISMS (7)	57.6
4.2:	HAVE A GENERAL KNOWLEDGE OF MAJOR REPRESENTATIVES OF KINGDOMS OF LIVING THINGS (7)	57.9
GOAL 5:	UNDERSTAND THE BEHAVIOR OF LIVING THINGS (42)	60.7
5.1:	KNOW THAT FOR ALL ORGANISMS, SURVIVAL REQUIRES SUITABLE RESPONSES TO THE EXTERNAL ENVIRONMENT (7)	62.8
5.2:	HAVE A GENERAL UNDERSTANDING OF PLANT TROPISM (7)	54.7
5.3:	HAVE A GENERAL KNOWLEDGE OF INNATE BEHAVIOR (7)	61.4
5.4:	KNOW THE CHARACTERISTICS OF LEARNED BEHAVIOR (7)	60.6
5.5:	KNOW ABOUT BIOLOGICAL RHYTHMS (7)	67.9
5.6:	HAVE A GENERAL KNOWLEDGE OF ENVIRONMENTAL EFFECTS AND BEHAVIOR (7)	56.6

NOTE: THE NUMBER OF ITEMS IN EACH GOAL AREA IS DIRECTLY PROPORTIONAL TO THE NUMBER OF OBJECTIVES FOR THE GOAL. FIVE FORMS OF A 100-ITEM TEST WERE ADMINISTERED IN EVERY CLASSROOM. SIXTY-SIX OF THE 100 ITEMS WERE COMMON ACROSS THE FIVE FORMS (CORE). THE REMAINING 34 ITEMS VARIED BY FORM, SO THAT 236 ITEMS WERE MEASURED IN EVERY CLASSROOM. GOAL AREAS INCLUDE BOTH CORE AND VARIABLE ITEMS.

Table 5, cont'd.

		STATE
GOAL 6:	UNDERSTAND THE BIOLOGY OF HUMANS (35)	62.7
6.1:	UNDERSTAND THE NATURE OF HUMAN ORIGIN AND DEVELOPMENT (7)	61.1
6.2:	HAVE A GENERAL KNOWLEDGE OF HUMAN ANATOMY (7)	60.6
6.3:	HAVE A GENERAL KNOWLEDGE OF HUMAN PHYSIOLOGY (7)	61.7
6.4:	HAVE A GENERAL KNOWLEDGE OF HUMAN REPRODUCTION (7)	52.9
6.5:	HAVE A GENERAL KNOWLEDGE OF MAJOR GENETIC AND ENVIRONMENTAL FACTORS THAT AFFECT HEALTH (7)	77.2
GOAL 7:	UNDERSTAND ECOLOGY (33)	55.0
7.1:	UNDERSTAND THE NATURE OF POPULATIONS (7)	48.7
7.2:	UNDERSTAND THE NATURE OF COMMUNITIES (7)	58.8
7.3:	UNDERSTAND THE NATURE OF ECOSYSTEMS (13)	54.9
7.4:	HAVE A GENERAL KNOWLEDGE OF THE INFLUENCES OF HUMAN ACTIVITY ON THE ENVIRONMENT (6)	58.1
GOAL 8:	UNDERSTAND HOW THE DYNAMICS OF BIOLOGY ARE RELEVANT TO PEOPLE (21)	53.2
8.1:	KNOW ABOUT ADVANCES AND DISCOVERIES IN BIOLOGY (7)	56.7
8.2:	KNOW THAT MANY CURRENT SOCIETAL ISSUES ARE RELATED TO BIOLOGY (7)	40.8
8.3:	KNOW THAT MANY CAREERS ARE AVAILABLE IN THE BIOLOGICAL SCIENCES (7)	61.9
	PERCENT CORRECT ALL ITEMS (236)	59.9
	AVERAGE SCORE ALL ITEMS (236)	141.4
	NUMBER OF STUDENTS TESTED	72898

NOTE: THE NUMBER OF ITEMS IN EACH GOAL AREA IS DIRECTLY PROPORTIONAL TO THE NUMBER OF OBJECTIVES FOR THE GOAL. FIVE FORMS OF A 100-ITEM TEST WERE ADMINISTERED IN EVERY CLASSROOM. SIXTY-SIX OF THE 100 ITEMS WERE COMMON ACROSS THE FIVE FORMS (CORE). THE REMAINING 34 ITEMS VARIED BY FORM, SO THAT 236 ITEMS WERE MEASURED IN EVERY CLASSROOM. GOAL AREAS INCLUDE BOTH CORE AND VARIABLE ITEMS.

APPENDIX

Biology Core and Goal Performance in Educational Regions and Public School System

Table 6 presents average performance on the 66-item core test, the 23-item curriculum test, and the 8 goals of Biology for the eight educational regions. Average core scores between educational regions differed by no more than 2.5 raw score points.

Average performance on the Biology test for the public school systems is listed in Table 7. School systems are arranged by educational region.

Biology Box and Whisker Plots of Core Scores for Educational Regions and Public School Systems

Figure 7 displays the distributions of core scores for eight educational regions using box and whisker plots. Public school system box and whisker plots are presented in Figures 8 through 15. See the interpretive legend in Figure 1 on page 4.

State Percentile Tables for 1987, 1988 and 1989

Tables 8 through 10 give summary statistics, the score distributions, and state percentiles for 1987, 1988 and 1989. The 1987 percentiles provide a baseline to which subsequent performance on the equivalent core tests can be compared.

Table 6

1989 Regional Summary Results for Biology: 66-Item Core Test and 236-Item Curriculum Test

STATE REPORT

GOALS

GOAL 1: UNDERSTAND THE NATURE AND RELATIONSHIP OF SCIENCE TO HUMAN ENDEAVOR
GOAL 2: UNDERSTAND THE NATURE OF LIFE
GOAL 3: UNDERSTAND THE CONTINUITY OF LIFE
GOAL 4: UNDERSTAND THE NATURE OF ORGANISMS
GOAL 5: UNDERSTAND THE BEHAVIOR OF LIVING THINGS
GOAL 6: UNDERSTAND THE BIOLOGY OF HUMANS
GOAL 7: UNDERSTAND ECOLOGY
GOAL 8: UNDERSTAND HOW THE DYNAMICS OF BIOLOGY ARE RELEVANT TO PEOPLE

	NUMBER TESTED	GOAL 1	GOAL 2	GOAL 3	GOAL 4	GOAL 5	GOAL 6	GOAL 7	GOAL 8	AVG CORE	PCT CORE	AVG ALL ITEMS	PCT ALL ITEMS
NUMBER OF ITEMS		28	35	28	14	42	35	33	21	66	66	236	236
NORTHEAST	3973	67.6	62.0	55.1	56.9	59.8	62.5	54.5	53.4	39.1	59.2	140.2	59.4
SOUTHEAST	8502	69.1	62.6	54.6	57.9	60.7	62.6	55.3	53.4	39.2	59.4	141.5	60.0
CENTRAL	11646	70.4	64.3	56.7	59.7	61.5	64.0	56.7	54.6	40.1	60.7	144.9	61.4
SOUTH CENTRAL	9348	66.4	59.7	51.5	55.0	58.0	60.2	51.8	51.4	37.6	56.9	134.9	57.2
NORTH CENTRAL	12939	70.4	63.4	56.4	58.5	61.7	63.7	55.7	53.9	39.9	60.4	143.8	60.9
SOUTHWEST	12911	68.6	61.4	53.8	56.5	59.1	61.5	53.3	51.8	38.2	57.9	138.5	58.7
NORTHWEST	7292	70.9	63.0	55.7	58.6	62.5	64.0	56.2	54.0	40.0	60.6	144.3	61.1
WESTERN	6287	70.7	62.3	55.3	58.8	62.4	63.2	56.6	52.9	39.8	60.4	143.4	60.8

NOTE: THE NUMBER OF ITEMS IN EACH GOAL AREA IS DIRECTLY PROPORTIONAL TO THE NUMBER OF OBJECTIVES FOR THE GOAL. FIVE FORMS OF A 100-ITEM TEST WERE ADMINISTERED IN EVERY CLASSROOM. SIXTY-SIX OF THE 100 ITEMS WERE COMMON ACROSS THE FIVE FORMS (CORE). THE REMAINING 34 ITEMS VARIED BY FORM, SO THAT 236 ITEMS WERE MEASURED IN EVERY CLASSROOM. GOAL AREAS INCLUDE BOTH CORE AND VARIABLE ITEMS.

Table 7

1989 School System Summary Results for Biology: 66-Item Core Test and 236-Item Curriculum Test

REGION NORTHEAST

REGION REPORT

GOALS

GOAL 1: UNDERSTAND THE NATURE AND RELATIONSHIP OF SCIENCE TO HUMAN ENDEAVOR
GOAL 2: UNDERSTAND THE NATURE OF LIFE
GOAL 3: UNDERSTAND THE CONTINUITY OF LIFE
GOAL 4: UNDERSTAND THE NATURE OF ORGANISMS
GOAL 5: UNDERSTAND THE BEHAVIOR OF LIVING THINGS
GOAL 6: UNDERSTAND THE BIOLOGY OF HUMANS
GOAL 7: UNDERSTAND ECOLOGY
GOAL 8: UNDERSTAND HOW THE DYNAMICS OF BIOLOGY ARE RELEVANT TO PEOPLE

	NUMBER TESTED	GOAL 1	GOAL 2	GOAL 3	GOAL 4	GOAL 5	GOAL 6	GOAL 7	GOAL 8	AVG CORE	PCT CORE	AVG ALL ITEMS	PCT ALL ITEMS
NUMBER OF ITEMS		28	35	28	14	42	35	33	21	66	66	236	236
BEAUFORT COUNTY	297	66.3	62.5	53.9	57.8	59.2	63.2	55.1	56.0	39.3	59.6	140.5	59.6
WASHINGTON CITY	266	64.7	60.3	53.1	52.6	56.9	58.5	51.9	48.1	36.6	55.5	133.1	56.4
BERTIE COUNTY	245	63.9	58.1	51.9	52.9	58.0	57.7	52.4	52.7	37.5	56.8	133.1	56.4
CAMDEN COUNTY	67	71.9	68.4	63.3	64.9	69.4	68.0	64.6	56.9	44.4	67.3	157.1	66.6
CHOWAN COUNTY	173	66.5	66.5	56.1	60.0	60.6	66.4	58.7	55.8	40.0	60.6	145.8	61.8
CURRITUCK COUNTY	144	73.8	66.0	62.0	65.2	64.7	64.4	62.3	52.7	42.8	64.9	151.6	64.2
DARE COUNTY	159	81.5	73.9	64.4	72.1	72.6	73.4	66.3	58.5	46.8	70.9	167.1	70.8
GATES COUNTY	103	67.5	60.4	54.2	52.0	57.8	58.5	54.1	52.8	37.3	56.5	136.2	57.7
HERTFORD COUNTY	277	63.8	56.9	50.2	52.2	53.8	58.7	49.7	50.4	35.6	53.9	129.3	54.8
HYDE COUNTY	86	63.1	59.5	49.3	46.0	55.9	58.7	46.0	48.6	35.5	53.8	128.1	54.3
MARTIN COUNTY	406	65.2	60.4	54.4	58.1	57.7	62.7	52.6	53.7	38.0	57.6	137.6	58.3
PASQUOTANK COUNTY	339	69.4	61.2	51.8	55.1	61.3	60.7	52.5	53.5	38.4	58.2	138.6	58.7
PERQUIMANS COUNTY	89	68.7	61.7	54.0	57.9	64.6	66.8	51.6	52.7	39.2	59.5	142.6	60.4
PITT COUNTY	1062	69.3	63.4	57.6	57.9	61.0	64.6	56.3	54.1	40.6	61.5	144.0	61.0
TYRRELL COUNTY	51	66.8	68.6	56.0	59.1	62.2	61.0	54.8	54.5	40.0	60.6	143.6	60.9
WASHINGTON COUNTY	209	62.2	55.5	50.4	50.8	53.2	55.8	46.7	53.	34.9	52.9	126.5	53.6

NOTE: THE NUMBER OF ITEMS IN EACH GOAL AREA IS DIRECTLY PROPORTIONAL TO THE NUMBER OF OBJECTIVES FOR THE GOAL. FIVE FORMS OF A 100-ITEM TEST WERE ADMINISTERED IN EVERY CLASSROOM. SIXTY-SIX OF THE 100 ITEMS WERE COMMON ACROSS THE FIVE FORMS (CORE). THE REMAINING 34 ITEMS VARIED BY FORM, SO THAT 236 ITEMS WERE MEASURED IN EVERY CLASSROOM. GOAL AREAS INCLUDE BOTH CORE AND VARIABLE ITEMS. CAUTION SHOULD BE USED WHEN INTERPRETING RESULTS BASED ON SMALL NUMBERS OF STUDENTS OR ITEMS.

