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Curriculum development at the African Regional Wildlife Colleges, with special reference to the Ecole de Faune, Cameroon

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SUMMARY

Regional colleges in Tanzania, Cameroon and, recently, South Africa have trained some 4000 wildlife managers. Training need assessments called for major curriculum reforms, which were developed and implemented in the late 1990s. This is an analysis of the factors that influenced this curriculum reform in the colleges' endeavour to respond to new developments in African wildlife management. Since 1979, the curriculum of Garoua Wildlife College, Cameroon, has changed only gradually, whereas work placement subjects, selected by students and their employers, have quickly responded to developments in wildlife management, with an increase in the number of people-oriented subjects amongst other things. In the new curriculum, Garoua's mid-career students appreciated biology and inventory disciplines for their relevance, as well as courses in other disciplines tailored to conservation practice. The curriculum reforms implemented at Garoua depended on the presence of interested lecturers with an appropriate background, often obtained by additional training. The curricula of the regional wildlife colleges at Garoua (Cameroon) Mweka (Tanzania) and SAWC (South Africa) showed important differences, as a result of regional differences and differing visions of the wildlife management profession. All three colleges have struggled to establish a feedback system for continuous curriculum review. Increasing the exchanges between the colleges could further develop the curricula. While pursuing necessary changes in curriculum and institutions, care should be taken to avoid reducing the colleges' sustainability.

Keywords: curriculum, college, Africa, wildlife education

INTRODUCTION

European managers ran African protected areas long after independence and the international conservation community was generally reluctant to see the custodianship of wildlife transferred into African hands (Robins 1970). The subsequent lack of qualified national wildlife managers in independent Africa drove the establishment of the College of African Wildlife Management in Mweka (Tanzania) in 1963 and the Ecole pour la Formation des Spécialistes de la Faune in Garoua (Cameroon) in 1970. Both colleges had a regional orientation because of the limited size of national markets. In total, the colleges in Mweka and Garoua have trained 2500 and 800 students, respectively, from some 20 African anglophone and francophone countries. They focus on mid-career, medium-level wildlife professionals, and many of their graduates have become protected area or wildlife service managers (Gamassa 1995; Ngog Nje 1995*a;* Njoya 2001). The Southern African Wildlife College (SAWC) was founded in 1997, focusing on Southern Africa, including lusophone Mozambique and Angola (Venter 1995).

National training centres in Botswana, the Central African Republic, Kenya, Nigeria and Zimbabwe (Child 1976) aimed at the low and, occasionally, medium professional levels (i.e. park guards and rangers), but some collapsed due to their dependence on foreign assistance (Ngog Nje 1995*b*). Although universities also provided courses in ecology and wildlife biology, Mweka, Garoua and SAWC have remained virtually without competition for mid-career professional wildlife management training (Snelson & Lanjouw 1997).

Since the creation of the regional wildlife colleges, major changes have taken place in wildlife management that, apart from ecological and technical management, now also includes communication and community development (Cannon *et al.* 1996; Saberwal & Kothari 1998; Holme & Murphree 1999). This new orientation has resulted in increased awareness of the role of women in environmental management (de Bruijn *et al.* 1997). The private sector has taken over governmental responsibilities, especially in Southern Africa (Holme & Murphree 1999). Armed conflicts in Central and West Africa, the student catchment for Garoua, have resulted in loss of state power, without a private sector or other institutions to take over. New models for conservation and relevant necessary training need to be implemented during such critical periods (Hart & Hart 1997; Shambaught *et al.* 2001). As in other professions (van den Bor 1989), the information technology revolution has helped generate powerful tools such as geographical information systems (GIS) and remote sensing, which few wildlife managers have mastered.

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In 1993, Mweka and Garoua were criticized, among others, for being slow in adapting their curricula to meet evolving needs, providing insufficient field practice, having curricula insufficiently responsive to identified needs, failing to evaluate training effectiveness and not including a greater representation of ecosystems in training programmes (Snelson & Lanjouw 1997). In response to such criticism, clients and experts became involved in curricula reforms that hitherto had been conducted internally. None of the colleges had a feedback system to evaluate and review the curriculum. Participatory curriculum development (Rogers & Taylor 1998) can only be effective with appropriate facilities and qualified and motivated staff to implement reform (Tuntivanich 1989); this required institutional changes when external support for the colleges stagnated.

In this paper, I review developments in African wildlife management and the resulting training requirements and organization of the colleges. I assess how Garoua has adapted its curriculum over the last 20 years and compare its 1996 reform with those of the other wildlife colleges. An analysis of the factors that have influenced curriculum reform and review will show the importance of the organizational and institutional settings of the colleges.

