

Profile and Employment Trends of Fish and Wildlife Technicians from Several Southeastern States

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Abstract: Names and addresses of currently employed technicians were obtained from fish and wildlife agencies of Georgia, South Carolina, North Carolina, Virginia, and Tennessee. Surveys ($N = 355$) were mailed to these individuals; 185 (52%) were returned. This information was used to develop a profile of "the technician" employed by the surveyed states. Technicians were ≥ 36 years old (36%), had at least 1 educational degree beyond high school (57%), had previous agricultural experience prior to employment (68%), desired additional equipment operation and maintenance experience prior to employment (24%), desired additional biological or wildlife courses prior to employment (28%), had technician as their career goal (68%), earned $\geq \$18,000/\text{year}$ (47%), and were satisfied with their jobs (50%). Forty-nine percent of the technicians hired from 1978 to 1985 had a 4-year or higher degree, while 18% of those hired prior to 1978 had a 4-year or higher degree, possibly indicating a trend towards hiring technicians with a higher level of education.

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Through the 1970s and 1980s there has been discussion about the role of fish and wildlife technicians in the profession, and the education needed for such positions (Scott et al. 1975, Ramakka 1982, Hein and Bates 1983). There also has been concern regarding the competition for technician positions between graduates of 2- and 4-year wildlife programs (unpubl. rep., Haywood Technical College, 1985). Ramakka (1982) reviewed the status of wildlife education at 2-year colleges, Brooks and Stutz (1984) reported the status and role of wildlife technicians, and Scott et al. (1975) discussed whether too many wildlife students were being trained.

A technician may be defined as an individual below the professional level (meeting certification requirements of the professional society) with some formal education in fisheries and/or wildlife beyond high school. The responsibilities and duties required in a technical position may vary but generally include executing fish

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and wildlife management or research plans which have been developed by the professional and carried out under his supervision. The fish or wildlife technician position is a skilled position between the professional and the laborer. My study was designed to profile technicians employed by several southeastern states and indicate trends in hiring fish or wildlife technicians based on level of education.

Methods

During July 1985 the names and addresses of currently employed "technicians" were requested from state fish and wildlife agencies of Georgia, South Carolina, North Carolina, Virginia, and Tennessee. The names received from the state agencies included individuals in positions with the following titles: Wildlife Management Technician and Fisheries Technician I (North Carolina), Wildlife Technician (includes both wildlife and fisheries positions) (South Carolina and Georgia), and Wildlife Aide I (Tennessee). The Game Division of the Virginia Commission of Game and Inland Fisheries indicated that they had no positions titled as wildlife technician. They have entry level employees as technicians with the title of Wildlife Management Area Supervisor, Wildlife Management Area Supervisor Assistant, Game Biologist Aide, Fish Biologist Assistant, or Fish Culturist. In August 1985 a survey was mailed to each technician and employees from Virginia in the aforementioned position, requesting the technicians to indicate age, length of time employed, education, general experience prior to employment as a technician, job satisfaction, and salary range from a grouping provided, and to provide information on additional experience desired prior to becoming a technician, additional education desired prior to becoming a technician, and career goal. The survey was anonymous and included a stamped envelope with return address. Surveys returned by 15 November 1985 were used in calculations. In addition, a job description, salary range, and qualifications needed for the particular technical positions were requested from each state. Chi-square analysis was used to compare survey responses.

Results and Discussion

Of 355 questionnaires mailed, 185 were returned (52%). The number and percent of surveys returned by state were North Carolina 39 (74%), South Carolina 27 (45%), Georgia 59 (56%), Tennessee 27 (36%), and Virginia 33 (55%).

There was a significant relationship between education level and length of time employed ($P < 0.01$). Survey results indicated that 49% of the technicians hired during the previous 8 years (1978–1985) had a 4-year degree or higher while 18% of those hired >8 years ago (prior to 1978) had a 4-year degree or higher (Table 1). These results indicate a trend in hiring more educated individuals for technician positions. This trend was observed in responses obtained from the individuals employed by the States of North Carolina ($P < 0.01$), Virginia ($P < 0.01$), and Tennessee ($P < 0.05$), but not from Georgia ($P < 0.47$) or South Carolina ($P < 0.40$).

Table 1. Characteristics based on survey responses (%)^a of fish or wildlife technicians in 5 southeastern states^b by education level,^c 1985.

