



Entry of Minorities Into Natural Resource Careers*

John F. Dwyer

Abstract

Few minority members are in natural resource careers. The reasons for low minority representation in natural resource careers are identified, barriers to minority inclusion discussed, and recommendations made for problem solution.

There are few black Americans, native Americans, Mexican Americans or other minorities in natural resource careers. This is reflected in the attendance at professional meetings, conferences, workshops, and short courses, and in the staffs of academic departments in natural resources and related areas. The following remarks, delivered at a 1975 workshop on entry of minorities into natural resource careers, highlight the current situation:

A few years ago, in 1967 or 1968, according to some figures made available to me, there were 18,000 professional foresters in the United States. I was shocked to find that two of them — two people, not two thousand — out of those 18,000 were black. One of those had a job in the Forest Service. So essentially, one black practicing professional out of 18,000 — somewhat difficult to explain in a free, open society. I had another real awakening recently — about two years ago. Our forestry staff here at Tuskegee put on a controlled burning demonstration and workshop which met right here in this Chapel, at least the initial session was here. I don't remember the exact number of people, but I think there were about 150 here from throughout the State of Alabama. They were Forest Service employees who work in this country, and they varied from common laborers to professional foresters. It is somewhat ironic that on the morning when that conference began, there was one black person here and I was he. Tuskegee Institute of all places and all of the participants were white. Think about it (6).

No black is employed now as a professional forester by the State of Florida. This statistic is regrettable, but it is not an example of overt discrimination. Not one of the 300 applicants for a professional position in the past two years was black. There is no application on file with us now from a black (3).

Are not most minorities today taking the back seat in the affluence of this great nation? And may not quality education be the opportunity for many to compete as equals in professional job markets? And may not equal job opportunity in turn be a key to affluence among minorities? We think this is true in the natural resources and especially forestry — forestry schools nationally graduated eleven minority foresters in 1974 (5).

John F. Dwyer is assistant professor of Forestry Economics, Department of Forestry, University of Illinois at Urbana-Champaign.

The representation of minorities in professional natural resource careers is not likely to change markedly in the next four years. Enrollment in U.S. forestry programs, which provide a large share of the natural resource professionals, indicate that minority students make up less than 3 percent of the current enrollment (Table 1). Examination of the distribution of enrollment by class reflects a slow increase in minority representation; but the only minority group showing marked increases in enrollment is white females.

Yet representatives of minority groups are needed to play a significant role in analyzing critical environmental problems and implementing appropriate solutions. Environmental and resource management programs cannot be fully effective without a thorough understanding of all cultures. By omitting minorities we neglect human resources that can play a significant role in our efforts to manage natural resources for the well-being of all.

Employers are actively seeking minority resource managers. Their efforts are motivated by recognition of the substantial contribution of minority professionals as well as the fear of legal action or other pressure and chastisement. With the current unavailability of minorities trained in natural resources, employers have in some cases turned to training minorities from other fields to fill positions in natural resource management (1).

The Workshop

In light of this situation, a Workshop on Entry of Minorities into Natural Resource Careers, sponsored by Tuskegee Institute, Weyerhaeuser Company, and the USDA Forest Service, was held at Tuskegee, Alabama, on February 24-27, 1975. The workshop was attended by representatives of educational institutions, industry, and government. Workshop objectives were (1) to enable participants to become more aware of the problem of too few minorities in professional natural resource careers, (2) to generate within each participant an increased desire to deal with the problem and develop solutions, and (3) to provide basic knowledge in order to enable each participant to bring about needed changes through his or her individual action and nationwide coordination among organizations — academic institutions, industry, and state and federal government — with responsibilities for creating natural resource career opportunities for minorities.

* Based on a Workshop on Entry of Minorities Into Natural Resource Careers held at Tuskegee Institute, Tuskegee, Alabama; February 24-27, 1975. The workshop was sponsored by Tuskegee Institute, Weyerhaeuser Corporation, and the Forest Service, USDA.

