### Fish and Wildlife Technician

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| **A. Analysis of Indicators** Note: data is **not** recorded in this section of the template.**Reflect on, and discuss, the following indicators in the context of the curriculum and program:**  |
|  **1. Industry / Sector Trends** * 1. Many jobs are predicted for the “Green” sector and we are starting to see some hiring of our graduates in this area. Some of these areas include pre and post monitoring alternate energy projects, fisheries and wildlife management, water quality assessment, habitat classification, assessment and remediation. We are well positioned on the aquatic side and this is one of the strengths of our program. We should maintain our standing in this area. We are lacking in the terrestrial component as only a few of the necessary skills are covered in the current curriculum. The terrestrial component is considered the growth area.
	2. The public sector is going through a period reduction through attrition and evaluation of each position before replacement. Job prospects in this area will be replacement of necessary positions over the next few years however some old positions are being restructured to new positions. The demographic of the Ministry of Natural Resources is such that the retirement rate over the next 5 years will far exceed required vacancy rate. This can already be seen as entry level positions become posted on the OPS Job Site. One of the areas that has benefited is wildlife assessment, including Species at Risk. Although the prospects for growth do not look good in the short term repositioning combined with an accelerating retirement rate will benefit our students.

The new green energy initiatives have a legislated requirement for the proponents to do the pre and post development assessment and monitoring. Strong growth in private sector consulting firms especially in the terrestrial assessment areas is expected over the next several years. This is an overall industry comment but was confirmed by the F&W advisory committee.* 1. Requirements for program accreditation by the North American Wildlife Association indicate that our program has only minimal curriculum in the areas of “equipment maintenance and repair”. This is discussed in section 2.6.
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| **2. Curriculum Development****Curriculum changes in the last year such as changes in program positioning, course content, course/program outcomes, and delivery mode.** 2.1 After two years of allowing the students to choose Introduction to Fisheries or Introduction to Wildlife, feedback from employers and the majority of students is that they need both skill sets. A lack of understanding of basic netting techniques in the wildlife students and likewise the lack of basic wildlife present / not detected surveys and monitoring protocols in the fisheries students is evident. The importance of terrestrial surveys was identified by the advisory committee and is seen as a growth area. The Introduction to Wildlife course was removed and everyone will now take Introduction to Fisheries and the Fish Camp. The additional cost of running two camps was not supported and the terrestrial (wildlife) camp was also removed. This disadvantages our students from the terrestrial side and the portion of the private sector job market where there is growth. This also removed the applied field portion for the wildlife part of the program. This may be offset by putting some of the content into other courses and adding a field course (discussed below). 2.2 Anecdotal evidence suggests that F&W students are severely disadvantaged because they have poor job search skills. This was also identified by members of the advisory committee. It is recommended that the semester 3 Human Relations Course (ORGB 10) be replaced with a “Career Advancement Techniques” course. This approach was supported the advisory committee and they strongly endorsed making improvements in the area.  **2.3 Recent or anticipated initiatives that promote student pathways including high school articulations, program laddering, and university transfer / articulations.**  The University of Prince Edward Island will now accept a graduate from a NAWTA (North American Wildlife Technology Association) accredited institution by allowing a block transfer into their BSc. in Wildlife Management. The Fish and Wildlife Technician Program at Fleming is accredited by the NAWTA.  **2.5 New competitor programs and/or re-positioning of existing programs.** Sault college has a Co-op component of their program that we could not possibly have because of our large numbers.  Sault college has a course called Wildlife Survey Techniques that covers many of the terrestrial survey protocols and monitoring techniques now being done in Ontario. This positions their students for the green energy work now being done and the expansion ahead.  **2.6 New or changing provincial standards, standards for accreditation, credentials, and / or industry or sector certifications over the past year.**   Curriculum changes that reduce hours will have to be closely monitored. The NAWTA (North American Wildlife Association) has a minimum number of contact hours as well as a curriculum requirement. They do not allow the inclusion of self directed learning hours and on-line courses. It appears that in the case of a hybrid course only the contact hours can be included. This will be discussed at the annual general meeting in June of this year (2012) when the Fish and Wildlife Program applies for accreditation renewal.   