Table 7, cont'd.

REGION SOUTHEAST

REGION REPORT

GOALS

GOAL 1: UNDERSTAND THE NATURE AND RELATIONSHIP OF SCIENCE TO HUMAN ENDEAVOR
GOAL 2: UNDERSTAND THE NATURE OF LIFE
GOAL 3: UNDERSTAND THE CONTINUITY OF LIFE
GOAL 4: UNDERSTAND THE NATURE OF ORGANISMS
GOAL 5: UNDERSTAND THE BEHAVIOR OF LIVING THINGS
GOAL 6: UNDERSTAND THE BIOLOGY OF HUMANS
GOAL 7: UNDERSTAND ECOLOGY
GOAL 8: UNDERSTAND HOW THE DYNAMICS OF BIOLOGY ARE RELEVANT TO PEOPLE

	NUMBER TESTED	GOAL 1	GOAL 2	GOAL 3	GOAL 4	GOAL 5	GOAL 6	GOAL 7	GOAL 8	AVG CORE	PCT CORE	AVG ALL ITEMS	PCT ALL ITEMS
NUMBER OF ITEMS		28	35	28	14	42	35	33	21	66	66	236	236
BRUNSWICK COUNTY	584	69.8	62.9	54.7	55.7	60.9	63.1	57.4	54.0	39.9	60.4	142.7	60.5
CARTERET COUNTY	507	70.9	67.1	57.8	58.5	66.7	65.1	60.3	56.1	41.1	62.2	150.2	63.6
NEW BERN-CRAVEN	926	67.8	63.1	55.8	60.1	60.7	62.0	57.8	52.3	39.0	59.1	142.3	60.3
DUPLIN COUNTY	549	66.9	60.6	53.5	55.5	59.4	61.9	52.4	52.3	38.5	58.3	137.5	58.3
GREENE COUNTY	183	69.0	62.3	53.3	58.3	56.2	65.5	55.1	51.2	38.0	57.6	139.7	59.2
JONES COUNTY	115	64.0	58.9	51.5	59.5	55.6	62.9	49.1	56.7	36.8	55.8	134.7	57.1
LENOIR COUNTY	462	66.6	61.2	52.4	54.0	55.2	57.1	51.0	50.6	36.9	55.8	132.9	56.3
KINSTON CITY	312	66.2	60.0	49.6	57.1	55.7	60.2	50.5	52.0	37.4	56.7	133.4	56.5
NEW HANOVER COUNT	1341	74.1	67.2	59.6	62.1	66.0	66.6	59.7	56.9	42.3	64.1	152.4	64.6
ONSLOW COUNTY	1142	69.7	61.5	52.9	59.6	61.4	63.2	55.6	53.1	39.1	59.3	141.6	60.0
PAMLICO COUNTY	139	65.6	59.4	51.4	53.2	55.6	60.4	50.2	52.1	37.2	56.4	133.0	56.4
PENDER COUNTY	410	63.9	57.3	51.6	53.7	57.1	58.4	48.1	50.1	36.4	55.1	130.8	55.4
SAMPSON COUNTY	435	68.0	61.8	53.2	57.4	60.3	61.2	53.5	55.5	38.5	58.3	139.7	59.2
CLINTON CITY	179	66.7	62.1	52.5	50.0	56.1	61.9	54.7	53.2	38.0	57.6	136.5	57.9
WAYNE COUNTY	932	70.1	62.1	55.1	59.4	61.2	61.8	53.8	52.5	39.5	59.9	141.2	59.8
GOLDSBORO CITY	286	64.5	58.3	49.7	49.2	54.9	59.8	52.0	50.5	35.9	54.3	131.0	55.5

NOTE: THE NUMBER OF ITEMS IN EACH GOAL AREA IS DIRECTLY PROPORTIONAL TO THE NUMBER OF OBJECTIVES FOR THE GOAL. FIVE FORMS OF A 100-ITEM TEST WERE ADMINISTERED IN EVERY CLASSROOM. SIXTY-SIX OF THE 100 ITEMS WERE COMMON ACROSS THE FIVE FORMS (CORE). THE REMAINING 34 ITEMS VARIED BY FORM, SO THAT 236 ITEMS WERE MEASURED IN EVERY CLASSROOM. GOAL AREAS INCLUDE BOTH CORE AND VARIABLE ITEMS. CAUTION SHOULD BE USED WHEN INTERPRETING RESULTS BASED ON SMALL NUMBERS OF STUDENTS OR ITEMS.

Table 7, cont'd.

REGION CENTRAL

REGION REPORT

GOALS

GOAL 1: UNDERSTAND THE NATURE AND RELATIONSHIP OF SCIENCE TO HUMAN ENDEAVOR
GOAL 2: UNDERSTAND THE NATURE OF LIFE
GOAL 3: UNDERSTAND THE CONTINUITY OF LIFE
GOAL 4: UNDERSTAND THE NATURE OF ORGANISMS
GOAL 5: UNDERSTAND THE BEHAVIOR OF LIVING THINGS
GOAL 6: UNDERSTAND THE BIOLOGY OF HUMANS
GOAL 7: UNDERSTAND ECOLOGY
GOAL 8: UNDERSTAND HOW THE DYNAMICS OF BIOLOGY ARE RELEVANT TO PEOPLE

	NUMBER TESTED	GOAL 1	GOAL 2	GOAL 3	GOAL 4	GOAL 5	GOAL 6	GOAL 7	GOAL 8	AVG CORE	PCT CORE	AVG ALL ITEMS	PCT ALL ITEMS
NUMBER OF ITEMS		28	35	28	14	42	35	33	21	66	66	236	236
DURHAM COUNTY	1223	74.7	65.1	58.2	61.7	64.6	67.0	58.3	55.5	41.7	63.2	150.1	63.6
DURHAM CITY	386	63.0	57.4	48.5	52.9	51.7	57.0	46.0	48.7	34.7	52.5	125.8	53.3
EDGECOMBE COUNTY	333	65.0	62.6	53.1	56.5	58.5	58.4	54.4	53.7	37.5	56.8	137.1	58.1
TARBORO CITY	186	66.3	60.5	54.0	57.6	59.1	60.7	53.3	51.4	38.0	57.5	137.4	58.2
FRANKLIN COUNTY	352	66.2	60.5	53.8	55.6	55.8	60.8	51.1	52.3	37.0	56.1	135.2	57.3
FRANKLINTON CITY	108	70.5	62.0	56.6	50.5	58.9	64.5	53.5	57.0	40.4	61.3	141.3	59.9
GRANVILLE COUNTY	474	64.3	61.4	53.2	55.0	55.7	62.7	48.5	49.5	36.7	55.6	133.8	56.7
HALIFAX COUNTY	446	52.8	51.3	43.9	47.6	46.5	48.4	40.5	43.7	30.6	46.3	110.7	46.9
ROANOKE RPDS CITY	204	81.0	75.8	66.3	62.6	66.9	72.5	63.3	63.2	45.9	69.6	164.2	69.6
WELDON CITY	65	56.6	51.3	44.5	38.8	43.1	52.2	37.8	45.0	31.6	47.9	110.0	46.6
JOHNSTON COUNTY	1046	70.4	64.8	57.7	61.2	61.6	63.9	56.2	53.6	40.1	60.8	145.2	61.5
NASH COUNTY	813	67.7	62.3	52.0	57.6	58.8	60.7	53.4	52.9	38.3	58.0	138.0	58.5
ROCKY MOUNT CITY	350	68.8	59.4	54.7	58.3	57.7	56.6	53.7	51.4	37.2	56.4	136.1	57.7
NORTHAMPTON COUNT	276	63.1	55.4	48.9	45.7	51.6	54.8	47.2	49.0	35.6	53.9	123.9	52.5
VANCE COUNTY	513	63.0	55.9	50.2	48.5	54.9	54.2	51.0	48.4	34.9	52.9	127.1	53.8
WAKE COUNTY	3892	76.3	69.6	62.2	65.7	67.7	70.3	64.2	59.1	43.9	66.5	159.0	67.4
WARREN COUNTY	231	60.6	58.6	48.5	54.2	57.3	55.6	50.6	51.0	35.8	54.2	129.6	54.9
WILSON COUNTY	748	68.9	64.6	56.9	60.5	60.9	63.4	55.8	55.5	40.4	61.2	144.1	61.1

NOTE: THE NUMBER OF ITEMS IN EACH GOAL AREA IS DIRECTLY PROPORTIONAL TO THE NUMBER OF OBJECTIVES FOR THE GOAL. FIVE FORMS OF A 100-ITEM TEST WERE ADMINISTERED IN EVERY CLASSROOM. SIXTY-SIX OF THE 100 ITEMS WERE COMMON ACROSS THE FIVE FORMS (CORE). THE REMAINING 34 ITEMS VARIED BY FORM, SO THAT 236 ITEMS WERE MEASURED IN EVERY CLASSROOM. GOAL AREAS INCLUDE BOTH CORE AND VARIABLE ITEMS. CAUTION SHOULD BE USED WHEN INTERPRETING RESULTS BASED ON SMALL NUMBERS OF STUDENTS OR ITEMS.

Table 7, cont'd.

