2012 Proposal for EnviroScience's Milfoil Solution®
At Goose Bay, Alexandria Bay, New York

Prepared For:

The Goose Bay Reclamation Corporation

Prepared By:

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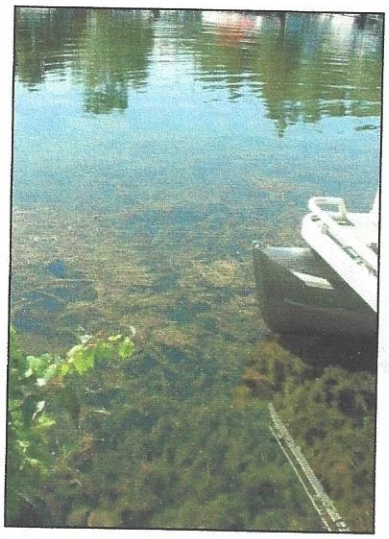
Milfoil Weevil
Cost Proposal
6/6/2012
EnviroScience

June 6, 2012

Project Description



Goose Bay is a 1,000 acre bay in Alexandria Bay, New York which has undergone a rapid expansion of the exotic aquatic plant Eurasian watermilfoil, *Myriophyllum spicatum*, (milfoil) in the past several years. At present, heavy infestation covers a large portion of the bay and poses a considerable long-term threat to the recreational potential and ecological health of the Bay.

The Goose Bay Reclamation Corporation has evaluated several alternatives for managing with this problem. Chief among them are the use of herbicides, harvesting and biological control. The milfoil weevil, *Euhrychiopsis lecontei*, is the active biological control agent in **Milfoil Solution®**. Milfoil weevils are native insects that are found naturally occurring on milfoil throughout most of the northern states and provinces across North America. In addition to being environmentally safe, Milfoil Solution® is the only proven approach for sustainable control, as opposed to mechanical and chemical application, which will need to be reapplied indefinitely. Therefore, this solution is the only natural and completely eco-friendly choice for addressing milfoil infestations and its sustainability saves money over the long-term.

EnviroScience's customized Milfoil Solution® includes stocking milfoil weevils into a lake, bay, or river over the course of two of more years, depending on the size of the waterbody and the milfoil infestation. Although every waterbody responds somewhat differently, experience has demonstrated that the length of time needed for the weevils to achieve lake-wide control depends on the total number of weevils stocked. As with any biological control, larger impacts can be expected when more insects are placed in a concentrated area.

In most cases, noticeable weevil activity during the first stocking season may be limited and will be usually restricted to the immediate stocking areas. Over the course of the next two to three years the weevils will move from the stocking areas and spread out around the lake, ultimately reaching the density required to sustainably control the milfoil within three to five years. Biological control is a gradual management strategy therefore a Milfoil Solution® program requires stocking weevils over multiple years. This minimizes seasonal variability and allows for annual adjustments to the program based on survey data.

Expected control of the milfoil utilizing the Milfoil Solution® program includes:

- ✓ reduction in the density of the milfoil (stems/m^2),
- ✓ an increase in beneficial native plants that outcompete damaged milfoil,
- ✓ open areas and increased distance between milfoil stems that lead to elimination of the milfoil in the bed, and
- ✓ maintenance of the milfoil below the lake surface at a non-nuisance level

At the request of the Goose Bay Reclamation Corp., EnviroScience has prepared the following proposal, which involves establishing baseline conditions and charting the progress of the project through field surveys and laboratory analysis.

Methods

Milfoil Solution® includes three general tasks each year as outlined below. In addition to stocking milfoil weevils, baseline and post-stocking surveys allow for the continuous monitoring and progress of the Milfoil Solution® program. The information collected also assists in assessing the management strategy for the subsequent year. Finally, an annual report provides the association with the year's accomplishments and future recommendations.

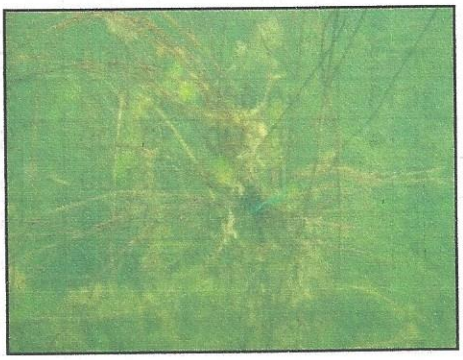
Below is a detailed description of each task performed annually as part of the Goose Bay program.

