NIFRMA Task C - An evaluation of staffing patterns of forestry organizations of the Bureau of Indian Affairs and of Indian tribes. *The section also addresses the special study area of workforce education, recruitment, and retention*

Staff

An assessment of the adequacy of BIA and tribal staffing to manage reservation and allotted forest lands is of central concern to NIFRMA, and hence a core topic of study in all IFMAT reports. IFMAT I (1993) and IFMAT II (2003) analyses found that in 1991 and 2001 that Indian forestry was understaffed relative to its tasks and in comparison to staffing levels for federal and state agencies and private industry. IFMAT II, in contrast to an IFMAT I recommendation for staffing increases, found a 26% decrease in forest management staff over ten years. This reduction in staff was somewhat masked, however, by a large increase in fire staff that resulted from emergency national fire program expansions following the devastating fire season of 2000. Other findings of note from previous IFMAT reports included the lack of staffing to support progress in integrated and coordinated resource planning; a continuing decline in BIA capacity to provide technical services such as GIS, inventory, and marketing support; and a chronic shortage of professional foresters as compared to state and federal agencies and private industry.

In the last decade, there have been national trends related to staffing that bear mention before launching into our trend analyses of tribal and BIA forestry staff.

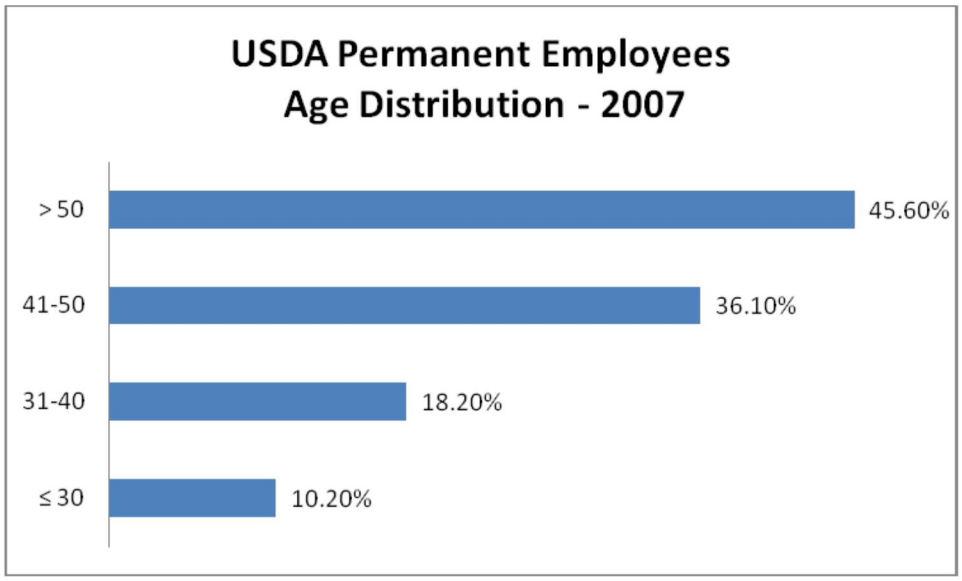

Figure C.1. USDA Employee age distribution 2007 (USDA 2008).

An aging workforce in forestry is affecting forestry organizations across the Nation as a large proportion of the experienced workforce is, or soon will be, eligible for retirement. A 2011

study showed that the average age of foresters was 51, higher than most related natural resource professions (Sharik and Lilieholm, 2012). The USDA strategic workforce plan (2008) found that 27% of all foresters, 36% of supervisors/managers and 62% of the senior executive service were eligible for retirement. A nationwide "scarcity" of trained and experienced foresters will add to the already considerable recruitment and retention issues faced by BIA and the tribes. For instance over 60% of BIA forestry staff in the Pacific Northwest Region are eligible for retirement in the next 5 years (Shaw, 2012). Within a small agency such as the BIA, a disproportionate wave of retirements can translate to major shifts in personnel, losses of institutional knowledge, and leadership deficits.

In the past, IFMAT has developed comparisons of BIA and tribal staffing levels to those of other public and private forestry organizations in order to help inform discussion about the number of staff per acre of forest land needed to sustain state-of-the-art forest management. This method has been adopted again in IFMAT III. However, there have been some notable shifts in non-Indian forestry organizations that should be considered in assessing their merit as comparators.

- As private timber land ownership has shifted from long-tenured and vertically-integrated companies and toward short-tenured Timber Investment Management Organizations (TIMOs) and Real Estate Investment Trusts (REITs) the number of full time professional staff has been reduced while consultants and other contractors have increasingly provided management services.

- The USFS has also undergone a significant staffing re-structuring as management objectives have changed for national forests. Between the years 2005-2007 the average rate of loss of foresters in the USDA was 12% (retirement and attrition) while the hiring rate was 3.4%. The 5-year projection for the years 2008-2013 includes a cumulative 15% reduction in the "mission critical" area of forestry within the USDA during this time period. At the same time that the USDA lost 371 foresters, they hired 1,000 people within the general biological science series (USDA 2008). The transition away specialized forest management to a more general biological focus changes the value of the national forests as a baseline comparator for tribal forestlands, which continue to be actively managed for an integrated mix of cultural, economic, and environmental objectives.

During IFMAT site visits we found that tribal and BIA forestry programs have dedicated staff made up of a mix of tribal members and non-Indian professionals. However, an aging workforce, an increasingly challenging management environment, and issues regarding recruitment and retention represent growing challenges for the future.

Since education is essential to generate quality forestry staff, both previous IFMAT reports commented on trends and concerns in forestry education programs and access. ITC requested that the IFMAT III team more fully explore trends in Native American natural resource education and how such trends might affect tribal and BIA forestry programs, especially given current demographic shifts. Education is discussed below as an additional section of the Task C report.