REGION SOUTH CENTRAL

REGION REPORT

GOALS

GOAL 1: UNDERSTAND THE NATURE AND RELATIONSHIP OF SCIENCE TO HUMAN ENDEAVOR
GOAL 2: UNDERSTAND THE NATURE OF LIFE
GOAL 3: UNDERSTAND THE CONTINUITY OF LIFE
GOAL 4: UNDERSTAND THE NATURE OF ORGANISMS
GOAL 5: UNDERSTAND THE BEHAVIOR OF LIVING THINGS
GOAL 6: UNDERSTAND THE BIOLOGY OF HUMANS
GOAL 7: UNDERSTAND ECOLOGY
GOAL 8: UNDERSTAND HOW THE DYNAMICS OF BIOLOGY ARE RELEVANT TO PEOPLE

	NUMBER TESTED	GOAL 1	GOAL 2	GOAL 3	GOAL 4	GOAL 5	GOAL 6	GOAL 7	GOAL 8	AVG CORE	PCT CORE	AVG ALL ITEMS	PCT ALL ITEMS
NUMBER OF ITEMS		28	35	28	14	42	35	33	21	66	66	236	236
BLADEN COUNTY	436	62.8	58.2	46.7	48.7	54.7	57.6	47.7	49.6	35.4	53.6	127.1	53.9
COLUMBUS COUNTY	609	65.0	57.5	47.6	51.7	55.0	57.9	49.1	49.1	35.3	53.4	128.8	54.6
WHITEVILLE CITY	188	69.1	63.3	58.6	61.1	63.0	65.2	56.6	52.7	40.0	60.5	145.5	61.6
CUMBERLAND COUNTY	3133	68.1	60.8	53.6	57.4	59.8	61.0	53.4	52.7	38.4	58.2	138.5	58.7
HARNETT COUNTY	798	67.1	61.2	52.7	56.5	59.6	61.0	53.5	52.1	38.8	58.8	137.8	58.4
HOKE COUNTY	353	65.6	59.0	48.2	54.9	56.9	57.9	50.7	51.1	36.7	55.6	131.8	55.9
LEE COUNTY	451	69.0	57.1	50.8	49.9	57.5	58.2	52.0	47.5	36.4	55.2	132.2	56.0
MONTGOMERY COUNTY	314	71.4	65.4	57.3	64.3	63.5	68.3	59.6	57.9	43.1	65.3	150.3	63.7
MOORE COUNTY	545	68.4	60.7	52.1	56.7	59.5	61.1	52.4	52.8	38.0	57.6	137.7	58.3
RICHMOND COUNTY	550	67.3	59.8	51.7	54.6	59.5	61.8	52.1	52.4	38.0	57.6	136.7	57.9
ROBESON COUNTY	888	61.4	56.8	46.9	49.1	54.1	57.4	46.5	48.4	35.7	54.2	125.4	53.1
FAIRMONT CITY	128	61.3	54.8	47.9	53.3	52.8	57.7	46.3	49.3	34.8	52.7	125.2	53.0
LUMBERTON CITY	246	64.5	59.6	53.1	55.0	56.1	58.1	50.8	51.9	36.0	54.5	133.1	56.4
RED SPRINGS	161	59.6	60.1	46.6	50.9	50.7	55.9	50.3	48.4	34.4	52.1	125.5	53.2
SAINT PAULS CITY	102	64.2	57.2	49.5	53.4	52.4	55.6	53.8	48.1	36.6	55.5	128.6	54.5
SCOTLAND COUNTY	446	65.1	58.3	52.5	55.1	56.0	60.6	50.1	49.8	37.7	57.1	132.8	56.3

NOTE: THE NUMBER OF ITEMS IN EACH GOAL AREA IS DIRECTLY PROPORTIONAL TO THE NUMBER OF OBJECTIVES FOR THE GOAL. FIVE FORMS OF A 100-ITEM TEST WERE ADMINISTERED IN EVERY CLASSROOM. SIXTY-SIX OF THE 100 ITEMS WERE COMMON ACROSS THE FIVE FORMS (CORE). THE REMAINING 34 ITEMS VARIED BY FORM, SO THAT 236 ITEMS WERE MEASURED IN EVERY CLASSROOM. GOAL AREAS INCLUDE BOTH CORE AND VARIABLE ITEMS. CAUTION SHOULD BE USED WHEN INTERPRETING RESULTS BASED ON SMALL NUMBERS OF STUDENTS OR ITEMS.

Table 7, cont'd.

REGION NORTH CENTRAL

REGION REPORT

GOALS

GOAL 1: UNDERSTAND THE NATURE AND RELATIONSHIP OF SCIENCE TO HUMAN ENDEAVOR
GOAL 2: UNDERSTAND THE NATURE OF LIFE
GOAL 3: UNDERSTAND THE CONTINUITY OF LIFE
GOAL 4: UNDERSTAND THE NATURE OF ORGANISMS
GOAL 5: UNDERSTAND THE BEHAVIOR OF LIVING THINGS
GOAL 6: UNDERSTAND THE BIOLOGY OF HUMANS
GOAL 7: UNDERSTAND ECOLOGY
GOAL 8: UNDERSTAND HOW THE DYNAMICS OF BIOLOGY ARE RELEVANT TO PEOPLE

	NUMBER TESTED	GOAL 1	GOAL 2	GOAL 3	GOAL 4	GOAL 5	GOAL 6	GOAL 7	GOAL 8	AVG CORE	PCT CORE	AVG ALL ITEMS	PCT ALL ITEMS
NUMBER OF ITEMS		28	35	28	14	42	35	33	21	66	66	236	236
ALAMANCE COUNTY	729	71.2	61.3	54.2	57.4	61.7	59.0	56.0	51.9	38.7	58.6	140.6	59.6
BURLINGTON CITY	406	76.5	68.4	60.8	65.1	66.4	68.3	62.3	56.0	42.9	65.0	155.6	65.9
CASWELL COUNTY	301	66.3	62.7	51.0	50.9	56.8	59.3	50.7	50.4	37.0	56.0	133.9	56.7
CHATHAM COUNTY	398	70.0	62.8	53.9	59.1	59.2	64.8	54.4	53.6	38.9	59.0	141.7	60.1
DAVIDSON COUNTY	1126	71.0	63.3	56.2	58.5	63.0	63.3	54.9	53.9	40.3	61.0	144.0	61.0
LEXINGTON CITY	195	65.4	61.4	53.9	55.6	58.4	61.7	53.8	51.2	38.3	58.0	137.3	58.2
THOMASVILLE CITY	159	62.4	55.0	45.2	52.7	55.0	55.0	47.2	46.2	34.6	52.4	124.4	52.7
FORSYTH COUNTY	2418	68.1	61.0	55.4	56.3	59.2	61.6	53.3	52.7	38.4	58.2	138.9	58.8
GUILFORD COUNTY	1789	72.9	66.6	59.4	61.3	65.0	66.9	59.4	55.9	41.8	63.3	151.0	64.0
GREENSBORO CITY	1222	70.3	65.0	57.1	56.9	60.5	65.2	56.1	55.5	39.8	60.3	144.7	61.3
HIGH POINT CITY	527	68.7	63.7	55.1	57.8	60.6	65.6	55.0	53.9	39.8	60.2	143.0	60.6
ORANGE COUNTY	294	71.1	62.2	54.0	56.6	64.2	63.3	57.4	53.4	40.7	61.7	144.0	61.0
CHAPEL HILL CITY	379	82.1	73.4	69.5	70.9	71.9	74.4	69.5	61.9	47.3	71.7	170.2	72.1
PERSON COUNTY	396	73.2	66.2	59.8	61.5	61.7	67.6	58.4	55.1	42.0	63.6	149.4	63.3
RANDOLPH COUNTY	838	70.6	63.7	55.7	61.2	62.5	63.8	56.6	53.8	40.3	61.0	144.8	61.3
ASHEBORO CITY	256	72.3	65.9	59.2	61.6	68.1	63.4	56.4	53.7	41.0	62.1	149.2	63.2
ROCKINGHAM COUNTY	232	71.3	63.3	60.7	63.0	63.1	65.6	53.1	53.7	40.5	61.3	146.2	61.9
EDEN CITY	272	69.0	62.5	56.1	58.2	62.4	66.2	59.0	53.8	40.1	60.7	145.2	61.5
WEST. ROCKINGHAM	255	70.6	62.0	55.8	59.6	61.7	63.9	55.8	52.8	39.9	60.4	143.2	60.7
REIDSVILLE CITY	261	62.6	57.9	51.9	52.0	56.1	56.8	51.3	49.4	36.0	54.5	130.4	55.2
STOKES COUNTY	486	66.4	56.1	49.6	51.8	55.5	56.2	43.3	51.1	35.6	53.9	127.3	54.0

NOTE: THE NUMBER OF ITEMS IN EACH GOAL AREA IS DIRECTLY PROPORTIONAL TO THE NUMBER OF OBJECTIVES FOR THE GOAL. FIVE FORMS OF A 100-ITEM TEST WERE ADMINISTERED IN EVERY CLASSROOM. SIXTY-SIX OF THE 100 ITEMS WERE COMMON ACROSS THE FIVE FORMS (CORE). THE REMAINING 34 ITEMS VARIED BY FORM, SO THAT 236 ITEMS WERE MEASURED IN EVERY CLASSROOM. GOAL AREAS INCLUDE BOTH CORE AND VARIABLE ITEMS. CAUTION SHOULD BE USED WHEN INTERPRETING RESULTS BASED ON SMALL NUMBERS OF STUDENTS OR ITEMS.

Table 7, cont'd.

REGION SOUTHWEST

REGION REPORT

GOALS

GOAL 1: UNDERSTAND THE NATURE AND RELATIONSHIP OF SCIENCE TO HUMAN ENDEAVOR
GOAL 2: UNDERSTAND THE NATURE OF LIFE
GOAL 3: UNDERSTAND THE CONTINUITY OF LIFE
GOAL 4: UNDERSTAND THE NATURE OF ORGANISMS
GOAL 5: UNDERSTAND THE BEHAVIOR OF LIVING THINGS
GOAL 6: UNDERSTAND THE BIOLOGY OF HUMANS
GOAL 7: UNDERSTAND ECOLOGY
GOAL 8: UNDERSTAND HOW THE DYNAMICS OF BIOLOGY ARE RELEVANT TO PEOPLE

	NUMBER TESTED	GOAL 1	GOAL 2	GOAL 3	GOAL 4	GOAL 5	GOAL 6	GOAL 7	GOAL 8	AVG CORE	PCT CORE	AVG ALL ITEMS	PCT ALL ITEMS
NUMBER OF ITEMS		28	35	28	14	42	35	33	21	66	66	236	236
ANSON COUNTY	299	58.0	52.7	46.0	47.3	48.2	53.6	41.7	47.1	31.7	48.0	116.9	49.5
CABARRUS COUNTY	766	72.5	62.3	54.7	60.1	62.4	63.8	56.4	53.2	39.9	60.4	144.2	61.1
KANNAPOLIS CITY	284	68.0	58.0	49.2	53.7	54.6	56.1	49.5	49.0	35.2	53.4	129.8	55.0
CLEVELAND COUNTY	554	68.4	60.9	54.6	57.4	59.7	59.2	55.1	54.8	38.6	58.5	139.3	59.0
KINGS MTN. CITY	269	67.7	61.3	52.7	58.4	57.3	58.7	54.2	50.0	37.4	56.7	136.3	57.8
SHELBY CITY	233	66.2	59.6	55.7	56.5	59.2	59.5	53.8	50.7	38.0	57.6	137.0	58.1
GASTON COUNTY	2385	66.0	58.0	50.8	54.1	58.3	58.0	50.6	48.5	36.6	55.4	132.6	56.2
LINCOLN COUNTY	617	67.6	60.8	51.3	57.8	58.4	61.0	50.4	50.5	37.9	57.4	135.8	57.5
MECKLENBURG COUNT	4933	69.4	62.2	54.9	56.8	59.2	63.3	54.2	52.6	38.8	58.8	140.5	59.5
ROWAN COUNTY	723	69.6	61.9	54.1	56.2	60.5	62.2	53.4	54.1	38.4	58.2	140.4	59.5
SALISBURY CITY	131	64.8	55.9	50.9	58.0	53.0	55.4	51.6	49.0	36.7	55.6	129.1	54.7
STANLY COUNTY	472	70.8	64.7	55.5	53.8	60.8	64.7	50.0	53.5	38.8	58.8	141.5	59.9
ALBEMARLE CITY	147	74.2	66.7	58.7	64.2	66.2	63.2	60.9	56.1	42.0	63.7	151.3	64.1
UNION COUNTY	893	72.1	65.2	58.8	59.7	62.9	65.1	59.1	54.7	40.9	61.9	148.1	62.7
MONROE CITY	205	66.0	60.5	52.1	56.5	54.6	59.4	54.1	49.4	36.3	55.0	134.1	56.8

NOTE: THE NUMBER OF ITEMS IN EACH GOAL AREA IS DIRECTLY PROPORTIONAL TO THE NUMBER OF OBJECTIVES FOR THE GOAL. FIVE FORMS OF A 100-ITEM TEST WERE ADMINISTERED IN EVERY CLASSROOM. SIXTY-SIX OF THE 100 ITEMS WERE COMMON ACROSS THE FIVE FORMS (CORE). THE REMAINING 34 ITEMS VARIED BY FORM, SO THAT 236 ITEMS WERE MEASURED IN EVERY CLASSROOM. GOAL AREAS INCLUDE BOTH CORE AND VARIABLE ITEMS. CAUTION SHOULD BE USED WHEN INTERPRETING RESULTS BASED ON SMALL NUMBERS OF STUDENTS OR ITEMS.