METHODS

I began this study during a two-year assignment at Garoua, holding informal discussions with students and staff, which were presented at feedback sessions. Information on SAWC and Mweka was obtained from internal documents and discussed during the SADC Wildlife Management Training Workshop in Harare, Zimbabwe, and at SAWC in November 1999 and Mweka in May 2002.

Training needs and developments in African wildlife management

I used the two wildlife training needs assessments conducted in the mid-1990s that covered central, eastern and southern Africa (Pitkin 1995; ULG Consultants 1998). Because of the lack of earlier systematic training needs assessments, I analysed 492 work placement subjects. Since 1979, Garoua students have spent six weeks in the field between their first and second year, often at their previous position of employment. Generally, the students' employers or financing agencies and, to a lesser extent, the students themselves, selected these work placements or research projects (Fig. 1). The role of the college at Garoua has usually been limited to academic approval. Work placement subjects were categorized into four disciplines, namely biology and ecology, protected area management, tourism and other forms of exploitation, and people-oriented subjects, and the Pearson Correlation (SPSS 1999) coefficients were calculated. It was not possible to perform a comparable analysis at Mweka and the recently-created SAWC, because of the limited role of work placements or research projects at these colleges (see later).

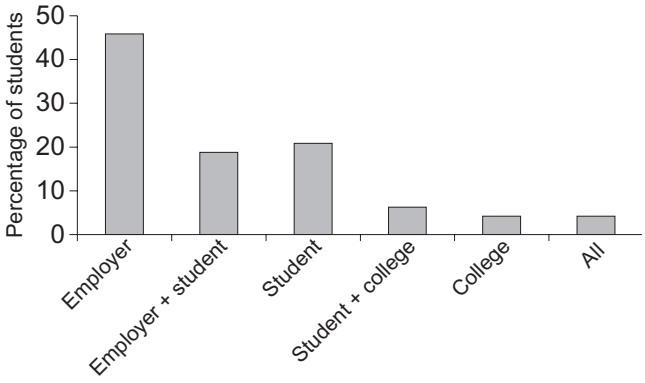

Figure 1 Who chose students' work placement subjects in 1998 (as disclosed by students, $n = 48$).

Background to students and colleges

Garoua students indicated their prior work and training experience as part of the evaluation. No systematic information was available from Mweka or SAWC. Tests of normality were carried out using Kolmogorov-Smirnov tests (with Lillefors significance correlation).

Garoua's curriculum development and students' perceptions

To study Garoua's curriculum development, its >40 courses were categorized into the ten disciplines, including work placements, commonly used at Garoua.

An anonymous evaluation of students' perceptions was introduced to provide feedback on Garoua's 1997 curriculum. The 31 diploma and 18 certificate students judged the relevance of the courses' contents, their presentation and the balance between theory and practice on a scale of 1–5. Scores were averaged and ranked for each course. I also allocated the scores to the disciplines and subsequently ranked them. I was unable to obtain data on the perceptions of Mweka or SAWC students for comparison (see later).

Curriculum comparison between the regional colleges

Information on the curricula of Mweka and SAWC was obtained from the 2000–2002 course prospectuses and syllabi and categorized according to the disciplines applied at Garoua. The number of hours each subject occupied in the curriculum, the main criterion in evaluating student results at the three colleges, was used as a comparison.

RESULTS

African wildlife managers' job requirements and training needs

Graduation from the wildlife colleges has become an important criterion for promotion to medium-level staff

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Table 1 Student numbers at the African regional wildlife colleges. [1] Garoua had a biennial intake. [2] Male and female numbers not specified. nd = not determined.

Year	*Garoua*				*Mweka*				*SAWC*			
	Certificate		*Diploma*		*Certificate*		*Diploma*		*Certificate*		*Diploma*	
	Male	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*
1998	14	4	27	4	43[2]		49[2]		25	2	0	0
1999[1]	0	0	0	0	22[2]		52[2]		22	2	12	1
2000	11	4	21	5	43[2]		55[2]		15	1	18	1
2001[1]	0	0	0	0	54[2]		27	6	nd	nd	nd	nd
2002	8	4	26	6	37	4	34	2	18	8	17	5
Overall %	73	27	83	17	90	10	88	12	86	14	87	13

functions. Whereas in the past certificate students accounted for most enrolments, their numbers at Garoua and Mweka, and recently at SAWC, have dropped (Table 1), suggesting an increase in job requirements. In Cameroon, Niger, Tanzania, Uganda and elsewhere, some of the more prestigious national parks have recruited M.Sc. graduates as park wardens, thus bypassing the wildlife colleges. Only Mweka delivers advanced diploma and post-graduate courses, but struggles with their accreditation.