Findings

C1. Overall staffing has continued to decline, down 21% from 2001 and 13% below the 1991 baseline. We find fewer staff per acre in Indian forestry programs than is the case for federal, state or private forest operations. As indicated in Table C.1., in the decade since IFMAT II (2011-2001), total staffing has fallen 21%, reflecting a particularly dramatic drop in fire staff of 36% and a more modest decline of 4% in forest management staff. In the prior decade (2001-1991), however, total forestry staff fell by 29% while fire staff increased by 29% and consequently, although the decline in forestry staff was significant, total staffing, during the decade of 2001-1991, actually increased by 10%. These data illustrate dual staffing concerns: the number of staff available verses needed to properly care for the forest and the destabilizing nature of volatile shifts in forest and fire staffing numbers.

Table C.1. Total number of staff full time equivalents (FTEs) forestry including professionals and technicians as well as seasonal and support works.

	2011	2001	1991	% change (2011-2001)	% change (2011-1991)
Forest Management Staff					
BIA	404	409	1,002	-1%	-60%
Tribal	766	815	642	-6%	19%
Total	**1,169**	**1,224**	**1,645**	**-4%**	**-29%**
Fire Staff					
BIA	331	796	490	-58%	-32%
Tribal	473	462	133	2%	256%
Total	**804**	**1,258**	**622**	**-36%**	**29%**
Total Forest and Fire Staff					
BIA	734	1,206	1,492	-39%	-51%
Tribal	1,239	1,277	775	-3%	60%
Total	**1,973**	**2,483**	**2,267**	**-21%**	**-13%**

C2. Reductions in fire funding over the last 10 years have led to a 36% reduction in fire staff (Table C.1). The influx of fire funds that occurred in the earlier part of this decade, reported by IFMAT II, peaked in 2001 and continues to decline. The Fiscal Year 2012 Budget Justification for the DOI Wildland Fire Management calls for a DOI wide

reduction in full time staff of 332 jobs (8% reduction) (DOI, 2012a). This relatively sudden influx and then erosion of the funding base has created challenges for tribes in hiring, retention and job duty allocations. It has also had profound effects on the inter-relationship and relative roles of forestry and fire program personnel. The divisions between forestry and fire programs that existed previously, especially when fire funding was plentiful, are once again blurring, as tribal forestry departments attempt to use a mixed bag of funding from forestry, fire and grant sources to retain staff and accomplish management objectives such as hazardous fuel reduction and other fuel treatments.

C3. Funding and Position Analysis and Workforce Survey data indicate a need for a 65% increase in staff for Indian forestry programs. IFMAT staffing needs analyses based on tribal and BIA responses to the 2011 FPA survey conducted by BOFRP shows that perceived staffing shortages are getting worse as compared to prior IFMATs. 2011 FPA results indicate a need for an addition of 361 professional foresters – a 62 % staffing increase. Needs analysis also calls for 431 additional technicians, a 69 % increase beyond current levels. Needed additional personnel for Indian forestry programs total 792 (Table C.2.). FPA respondents report that forest protection (36% of all requested personnel) is the most needed area of expertise, followed by increases in forest management and inventory planning staff (21%), sales (17%) and forest development (10%).

Table C.2. Current and requested full time staff (professionals and technicians only) by region.

Region	Current Staff	Requested Staff	% Increase
Northwest	565	268	47%
Southwest	330	276	87%
Lake States	226	182	81%
Eastern	49	50	102%
Central Office	40	16	40%
Total	**1,210**	**792**	**65%**

Regionally, staffing needs vary, with the Eastern, Southwest and Lake States requesting the greatest percentage increase in staffing while the largest numbers of additional staff are requested by the Northwest, Southwest, and Lake States (Table C.2.).

At numerous site visits, IFMAT was told that additional staff were needed and that the bare-bones forestry staff are just barely able to "keep the shop open" at current staffing levels. Under such circumstances, only the most urgent management issues get addressed while long-term activities such as integrated planning, climate adaptation, and woodland management are necessarily differed. Most reservations report vacant positions for which recruitment has been difficult or funding has disappeared. The IFMAT III workforce survey reports that 71 of 199 respondents (36%) claim that there is at least one current forestry

job opening at their tribe/agency. Lack of funding was most frequently identified as the major cause of persistent job vacancies. However, difficulties in job postings, lack of funds for relocations to remote reservations, and inadequate pay levels and benefits packages all hinder staff recruitment.

Table C.3. Comparisons of BIA staffing levels to those of other public and private forest management organizations (BIA 2012a, USDA 2008).

Forestry Organization	% Professional	Forest acres per professional
BIA/Tribes, all	**30%**	**30,000**
National Forests	19%	24,500
Oregon Trust Lands	80%	3,500
NW Forest Industry-West Side	40-80%	9,000
NW Forest Industry-East Side	40-80%	16,000

C4. Indian forestry operations are understaffed compared to other public and private forest management organizations. Retirements and limited training opportunities contribute to loss of institutional knowledge and leadership. Recruitment and retention of Indian forestry staff trend toward opposite extremes: often, talented staff members serve for a long time, but many others enter, train, and quickly move on. Relatively low salaries, remote locations, and small organizations lead to poor career ladders, resulting in employee turnover and recruitment difficulties. Exacerbating the problem is the large number of long- term employees eligible for retirement.

Lengthy processing time by Human Resources appears to be a widespread problem at all levels of BIA forestry and fire organizations. Delays of up to one year in filling funded positions are common, impacting delivery of all program aspects from forest management planning to project implementation.

C5. The percentage of professionals in the workforce has increased for the second straight decade, but is still lower than that of state and private forestry operations. There has been a significant increase (35%) in the number of professional foresters over the last 20 years despite a consistent downward trend in overall staffing. There is also a marked transition from BIA to tribal employment as a result of the shift towards greater self-determination and self-governance. FPA data indicate a 206% increase in tribal foresters since 1991. Although that trend has continued over the last decade, BIA professional staffing levels have declined by 15% since 1991. The majority of the remaining BIA jobs are in regional and support functions rather than local direct service.

Table C.4. Changes in BIA and tribal professional foresters since 1991.