Task 1: Site selection, initial survey, mapping, and weevil stocking

Stocking sites are selected, in part, by input from the client and lake manager, and in part by conditions contributing to successful weevil habitat. At the time of the initial annual visit (mid-May – July), EnviroScience biologists will tour the bay to determine potential stocking locations. Selected sites will be marked using Global Positioning System (GPS) technology and a buoy will be placed (with the permission of the client) to deter unnecessary boat traffic. A survey of the milfoil bed will be conducted followed by the stocking of milfoil weevils. The same protocol is used for each survey to allow our biologists to track the progress of the weevil population. This includes analyzing randomly-sampled milfoil samples at our laboratory to identify weevil life stages (egg, larvae, pupae, and adult) and determine the population density (the number of weevils per stem). Our biologists will also determine the density of the milfoil (stems/m^2) and identify native plant species in and around the stocking sites. Monitoring the native plant community is a key component of the success of the program as they will out-compete damaged milfoil and fill-in areas once dominated by milfoil. Additionally, native plants provide a food source and habitat for other aquatic life which is important for biodiversity and ensuring a healthy, balanced ecosystem. In addition to stocked sites, one or more monitoring sites not stocked with weevils, can be established to gauge the progress of the program in other parts of the bay.

Task 2: Follow-up Survey

EnviroScience will return to the stocking sites 5-8 weeks later (August - September) to conduct a follow-up survey using the same protocol as the initial survey. The data from initial and follow-up surveys will be used to track the progress of the program over the summer and from year to year. The final year of the Milfoil Solution® program includes one visit between July and early September to assess the overall effects of the multiple-year program.



Milfoil damage as a result of direct weevil augmentation.

Task 3: Reporting

A report summarizing the progress of the Milfoil Solution® program is generated at the end of each year (November – December) and pursuant to the final follow-up survey. The reports include the evaluation of the data collected from the surveys, a map locating the stocking and survey sites, and management recommendations for the subsequent year.

2012 Pricing for Goose Bay

Task 1: Initial survey, mapping of sites, and weevil stocking	
Labor	$986.50
Other Direct Cost (hotel, travel, per diem)	$369.75
Total Cost of Task 1	**$1,356.25**
Task 2: Follow-up Survey	
Labor	$755.50
Other Direct Cost (hotel, mileage, per diem)	$369.75
Total Cost Task 2	**$1,125.25**
Task 3: Report	
First year interim report with map - Total Cost Task 3	**$300.00**
Total of Tasks 1-3	**$2,781.50**

Weevils

Year	Unit	# Of Units	Unit Cost	Total
2012	1,000 eggs & larvae	See Below	$1,000.00	-
Total Cost with 5,000 weevils (1 stocking site)				**$7,781.50**
Total Cost with 10,000 weevils (2 stocking sites)				**$12,781.50**

ONE DOLLAR PER BUG EGG

WE COULD BUY A THOUSAND DUCKS CHEAPER — AND EAT THEM IN THE FALL

Total Projected Budget for Goose Bay

Year	Total Weevils	Surveys, Stocking Expenses	Report	Total by Year
2012	10,000	$2,481.50	$300.00	$12,781.50
2013	40,000 - 30,000	$3,116.00	$500.00	$43,616 - $33,616
2014	40,000 - 30,000	$3,146.00	$550.00	$43,696 - $33,696
2015	30,000 - 20,000	$2,939.00	$600.00	$33,539 -$23,539
2016	15,000 - 10,000	$2,732.00	$650.00	$18,382 - $13,382
2017	Survey only	$1,530.00	$700.00	$2,230.00
Totals	**135,000-100,000**	**$15,944.50**	**$3,300.00**	**$154,244.50 - $119,244.50**

MORE THAN WE CAN PAY OR RAISE NEED GRANT OR GOVERNMENT SPONSORSHIP → NOT HAPPENING THIS YEAR

Note: EnviroScience determines the projected budget based on over 12 years of experience and the initial milfoil infestation. Each year, our biologists will evaluate the progress of the weevils and adapt the number of weevils *only if necessary.*

Terms and Agreement

EnviroScience, Inc. will provide services and organisms for application of the **Milfoil Solution®** to Goose Bay as outlined in the attached proposal. The following paragraphs outline terms of payment.

Payment- Payments for each year's costs are due in accordance with the following schedule:

-20% of the first year cost is due at the time of contract submittal.
-80% (remaining balance of annual cost) is due at the time of the initial stocking or survey each year.

Should the project be cancelled, delayed or otherwise postponed after May 1st of any year due to factors outside of the control of EnviroScience, Inc., 20% of the annual project cost for the year in question will be kept as a cancellation fee to defray costs associated with start up of the laboratory cultures. Any additional balance will be retained and applied to the project costs for the following year. Factors beyond EnviroScience's control may include, but are not limited to adverse weather, high water level, and actions of outside contractors hired by the client.