Relatively few wildlife college graduates continued advanced training. Out of a sample of 221 who received training at Mweka from 1989 to 1999, 29 continued their training after graduation. However, more than 50% of the 221 expressed a desire to continue to study for a B.Sc. or M.Sc. in order to improve career advancement options (Lipya 2000).

Developments in wildlife management reflected by work placement subjects

Amongst the work placements, there has been a steady increase in people-oriented conservation subjects between 1980 and 2000, their frequency being negatively correlated ($p = 0.006$) with the number of biology and ecology subjects (Fig. 2). The number of protected area management subjects received a largely constant level of attention (Fig. 2).

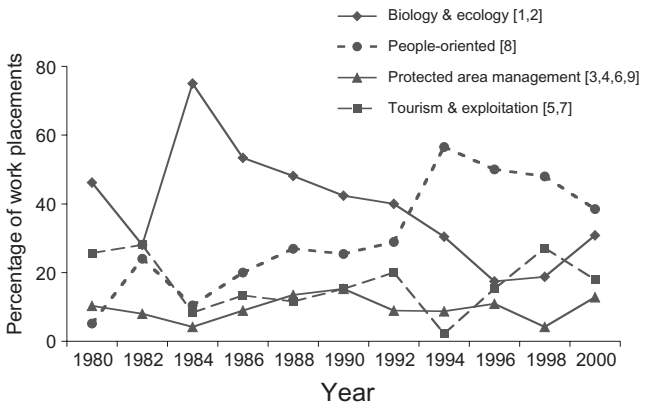

Figure 2 Subject areas of Garoua work placements, 1980–2000. Numbers in parentheses correspond to the disciplines on the x-axis of Figures 3 and 4.

Garoua's work placement subjects have been responsive to topical developments in wildlife management. An example is the rinderpest outbreak in 1983 that received considerable attention amongst the 1984 subjects, contributing to the peak of interest in biology and ecology (Fig. 2). People-oriented subjects peaked in 1994 (after the United Nations Conference on Environment and Development), and subsequently decreased. On average 47%, and never less than 30%, of the work placement subjects dealt with tourism and exploitation, and people-oriented conservation.

Background of colleges

Students

With on average approximately 10 years prior work experience, Garoua students have been professionals, working in protected areas or forestry or agricultural services (Table 2). Mweka and SAWC have also attracted an increasing number of students from community organizations, and hunting and tour operators, while some students have been self-financed.

Since the late 1980s, there has been a steady increase in the number of female students. The preferential scholarship policy at Garoua has raised the number of female students to 25%, double that of Mweka and SAWC (Table 1).

Trainers

Five of Garoua's nine permanent training staff had university training in biology or agronomy; the others were Garoua college graduates. Increasingly, temporary staff are hired, while expatriate staff have declined from an initial majority to

Table 2 Prior education and work experience (years ± 95% confidence interval) of Garoua students between 1997 and 1999. (BAC is roughly equivalent to English A-levels, BEPC is roughly equivalent to English O-levels/GCSE). Comparisons between diploma and certificate students are given a different superscript: $p < 0.05$ by Mann–Whitney (a–d) or independent t-test (e–g) (SPPS 1999).

Experience	*Average*	*Diploma*	*Certificate*
Prior education	Median	BAC + 2.0[a]	BEPC + 2.0[b]
Prior field work	Mean	6.4[e] ± 1.7	6.7[e] ± 2.4
Prior office work	Median	1.0[c]	5.0[d]
Prior total work	Mean	9.2[f] ± 1.7	12.3[g] ± 2.4

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none. Most of the staff used to have a management or scientific background, whereas the current staff members have spent their entire career at the college. At its establishment, most Mweka staff had a B.Sc. and there were few diploma holders. At present, all but one of the 14 staff at Mweka hold M.Sc. degrees. SAWC has four permanent staff to ensure the functioning of the college, drawing on a variety of subject specialists for training.

Facilities and financing

All students have access to computers, but it has been difficult to keep track of the latest developments, such as in the Internet, at Garoua. Garoua and Mweka spend periods of up to two weeks in the field, requiring important investments in cars, camping gear and other field equipment. Day trips dominate at the SAWC, which is surrounded by Kruger National Park. Garoua and Mweka manage nearby savannah and mountain rainforest reserves for fieldwork.