	2011	2001	1991	% change 10 years	% change 20 years
BIA professional	289	291	342	-1%	-15%
Tribal professional	306	249	100	23%	206%
Total	**595**	**500**	**442**	**19%**	**35%**

Forest and foresters – Spokane. Photo by Mark Rasmussen.

C6. The number of Native American forestry professionals has increased from 22% of the Indian forestry professionals in 1991 to over 48% in 2012. IFMAT I reported that, in 1991, 22% of all Indian forestry professionals were Native American. The current IFMAT III workforce survey of tribal and BIA professional foresters indicates that 48% are Native. Although this is a positive step, some tribal forestry departments are still staffed predominantly by non-native foresters. Many tribes reported on-going commitments to recruit and train tribal members into forestry positions and to support tribal members pursuing higher education in forestry (see following section on education). According to the survey, of the Native American professional foresters working in Indian Country, 64% work on their home reservations, 15% work on other reservations and 21% work off reservation (generally a BIA agency or regional office).

Increasing the number of Indian foresters, especially in positions of leadership, that care for the resources so important to reservations is a powerful objective of self-determination and

self-governance. Additionally, however, it is important to acknowledge the many non-Native professionals that have dedicated their careers to working in Indian forestry programs often at wage levels below those available at public agencies and private companies. Native and non-Native foresters are in agreement that working in Indian country brings uniquely rewarding opportunities to practice forestry that are unavailable from other forest management organizations.

C7. Tribal foresters report an increasing amount of staff time is spent on pursuit of outside grant opportunities and the attendant duties of administration and reporting. Due to declining funding levels from BIA (see Task A Report), tribal staff report that in an effort to augment strained budgets as well as support interdisciplinary staff needed for integrated resource management (biology, fisheries, hydrology, etc.) an increasing amount of staff time must be spent on pursuing, administering, and reporting outside grant opportunities. At multiple IFMAT reservation visits, discussions with forest managers and other natural resource department supervisory professionals indicate that the time spent by a staff member to secure and execute project grants can be as much as 50 percent FTE. At several reservation visits, IFMAT found key staff totally reliant upon non-recurring project funds to support their positions. Programs, hires and other activities based on grant funding tend to be for short periods of time (1-5 years) with no guarantee of sustainability or renewal. Although partnerships between tribes, agencies and other funders can result in beneficial conservation projects, such projects may not align with tribal priorities and may even distract key personnel from more pressing but under-funded responsibilities. Further, we saw funding-strapped tribes creatively piecing together support for key personnel from part project funds, part program funds, and part fire funds. Such fragile funding support arrangements cannot be sustained and, although project funding might only provide a portion of a staff person's wages, without the supplement provided by such funds the position might be lost all together. Baseline funding for staff should be adequate, stable, and predictable in order to support the long-term staff engagement that stewardship of forests and woodlands requires.

Tribal forester – Warm Springs. Photo by Vincent Corrao.

C8. Below average salary and benefit packages offered by many tribes hamper recruitment and retention efforts. Retention of foresters working for the tribes, especially non-tribal employees, is often hampered by below average salary and benefits packages. Reports from tribal forestry personnel at many of the site visits indicate that wages for tribal forestry employees are 15-30% lower than those for comparable federal positions. Benefits packages are also reported to be less generous than those available to federal employees. Many tribal forestry staff have complained that, in addition to low wages, isolated reservations serve as a "training platforms" for young foresters that then move on to better paying state and federal positions. On the other hand, as indicated by the long tenure of many survey respondents and professional staff interviewed at site visits, we do find foresters (Indian and non-Indian) that report preference for forestry jobs in Indian country.

C9. An aging workforce will result in staff losses that are overcoming current recruitment and retention measures. IFMAT III workforce survey of 135 professional foresters indicates an average age of 49. While this is slightly lower than the 51 years documented in a national study (Sharik and Lilieholm, 2012), the workforce survey reveals that 51% of the surveyed foresters were 50 years or older (Figure C.2.). The average number of years of experience in Indian forestry was 18 with 40% reporting 21 or more years of service. The last systematic analysis of BIA workforce recruitment and retention challenges was done in 1992. In spite of skewed age distributions that foretell coming waves of retirements, we find no cohesive national strategic plan to address increasing shortages of trained personnel within Indian forestry programs. We find no systematic program for employee recruitments such as is the practice for the Forest Service. The BIA has no protocol for consolidating or advertising available positions. Recent postings of BIA openings on the Division of Forestry and Wildland Fire Management Facebook page are

part of a new effort to utilize social media for recruitment. BIA foresters report frustration with the DOI Human Resources system. Multiple reports were heard of four months to a year to create a position description and longer to advertise, interview, and follow through to the selection of an individual. In the IFMAT III workforce survey, 55% of respondents reported that the average length of time needed to fill an open position exceeded 7 months (with almost 32% claiming that it took over a year).

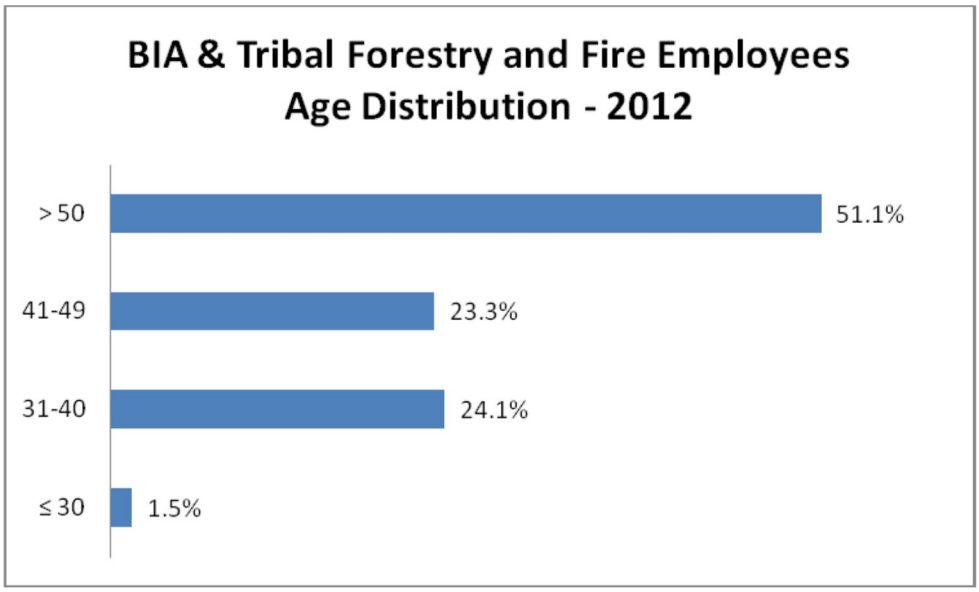

Figure C.2. BIA and Tribal forestry and fire employees age distribution 2012.