	High school	2-Year degree	4-Year degree	6-Year Degree	Total
Age	<i>N</i> = 77	<i>N</i> = 44	<i>N</i> = 50	<i>N</i> = 11	<i>N</i> = 182
16 - 20	1	0	0	0	1
21 - 25	4	11	2	0	5
26 - 30	16	34	28	64	26
31 - 35	23	34	46	36	33
36 +	56	20	24	0	35
Years employed	<i>N</i> = 78	<i>N</i> = 44	<i>N</i> = 49	<i>N</i> = 11	<i>N</i> = 182
1 - 2	10	5	16	64	14
3 - 4	4	11	10	9	8
5 - 8	14	34	39	27	26
9 - 12	22	20	16	0	19
13 +	50	30	19	0	34
Career goals	<i>N</i> = 65	<i>N</i> = 41	<i>N</i> = 44	<i>N</i> = 9	<i>N</i> = 159
Technician	83	93	36	0	68
Biologist	6	5	57	89	24
Law enforcement	6	0	0	0	3
Other	5	2	7	11	5
Salary	<i>N</i> = 76	<i>N</i> = 44	<i>N</i> = 50	<i>N</i> = 11	<i>N</i> = 181
\$5 - 8,000	3	0	0	0	1
\$8 - 10,000	3	0	2	0	2
\$10 - 12,000	12	0	8	18	8
\$12 - 14,000	17	9	6	27	13
\$14 - 16,000	11	20	16	36	16
\$16 - 18,000	7	23	18	0	14
\$18,000 +	49	48	50	18	47
Job satisfaction	<i>N</i> = 77	<i>N</i> = 44	<i>N</i> = 50	<i>N</i> = 11	<i>N</i> = 182
Very satisfied	34	50	20	28	34
Satisfied	54	39	56	36	50
Dissatisfied	8	11	22	36	15
Very dissatisfied	4	0	2	0	2

^aPercents may not sum to 100 due to rounding.

^bNorth Carolina, South Carolina, Georgia, Virginia, and Tennessee.

^cChi-square analysis indicated a significant relationship between education and : age ($P < 0.01$); years employed ($P < 0.01$); career goal ($P < 0.01$); salary ($P = 0.04$); job satisfaction ($P = 0.02$).

The hiring of more educated individuals for fish or wildlife technicians is not unexpected. Since the increase in environmental awareness in the 1960s and early 1970s there has been an increase in the number of schools offering courses in fish and wildlife sciences (Ramakka 1982). This trend has led to more associate, baccalaureate, and graduate degrees being granted in fish and wildlife disciplines than there are positions available; therefore, competition for these positions probably has increased along with the employment of overeducated individuals. Overeducation is the employment of individuals in jobs that do not make full use of their education. Overeducation is not unique to our profession but is of national concern impacting on private and public organizations (Rumberger 1981).

Employers of fish and wildlife technicians may choose from a wide range of individuals with varied experiences and educational backgrounds. The temptation to hire the most educated individual for a position may lead to future problems. Results of this survey indicated a significant relationship in education levels and career goals ($P < 0.01$) or job satisfaction ($P < 0.01$). Thirty percent of responding employees with a 4-year or master's degree indicated technician and 62% indicated biologist as their career goal, while 87% of those with a 2-year technical degree or less indicated technician and 6% indicated biologist as their career goal (Table 1). Although the majority of all responding technicians indicated they were satisfied with their jobs, 12% of the technicians with a 2-year degree or less and 26% of the technicians with a 4-year or graduate degree were dissatisfied or very dissatisfied with their jobs (Table 1). The disparity between present position and career goal and the increased job dissatisfaction for those with higher degrees may result in poor morale and higher job turnover hindering agency performance and efficiency. Job dissatisfaction, turnover, absenteeism, sabotage, and low productivity have been indicated as possible effects of overeducation in the workplace (Rumberger 1981).

General wildlife skills ranked in order of importance by public agencies versus wildlife technician skills ranked in order of importance by state wildlife agencies are different (Hein and Bates 1983, Brooks and Stutz 1984). The technician skills ranked by state wildlife agencies emphasize mechanical, farming, and practical fish and wildlife skills rather than the more theoretical training received in some 4-year programs. Agriculture (68%) and construction (59%) were the respondents' most common general experience prior to employment. Equipment operation/maintenance (24%) and biological/wildlife field experience (24%) were the most desired additional experiences that technicians wished they had prior to employment. Twenty-eight percent of respondents indicated that they desired additional biological or wildlife courses prior to employment, and 22% indicated that they desired a 4-year degree prior to employment. A greater percentage of technicians with a 2-year degree or less (74%) indicated agriculture as general experience prior to employment than was indicated by technicians with a 4-year or higher degree (56%); however, this difference was not significant (Table 2).