Garoua has received significant Cameroon government finance, albeit on a lower level than in the 1980s, ensuring the salaries of its personnel. Tuition fees cover most of the running costs, including the fees for temporary trainers, whereas donors have provided investments and staff training. The annual cost of a Garoua student is estimated to be €8800, including scholarships (€4600) and annual tuition fees (€2100) (Njoya 2001).

Although a government institution, Mweka does not receive government funding for recurrent activities and depends on tuition fees (US$ 3125 yr^{-1} and US$ 6000 yr^{-1} for Tanzanian and foreign students, respectively) and project support. The SAWC is a private institution, and tuition fees (US$ 4500 yr^{-1}) and company and donor grants assure its continued function and cover investments.

Curriculum reform and review

Three internal curriculum reforms have taken place since Garoua's establishment, namely in 1977, when certificate and diploma courses increased from one to two years in duration (Allo 1978), 1981 and 1989. The 1996–1997 reform, which led to a modular programme, was based on a five-day workshop with a variety of participants, including three non-Cameroonian graduates, followed by a workshop with donors and ministerial personnel (Tables 3 and 4). Garoua staff produced syllabi and began curriculum implementation in September 1997.

Mweka has gone through six curriculum reforms (Snelson 1993), driven mainly by consultants. The 1990s reform took

Table 3 Curriculum reform and ongoing review at the African wildlife colleges in the 1990s.

		Mweka	*Garoua*	*SAWC*
Process	Starting base for reform	White blanket	Existing curriculum	White blanket
	Reform methods	Workshops, consultancies	Technical workshop, follow-up workshop	Consultancies, workshop
	Period of reform	1993–1997	1996–1997	1994–1997
	Frequency of review	Annually	Biannually	?
Feedback	Course evaluation:			
	Trainee	Ineffective (lack of confidence)	Yes	Initially by each trainer, since recently centrally
	Faculty	Yes	Yes	Limited
	Outsiders	Yes	No	Yes
	Tracer studies	Two limited studies (n = 55, 18)	Ongoing ($n >> 100$)	Results not yet available

Table 4 Participants of curriculum reform and review at the African wildlife colleges. Presence of participants: ++ = majority, + = one–several, − = occasionally one, −− = none, ? = unknown. [1] Pending a presidential decree, (re-) institutionalizing the college. [2] Due to the recent start of the college.

	Mweka		*Garoua*			*SAWC*	
	Reform	*Review*	*Reform*	*Review*	*Envisaged*[1]	*Initiation*[2]	*Review*
(Potential) trainees	+	−−	−−	+	+	−−	−−
Protected Area managers	++	+	+	−	+	?	+
Local communities/ development NGOs	−−	−−	−−	−−	−−	−	−
Clients:				−−	+		
Governmental	++	+	+	−−	+	?	+
Private sector	+	+	−	−−	−	+	+
Conservation NGOs	+	−	+	−−	+	+	++
Trainers, inside college	++	++	++	++	+	−	−
Trainers, outside college	+	+	+	−−	+	+	+
Scientists	+	+	+	−−	+	+	+

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five years, as it deliberately ignored the existing curriculum (Table 3). Although facilitated by Mweka staff, substantial technical assistance was delivered through workshops and the production of syllabi in 2001. The production of course manuals is, as at Garoua, still underway.

The SAWC leaves much initiative to its visiting expert staff that, not bound to syllabi, have had the ability to develop their own courses for which the college generally produces manuals.

Recent curriculum review at Garoua has been driven mainly by student feedback (see below), reported to a commission of training staff (Table 3). A similar commission deals with course development at Mweka, which has recently installed an external curriculum review commission like that at SAWC (Table 3).

Developments in Garoua's curriculum

Changes from 1979 to 1997 in Garoua's curriculum have been gradual (Fig. 3). One of the few changes was the 1981 introduction of ornithology, a biology subject that has remained a major course, possibly because of the enthusiasm of the trainer. In 1997, veterinary techniques (biology), a prominent course due to the presence of French veterinary assistance until 1996, was reduced. In 1997, computer science (administration) and GIS (inventories) were introduced, as well as participatory approaches and environmental education, thus tripling the importance of socio-economics.

Feedback on the new Garoua curriculum

The perceived relevance of courses at Garoua has been remarkably consistent but varies between disciplines (Table 5). Courses on biology, inventories, parks and tourism, and arms and hunting were considered to have above-average relevance (Table 5). Surprisingly, courses in the field of ecology and habitat management were ranked lower. New courses ranked from very high (for example participatory approaches: socio-economics), to very low (for example remote sensing and GIS: inventories). The relevance of the extensive ornithology course (biology), a topic that received far less attention at Mweka and SAWC, was considered above average.