C10. Tribal forestry programs lack access to needed technical support, especially in the fields of forest management inventory and planning, wildlife management, engineering, marketing, and in coordination of integrated resource planning. BIA technical support capability varies by region and tribe, but inadequate technical support has been chronic since the first IFMAT report. Insufficient technical support by BIA contradicts the recommendations of this and earlier IFMATs. Tribes that rely on direct service support from the BIA are particularly affected. Tribes that rely upon direct service support from the BIA are particularly affected. Forest inventory and analysis capability is often seen as slow and less than adequate. Forest management plans are sometimes prepared with old, outdated inventory information and inadequate help in analyzing the inventory data available. Use of geographic information systems (GIS) was often identified by tribes as a technical area in which they needed more support. Electronic sharing of files has been cited as another technical challenge.

BOFRP has the central responsibility for technical support to tribes, and is chronically understaffed. As example, in 2011 BOFRP operated at 50 percent of need due to unfilled staff vacancies. Soon, BOFRP is set to inherit a significant suite of new responsibilities as it

has been called upon to provide the forestry expertise to support the Office of the Special Trustee (OST) in administration of allotment acquisitions as part of the Cobell settlement. This will further compromise BOFRP's ability to provide needed technical support.

Recommendations:

C1. A total of $254 million annually and 2002 professional and technical staff members are needed to adequately support tribal forestry programs. Section A of this report recommends a minimum increase in funding of $100 million/year. We find these funds will, in part, provide support for the 792 professional and technical staff additions needed for Indian forestry programs. Downward trends in funding and staffing (despite increases in trust acreage, fire hazard, climate change impacts, and other responsibilities) along with increasing reliance on project grants preclude achievement of state-of-the-art forestry and compromise fulfillment of federal trust obligations. Nearly 800 new staff members need be recruited for Indian forestry programs across the Nation to create a total BIA and tribal forest and fire workforce of 2002 professional and technical staff.

C2. BIA delivery of technical services needs to be analyzed at the programmatic level and re-structured to increase its effectiveness. Analysis of critical expertise areas for tribes in each region will not only provide insight into which fields are most badly needed by individual tribes, but will provide an opportunity to investigate cooperative mechanisms for hiring experts to address pressing management challenges such as invasive species, inventory planning and analyses, roads, GIS, and other disciplines. Development of IRMPs requires technical support in multiple disciplines many of which are outside of forestry and not currently provided by BIA. For small tribes shared technical staff or consultant support can help if needed funds are made available. The BIA should work with tribes to determine the technical support most needed and the means to provide the human and funding resources that will be needed. Opportunities may exist to collaborate with other federal agencies such as the USFS, BLM, NRCS, and EPA to develop integrated agency strategies that address the underserved technical needs of Indian forestry programs.

C3. The BIA should work with tribes to develop a strategic plan to recruit, train, and retain tribal forestry professionals and technicians. BIA should involve tribes and intertribal organizations such as the ITC, Native American Fish and Wildlife Society and the National Congress of American Indians in an effort to address current and anticipated personnel shortfalls for Indian forestry.

Education

In both IFMAT I and II, considerable attention was paid to issues related to access of Native American students to natural resource education, especially at the post-secondary level.

NIFRMA specifically addressed the importance of funding and supporting Native Americans who wished to study natural resources. In 25 U.S.C. § 3113 & 3114, NIFRMA authorized the BIA to create and administer 1) an internship program, 2) a cooperative education program, 3) a scholarship program, 4) forestry education outreach, 5) post-graduation recruitment, 6) post graduate intergovernmental internships and 7) continuing education and training.
IFMAT I acknowledged the important role of tribal colleges and community colleges in proximity to reservations in providing opportunities to Native students of forest sciences. IFMAT I also expressed concern, however, about the low number of Native Americans graduating from 4-year degree programs in natural resources. Additionally, there was some discussion of innovative high school and youth camp programs that provided summer employment and natural resource education to Native youth during the summers. IFMAT I also expressed concern that of the seven educational programs created by NIFRMA, only the internship program had been funded. IFMAT I recommended the creation of "an education committee of selected universities, agencies, and companies to develop, implement, and coordinate a comprehensive national plan for recruiting and retaining Indian natural-resource professionals." IFMAT II echoed this concern and called for a study to analyze whether current education funding programs were sufficient to meet the needs of tribal foresters and other natural resource managers.

During the IFMAT III investigation, we encountered three important realms of education that are essential to recruitment of skilled tribal staff as well as to the broader well-being of forested reservation communities:

a) Education begins with the children that if not brought early into the forest may be drawn later to video games, substance abuse, and other destructive elements of the non-Indian society. We saw forestry camps, resource education programs, and summer internships that taught K-12 aged children and young adults about their culture and about the forest while preparing them for potential career opportunities in natural resource science and management. These programs were most often taught by volunteer tribal members and struggled for funds just to rent a bus or provide the children lunches. The future of Indian forests and reservation cultures are dependent upon reaching out to youth. Where opportunities exist they must be funded. The costs of failure are unacceptable.
b) Workforce survey respondents indicate that leadership and technical training is essential to maintain a state-of-the-art workforce, provide opportunities for staff qualification certifications, and to bring future leaders up through the ranks. Continuing education, trainings, and workshops appear as one of the first funding allocations to go when budget are cut yet the long-term implications for loss of institutional knowledge and capacity will be considerably more costly.
c) There have been improvements in recruitment of students into higher education natural resource programs with most gains coming from tribal colleges. One tribal college has