Table 1. 1974 Fall semester enrollment by group and sex, U.S. Professional Forestry Schools.¹

	1st	2nd	3rd	4th	M.S.	Ph.D.
Female						
American Indian	5	1	2	3	1	0
Black	3	2	3	0	3	3
Oriental	4	3	0	5	5	1
Spanish Surname	7	6	4	1	4	0
Foreign National	1	1	1	1	4	8
White	840	711	626	471	236	26
TOTALS	860	724	636	481	253	38
Male						
American Indian	22	6	8	13	2	1
Black	14	13	15	10	29	9
Oriental	14	8	14	4	14	12
Spanish Surname	25	19	14	15	15	5
Foreign National	16	15	14	21	86	80
White	4285	3791	4228	4536	1703	510
TOTALS	4376	3852	4293	4599	1849	617

¹ Data for West Virginia University and California not included. Male white enrollment not included for University of Maine, University of Michigan, Oklahoma State, or Louisiana Tech Univ. Data compiled by Ralph G. Didriksen, USDA Liaison Officer - Lincoln, University of Missouri.

Following general presentations by representatives of industry, academic institutions, and government which identified the problem and posed some ideas for solution, individual work groups approached the problem from the standpoint of three major questions: (1) what are the barriers or roadblocks to increased minority representation in professional natural resource careers? (2) what are the success factors which have enabled a limited number of minorities to enter professional natural resource careers? (3) what courses of action are necessary to increase minority representation in natural resource careers?

This analysis of the workshop from the viewpoint of the academic community is presented as an aid to subsequent efforts aimed at increasing minority representation in programs preparing professionals for natural resource and related careers.

The Barriers

Factors that have contributed to the small representation of minority students in professional natural resource programs include lack of awareness of and exposure to the opportunities, inadequate academic preparation, urban orientation, ties to the family culture, and financial need. Natural resource careers often have a "bad image" with minority youth. Black Americans often associate natural resource careers with low skill jobs in timber production such as pulpwood cutting. Many natural resource programs are a part of a college of agriculture and are consequently identified with a few low skill jobs in agriculture such as manual crop harvesting (1).

Minority youth lack minority role models in natural resource careers. Considering the limited contact minority youth, particularly urbanites, have with natural resource professionals or their work it is not surprising that few

are aware of, or interested in, such careers. Advisers dealing with minority youth often lack knowledge of natural resource careers and steer minority students into "traditional minority careers" in business and the social sciences (1,4).

Minority students may be inadequately prepared for admission into and successful completion of many natural resource programs (4). In addition, ties to home and minority cultures may make it difficult for minority students to perform well in many university environments. The students are often torn between their native cultures and the new culture to which they must adapt (4).

Success Factors

Factors that have enabled a limited number of minority students to enter natural resource careers include scholarships, summer employment, Youth Conservation Corps, cooperative education, environmental education, and cooperative relationships between industry and academic institutions. These efforts are particularly effective when they work in concert so that the individual is made aware of the opportunities, recruited into an academic program, given the support necessary for retention in the program, and placed in a rewarding job upon completion of the program. A weakness in any of these key parts of the package often results in failure.

For example, the pre-forestry program at Tuskegee Institute has placed considerable emphasis on student recruitment, summer employment, and financial support. Financial support and assistance in finding employment has been made available by industry and government. Recruitment often takes the form of one-to-one contact. A number of students in the Tuskegee program have been participants in the Youth Conservation Corps² where they gained direct contact with conservation projects and natural resource professionals. Others were placed in summer jobs in natural resource areas.

The University of Michigan has a cooperative agreement with Tuskegee to accept graduates of the pre-forestry program. The agreement specifies financial support and student guidance. Other institutions that have enrolled pre-forestry transfers from Tuskegee include Auburn, Colorado State, Iowa State, North Carolina State, and University of California at Berkeley. At present there are no problems with placing Tuskegee graduates in four-year professional programs.

The experiences of minority students in natural resource programs at Humbolt State (California) have demonstrated the importance of minority advisers to help students deal with a culture that may be far removed from that with which they have been associated.³

² The Youth Conservation Corps is a program within the U.S. Department of the Interior and the U.S. Department of Agriculture designed to provide summer employment for teenagers while helping them to become aware of environmental problems and appreciate natural resources.