Students and training staff alike expressed their interest in field trips and exercises as the most effective type of training, addressing skills and complementary to the predominantly knowledge-based classroom training. Moreover, fieldwork (several weeks of bush experience) was considered unsurpassed in developing professional attitudes by students at all three colleges.

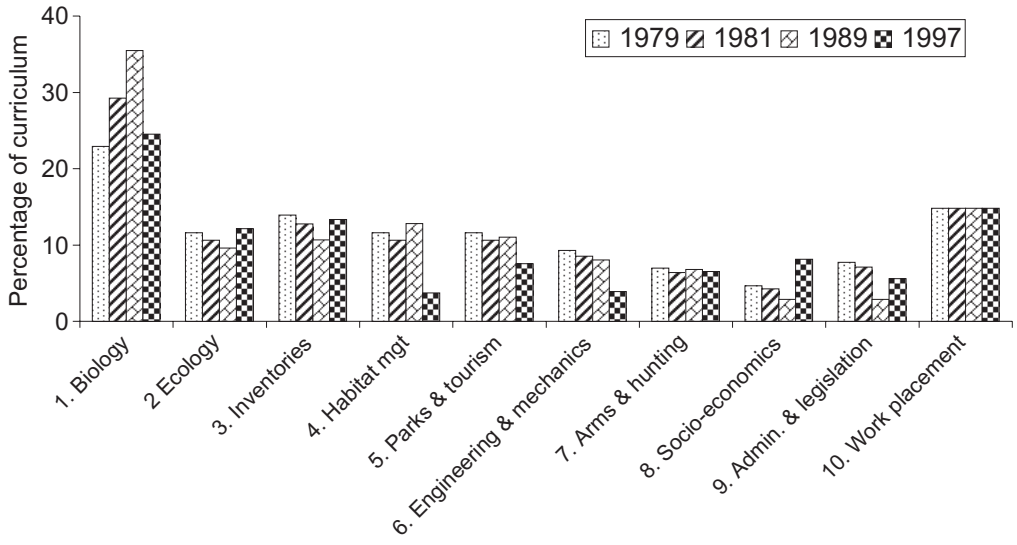

Figure 3 Curriculum subject composition of the diploma course at Garoua Wildlife College, 1979–1997.

Table 5 Relevance ranking of disciplines by Garoua students (1997–1999).
[1] Median of ranks 1 and 2 is 5; median of rank 3 is 4.25; median of ranks 4–9 is 4.
[2] Comparison of medians amongst disciplines, different letters in superscript indicate $p < 0.05$ (Mann-Whitney).
[3] For all ranks, median = 4.

Rank	*Diploma students*	*Mean*[1,2]	*Certificate students*	*Mean*[2,3]
1	Parks and tourism	4.49[a]	Inventories and wildlife management	4.37[a]
2	Biology	4.41[a]	Arms and hunting	4.28[a]
3	Inventories and wildlife management	4.39[a]	Biology	4.26[a]
4	Arms and hunting	4.38[a]	Parks and tourism	4.25[a]
5	Habitat management	4.20[ab]	Administration and legislation	4.18[a]
6	Socio-economics	4.19[ab]	Socio-economics	4.07[ab]
7	Ecology	4.14[bc]	Ecology	4.09[b]
8	Administration and legislation	4.08[c]	Habitat management	3.93[b]
9	Engineering and mechanics	3.91[cd]	Engineering and mechanics	3.54[c]