launched a 4-year forestry program since IFMAT II and another offers a 4-year degree in resource sustainability. Tribal colleges are playing an increasingly important role in creating forestry educational opportunities customized for tribal students. Tribal forestry programs can be supported several ways: direct funding, education partnerships with universities, education/internship partnerships with federal and state agencies and scholarships to deserving students. Another way to support tribal students and colleges is through increased involvement in natural resource science research. Under such circumstances tribal research issues are better addressed, costs of education can be underwritten through research assistantships, and students and tribal college instructors benefit from partnerships with university and agency scientists. Areas of research can include linking traditional knowledge to western science, tribal adaptation to climate change, the economics of natural resource management on Indian reservations, stewardship and restoration of woodlands, and more topics of special interest to Indian forestry programs.

Tribal colleges with natural resource science programs visited by IFMAT.

Education findings

CE1. Educational access of Native Americans to natural resource programs is improving, but many challenges still exist. The current number of Native forestry graduates will not be sufficient to keep up with retirements and loss of staff to other agencies or employers. With over half of the professional foresters working for tribes or the BIA over the age of 51, there is a need for a significant number of young foresters and other natural resource professionals to move into the ranks now, so that they can receive the experience and on-the-job training needed to prepare them for management level positions. According to the IFMAT III workforce survey, only 1.5% of professional foresters are under the age of 30, and only about 25% are under 40.

The declining trend in natural resource undergraduate enrollments (all ethnicities), and forestry in particular, that was seen through the 1990s and into the early 2000s has reversed, although enrollments are still well below 1980s levels. Forestry enrollments in particular have remained fairly flat from 2004 through 2011.

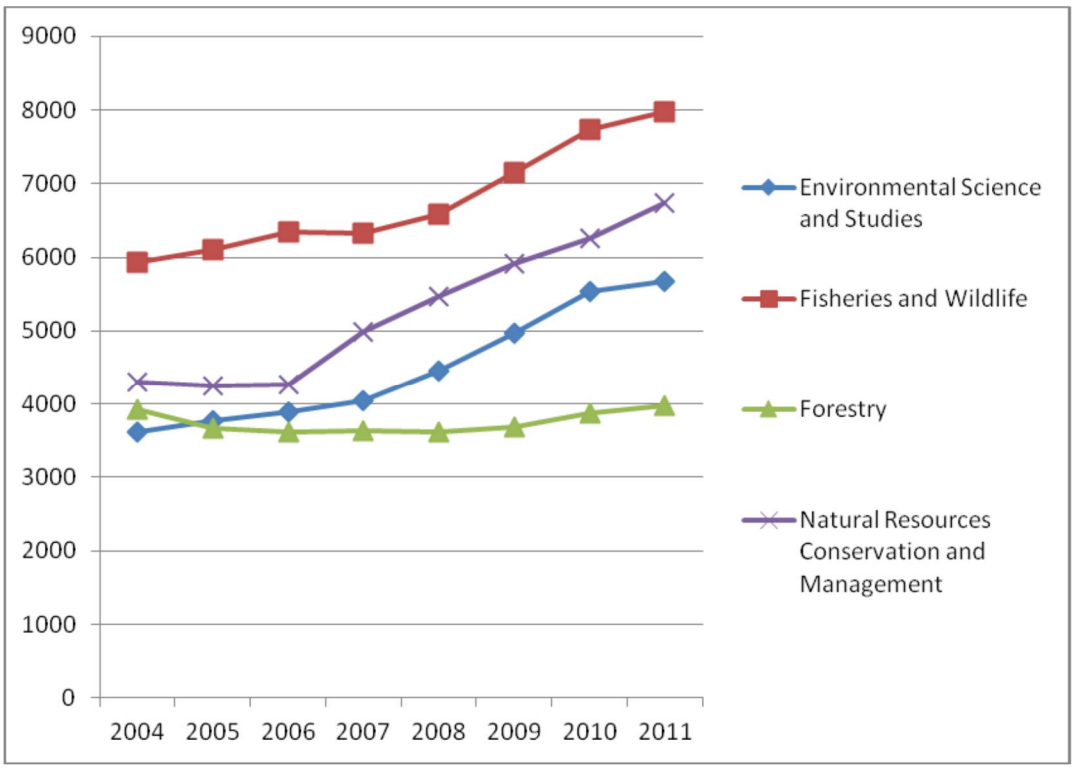

Figure C.3. Total enrollment (all ethnicities) in natural resource degree areas. 85 institutions reporting (FAEIS 2013).

Native American enrollments at large colleges and universities are showing an upward trend, with a 19% increase across all natural resource fields between 2004 and 2011 (Table C.5). IFMAT I documented small numbers of Native Americans graduating in forestry, citing a Society of American Foresters report (1993) that 13 Native Americans received baccalaureate degrees in forestry in 1990 followed by just 5 in 1991. According to USDA's Food and Agriculture Education Information Statistics (FAEIS) data (2013), there have been an average of 15 Native Americans/year graduating with bachelors degrees in forestry from traditional universities over the last decade. There are also on average 4-5 Native students/year graduating from one tribal college that started offering a 4-year degree in forestry in 2007. FAEIS reported an average total of 175 Native students/year completing baccalaureate degrees in all natural resources fields over the last decade. However, FAEIS figures do not include tribal colleges.

Table C.5. Native American enrollment in natural resources fields of study. Data from 85 institutions and supplied to IFMAT III by Bill Richardson, FAEIS.