Requirements for program accreditation by the North American Wildlife Association indicate  that our program has only minimal curriculum in the areas of “equipment maintenance and repair”. An inventory of the curriculum in all the Fish and Wildlife Courses identified areas where some of the necessary work is being covered. There is still room for improvement. The advisory committee also agree that the Fish and Wildlife Program needs more “equipment  maintenance and repair” instruction.  The North American Wildlife Technology Association (NAWTA) now has an agreement with the American Wildlife Society that allows for graduates on NAWTA accredited programs (such as the Fish and Wildlife program at Fleming) with several years of work in a related field to become certified Wildlife Technicians (American Wildlife Society) without having to prove they meet the educational standards of the Wildlife Society. The Habitat Classification course (Semester 3) may be an opportunity to certify students to Provincial Standards (ELC) and pursue course certification. To accomplish this soils and the basic tree measurement components now covered in the course must be repositioned. These topics need to be taught before the student enters semester 3.  **2.7 Progress made from the last curriculum renewal initiative.**   The Ornithology course is developing well and a change in faculty this year has brought new insights to the course. Avian assessment is an important component to the green energy assessment and the avian portion of the assessment protocols will be imbedded in the course beginning in 2012.   The Human Relations (ORGB 10) course will be removed from the program (Semester 3) and with the removal of Environmental Issues: The Human Factor (GNED 15) in semester 4 there should be room for a Career Development Course. This would be best placed in semester 4 for employment timing. After two years of Introduction to Wildlife and the associated camp the course has been removed and everyone will do the Introduction to Fisheries course and the fish camp. This will satisfy the need for all students to have fisheries training but creates issues for the terrestrial component of the course. This is discussed elsewhere. The Fish camp will become a four day overnight camp and will be moved from Sturgeon Lake to Lower Buckhorn Lake for the fall of 2012.  With 6 sections requiring a day of on water training and a day of on campus camp training it is recommended that no scheduled classes be held in week one. Week one is a short week due to Labour Day. The students should get a training schedule to follow for that week that would include one full day on campus and one full day on the water. The on campus training will include a water safety review, GPS and Chart/Map Reading and compass use, Working in Bear Country and an introduction to Wildlife Protocols.  |
| **3. Student and Graduate Satisfaction** (2011)3.1 Key performance indicators # 4, 8, 9, and 11.KPI #4: Generic and Vocational Learning Outcomes ………... 90 %KPI #8: Student Satisfaction – Learning Experience ………… 94 %KPI #9: Student Satisfaction – Teachers ……………………… 87 %KPI #11: Graduate Satisfaction – Program …………………… 77 % |
|  **4. Employment Trends** 4.1 New or changing employment trends in the industry or sector. Already discussed.4.2 Curriculum issues – with having all students in the semester 3 of the Fish and Wildlife Program taking intro to fish we are lacking some very important wildlife assessment material. Graduates will miss employment opportunities in the expanding terrestrial “Green Sector”. Already discussed.4.3 Curriculum issues / strengths that have been identified by employers pertaining to graduate job readiness.  We are receiving feedback that our students are not getting the employment for positions for which they are most qualified because of poor resumes and weak interview skills. There is a course that our students should be taking (Career Advancement Techniques) that would should help to remedy this situation. This should happen as soon as possible!  |
|  **Program - Fish and Wildlife Technician Co-ordinator David Wood** **Date February 17, 2012** |
| **B. Curriculum Strengths and Challenges**  Summarize the curriculum strengths and challenges identified by the team.  |
| **Strengths*** Fish and Wildlife is the most popular program at the Frost Campus with approximately 160 students in semester 1, 170 students in semester 3 and 30 students in semester 5
* The one week fisheries fall camp doing lake survey exercises and fish sampling on Lower Buckhorn Lake is a highlight.
* Hands on training in Fisheries and Wildlife management practices working to Provincial and industry standards.
* Strong technical component reinforced by applied lab work.
* Strong steady enrolment with strong KPIs
* Good contribution to college overhead
* Experienced and dedicated faculty and staff with close ties to the industry.
* Active advisory committee

**Challenges** 1. Insufficient class time to cover all of the technical material appropriate to program. This is particularly true of the:* terrestrial wildlife assessment protocols and sampling techniques required for green energy employment and,
* soils and the basic environmental measurements component of habitat classification.