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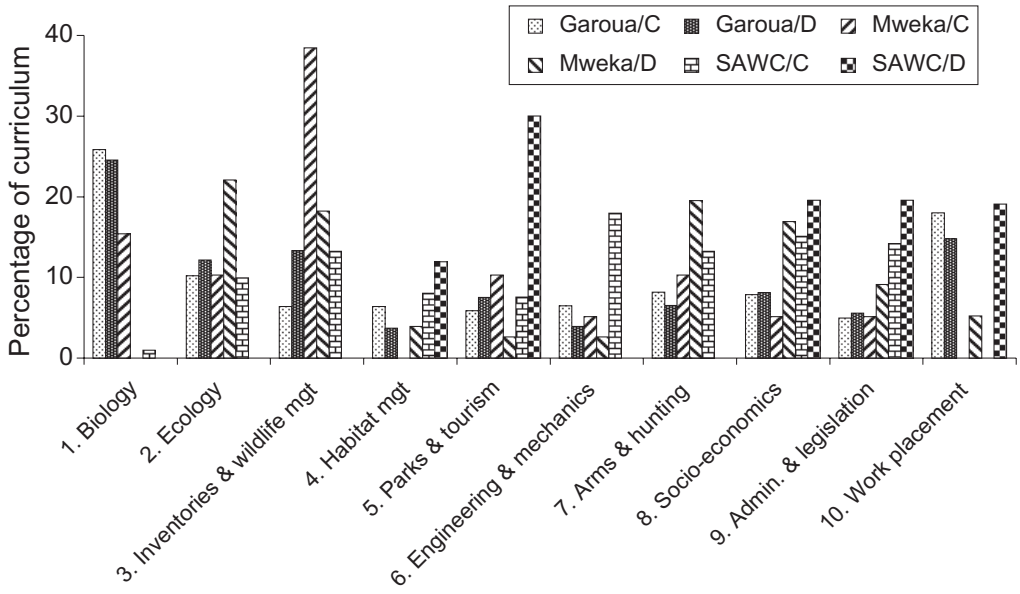

Figure 4 Curriculum subject comparison of the three African wildlife colleges. Garoua/C = Garoua certificate course. Garoua/D = Garoua diploma course. Mweka/C = Mweka certificate course. Mweka/D = Mweka diploma course. SAWC/C = SAWC certificate course. SAWC/D = SAWC diploma course.

Curriculum comparison between the three African wildlife colleges

The curricula of the two-year certificate and diploma courses were similar at Garoua (Fig. 4). Mweka and SAWC focused their one-year certificate course on traditional wildlife management (inventories, mechanics) and their diploma courses of two years and one year, respectively, on socio-economics and administrative subjects. This contrasted with the substantial prior office experience of certificate students at Garoua (Table 2). Differentiation between certificate and diploma courses enabled students to start at certificate level and continue the following year with the diploma course. Although possible, this has created considerable overlap at Garoua.

Biology and ecology received ample attention at Garoua and at Mweka (Fig. 4). The lack of these disciplines at diploma level at SAWC was striking, given the preference for biology exhibited by Garoua students (Table 5). Inventories and wildlife management and habitat management received attention in all curricula. Parks and tourism were dealt with at all colleges and contributed to a third of the diploma curriculum at the SAWC. Garoua and Mweka scarcely covered engineering and mechanics, nor did the SAWC diploma course, a development consistent with the low appreciation of these subjects by Garoua students (Table 5). Socio-economics received attention in all curricula, with courses at SAWC and the diploma course at Mweka spending up to 20% of the time on this area. The SAWC further spent an important part of its curriculum on administration.

DISCUSSION

The wildlife colleges have made considerable internal efforts to keep pace with the new developments in wildlife management. Do these efforts result in an education that meets the demands of wildlife practice?

Continuing discrepancy between curricula and professional requirements

There are different requirements for a two-year curriculum and a six-week work placement and these cannot be translated automatically into developments of job requirements. For example, protected area management subjects have received less attention in work placements than in Garoua's curriculum, yet are expected to occupy a major share of a wildlife manager's time. Tourism and exploitation and people-oriented conservation have received more than twice as much attention in work placements as in the curriculum. More important than this absolute difference was the observed time lag in attention. Whereas in 1994 people-oriented subjects peaked amongst work placements, their subsequent decline coincided with an increase in attention in the curriculum, a lag of five years.

Three hundred interviews with protected area managers across eastern, central and southern Africa, conducted in the early 1990s, identified training needs in three job responsibilities, namely (1) implementing intervention programmes, (2) ensuring visitor satisfaction and (3) promoting conservation in local communities. Managers further expressed the need for (4) knowledge-oriented training in policies and procedures, planning and administration, as well as (5) skills-oriented training in creativity, problem analysis and evaluation techniques (Pitkin 1995). A training needs assessment in Southern Africa concluded that the wildlife colleges remain 'by their nature' weak in providing skills and attitudes, especially in administration, project and business management (need 4) and community wildlife management (need 3) (ULG Consultants 1998).

These training needs were already addressed in the curricula, needs (1) and (2) in inventories, habitat management, and parks and tourism (Fig. 3), introduced or reinforced during the recent reform, such as needs (3) and (4)

in socio-economics, and administration and legislation (Figs. 3 and 4), or have remained largely uncovered (need 5), with the possible exception of the SAWC. In the early and mid-1990s, a reported general lack of skills amongst graduates of Garoua and Mweka (Pitkin 1995; Snelson & Lanjouw 1997; ULG Consultants 1998), explained the continuing need for training in responsibilities that were already addressed by the curricula (needs 1 and 2), but probably too theoretically. This was in line with the evaluation by Garoua students in 1998–2000, showing that training after the curriculum reform was still too knowledge-oriented.