	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Environmental Science and Studies	28	36	29	34	40	43	44	36
Fish and Wildlife	47	39	44	48	56	56	76	67
Forestry	52	49	38	54	48	50	55	53
Natural Resource Conservation and Management	33	33	41	32	34	55	50	46
Natural Resources Recreation	15	16	19	18	15	13	8	9
Range Science and Management	11	14	13	9	9	15	18	17
Watershed Science and Management	0	0	0	2	2	0	0	1
Wood Science/Products	2	2	7	5	4	2	2	1
Totals, all majors	**188**	**189**	**191**	**202**	**208**	**234**	**253**	**230**

In terms of support for Native students pursuing degrees in natural resources, there have been mixed trends in the last decade. For example, a Native American forestry program at one major university was de-commissioned, with funding moved into recruitment and scholarships for students from all under-represented minority groups. At the same time, another university began a Native American natural resources program, established partly with funds from a large private foundation.

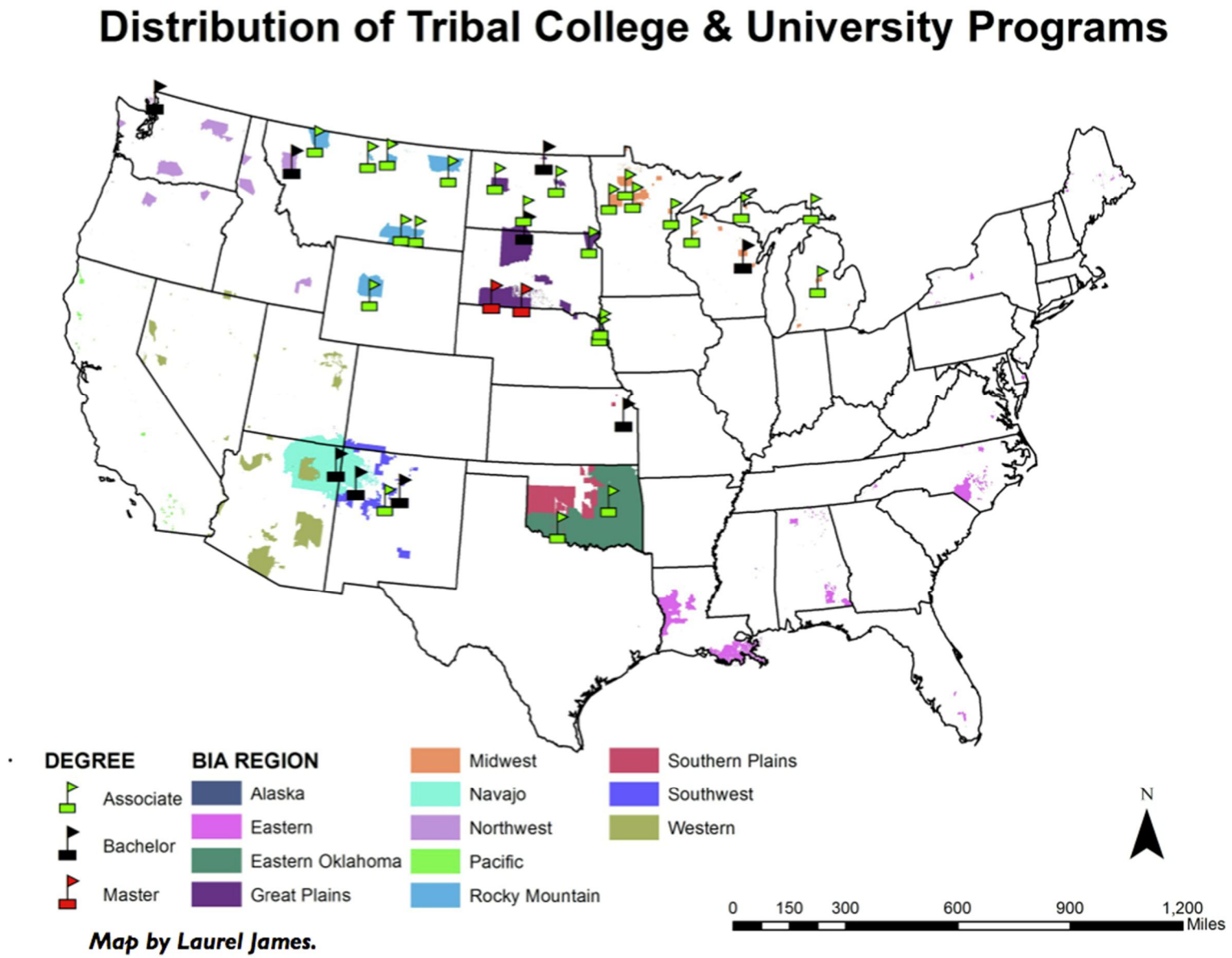

Figure C.4. Tribal reservations, colleges, and university degree programs throughout the contiguous United States.

For more than 30 years the ITC has supported Native American natural resource students through the Truman Picard Jr. Memorial Scholarship Program. Scholarships are granted to enrolled members of federally-recognized tribes that are pursuing higher education in natural resources. Picard Scholarships are available to graduating high school seniors ($1500), current undergraduates and graduate students ($2000). To date, 287 scholarships have been awarded cumulatively over $500,000. Past recipients of the scholarship include many BIA regional foresters and tribal forest managers.

However, for many reservation communities, access to college-level forestry classes may not be available or may be dependent upon the extraordinary efforts of forestry staff. In at least three cases we met tribal foresters who were teaching forestry classes at local community or tribal colleges so that tribal members would have opportunity for forestry education.

Discussions with forestry technicians and students in education focus groups convened during reservation visits revealed numerous hurdles to Native student recruitment. In addition to cultural challenges experienced at large urban universities, many Native students have family obligations and work responsibilities that must be accommodated while attending school. Scholarships and tuition waivers are limited, competitive, and require time and effort for application. Most large universities have limited outreach programs for recruiting, retaining and mentoring Native students. Tribal college programs have been expanding education deliveries to fill an important niche: provision of education customized to tribal needs and cultural considerations. On the other hand the value of on-the-job training should not be overlooked. Some tribal forestry technicians don't feel a need for institutional education as they are comfortable working their way up through the ranks to become accomplished resource managers without leaving their reservations**.**

CE2. Tribal college natural resource programs have increased in number and enrollments over the last decade and represent an important link between tribal natural resource programs, tribal members and future natural resource professionals. There are currently an average of 400 students each year enrolled in natural resource degrees at 23 Tribal Colleges and Universities (TCU) (AIHEC). Most of these degrees are 2-year or technical degrees, and there are currently only two active TCU programs in forestry (1 associates and 1 baccalaureate). In the last five years, two TCUs started 2-year programs in forestry. Both of these programs are on hold due to a lack of resources and enrollment. A third TCU is currently studying the feasibility of launching a two-year forestry program. The IFMAT III workforce survey identified 12 colleges and universities that were attended by 5 or more of respondents, two of these were TCUs (Table C.6).