 2. Increased number of students entering the third semester of the program are lacking theskill set required to progress successfully to semester 4. This is evident with math, which affects the student’s success in limnology in semester 3. 3. Hiring consistent qualified contract professors for the Vertebrate Biology, Limnology 1 and the Wildlife courses is a challenge.There are limited funds available to hire full time professors combined with the difficulty in recruiting and retaining contract faculty is an issue. 4. First semester students need to have a clearer understanding of the expectations of the Fish and Wildlife Program. * + students progressing from common semester with a course failure or a low GPA are going to find F&W very challenging.
	+ there is a lot of identification skills expected and of out-of-class work necessary to be successful in the F&W program
	+ finding employment in the F&W field is very competitive, students need to be very good academically, willing to move to find work and willing to start in contract positions. Finding related work is by no means guaranteed.

5. Students do not feel that the Chemistry and Statistics courses have relevance to their program of study. 6. Program needs to include job search and interview skills to assist students with finding employment to increase overall and related employment rates.7. Admission into the Technology program in semester one has created challenges related to progression into semester 5 and the direct entry process for applicants  |
| **C. Action Plan** Identify priority actions for the next year and the rationale for their inclusion. For each, indicate the project lead, and the proposed timelines for completion.  |
|  1. Some of the missing components of the terrestrial assessment of wildlife can be built into the ornithology course (Sem. 3) and one protocol can be covered in the Wildlife Technologies lab (Sem. 3). That still leaves many of the terrestrial components not covered.

One option to expose our students to the required terrestrial protocols and sampling techniques is to run a 7 week applied learning course (Wildlife Field Monitoring) on campus in semester 3. With a 2 hour lab per week combined with blended learning techniques. This would allow the protocols and sampling techniques to be covered at a level that would make our students competitive in the terrestrial green energy market. This would require the adjustments to Ornithology and Wildlife Technologies mentioned above to happen to fill in the missing components. If a course were to be put into semester 2 that combines soils, measurement and terrestrial assessment we could begin to address both deficiencies. This may allow enough time for the Habitat Classification course (semester 3) to certify students to Provincial Standards and pursue course certification.  Sault College has the content in three courses but the main area is a semester 4 course. It is recommended that we put something a course into semester 3 (Wildlife Field Monitoring – discussed above), so we can incorporate applied learning on campus. This would be more advantageous than camp when combined with the  semester 2 course mentioned above. This approach would put us in a superior position  to our competitor and allow us to use equipment originally purchased for Wildlife Camp.  The field (applied learning) component of the protocols can’t be conducted in semesters 4 or 2 due to weather. 1. The implementation of prerequisites and alternate (slower) patterns of course progressions that allow these technician students to spread their courses over more than four semesters has helped with the student that struggle with courses. This approach helps students an education plan or are part time.
2. Recruiting qualified part time teachers will become a challenge for the Chair at Frost Campus.
3. A “Certificate of Awareness” has been prepared for the students starting semester two to make sure that they are aware of the challenges that they may face as they try to graduate from the F&W program.
4. **Students do not feel that the Chemistry course has relevance to them**.

If an “Anticipatory Set” is being used in the Chemistry course it is not adequate enough to engage the students. Most students do not see the relevance of chemistry to their field of study. We need a course that is more applied using examples and applications that draw on areas of student interest and study. The chemistry course needs to be designed and taught by someone with the appropriate background in applied chemistry who can relate the basics of water chemistry to Limnology and Fisheries. Although basic chemistry is important, unless there is some movement to make this course more relevant it is recommend we remove it and replace it with a course our students can use. It is difficult to customize a general course taught to many disciplines however water and soils are a common thread in most environmental programs at SENRS.   6. **Students do not feel that the Statistics course has relevance to them**. It has been known and identified several times that the Fish and Wildlife Students do not appreciate the importance of statistics. In the winter semester of 2012 a fisheries data set was given to the group teaching stats to the F&W program students. The group was also given a short overview of what is done with fisheries data and an introduction to fisheries population dynamics. The program feels that if the student can relate to the data set being used they may find the course more interesting. It is also very important to be able to discuss what it means once the analysis is done. It is recommended that students use Excel for data organization and analysis from the start. The program will introduce a brief (non statistical) introduction to fisheries population dynamics in the Intro to Fisheries course (sem. 3). The intent is to start the anticipatory set and begin the demonstration of applicability of the statistical analysis of the data (sem.4). Students collect data at camp during the beginning of semester 3 – process the samples and learn a little about population dynamics thorough out the semester to set them up to use the data (or similar data) in semester 4 Statistics.We will have to monitor this as this to see if it has the desired outcome. As with Chemistry this is a general course taught to many disciplines and thus hard to customize however we need to look at ways to do this.  7. Lack of job search, portfolio and interview skills.Obtain approval to put a Career Development Course in Semester 4.  |
| **D. Deferred Actions** Record any issues that will need to bemonitored, researched, or deferred for future action. |
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**Fish and Wildlife Technologist**