Table 7, cont'd.

REGION NORTHWEST

REGION REPORT

GOALS

GOAL 1: UNDERSTAND THE NATURE AND RELATIONSHIP OF SCIENCE TO HUMAN ENDEAVOR
GOAL 2: UNDERSTAND THE NATURE OF LIFE
GOAL 3: UNDERSTAND THE CONTINUITY OF LIFE
GOAL 4: UNDERSTAND THE NATURE OF ORGANISMS
GOAL 5: UNDERSTAND THE BEHAVIOR OF LIVING THINGS
GOAL 6: UNDERSTAND THE BIOLOGY OF HUMANS
GOAL 7: UNDERSTAND ECOLOGY
GOAL 8: UNDERSTAND HOW THE DYNAMICS OF BIOLOGY ARE RELEVANT TO PEOPLE

	NUMBER TESTED	GOAL 1	GOAL 2	GOAL 3	GOAL 4	GOAL 5	GOAL 6	GOAL 7	GOAL 8	AVG CORE	PCT CORE	AVG ALL ITEMS	PCT ALL ITEMS
NUMBER OF ITEMS		28	35	28	14	42	35	33	21	66	66	236	236
ALEXANDER COUNTY	280	68.4	61.1	51.9	55.3	59.9	57.2	49.2	53.1	37.5	56.8	135.3	57.3
ALLEGHANY COUNTY	122	71.8	63.4	53.4	63.4	58.6	59.4	56.8	52.9	40.2	60.9	141.4	59.9
ASHE COUNTY	243	73.1	61.4	58.0	60.9	65.7	65.5	58.8	55.2	40.8	61.9	148.2	62.8
AVERY COUNTY	208	68.9	58.4	52.8	53.8	59.2	60.2	51.3	51.1	37.9	57.4	135.6	57.5
BURKE COUNTY	837	69.7	59.7	53.9	56.1	60.1	62.6	58.0	51.9	39.3	59.5	140.6	59.6
CALDWELL COUNTY	737	71.9	63.4	53.8	57.8	63.9	64.2	57.8	54.2	40.0	60.5	145.3	61.6
CATAWBA COUNTY	837	72.5	63.4	55.9	58.9	64.8	65.8	58.4	54.0	40.9	62.0	147.3	62.4
HICKORY CITY	296	75.0	70.4	61.4	63.7	65.4	68.1	60.6	60.0	43.2	65.5	155.7	66.0
NEWTON CITY	189	73.8	63.5	56.5	63.0	66.6	66.6	61.4	56.3	41.3	62.6	150.9	63.9
DAVIE COUNTY	337	74.7	69.2	61.0	65.8	65.0	71.7	60.9	58.8	42.6	64.6	156.2	66.2
IREDELL COUNTY	693	67.7	60.8	54.5	55.7	59.6	60.1	50.9	51.9	37.6	57.0	137.1	58.1
MOORESVILLE CITY	162	67.1	62.8	56.1	60.3	63.0	60.0	58.3	52.2	39.6	60.1	142.5	60.4
STATESVILLE CITY	198	67.7	65.6	54.6	58.3	61.5	60.2	52.9	54.5	38.9	58.9	141.1	59.8
SURRY COUNTY	585	70.2	62.0	55.3	54.3	61.5	64.7	53.4	52.4	39.1	59.2	141.6	60.0
ELKIN CITY	61	79.2	74.0	65.2	65.2	64.7	67.8	59.7	61.9	44.5	67.5	159.1	67.4
MOUNT AIRY CITY	107	76.1	66.9	66.0	64.7	68.2	69.7	64.1	59.8	45.2	68.5	159.0	67.4
WATAUGA COUNTY	306	73.5	68.6	60.2	64.7	65.6	70.0	60.7	56.5	42.7	64.7	154.5	65.4
WILKES COUNTY	752	69.9	61.7	55.1	59.0	61.7	64.4	53.6	54.2	39.6	60.0	142.4	60.3
YADKIN COUNTY	342	68.8	60.4	54.2	58.0	60.1	60.1	54.0	51.2	38.9	58.8	138.6	58.7

NOTE: THE NUMBER OF ITEMS IN EACH GOAL AREA IS DIRECTLY PROPORTIONAL TO THE NUMBER OF OBJECTIVES FOR THE GOAL. FIVE FORMS OF A 100-ITEM TEST WERE ADMINISTERED IN EVERY CLASSROOM. SIXTY-SIX OF THE 100 ITEMS WERE COMMON ACROSS THE FIVE FORMS (CORE). THE REMAINING 34 ITEMS VARIED BY FORM, SO THAT 236 ITEMS WERE MEASURED IN EVERY CLASSROOM. GOAL AREAS INCLUDE BOTH CORE AND VARIABLE ITEMS. CAUTION SHOULD BE USED WHEN INTERPRETING RESULTS BASED ON SMALL NUMBERS OF STUDENTS OR ITEMS.

Table 7, cont'd.

REGION WESTERN

REGION REPORT

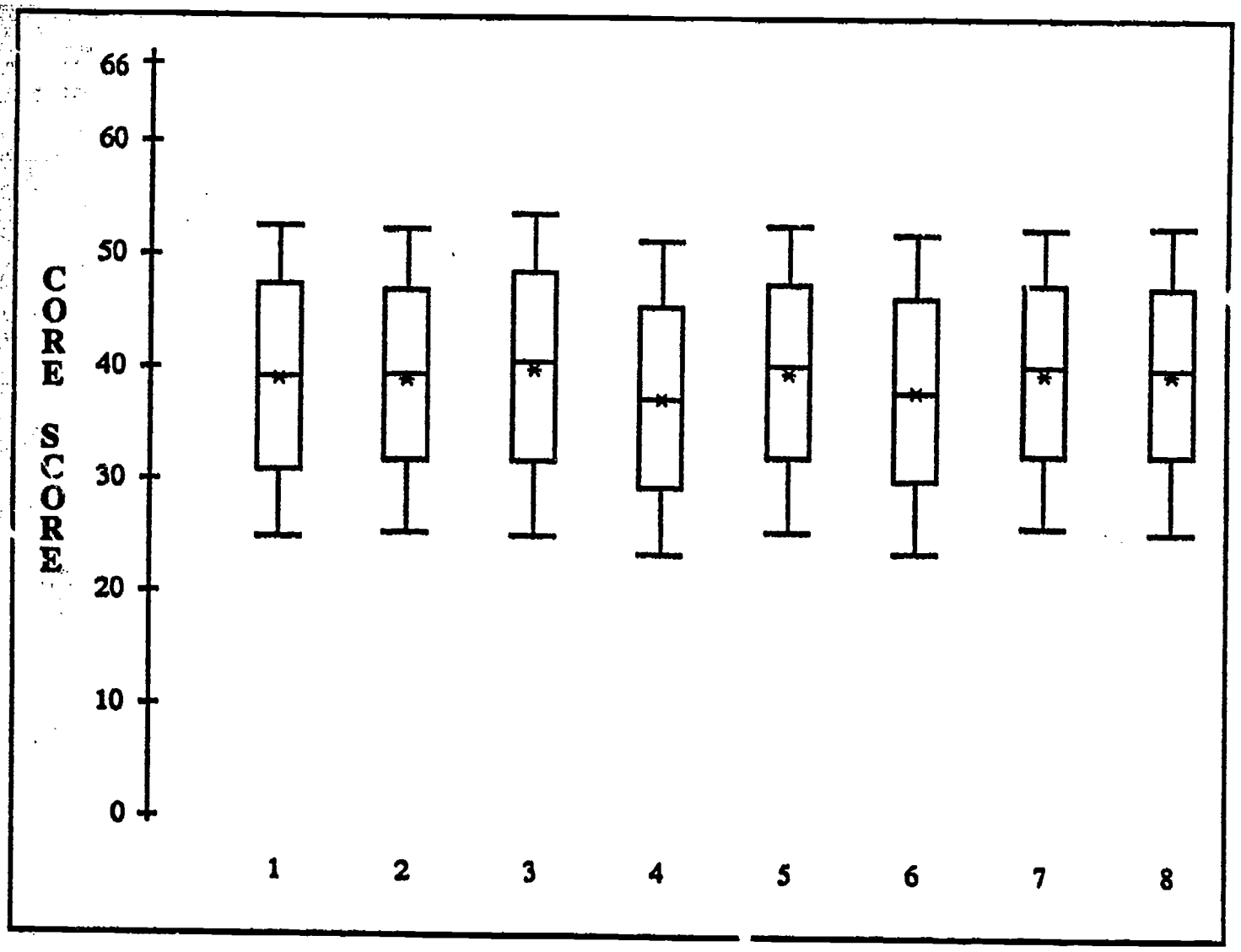
GOALS

GOAL 1: UNDERSTAND THE NATURE AND RELATIONSHIP OF SCIENCE TO HUMAN ENDEAVOR
GOAL 2: UNDERSTAND THE NATURE OF LIFE
GOAL 3: UNDERSTAND THE CONTINUITY OF LIFE
GOAL 4: UNDERSTAND THE NATURE OF ORGANISMS
GOAL 5: UNDERSTAND THE BEHAVIOR OF LIVING THINGS
GOAL 6: UNDERSTAND THE BIOLOGY OF HUMANS
GOAL 7: UNDERSTAND ECOLOGY
GOAL 8: UNDERSTAND HOW THE DYNAMICS OF BIOLOGY ARE RELEVANT TO PEOPLE