Table C.6. Twelve universities and colleges most commonly attended by Native natural resource students as identified by IFMAT III workforce survey respondents.

University/College	# Attendees
Northern Arizona University	21
University of Washington	17
Washington State University	15
Humboldt State University	12
University of Montana	12
Oregon State University	10
Colorado State University	9
University of WI Stevens Point	8
Salish Kootenai College	7
Haskell Indian Nations University	7
Oklahoma State University	6
New Mexico State University	5

C3. Of the seven educational programs empowered by NIFRMA, only the cooperative education program is being implemented. The National Center for Cooperative Education (NCCE), formerly the Student Career Employment Program (SCEP), is now being run in accordance with the new Pathways program created by the Office of Personnel Management, funded by BIA Division of Forestry and Wildlife Management. This program is designed to provide tuition assistance and internships to 20 Native American students a year in forestry and another 5 in range management. There are currently 20 students enrolled in this program (18 forestry, 2 range management) at a variety of universities and tribal colleges. The overall cost of this program is approximately $450,000 year, $5,000 per student paid in tuition assistance, and $5,000 for summer internships. The NCCE office is currently located at Haskell Indian Nations University. Of the 123 students accepted into the NCCE program, 63% have graduated and found employment. Graduates of this program include three regional foresters and several tribal foresters. The NCCE is an amalgam of the internship and cooperative education programs, authorized by NIFRMA, that provides education outreach, scholarship and post-graduate placement.

Tribal colleges offer many advantages to natural resource education including close proximity to tribal forests, inclusion of Native American cultural perspectives in the curriculum, access to elders and sources of traditional ecological knowledge, and the ability to educate the tribal public on natural resource management through reservation outreach programs. Not only are tribal colleges increasingly becoming the training ground of future Native American natural resource professionals, they also offer an opportunity to increase tribal member awareness of what resource managers are doing on the reservation and why, helping to overcome the poor communication between membership and managers that has been a common theme in focus groups during all three IFMAT investigations.

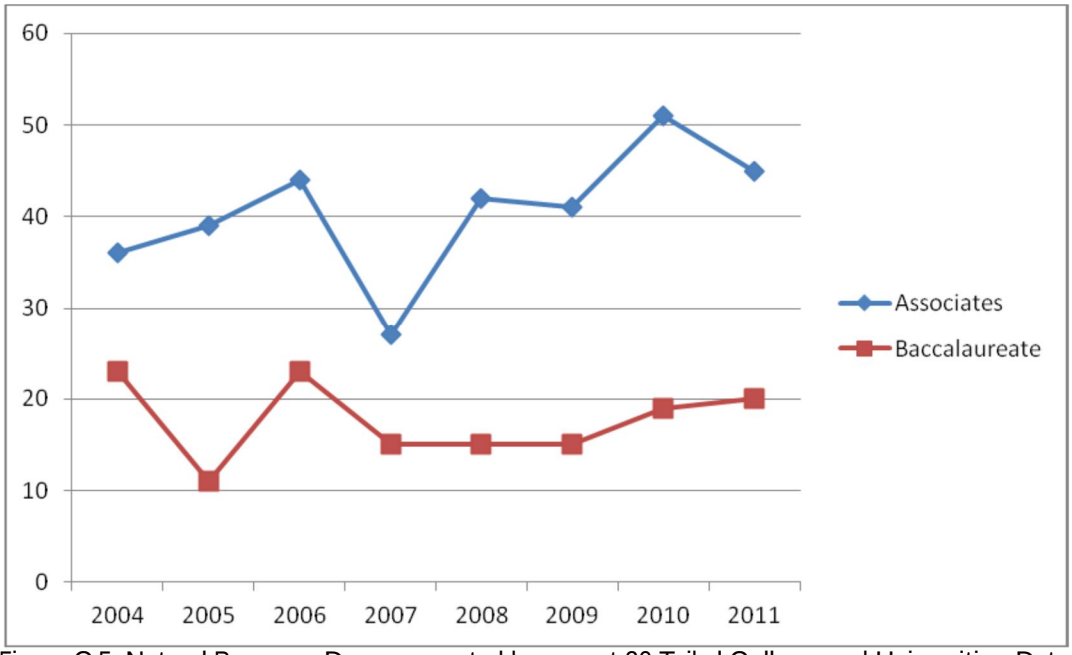

Figure C.5. Natural Resource Degrees granted by year at 20 Tribal Colleges and Universities. Data provided by Bill Richardson, FAEIS

CE.4 Education focus group discussions at tribal site visits have repeatedly revealed that tribal natural resource staff and tribal members in general are concerned that their young people are becoming disconnected from the land. Concerns are common amongst elders that tribal youth are losing contact with their forests and their culture. High school students that attended IFMAT focus groups expressed frustration about the lack of interest in natural resources amongst their peers. Some tribal forestry programs are hiring high school interns for summer work in the forest. We met several forest managers that speak to students in the classroom about forestry. Some foresters volunteer to participate in summer natural resource youth camps. However, limited funds and staff availability are chronic challenges for such outreach activities.

CE5. Access to training and continuing education continues to be an issue for BIA and tribal forestry and natural resource staff. Workforce survey respondents identified multiple continuing education needs that, if addressed, could enhance productivity. Continuing education is essential to meet and sustain the NIFRMA objective of state-of-the-art forestry. Of the 181 responses to the question regarding desired training needs, 34 skill areas were identified with 7 accounting for 67% of total responses.