Curriculum reform and review

The differences between the curricula (Fig. 4) can be partly explained by the reform processes. The short intensive reform at Garoua with a limited number of participants (Table 4) who were mostly familiar with the old curriculum, led to gradual changes imprinted by the training staff, as reflected by the reported course introduction. The elaborate reform process at Mweka (Table 3) led to a break with the previous curriculum, as illustrated by the new one-year only certificate course. The newly-developed focus on the wildlife profession probably played a critical role.

None of the colleges had a feedback system in place prior to the curriculum reform. At Garoua, feedback from students with an average of 9–12 years of work experience (Table 2) was introduced in 1998 and considered an important indication of quality. Despite sometimes-harsh judgements that could have provoked resistance (Tuntivanich 1989), trainers used the subsequent evaluations to monitor their functioning and impact. This has also led to a reduction in the number of temporary trainers and adjustments in overlapping courses, but not to changes in the course syllabi. The external review commissions at Mweka and the SAWC have not yet had an impact on the curriculum.

All three colleges recognized the potential of communicating with their alumni and started tracer studies (Table 3); however, communication and methodological problems prevented their feedback into the curriculum.

Training and learning

The three colleges have the distinct advantage of attracting experienced students, who are motivated to learn and, with the exception of Cameroonian students, will be rewarded with promotion once back home. Trainers with relatively little field exposure and little experience with participatory training (Moss 1991) may have difficulties using students' prior knowledge (Dochy *et al.* 1997).

Socio-economic and administrative courses should especially be tailored to wildlife practice. These courses are not automatically in the interest of students, who are after all wildlife managers and not human-resource or business managers, and therefore demand specialized trainers. The student feedback highlighted the discrepancy in socio-economics, where the participatory approaches course was ranked fourth in relevance, while the more general economics course was ranked forty-third.

Curriculum reform has been hampered by the difficulty of introducing new ideas in an environment where students and trainers will not recognize them and hardly ever receive incentives for somewhat-controversial knowledge. An example is the rejection of the transfer of technology paradigm (Chambers & Jiggins 1987) in the Garoua participatory approaches course, whereas extension services, considered to be subject specialists, were still working with it. The SAWC has the distinct advantage of being located in South Africa, where it is in the forefront of developments in wildlife management.

Field work and exercises

Assignments and field exercises, appreciated for their effectiveness (see also Galindo-Leal 2001) were programmed to occupy a quarter of the time at Garoua and slightly more at Mweka (Table 6). In practice they hardly ever attained this, as Garoua students noted, mainly due to planning problems, and not for financial reasons as Garoua staff sometimes claimed. An increasing problem was the disintegrating protected area system, especially in Cameroon, depriving Garoua of prime wildlife conservation field examples (Alpert 1993; Scholte 2003).

Modularization and short courses

Modularization has been presented as an instrument to facilitate a transition from a classical towards a more flexible education system (van Meel 1997) and the introduction of a

Table 6 Type of education at the three wildlife colleges. [1] Includes student presentations and directed study. [2] Includes seminars and self-directed study. [3] Not centrally fixed, dependent on trainer.

	Garoua		*Mweka*		*SAWC*	
	Certificate	*Diploma*	*Certificate*	*Diploma*	*Certificate*	*Diploma*
Course length (hrs)	2200	2700	1152	2352	1272	1314
Course length (yrs)	2	2	1	2	1	1
Long field trips (%)	18	15	27	20	0	3
Exercises/assignments (%)	25	23	29[1]	29[1]	?[3]	?[3]
Lectures (%)	39	47	44[2]	44[2]	?[3]	?[3]
Work placement/research period (%)	18	15	0	6	0	19

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modular system brought advantages such as more focused learning and training at the three colleges (Banham 1999). Some expected results, such as increased exchanges between lecturers were, however, a function of changes in the colleges' management. At all three colleges, little use was made of the ability to combine long and short courses. Modularization did, however, allow trainers to be involved in additional research, consultancies and short-course training.

Since the mid-1980s, Garoua has organized short courses on wetland management that were initially externally financed and attended by both outsiders and students. These stimulated the 1996 modularization based on ecosystems and were subsequently integrated as modules in the curriculum. Mweka and the SAWC organized short courses more regularly than Garoua, providing the well-situated SAWC in particular with regular income. Moreover, short courses allowed the colleges to keep in touch with senior wildlife managers (Pitkin 1995; Stone 1997).