An important indication of the type of training that technicians should be receiving was the additional experience that some technicians indicated was desirable. This presumably reflected additional experience that would be beneficial in the technician's current position. Equipment operation and maintenance, biological or wildlife field experience, construction, carpentry, and welding were indicated as desirable additional experience (Table 2). These desires support the concept that technicians need training that emphasizes practical skills.

Questions concerning education and training needed by wildlife technicians should be addressed by wildlife professionals. Results of this study indicate a trend in some states towards hiring "more educated" individuals for technician positions. Brooks and Stutz (1984) indicated this trend may be national in scope. They found only 8% of the states with technical positions required a 4-year degree for those

Table 2. General experience and desired additional training of fish or wildlife technicians based on survey responses (%)^a in 5 southeastern states^b by education level, 1985.

	High School (N = 78)	2-Year degree (N = 44)	4-Year degree (N = 50)	6-Year degree (N = 11)	Total (N = 183)
General experience prior to employment					
Agriculture	76	70	56	55	68
Construction	60	59	56	64	59
Business	27	14	20	0	20
Teaching ^c	1	2	10	18	5
Other	38	41	42	45	40
Desired additional experience prior to employment					
Equipment operation and maintenance ^c	9	43	34	9	24
Farming/agriculture	5	9	10	18	8
Biological/wildlife field experience	22	14	32	36	24
Forestry	3	2	8	0	4
Construction/carpentry/welding ^c	1	27	18	9	12
Public relations/communications	6	7	16	9	9
Desired additional education prior to employment					
Biological wildlife courses	22	23	38	36	28
Associate degree ^c	22	2	2	0	10
4-Year degree ^c	31	32	4	0	22
6-Year degree ^c	5	7	20	0	9
Business courses	1	2	2	0	2
Computer courses ^c	0	7	10	27	6

^aPercents may not sum to 100 due to rounding.

^bNorth Carolina, South Carolina, Georgia, Virginia, and Tennessee.

^cChi-square analysis indicated a significant relationship between education levels and: teaching ($P < 0.025$); equipment operation and maintenance ($P < 0.001$); construction/carpentry/welding ($P < 0.001$); associate degree ($P < 0.001$); 4-year degree ($P < 0.005$); 6-year degree ($P < 0.05$); computer courses ($P < 0.005$).

positions, while 32% of the technicians actually hired had a 4-year degree. In the current study the Wildlife Management Area Supervisor position in Virginia was the only position requiring a 4-year degree, although a high school diploma and appropriate experience could be substituted.

As indicated by Brooks and Stutz (1984), the perceptions of technicians and their duties in the fish or wildlife profession are not consistent; however, the standardization of technical positions may not be a desired goal. A more detailed evaluation of the technical skill level required for specific positions may be desirable and useful to employers and employees. The employers have a responsibility to evaluate technical positions and to select individuals for these positions based on skills required and potential job satisfaction, and not on educational level alone.

The profile of "the technician" also may vary from state to state or from region to region within the United States (Table 3). A summary profile of technicians employed from 1978–1985 by the 5 southeastern states surveyed is presented in Table 4. The greatest percentage of responding technicians were ≥ 36 years of age, had at

Table 3. Profiles of fish or wildlife technicians (%)^a employed by 5 southeastern states,^b 1985.