Table C.7. Top seven training needs (67% of total responses) identified by workforce survey respondents.

Training needs	# Responses
Leadership/upper level management skills	33
GIS and GPS	23
Wildland fire/fire science and ecology	15
Laws and authorities especially PL 638 and trust administration	13
Budgeting and accounting	13
Computer skills- data base management, Excel and MS Word, social media	13
Silviculture	11

Respondents to the workforce survey, especially tribal employees, identify lack of travel funds and inability to leave primary work duties (due to understaffing) as two major impediments to continuing education. Leadership training and greater access to GIS training and technical assistance were the most frequently mentioned continuing education needs.

CE.6 A BIA lack of coordinated research or research advocacy has led to the tribes being under-serviced by federal and academic research institutions. Provision of federal research to tribes has largely fallen to the USFS Research Stations, which historically have not taken a very active role in engaging tribes. In the last several years, a number of the research stations, working with the ITC research sub-committee, have been seeking opportunities for collaborative research projects with tribes. Currently USFS researchers are developing a national tribal research strategy designed to engage tribes as research partners, provide support to tribal students through research programs and create regional tribal research liaisons.

Many colleges and universities have had intermittent and inconsistent relationships with tribes. As federal grant funds have become more competitive, there has been a surge of interest in having tribes as research partners.

TCU's offer an opportunity for culturally sensitive, locally-based research. However, TCUs do not have graduate programs, limiting the scope and complexity of research, and TCU faculty have little time for research projects. Without additional funding and staff, such as could be provided through McIntyre-Stennis funds, tribal college participation in research collaborations will be limited.

Education Recommendations

CE1. A BIA national educational coordinator is needed to pursue programs as envisioned by NIFRMA and to coordinate education programs with the Bureau of Indian Education and all other applicable federal agency programs such as the National Science Foundation and the USDA National Institute of Food and Agriculture. This individual would

be tasked with maximizing the effectiveness of the NCCE program as well as implementing other education and recruitment incentives called for by NIFRMA. The BIA coordinator would work with tribes to secure steady funding for outdoor youth programs. Through this position, the BIA and tribes would be better represented and able to interact more effectively with other federal natural resource education and research organizations such as NSF, NIFA and the USFS research stations. The coordinator could act on the IFMAT I recommendation of convening a national panel of universities, companies and agencies to develop a comprehensive plan for supporting Native student education and a state-of-the-art forestry workforce. An overall budget that would allow adequate resources for this individual to be able to effectively interact with tribes, universities and federal agencies would amount to approximately $400,000 a year.

CE2. Implement education programs envisioned by NIFRMA. NIFRMA specifically addressed the importance of funding and supporting Native Americans who wished to study natural resources. In 25 U.S.C. § 3113 & 3114, NIFRMA authorized the BIA to create and administer 1) an internship program, 2) a cooperative education program, 3) a scholarship program, 4) forestry education outreach, 5) post-graduation recruitment, 6) post graduate intergovernmental internships and 7) continuing education and training.

CE3. Increased programmatic support and cooperation with tribal colleges is needed by both the BIA and tribes. A large percentage of Native Americans enrolled in natural resource programs are at TCU's. Increased involvement of the BIA and tribes in TCU programs, curriculum design and internship/career development programs will be essential to sustain well-trained Native American natural resource professionals and an educated, informed and engaged tribal public. The BIA education coordinator could serve as liaison with tribal colleges.

CE4. One million dollars per year should be made available to tribes for the support of youth internships and nature/culture camps. Tribal youth education programs, which are an excellent opportunity to connect tribal youth to the outdoors and to their cultural heritage, are constantly challenged by lack of funds. A federal funding allocation of at least $1 million/year ($50,000 per tribe for 20 tribes) should be appropriated to support youth education and career programs in natural resources.

CE5. BIA should provide approximately $11.3 million per year for continuing education for forestry staff. IFMAT I found that the BIA devoted approximately 3% of personnel budget to continuing education, while the US Forest Service earmarked 9-12%. Although IFMAT III was unable to find exact figures, this comparison is consistent with our observations and discussions, as well as finding from the workforce survey. If the average salary plus benefits of a tribal or BIA forestry staff person was approximated at $55,000 this

would mean the dedication of an additional $4,950 annually per staff (assuming a 9% gap between BIA and the USFS as comparator) for continuing education. There are currently 1210 forestry professionals and technicians within Indian forestry and another 792 needed. At $4,950 per current staff ($5,989,500) and $6,600 for each new staff (assuming the 12% baseline funding this would be $5,280,000) adequate funding for continuing education would necessitate an additional $11,269,500 per year. Primary needs for this funding include leadership training (see below) and an increased provision of instruction and technical services in GIS. While BIA does support an active training program in wildland fire through its involvement in NIFC, and fund participation in the National Advanced Silviculture Program (NASP), the expressed need in the workforce survey in both fire and silviculture training exceeds current program deliveries.

Table C. 8 BIA investment needed to adequately support education and professional training.

Staff Development Needs	Funding Million $	$/acre
Education Coordinator	$0.40	$0.02
Youth Internship Programs	$1.00	$0.06
Professional Training and Continuing Ed.	$11.30	$0.61
Total	**$12.70**	**$0.69**

CE6. A strategy similar to the national agriculture leadership network should be developed that allows tribes, the BIA and the ITC to work together to address the leadership and upper level management skill needs identified in the workforce survey. Funds should be made available to contract with ITC or another entity to organize and host regional leadership training programs.

CE7. National level advocacy and support for building research partnerships between tribes and research institutions is needed. Although the USFS research programs have recently made efforts to improve their partnerships with and deliveries to tribes, there is still the need for a central, national advocate and source of technical support in research design and partnering for tribes. For example, Our Natural Resources (O.N.R., pronounced honor, http://www.ournaturalresources.org/) is an inter-tribal consortium of thirteen Native American natural resource organizations that may be able to play a leadership role in bringing forward tribal natural resource research priorities.