SO WE ARE RESPONSIBLE FOR BAD WEATHER AND HIGH WATER ?

Please note: Stocking priority is determined by the date we receive a signed contract and deposit. The price in this proposal is valid for 120 days from the date of issuance.

Respectfully submitted by:

Rebecca L McMenamin

Rebecca McMenamin
Marketing Manager
EnviroScience, Inc.

Accepted and Authorized to Proceed:

_____
Signature

_____ _____
Print Name **Date**

Send invoices to:

_____
Name, Title and Address or Email (if preferred)

Standard Terms and Conditions

1. General

The following Standard Terms and Conditions, together with the attached Proposal and Fee Schedule constitute the Agreement between EnviroScience, Inc. ("ES") and the entity or person to whom the proposal is addressed ("Client") for the performance of professional services outlined in the proposal. The Standard Fee Schedule may be omitted for Lump Sum type Agreements.

2. Performance of Services

ES's services will be performed in accordance with generally accepted practices of engineers and/or scientists providing similar services at the same time, in the same locale, and under like circumstances. No warranty, express or implied, except as specified in Section 9 below, is included or intended by this Agreement.

3. Invoices, Payments

ES will submit Invoices to Client monthly for work completed during the previous month and a final invoice upon completion of services. Payment will be due within thirty (30) days from invoice date. Client agrees to pay a service charge of one and one-half (1½) percent per month (18% per annum) on past due payments. If an invoice remains unpaid for a period in excess of sixty (60) days, ES reserves the right to pursue all appropriate remedies including stopping work and retaining all drawings and information without recourse. In the event ES must engage counsel to enforce overdue payments, Client will reimburse ES for all reasonable attorney's fees and court costs.

4. Insurance

ES is protected by Workers' Compensation Insurance, Commercial General Liability Insurance, Professional Liability and Automobile Liability Insurance coverages. ES will furnish certificates of insurance upon Client's request. Client agrees that ES will not be liable or responsible for any loss or damage beyond the amounts, limits, exclusions, and conditions of such insurance.

5. Disclosure of Hazards

ES will take reasonable precautions for the health and safety of ES's employees while at the Client's Site with consideration for the available information regarding existing hazards. Client will furnish to ES at the time of the Client's authorization to proceed, all information known to the Client, Client's Counsel, or Site Owner concerning physical hazards, oil, hazardous, toxic, radioactive or asbestos material in, on or near the site. If hazards are known to exist and the Client fails to advise ES of such substance or condition, and during the course of the work they are discovered, and such discovery in ES's opinion results or may result in injury or a health risk to persons, whether ES's employees or others, Client agrees to assume full responsibility and liability and shall hold ES harmless for any and all claims, demands, suits, or liabilities for personal injury including disease, medical expenses, including but not limited to, continued health monitoring, and/or death, or property damage, and for economic loss, including consequential damages.

6. Confidentiality

ES will hold confidential all business and technical information obtained or generated in performance of services under this Agreement. ES will not disclose such information without Client's written and/or verbal consent except to the extent required for: 1) performance of services under this Agreement; 2)compliance with professional standards of conduct for the preservation of public safety, health, and welfare; 3)compliance with any court order, statute or law, or governmental directive; and/or 4) protection of ES against claims or liabilities arising from the performance of services under this Agreement. ES's obligations hereunder shall not apply to information in the public domain or lawfully obtained on a non-confidential basis from others.

7. Ownership of Documents and Processes

All documents (including drawings, specifications, estimates, field notes, and other data) and all processes (including scientific, technological, software, and other concepts, whether or not patentable), created, prepared or furnished under this Agreement by ES or ES's independent contractors and consultants pursuant to this Agreement, are instruments of service in respect of the project and shall remain the property of ES whether or not the Project is completed. ES shall retain ownership of all documents, drawings, specifications, estimates, field notes, other data, and developed technology or processes and any copyright or right to patent thereto. Client may make and retain copies thereof as is necessary; however, such documents are not intended or represented to be suitable for additions, extension, alterations, or completion of the project by others, or use in any other project. Any reuse without written verification or adaptation by ES for the specific purpose intended is at Client's sole risk without liability or legal exposure to ES or its independent contractors or consultants. Client shall indemnify, defend, and hold harmless ES and its independent contractors, and consultants from all claims, damages, losses, and expenses, including attorney's fees arising out of or resulting therefrom. Any such verification or adaptation will entitle ES to further compensation.