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| **A. Analysis of Indicators**Note: data is **not** recorded in this section of the template.**Reflect on, and discuss, the following indicators in the context of the curriculum and program:**   |
| **1. Industry / Sector Trends****1.1 New or emergent *industry or sector* related issues and trends identified over the past year and their potential impact on the program**.Many jobs are predicted for the “Green” sector - our students need to be ready for these jobs. Some of these areas include pre and post monitoring alternate energy projects, fisheries and wildlife management, water quality assessment, habitat classification, assessment and remediation. We are well positioned on the aquatic side and this is one of the strengths of our program. We should maintain our standing in this area. We are lacking in the terrestrial component with only a few of the necessary skills covered. If these issues can be covered in 2nd year an advanced application course would be appropriate in third year.* 1. **Advisory Committee recommendations from the past year that will affect the positioning, nature, or scope of the program.**

 Hydro, wind and solar are emerging trends – all forms of green energy. Freshwater mussels and fish egg ID are other trends. Huge need for Ontario Wetland (OWES) course, Invasive species and species at risk  **1.3 Information / observations generated via faculty and staff professional development, engagement in sectoral and profession associations, and involvement in community and employer networks connected to the field.** **NAWTA** Requirements for program accreditation by the North American Wildlife Association indicate  that our program has only minimal curriculum in the areas of “equipment maintenance and  repair”. A survey of what is done in each course has identified areas where some of the  necessary work is being covered off but there is still room for improvement. The advisory committee also agree that the Fish and Wildlife Program needs more “equipment maintenance and repair” instruction. **Big Game and Fur 1 & 2**There is a need to do a higher level of preparedness for the green energy assessment. It is recommended there be one Big Game and Fur course in semester 6 and replace Big and Fur 1 from semester 5 with a Wildlife Habitat Assessment course. The new course would cover Wetland Evaluations, Environmental Impact Studies and other wildlife assessment protocols. This course would have a strong applied learning component.**F&W Introduction to Vector GIS - GEOM34** **Issues** **Shared with Ecosystems Management Students.**F&W students do not have any exposure to GIS content or software for 2 years before taking the Introduction to Vector course. The last exposure was 3 weeks of GIS curriculum at the end of the Geospatial Techniques course in Semester 1. Essentially, they have forgotten anything they may have learned. Also, 2 years in the GIS world means that there are likely new versions of software, new methods of storage, new data sources, etc. They have to start all over again. EM students, however, being in 3rd semester can still remember some of the curriculum they have learned. In summary, the two groups are coming into the course with different background knowledge.**Scheduling:** Currently the F&W students undergo a 3 week combined field / work placement. This year, it takes place weeks 6, 7, and 8. However, the EM students do not attend field trips during this time, so classes are held as usual. This results in F&W students missing important curriculum. It also results in adding compensating factors into the overall course curriculum in order to be fair to the returning F&W students, eg: due dates are different for EM and F&W, midterm examination was rescheduled.It is recommended that there be a separate course in GIS for the F&W students. They should be pulled from the course with EM. F&W curriculum should be developed to support this course. Historically content was developed in consultation with Fish and Wildlife that included forest management / wildlife HIS and fisheries applications such as lake surface area, shoreline slope etc. however with constant change in part time faculty most of this application curriculum has been eroded. |