	NUMBER TESTED	GOAL 1	GOAL 2	GOAL 3	GOAL 4	GOAL 5	GOAL 6	GOAL 7	GOAL 8	AVG CORE	PCT CORE	AVG ALL ITEMS	PCT ALL ITEMS
NUMBER OF ITEMS		28	35	28	14	42	35	33	21	66	66	236	236
BUNCOMBE COUNTY	1597	72.2	62.7	56.2	59.4	62.9	63.2	56.2	53.2	40.2	61.0	144.5	61.2
ASHEVILLE CITY	263	67.5	57.4	53.3	56.0	60.6	60.9	56.1	49.3	38.3	58.1	137.4	58.2
CHEROKEE COUNTY	276	70.8	61.7	57.6	57.9	60.9	63.6	54.6	54.7	39.6	60.0	143.0	60.6
CLAY COUNTY	107	73.9	63.0	54.1	53.9	65.6	67.3	57.7	59.1	41.1	62.2	148.0	62.7
GRAHAM COUNTY	102	62.3	58.1	51.6	48.0	54.6	55.0	50.2	44.9	35.9	54.3	127.1	53.9
HAYWOOD COUNTY	600	69.4	61.9	53.2	58.6	63.6	61.8	58.6	52.4	39.6	60.0	142.9	60.5
HENDERSON COUNTY	551	73.5	62.2	56.8	61.4	63.5	66.1	59.5	53.2	40.9	62.0	147.4	62.5
HENDRSNVLLE CITY	161	74.8	65.1	60.8	66.8	65.0	63.7	61.8	55.5	42.3	64.1	151.8	64.3
JACKSON COUNTY	256	72.6	64.2	55.4	61.2	63.4	60.9	57.5	55.9	39.7	60.1	145.6	61.7
MACON COUNTY	199	72.9	66.8	57.3	57.5	63.2	66.1	60.7	56.5	41.9	63.5	149.5	63.3
MADISON COUNTY	172	67.4	62.6	57.7	57.6	65.8	66.3	56.8	53.2	41.5	62.9	145.7	61.8
MCDONELL COUNTY	483	71.3	61.3	55.3	59.8	63.3	64.3	57.7	55.5	39.9	60.4	145.1	61.5
MITCHELL COUNTY	158	67.7	62.5	53.5	56.3	61.5	62.9	53.4	50.6	39.1	59.3	139.8	59.2
POLK COUNTY	123	65.3	56.6	49.8	54.4	56.4	54.5	46.5	45.6	35.2	53.3	127.4	54.0
RUTHERFORD COUNTY	647	70.0	64.9	55.3	60.0	61.9	65.5	57.6	52.9	40.6	61.5	145.2	61.5
SWAIN COUNTY	125	69.8	63.4	52.7	60.7	57.5	58.1	54.4	49.8	37.2	56.4	137.9	58.4
TRANSYLVANIA COUN	281	69.8	62.0	55.4	60.5	61.1	65.0	56.1	51.8	39.6	60.0	143.0	60.6
YANCEY COUNTY	186	65.5	57.2	47.7	46.9	58.4	55.9	48.7	48.7	35.6	54.0	128.7	54.5

NOTE: THE NUMBER OF ITEMS IN EACH GOAL AREA IS DIRECTLY PROPORTIONAL TO THE NUMBER OF OBJECTIVES FOR THE GOAL. FIVE FORMS OF A 100-ITEM TEST WERE ADMINISTERED IN EVERY CLASSROOM. SIXTY-SIX OF THE 100 ITEMS WERE COMMON ACROSS THE FIVE FORMS (CORE). THE REMAINING 34 ITEMS VARIED BY FORM, SO THAT 236 ITEMS WERE MEASURED IN EVERY CLASSROOM. GOAL AREAS INCLUDE BOTH CORE AND VARIABLE ITEMS. CAUTION SHOULD BE USED WHEN INTERPRETING RESULTS BASED ON SMALL NUMBERS OF STUDENTS OR ITEMS.

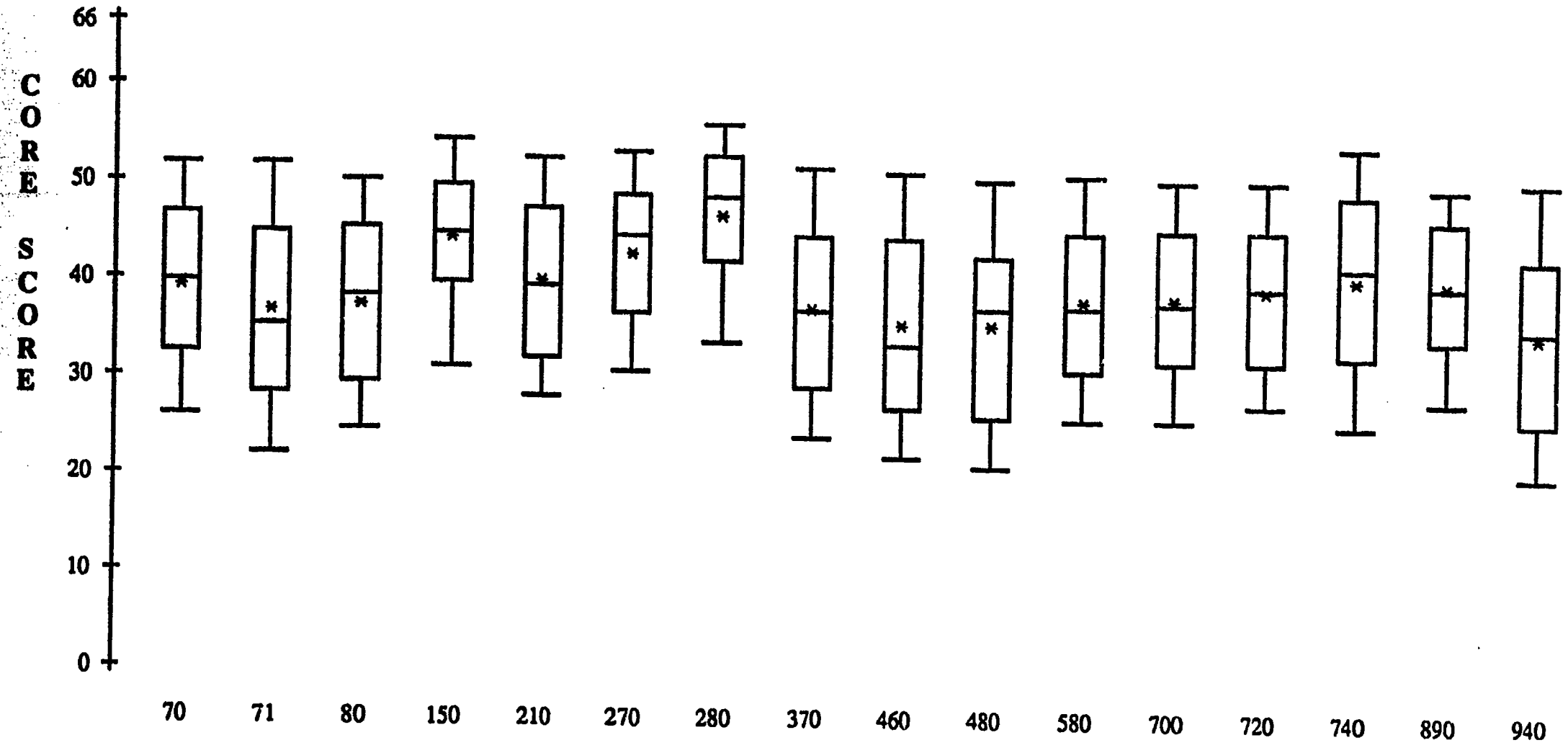
Figure 7. Distributions of Biology Core Scores by Regions -- 1989



Regions :

1 Northeast
2 Southeast
3 Central
4 South Central
5 North Central
6 Southwest
7 Northwest
8 Western

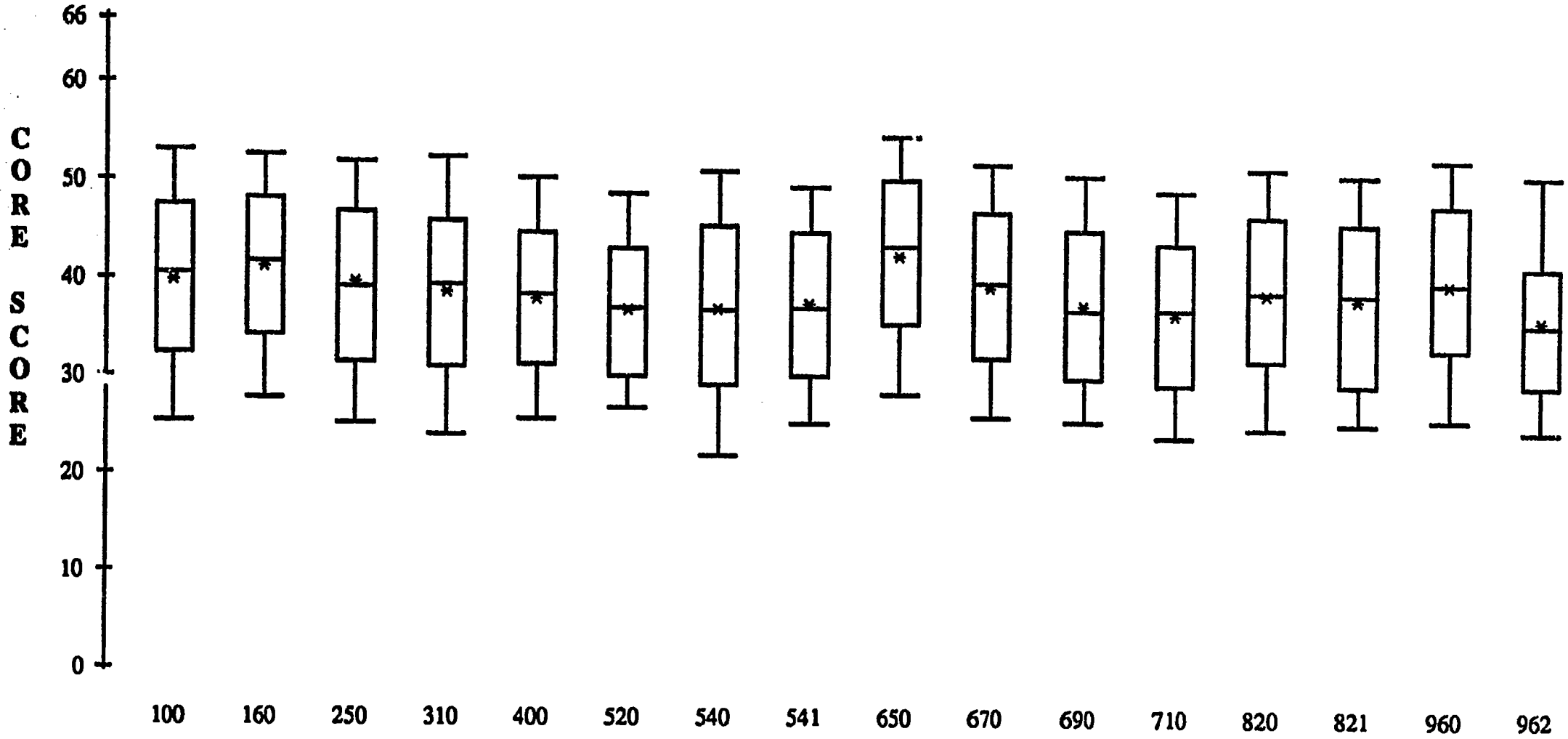
Figure 8. Distributions of Biology Core Scores by School Systems in the Northeast Region -- 1989



Northeast Region School Systems:

70 Beaufort Co.	210 Chowan Co.	460 Hertford Co.	720 Perquimans Co.
71 Washington City	270 Currituck Co.	480 Hyde Co.	740 Pitt Co.
80 Bertie Co.	280 Dare Co.	580 Martin Co.	890 Tyrrell Co.
150 Camden Co.	370 Gates Co.	700 Pasquotank Co.	940 Washington Co.