³ This point was emphasized by Millie Black and Luz Silvia Maynez, students in the Humbolt program who attended the Tuskegee Workshop.

Needed Action

Workshop participants identified a course of action to increase minority representation in professional natural resource careers.

The participants unanimously adopted the following resolution:

WHEREAS, educators, industry officials and government land managers have expressed a common concern about the lack of professionally trained minorities in the field of natural resources, and

WHEREAS, the Tuskegee Workshop represents commitment to address the problem of increasing minority representation in natural resource professions, and

WHEREAS, the immediate and formal continuation of this endeavor is paramount to realizing the goals of the workshop,

NOW let it be resolved, that the National Association of State Universities and Land Grant Colleges, in cooperation with the U.S. Forest Service, Tuskegee Institute, Weyerhaeuser Corporation, and the Society of American Foresters, take leadership in the organization of a permanent committee, with broad representation of natural resource education, management, and development organizations, to focus responsibility for continued effective action in implementing the strategies and programs outlined in this workshop to improve minority representation in the natural resource field.

While such coordination of future efforts is essential to the overall effort, the academic community can take immediate initiative in increasing minority representation in natural resource programs. The following points can form a basis for this initiative. They are ordered with the easily attained short-range steps listed first, followed by the more ambitious and far-ranging efforts.

1. Determine why a larger portion of the minority students attending college under special programs are not preparing for natural resource careers. This information can be obtained from those administering equal opportunity programs and students in these programs. Bring the opportunities in natural resource careers to the attention of these individuals through on-campus recruiting efforts. This recruitment could be enhanced by a series of programs, seminars, or workshops aimed at minority students and their advisers.

2. Aim an increasing part of off-campus student recruitment programs at minority youth. Cooperative Extension and 4-H programs should be particularly helpful in this effort. Recruitment efforts in urban areas should be enhanced by the increasing urban and people orientation of resource management programs. Bring the career

opportunities to the attention of high school advisers and those administering programs aimed at minorities. Perhaps career workshops can be developed for teachers, counselors, and advisers. These workshops might be carried out in cooperation with the N.A.A.C.P. and other minority organizations. Recruitment programs should not neglect young children and their teachers since career selection is a life-long process and early exposure to these opportunities may have a lasting impact. Programs should give particular attention to students beginning their high school education so that interested students can select their high school courses accordingly.

3. Direct an increasing portion of scholarships and financial aid to minority students.

4. Develop well-coordinated and supported program packages aimed at recruitment, education, retention, and placement of minority students. Such programs need strong support from faculty and administration, assured funding, and high visibility. Recruiters should be able to offer a potential student sufficient support to complete the program and find suitable employment.

These are special efforts, but breaking down or circumventing the barriers that continue to keep minorities out of natural resource careers will require nothing less than a special effort. Minority students must be made aware of the career opportunities in natural resources, recruited into natural resource programs and given the support necessary to complete their education. Special efforts are currently made to recruit students for various fields of endeavor who through their high academic achievement show potential for significant contribution to society. These students are given opportunities to engage in specialized programs and often study with distinguished faculty on a one-to-one basis. Minority students, with their high potential for contributing significantly to the field of natural resources, also merit special efforts.

Some, but not all, minority students will be inadequately prepared for traditional college programs. However, inadequate preparation does not imply inability to become prepared (2). Special programs and efforts may be required to bring inadequately prepared students up to acceptable standards for professional natural resource careers.

Summary and Conclusions

The present low level of minority representation in professional natural resource careers and in educational programs leading to those careers is a serious problem that requires considerable attention immediately. While there is not a simple or easy solution to this problem, the Tuskegee Workshop has clearly identified the problem and its causes and suggested ways to remove or circumvent the barriers that keep minorities out of professional natural resource careers. The task that remains is to implement these suggestions, a task in which the academic community can and should take leadership.