| **2. Curriculum Development****2.1 Curriculum changes in the last year such as changes in program positioning, course content, course / program outcomes, and delivery mode.**  No major changes over the last year.**2.2 Recent or anticipated initiatives that promote student pathways including high school articulations, program laddering, and university transfer / articulations.** The University of Prince Edward Island will now accept a graduate from a NAWTA (North American Wildlife Technology Association) accredited institution by allowing a block transfer into the BSc in Wildlife Management. The Fish and Wildlife Technician Program at Fleming is accredited and our technology program grads will qualify. **2.3 New competitor programs and/or re-positioning of existing programs**. Unaware of any**2.4 New or changing provincial standards, standards for accreditation, credentials, and / or industry or sector certifications over the past year.**  Unaware of any **2.5 Progress made from the last curriculum renewal initiative.**  Talks have begun with OMNR regarding the certification of the third year Fish and Wildlife wetland evaluation course. |
| **3. Student and Graduate Satisfaction (2011)**3.1 Key performance indicators # 4, 8, 9, and 11 (see **Appendix C** for a description of these).KPI #4: Generic and Vocational Learning Outcomes ……….. 99%KPI #8: Student Satisfaction – Learning Experience ………… 91%KPI #9: Student Satisfaction – Teachers ……………………… 82%KPI #11: Graduate Satisfaction – Program …………………… 88% |
| **4. Employment Trends** **4.1 New or changing employment trends in the industry or sector.**The increase in projected “green sector” jobs should increase the number of our graduates that will find related work. **4.2 Curriculum issues / strengths that have been identified by employers pertaining to graduate job readiness.**  **Strength:** The maintenance of high academic standards and the ability to supply unique  training experiences.  **Weakness:** Limited instruction in the use and repair of field equipment. **A greater** exposure to terrestrial wildlife assessment protocols and sampling  techniques is required to position our students for the growth in green energy related  work. We are receiving feedback that our students are not getting the employment for  positions for which they are most qualified because of poor resumes and weak interview skills.  |
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| **Program: Fish and Wildlife Technologist­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­ Co-ordinator: David Wood****Date: June, 2010** |
| **B. Curriculum Strengths and Challenges** Summarize the curriculum strengths and challenges identified by the team.  |
| **Strengths*** Two week long camps in the third year and 2 work/field placements enhance graduate hands on skills and knowledge of the workplace
* The capstone research project in semester 6 utilizes industry data and prepares students both for the workplace and transfer into university
* Third year program courses are integrated and build on previous knowledge resulting in a holistic view of the overall educational experience
* One week fall and winter field camps
* Experienced and dedicated faculty and staff

**Challenges**1. Students entering the program with a “Grade Deferred” from the previous year. Most “Grade Deferred” designations were being assigned for incomplete collections (plant and fish) in semester 3.

**2.** Entry of students directly into Technology in semester 1. This created several issues including inequity of access to the Technology Program based on application methods. Filing seats from a stale wait list in the fall when students in technology do not return to the  program and do not notify the college.  |
| **C. Action Plan**Identify priority actions for the next year and the rationale for their inclusion. For each, indicate the project lead, and the proposed timelines for completion.   |
| 1. In an attempt to force the students to complete their course in the assigned semester “Grade Deferred” is no longer used for late collections. Students receive a Fail for the course if not completed by the end of the semester. This will require the student to reregister (and pay) for taking the course again.

 **2.** In consultation with the RO’s office the following changes will be made.  Effective December 15th , 2011, applicants to FW Technology semester 1 in the fall of 2012 FW admitted into BO Technician. Technology selection will be removed as an option at OCAS by December 15th 2011. Students already in the system as Technology will be managed until all Technology Cohorts in the system have moved through.   For entry to third year FW the process will be an internal application in second year (Sem 4). Admission to the FW Technology program will be based on GPA of the grades from  semesters 1 to 3 with no failures. All courses must be completed by the end of semester 4.  A student with a failed or incomplete course(s) at the end of semester 4 will not be allowed  to move to 3rd year. They will be removed from the internal applicant list. |
| **D. Deferred Actions**Record any issues that will need to bemonitored, researched, or deferred for future action. |