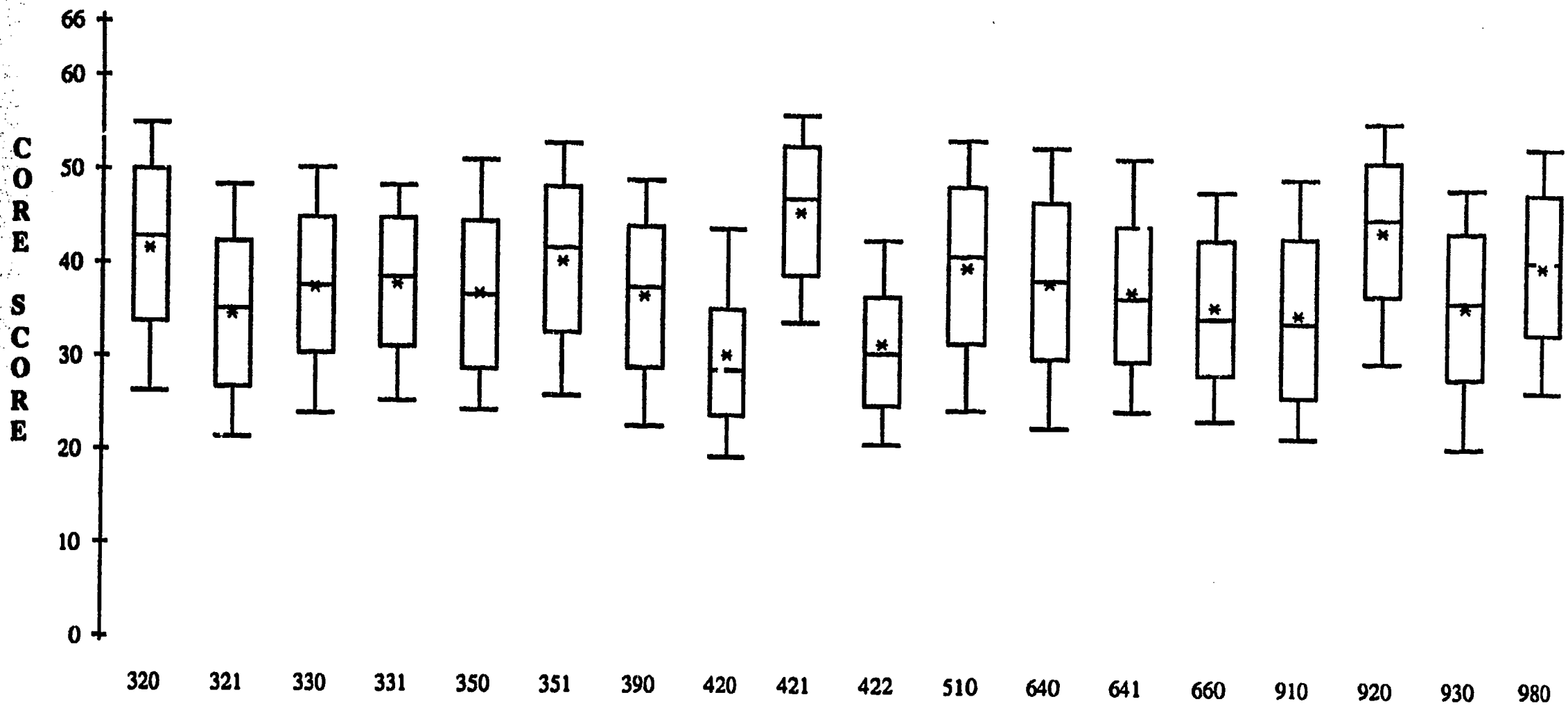
Figure 9. Distributions of Biology Core Scores by School Systems in the Southeast Region -- 1989



Southeast Region School Systems:

100 Brunswick Co.	400 Greene Co.	650 New Hanover Co.	820 Sampson Co.
160 Carteret Co.	520 Jones Co.	670 Onslow Co.	821 Clinton City
250 Craven Co.	540 Lenoir Co.	690 Pamlico Co.	960 Wayne Co.
310 Duplin Co.	541 Kinston City	710 Pender Co.	962 Goldsboro City

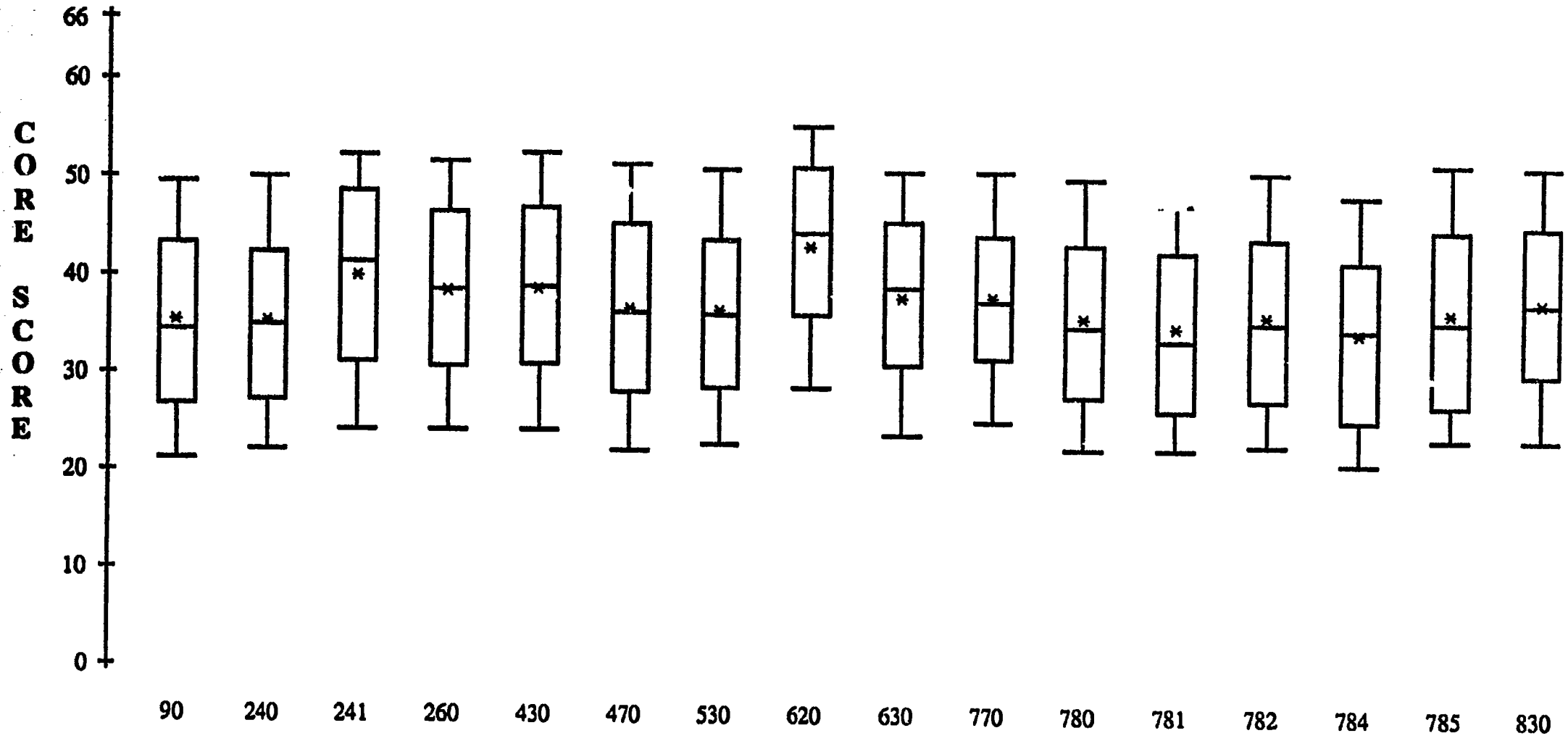
Figure 10. Distributions of Biology Core Scores by School Systems in the Central Region -- 1989



Central Region School Systems:

320 Durham Co.	350 Franklin Co.	421 Roanoke Rapids City	641 Rocky Mount City	930 Warren Co.
321 Durham City	351 Franklinton City	422 Weldon City	660 Northampton Co.	980 Wilson Co.
330 Edgecombe Co.	390 Granville Co.	510 Johnston Co.	910 Vance Co.	
331 Tarboro City	420 Halifax Co.	640 Nash Co.	920 Wake Co.	

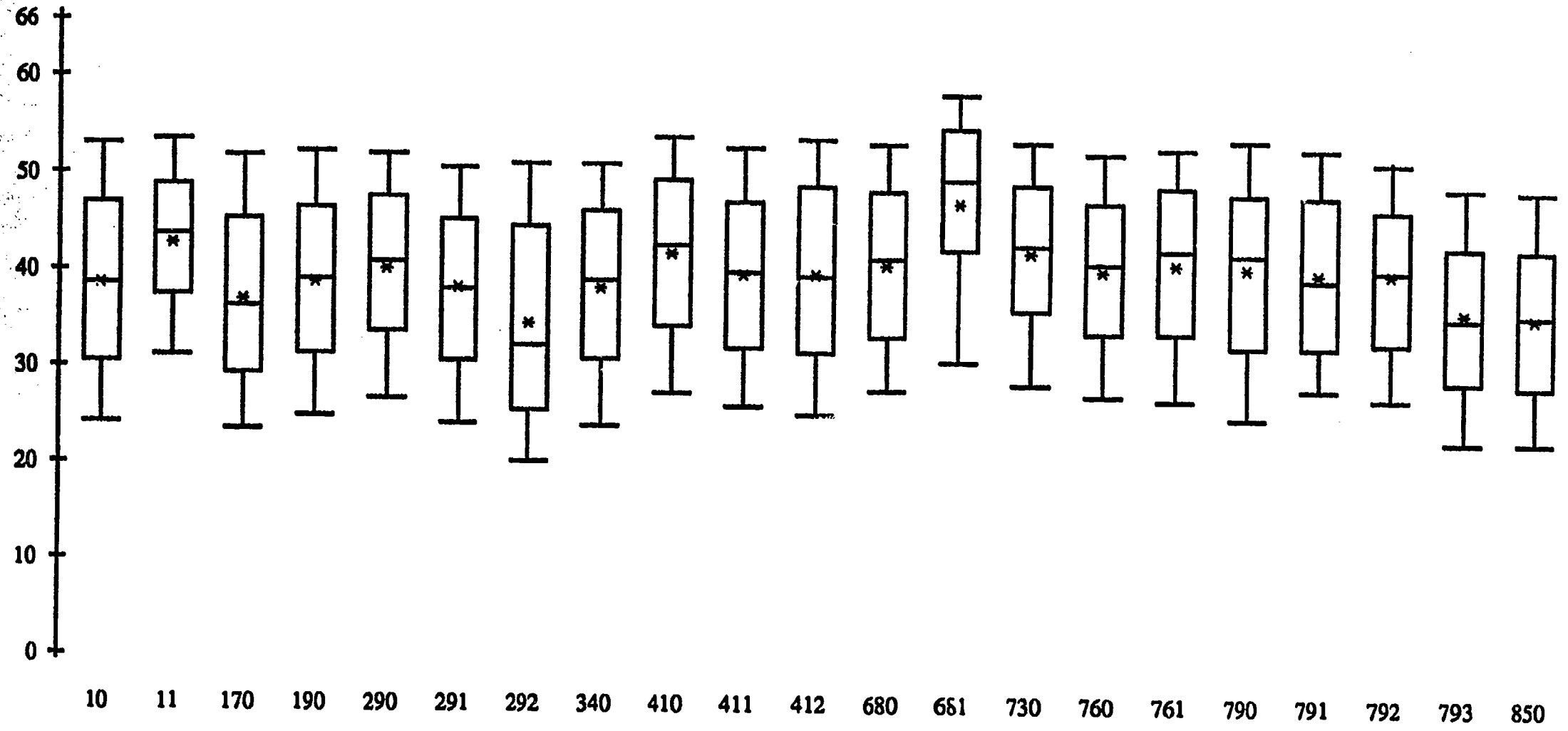
Figure 11. Distributions of Biology Core Scores by School Systems in the South Central Region -- 1989



South Central Region School Systems:

90 Bladen Co.	430 Harnett Co.	630 Moore Co.	782 Lumberton City
240 Columbus Co.	470 Hoke Co.	770 Richmond Co.	784 Red Springs City
241 Whiteville City	530 Lee Co.	780 Robeson Co.	785 St. Pauls City
260 Cumberland Co.	620 Montgomery Co.	781 Fairmont City	830 Scotland Co.