References

1. John C. Barber. "Opportunities in the Federal Government." *Proceedings of a Workshop on Entry of Minorities Into Natural Resource Careers* (New Orleans: USDA Forest Service Southern Forest Experiment Station, 1975). pp. 40-42.
2. Gordon L. Berry. "Career Development and Afro-Americans: Defoliation of the Barriers." *Proceedings of a Workshop on Entry of Minorities Into Natural Resource Careers* (New Orleans: USDA Forest Service Southern Forest Experiment Station, 1975). pp. 9-17.
3. John Bethea, "Opportunities for Employment in State Government," *Proceedings of a Workshop on Entry of Minorities Into Natural Resource Careers* (New Orleans: USDA Forest Service Southern Forest Experiment Station, 1975). pp. 43-46.
4. Delano C. Claymore. "Natural Resources and the American Indian," *Proceedings of a Workshop on Entry of Minorities Into Natural Resource Careers* (New Orleans: USDA Forest Service Southern Forest Experiment Station, 1975). pp. 6-8.
5. Ernest L. Finger. "Forward." *Proceedings of a Workshop on Entry of Minorities Into Natural Resource Careers* (New Orleans: USDA Forest Service Southern Forest Experiment Station, 1975). pp. ii.
6. B. D. Mayberry. "Introductory Remarks," *Proceedings of a Workshop on Entry of Minorities Into Natural Resource Careers* (New Orleans: USDA Forest Service Southern Forest Experiment Station, 1975). pp. 3-4.

A Predictive Model of Academic Performance In the MSU Agricultural Production Program

Wayne A. Knoblauch
Abstract

Which applicants should be admitted to a technical training program? If admitted, in which academic areas might the student experience difficulty? These are questions which concern admissions officers and advisors of students almost daily. On what predictors should the decision to admit or not admit be based? Is it possible to foresee academic weaknesses? The objective of this research was to identify those quantifiable predictors which may be used to estimate a student's academic performance and certain academic deficiencies in the Agricultural Production Program at Michigan State University.

The numerical criterion of a student's academic performance used in this study is the grade point average (GPA). Possible predictors of GPA analyzed are (1) vocabulary test scores (Voc), (2) comprehension test scores (Comp), (3) combined vocabulary, comprehension, and reading rate scores (Comb), (4) arithmetic test scores (Arith), (5) algebra test scores (Alg), (6) high school math GPA (HSMGPA), (7) number of high school math courses (M), (8) Differential Aptitude Test for Mechanical Ability (DAT), (9) number of vocational agriculture courses (VA), (10) GPA in vocational agriculture (GPAVA), (11) number of high school English courses (HSE), (12) GPA in high school English (GPAHSE), (13) chemistry test scores (Chem), and (14) high school GPA in academic courses (HSGPA).

Knoblauch is graduate research assistant, Department of Agricultural Economics, Michigan State University and former student advisor, Institute of Agricultural Technology, Michigan State University.

Predictor of Grade Point Average

The first step in the analysis of the possible predictors was to calculate simple correlations. A positive correlation between two variables indicates that high values of one variable tend to be associated with high values of the other variable and similarly with low values. When high values of one variable occur with low values of the other, they are inversely or negatively correlated. Table 2 presents the possible predictors of cumulative GPAs and their correlation coefficients (concurrent validity coefficients).

However several precautions must be observed when interpreting a validity coefficient. First, most correlation statistics are appropriate for linear relationships between the predictor and the criterion. If a nonlinear relationship exists, the traditional Pearson correlation coefficient will provide an underestimation of validity. In this study, plotting of residuals revealed no curvilinear relationships.

Second, if we lack the full range of possible scores on either the predictor or criterion, again we get an underestimation of validity. Given the current selection procedure in the Agricultural Production Program, the students exhibit a very wide range of scores and HSGPAs.

Third, reliability of both the predictor and criterion limits validity. If the predictor and/or criterion is unreliable and therefore inconsistent in assessing its own characteristic, we cannot expect one to measure the other. Thus, if we have poor reliabilities in the predictor and/or criterion we get underestimates of validity. The orientation tests used as predictors have proven reliable. GPAs in courses at the high school and college levels,