Science bias

The comparison between work-placement subjects and curricula indicated a bias at Garoua towards biological sciences, whereas employers were of more diverse backgrounds. Science bias is widespread in conservation training (Cannon *et al.* 1996) and an argument for including people from various disciplines and interest groups in curriculum reform (Rogers & Taylor 1998). Stakeholders absent from the Garoua 1996 reform were development organizations and local people (Taylor 1997), whereas Garoua trainers dominated in numbers (Table 4). With a comparable background, Mweka staff probably also had a science bias, but they involved more outsiders in curriculum reform and review (Tables 3 and 4). The SAWC with its temporary staff has had the flexibility to draw trainers from other disciplines.

Personnel aspects

Given the small size of the colleges, the staff have inevitably placed a personal imprint on the curriculum and this is to be applauded when the result of initiatives of dedicated staff. At Garoua, trainers, with what at first sight appeared to be unsuitable professional backgrounds, developed several new courses. Examples were a veterinary trainer who attended a six-week participatory rural appraisal (PRA) training course and a wildlife use trainer who attended a nine-month remote sensing/GIS course; both subsequently introduced these topics at Garoua. Trainers at Garoua attended courses and workshops organized by international NGOs and there has been specific funding to Garoua for such training. Expatriate staff at Garoua have sometimes set important directions, such as on rainforest and wetlands management, which have been continued by counterpart staff after their departure. Subject-specialist trainers have had the freedom to develop their own courses with their own personal imprint at the SAWC.

Some pronounced personnel impacts on the curricula, however, were due to institutional deficiencies. In Garoua's curriculum, training personnel could be held responsible for several deplored developments, and the English language course was abandoned with the departure of the anglophone director. That choice of specific trainer may have an impact beyond presentation was illustrated by the differences in perceived relevance between diploma and certificate courses that could sometimes be related to the trainer concerned (for example, habitat management, Table 5). Garoua and Mweka have been linked to their wildlife ministries and these should have allowed frequent rotation of personnel, maintaining contacts with wildlife management practice. Unfortunately, two-thirds of the training staff have been at Garoua and Mweka for more than 15 years, probably because of the personal preferences of trainers, low status of the colleges and the lack of appropriate human resource policies at the ministries and colleges. Given their regional orientation, it is regrettable that none of the colleges has employed trainers from within their regions.

CONCLUSIONS

Curriculum reform, especially at Garoua, has been related to personnel management, in particular the limited recruitment of trainers with a practical wildlife management background and interest, and subsequent training and follow-up. The 1996 Garoua curriculum reform workshop did not institute an external follow-up, nor has Mweka's reform been effective in this regard. Curriculum reform should, however, be a regular phenomenon and include representatives of development agencies and local people (Taylor 1997). Students' feedback on the curriculum has already played an important role at Garoua.

Obviously there is no 'best' curriculum, and opinions will always differ on the ideal composition of any curriculum. Nevertheless, the differences between the curricula with similar target groups are remarkable. To some extent this may reflect regional differences as indicated by different views of the wildlife profession, such as the 'wildlife MBA' diploma course at the SAWC. It would therefore be interesting to compare the reactions of students to their respective curricula among the three colleges. Interest has been shown in stimulating such exchanges (Kanyamibwa 1999), although as yet not on a structural base. This may also result in student exchanges for a specific module such as private wildlife management at SAWC and lowland rainforest wildlife management at Garoua.

The regional wildlife colleges have been pressured to orient training towards prestigious university level, as in their short courses. Collaboration with universities could avoid the accreditation difficulties experienced by Mweka and enable the small colleges to concentrate on their practical training niche.

Despite the discussed drawbacks, Garoua and Mweka have shown by their continued existence to be sustainable, an achievement given the harsh institutional environment

(Ebohon *et al.* 1997) that has led to the virtual collapse of the university system in Cameroon and other countries. While pursuing changes in curriculum and the colleges' structures, care should be taken not to jeopardize their sustainability. Donor fatigue in supporting the colleges is not entirely justified given their regional role and, in the case of Garoua, continuous support from the host government. Outside support has been crucial, not only as a source of investment, but also through staff training as an impetus for the implementation of curriculum reform. This has led to the education of several generations of African wildlife managers, including women, at a third of the costs in Europe (van den Bor 1989). Future conservation success in Africa will depend to a large extent on the capacity and dedication of wildlife college students, as it has in the past.

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