Figure 12. Distributions of Biology Core Scores by School Systems in the North Central Region -- 1989

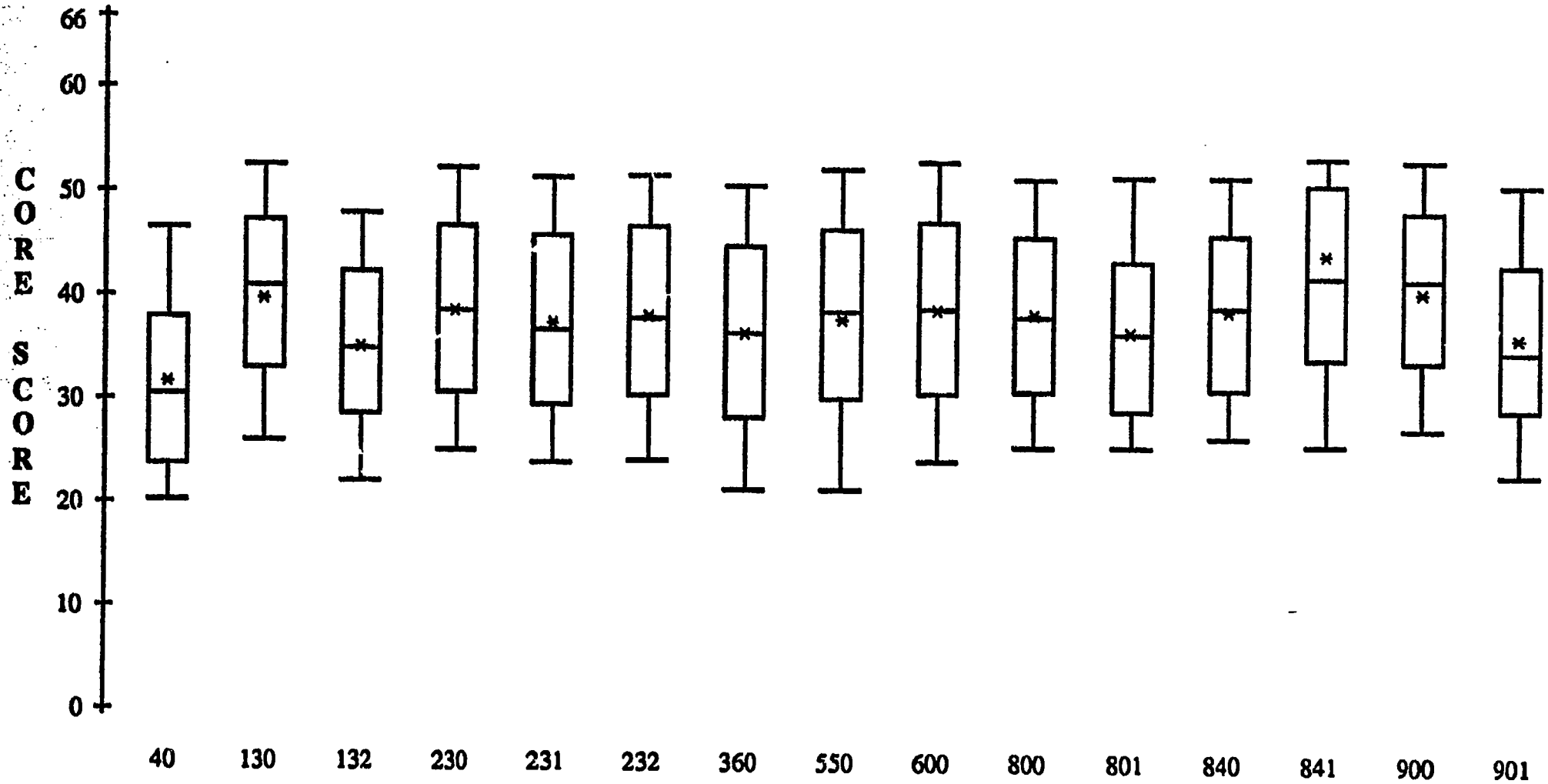


North Central Region School Systems:

10 Alamance Co.	291 Lexington City	412 High Point City	761 Asheboro City
11 Burlington City	292 Thomasville City	680 Orange Co.	790 Rockingham Co.
170 Caswell Co.	340 Forsyth Co.	681 Chapel Hill City	791 Eden City
190 Chatham Co.	410 Guilford Co.	730 Person Co.	792 Western Rockingham City
290 Davidson Co.	411 Greensboro City	760 Randolph Co.	793 Reidsville City

850 Stokes Co.

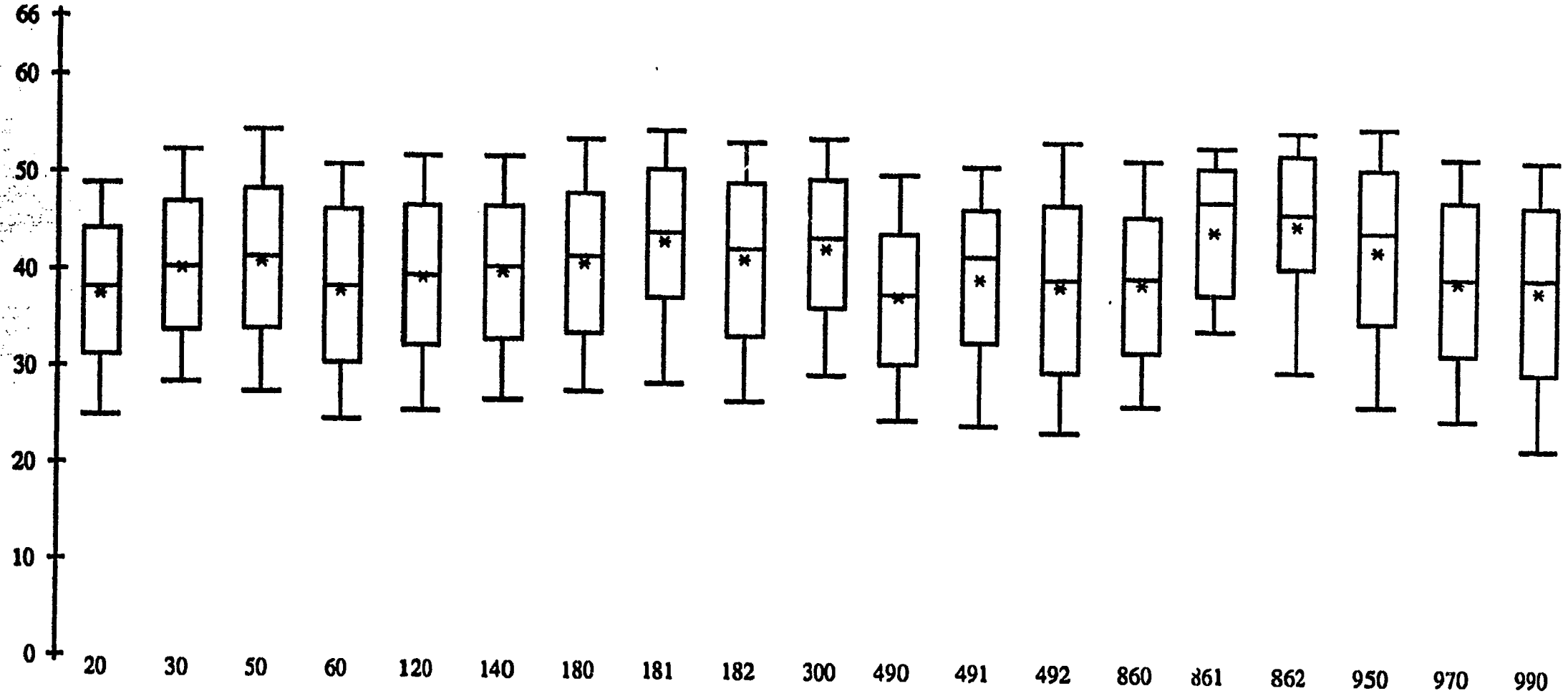
Figure 13. Distributions of Biology Core Scores by School Systems in the Southwest Region -- 1989



Southwest Region School Systems:

40 Anson Co.
130 Cabarrus Co.
132 Kannapolis City
230 Cleveland Co.
231 Kings Mountain City
232 Shelby City
360 Gaston Co.
550 Lincoln Co.
600 Mecklenburg Co.
800 Rowan Co.
801 Salisbury City
840 Stanley Co.
841 Albemarle City
900 Union Co.
901 Monroe City

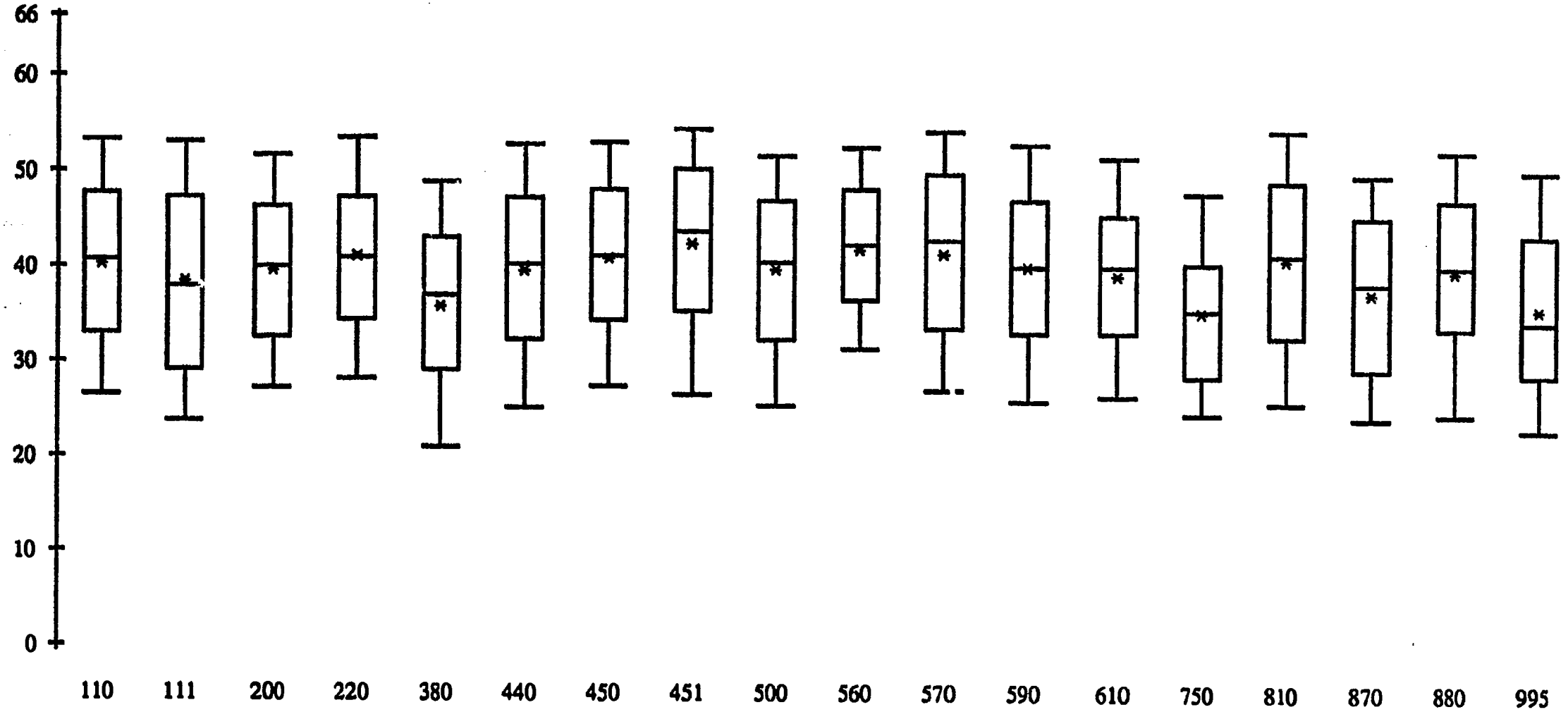
Figure 14. Distributions of Biology Core Scores by School Systems in the Northwest Region -- 1989



Northwest Region School Systems:

20 Alexander Co.
30 Alleghany Co.
50 Ashe Co.
60 Avery Co.
120 Burke Co.
140 Caldwell Co.
180 Catawba Co.
181 Hickory City
182 Newton-Conover City
300 Davie Co.
490 Iredell Co.
491 Mooresville City
492 Statesville City
860 Surry Co.
861 Elkin City
862 Mount Airy City
950 Watauga Co.
970 Wilkes Co.
990 Yadkin Co.