	N. C.	S. C.	Ga.	Va.	Tenn.	Total
Age ^c	<i>N</i> = 39	<i>N</i> = 27	<i>N</i> = 58	<i>N</i> = 33	<i>N</i> = 27	<i>N</i> = 184
16-20	0	0	0	4	0	1
21 - 25	22	44	11	0	22	5
26 - 30	23	13	44	8	13	26
31 -35	18	18	30	15	18	33
36 +	23	9	27	30	11	36
Education	<i>N</i> = 39	<i>N</i> = 26	<i>N</i> = 59	<i>N</i> = 32	<i>N</i> = 27	<i>N</i> = 183
2 years or less	56	81	64	69	70	67
4 years or more	44	19	36	31	30	33
Career goals ^c	<i>N</i> = 34	<i>N</i> = 24	<i>N</i> = 52	<i>N</i> = 29	<i>N</i> = 22	<i>N</i> = 161
Technician	62	75	79	62	55	68
Biologist	38	8	13	31	36	24
Salary ^c	<i>N</i> = 39	<i>N</i> = 26	<i>N</i> = 59	<i>N</i> = 32	<i>N</i> = 27	<i>N</i> = 183
\$5 - 8,000	0	0	0	0	7	1
\$8 - 10,000	0	0	0	0	11	2
\$10 - 12,000	0	4	0	0	52	8
\$12 - 14,000	8	35	5	3	26	13
\$14 - 16,000	18	35	22	0	0	16
\$16 - 18,000	21	19	14	13	0	14
\$18,000 +	54	8	59	84	4	47
Job satisfaction	<i>N</i> = 39	<i>N</i> = 27	<i>N</i> = 59	<i>N</i> = 32	<i>N</i> = 27	<i>N</i> = 184
Satisfied	79	89	85	84	78	83
Dissatisfied	21	11	15	16	22	17
General experience prior to employment	<i>N</i> = 39	<i>N</i> = 27	<i>N</i> = 59	<i>N</i> = 33	<i>N</i> = 27	<i>N</i> = 185
Agriculture	74	70	66	67	59	68
Construction	54	56	58	76	52	59
Desired additional experience	<i>N</i> = 39	<i>N</i> = 27	<i>N</i> = 59	<i>N</i> = 33	<i>N</i> = 27	<i>N</i> = 185
Equipment operation/main.	31	19	34	12	11	24
Biol. wildl. field experience	21	44	17	30	15	24
Desired additional education	<i>N</i> = 39	<i>N</i> = 27	<i>N</i> = 59	<i>N</i> = 33	<i>N</i> = 27	<i>N</i> = 185
Biol./wildl. courses	28	48	24	27	15	28
4-year degree	12	23	19	41	24	22

^aPercents may not sum to 100 due to rounding.

^bBased on survey returns.

^cChi-square analysis indicated a significant relationship between states and: age (*P* = 0.02); career goals (*P* = 0.02); salary (*P* < 0.01).

least 1 educational degree beyond high school, and were satisfied with their jobs. Most technicians who had been employed < 2 years were 26-30 years old (56%), had a 4-year or higher degree (60%), and were satisfied with their jobs (87%). Only 2 technicians employed < 2 years indicated that they were not satisfied with their jobs. One of these had a 4-year degree and the other had a 6-year degree.

It also may be beneficial to the wildlife profession to establish minimum qualifications for technicians. This idea has been proposed previously. Stribling and Brooks (unpubl. rep.) presented a "Statement of Intent for Establishment of a Committee on Two-Year Wildlife Technology Programs" to The Wildlife Society Coun-

Table 4. Summary profile of fish or wildlife technicians employed by 5 Southeastern states^a from 1978–1985.^b

Age	26–30 (51%) 31–35 (29%)
Education	4-year degree (37%) 2-year degree (25%) High school (25%)
Career goal	Technician (44%) Biologist (34%)
Salary	\$14–16,000 (24%) ≥\$18,000 (23%)
Job satisfaction	Satisfied (80%) Dissatisfied (20%)
General experience prior to employment	Agriculture (62%) Construction (56%)
Desired additional experience prior to employment	Equipment operation/maintenance (30%) Biological/wildlife field experience (30%)
Desired additional education prior to employment	Biology/wildlife courses (25%) 4-year degree (17%)

^aNorth Carolina, South Carolina, Georgia, Virginia, and Tennessee.

^bPercent based on survey returns.

cil on 28 January 1985. This subject also was discussed at the Second Annual Meeting of the National Organization of 2-Year Wildlife Colleges and Universities (unpubl. rep., Haywood Technical College, 1985). Discussions of this issue also should be initiated at institutions offering 4-year degrees since students from these institutions are increasingly employed as technicians.

In conclusion, this study provided a profile of fish or wildlife technicians employed by 5 southeastern states. This study also showed a trend toward hiring technicians with a higher level of education. The status of fish or wildlife technicians in the southeastern U.S. is of concern to many educational institutions, employers, and potential employees. It is the responsibility of fish and wildlife professionals and The Wildlife Society to provide guidance regarding the education and skills needed for employment as a fish and wildlife technician within our profession. Ultimately it is the responsibility of the employers to evaluate the position being filled and to select on the basis of the skill level required rather than on the basis of educational level alone.

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