Figure 15. Distributions of Biology Core Scores by School Systems in the Western Region -- 1989



Western Region School Systems:

110 Buncombe Co.
111 Asheville City
200 Cherokee Co.
220 Clay Co.
380 Graham Co.
440 Haywood Co.
450 Henderson Co.
451 Hendersonville City
500 Jackson Co.
560 Macon Co.
570 Madison Co.
590 McDowell Co.
610 Mitchell Co.
750 Polk Co.
810 Rutherford Co.
870 Swain Co.
880 Transylvania Co.
995 Yancey Co.

STATE

NORTH CAROLINA END-OF-COURSE TESTING PROGRAM
BIOLOGY --- 1987

SUMMARY STATISTICS ON CORE TEST

End of Course Testing

NUMBER OF STUDENTS WITH VALID SCORES	82646
MEAN	38.0
STANDARD DEVIATION	10.3
VARIANCE	106.8
MEAN PERCENT CORRECT	57.6

HIGH SCORE	66
LOW SCORE	6

LOCAL PERCENTILES	RAW SCORE
90	52
75	46
50 (MEDIAN)	38
25	30
10	24

FREQUENCY DISTRIBUTION

RAW SCORE	FREQUENCY	CUMULATIVE FREQUENCY	PERCENT	CUMULATIVE PERCENT	STATE PERCENTILE
66	2	82646	0.00	100.00	99
65	11	82644	0.01	100.00	99
64	27	82633	0.03	99.98	99
63	56	82606	0.07	99.95	99
62	159	82550	0.19	99.88	99
61	203	82391	0.25	99.69	99
60	265	82188	0.32	99.45	99
59	432	81923	0.52	99.13	99
58	566	81491	0.68	98.60	98
57	679	80925	0.82	97.92	98
56	892	80246	1.08	97.10	97
55	1005	79354	1.22	96.02	95
54	1303	78349	1.58	94.80	94
53	1369	77046	1.66	93.22	92
52	1596	75677	1.93	91.57	91
51	1700	74081	2.06	89.64	89
50	1883	72381	2.28	87.58	86
49	1998	70498	2.42	85.30	84
48	2287	68500	2.77	82.88	82
47	2288	66213	2.77	80.12	79
46	2504	63925	3.03	77.35	76
45	2629	61421	3.18	74.32	73
44	2742	58792	3.32	71.14	69
43	2772	56050	3.35	67.82	66
42	2826	53278	3.42	64.47	63
41	2814	50452	3.40	61.05	59
40	2809	47638	3.40	57.64	56
39	2880	44829	3.48	54.24	52
38	2747	41949	3.32	50.76	49
37	2770	39202	3.35	47.43	46
36	2745	36432	3.32	44.08	42
35	2776	33687	3.36	40.76	39
34	2576	30911	3.12	37.40	36
33	2596	28335	3.14	34.28	33
32	2504	25739	3.03	31.14	30
31	2483	23235	3.00	28.11	27
30	2254	20752	2.73	25.11	24
29	2137	18498	2.59	22.38	21
28	1989	16361	2.41	19.80	19
27	2026	14372	2.45	17.39	16
26	1760	12346	2.13	14.94	14
25	1669	10586	2.02	12.81	12
24	1544	8917	1.87	10.79	10
23	1353	7373	1.64	8.92	8
22	1198	6020	1.45	7.28	7
21	1055	4822	1.28	5.83	5
20	875	3767	1.06	4.56	4
19	721	2892	0.87	3.50	3
LESS THAN 19	2171	2171	2.63	2.63	2

STATE

NORTH CAROLINA END-OF-COURSE TESTING PROGRAM
BIOLOGY --- 1988

SUMMARY STATISTICS ON CORE TEST

NUMBER OF STUDENTS WITH VALID SCORES	77154
MEAN	39.0
STANDARD DEVIATION	10.9
VARIANCE	118.0
MEAN PERCENT CORRECT	59.1

HIGH SCORE	66
LOW SCORE	2

LOCAL PERCENTILES	RAW SCORE
90	53
75	47
50 (MEDIAN)	39
25	31
10	24

FREQUENCY DISTRIBUTION

RAW SCORE	FREQUENCY	CUMULATIVE FREQUENCY	PERCENT	CUMULATIVE PERCENT	STATE PERCENTILE
66	1	77154	0.00	100.00	99
65	27	77153	0.03	100.00	99
64	56	77126	0.07	99.96	99
63	98	77070	0.13	99.89	99
62	192	76972	0.25	99.76	99
61	326	76780	0.42	99.52	99
60	437	76454	0.57	99.09	99
59	622	76017	0.81	98.53	98
58	819	75395	1.06	97.72	97
57	962	74576	1.25	96.66	96
56	1251	73614	1.62	95.41	95
55	1312	72363	1.70	93.79	93
54	1563	71051	2.03	92.09	91
53	1612	69488	2.09	90.06	89
52	1733	67876	2.25	87.97	87
51	1890	66143	2.45	85.73	85
50	2034	64253	2.64	83.28	82
49	1974	62219	2.56	80.64	79
48	2068	60245	2.68	78.08	77
47	2192	58177	2.84	75.40	74
46	2241	55985	2.90	72.56	71
45	2331	53744	3.02	69.66	68
44	2427	51413	3.15	66.64	65
43	2373	48986	3.08	63.49	62
42	2383	46613	3.09	60.42	59
41	2539	44230	3.29	57.33	56
40	2472	41691	3.20	54.04	52
39	2443	39219	3.17	50.83	49
38	2484	36776	3.22	47.67	46
37	2438	34292	3.16	44.45	43
36	2382	31854	3.09	41.29	40
35	2328	29472	3.02	38.20	37
34	2384	27144	2.99	35.18	34
33	2292	24840	2.97	32.20	31
32	2092	22548	2.71	29.22	28
31	2098	20456	2.72	26.51	25
30	1985	18358	2.57	23.79	23
29	1857	16373	2.41	21.22	20
28	1765	14516	2.29	18.81	18
27	1670	12751	2.16	16.53	15
26	1609	11081	2.09	14.36	13
25	1409	9472	1.82	12.28	11
24	1336	8064	1.73	10.45	10
23	1168	6728	1.54	8.72	8
22	1096	5560	1.42	7.18	6
21	954	4464	1.24	5.76	5
20	758	3498	0.98	4.52	4
19	767	2732	0.92	3.54	3
LESS THAN 19	2025	2025	2.62	2.62	2

STATE

NORTH CAROLINA END-OF-COURSE TESTING PROGRAM
BIOLOGY --- 1989

SUMMARY STATISTICS ON CORE TEST

End Of Course Testing

NUMBER OF STUDENTS WITH VALID SCORES	72898	HIGH SCORE	65
		LOW SCORE	3
MEAN	39.2	LOCAL PERCENTILES	RAW SCORE
STANDARD DEVIATION	10.4	90	52.72
		75	47.37
VARIANCE	108.7	50 (MEDIAN)	39.65
		25	31.51
MEAN PERCENT CORRECT	59.4	10	24.91

FREQUENCY DISTRIBUTION

RAW		CUMULATIVE		CUMULATIVE	STATE
65	2	72898	0.00	100.00	99
64	23	72896	0.03	100.00	99
63	27	72873	0.04	99.97	99
62	80	72846	0.11	99.93	99
61	162	72766	0.22	99.82	99
60	277	72604	0.38	99.60	99
59	437	72327	0.60	99.22	99
58	581	71890	0.80	98.62	98
57	799	71309	1.10	97.82	97
56	999	70510	1.37	96.72	96
55	1276	69511	1.75	95.35	94
54	1400	68235	1.92	93.60	93
53	1578	66835	2.16	91.68	91
52	1828	65257	2.51	89.52	88
51	1966	63429	2.70	87.01	86
50	2027	61463	2.78	84.31	83
49	2244	59436	3.08	81.53	80
48	2205	57192	3.02	78.45	77
47	2344	54987	3.22	75.43	74
46	2257	52643	3.10	72.21	71
45	2357	50386	3.23	69.12	68
44	2398	48029	3.29	65.89	64
43	2379	45631	3.26	62.60	61
42	2401	43252	3.29	59.33	58
41	2373	40851	3.26	56.04	54
40	2389	38478	3.28	52.78	51
39	2333	36089	3.20	49.51	48
38	2424	33756	3.33	46.31	45
37	2297	31332	3.15	42.98	41
36	2276	29035	3.12	39.83	38
35	2239	26759	3.07	36.71	35
34	2086	24520	2.86	33.64	32
33	2138	22434	2.93	30.77	29
32	2091	20296	2.87	27.84	26
31	1978	18205	2.71	24.97	24
30	1881	16227	2.58	22.26	21
29	1745	14346	2.39	19.68	18
28	1660	12601	2.28	17.29	16
27	1510	10941	2.07	15.01	14
26	1378	9431	1.89	12.94	12
25	1298	8053	1.78	11.05	10
24	1172	6755	1.61	9.27	8
23	1016	5583	1.39	7.66	7
22	904	4567	1.24	6.26	6
21	796	3663	1.09	5.02	4
20	710	2867	0.97	3.93	3
19	513	2157	0.70	2.96	3
LESS THAN 19	1644	1644	2.26	2.26	2

Schedule for End-of-Course Testing: Revised May, 1989

Subject	School Year 1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92
Algebra I	▨	■	■	■	■	■	■	■
Algebra II		▨	■	■	■	■	■	■
Geometry				▨	■	■	■	■
Biology	▨	▨	■	■	■	■	■	■
Chemistry				▨	■	■	■	■
Physical Science						▨	■	■
Physics					▨	■	■	■
English I: Reading & Grammar (Reading Comprehension, Editing, and Literary Terms)					▨	■	■	■
English II: Composing					▨	▨	▨	■
English III: Reading and Analyzing Literature							▨	■
Government & Economics						▨	■	■
U.S. History			▨	■	■	■	■	■
Health & P.E.							▨	■
Foreign Language (To be specified)								▨

▨ Development: Items written by N.C. teachers; edited and placed in booklets; reviewed by teachers; field tested with students

■ Testing and Reporting: Multiple forms in each class, common (core) and different items on each form, student and curriculum information