8. Trade Secrets and Proprietary Information

Client acknowledges that ES has developed a number of protocols, techniques, and procedures, as well as specialized equipment for performing and ensuring the quality of laboratory and field services that it provides. Further, the Client acknowledges that ES regards this technical information as being its trade secrets. Client agrees not to use or disclose, directly or indirectly, any such trade secret to any person or organization, unless expressly authorized by ES.

9. Milfoil Solution® Process-specific Terms, Conditions and Warranty

a). Any written or verbal information, other than published scientific studies or written ES sales literature, transferred by ES to the Client concerning the methodology used to rear and stock organisms used in the Milfoil Solution® process are considered

proprietary by ES, and are specifically considered to be trade secrets. In addition to the conditions set forth in Section 8, to protect these trade secrets and comply with state and federal regulations, the Client agrees not to remove, transfer, culture, or otherwise use Milfoil Solution® organisms supplied by ES in any other location or for any other purpose.

WHAT IS THE DIFFERENCE BETWEEN THEIR BUGS AND OUR OWN INDIGENOUS BUGS ?

b). Client hereby agrees to allow ES access to the waterbody for a period ten years from the date of this contract for the purposes of continued research. Client also authorizes ES to collect limited numbers of adult Milfoil Solution® organisms from the waterbody for culturing purposes. In the event that ES collects organisms for this purpose, ES agrees to provide a written report detailing its activities, and furthermore agrees to restock within the same season two times the number of organisms removed.

10. References
Client agrees that ES has authority to utilize Clients name and general descriptions of the project work or service performed as references to other clients.

11. Limitation of Liability/Dispute
To the fullest extent permitted by law, the total liability of ES to Client, and anyone claiming by, through, or under Client, for any and all injuries, claims, losses, expenses, or damages whatsoever arising out of or in any way related to ES's services, from any cause or causes whatsoever, including, but not limited to, negligence, errors, omissions, strict liability, breech of contract, or breach of warranty, shall be limited to an amount of $50,000 or ES's fee, whichever is greater.

If Client prefers not to limit ES's liability to this sum, ES may increase this limitation upon Client's written request.

12. Dispute Resolution
All claims, disputes or controversies arising out of or in relation to the interpretation, application or enforcement of this Agreement shall be first submitted to non-binding mediation pursuant to the Rules for Commercial Mediation of the American Arbitration Association.

13. Legal Action
All legal actions by either party against the other for any cause or causes, including but not limited to breach of this Agreement, negligence, misrepresentation, breach of warranty or failure to perform in accordance with the standard of care, however denominated, shall be barred five (5) years from the day after completion of ES's services or the time that the party knew or should have known of this claim, whichever is sooner. In the event that Client institutes a suit against ES, and if such suit is not successfully prosecuted, or if it is dismissed, or if a verdict is rendered for ES, Client agrees to pay ES any and all costs of defenses, including attorney's fees, expert witnesses' fees, and court costs and any and all other expenses of defense which may be reasonably necessary, immediately following dismissal of the case or immediately upon judgment being rendered in favor of ES.

14. Precedence
These Terms and Conditions shall take precedence over any inconsistent or contradictory provisions contained in any proposal, contract, purchase order, requisition, notice to proceed, or like document.

15. Severability
If any of the Terms and Conditions are finally determined to be invalid or unenforceable in whole or part, the remaining provision shall remain in full force and effect and be binding upon the parties. The parties agree to reform these Terms and Conditions to replace any such invalid or unenforceable provision with a valid and enforceable provision that comes as close as possible to the intention of the stricken provision.

16. Survival
These conditions shall survive the completion of ES's services on this project and the termination of services for any cause.

17. Governing Law
This Agreement shall be governed and construed in accordance with the laws of the state of Ohio.

THE WORD GUARANTEE DOES NOT APPEAR ANYWHERE IN THIS DOCUMENT. FOR $150K IT SHOULD

Euhrychiopsis lecontei

From Wikipedia, the free encyclopedia

Euhrychiopsis lecontei is a type of weevil that has been investigated as a potential biocontrol agent for Eurasian water milfoil .[1] It is found in the eastern and central United States and western Canada .[2]

Euhrychiopsis lecontei	
Scientific classification	
Kingdom:	Animalia
Phylum:	Arthropoda
Class:	Insecta
Order:	Coleoptera
Superfamily:	Curculionoidea
Family:	Curculionidae
Genus:	*Euhrychiopsis*
Species:	***E. lecontei***
Binomial name	
Euhrychiopsis lecontei (Dietz, 1896)	

Life cycle

E. lecontei is a holometabolous insect, undergoing true metamorphosis. Development is temperature dependent, but the time to develop from egg to larvae is about 4 days, from larvae to pupae 13 days, and from pupae to adult 13 days. Larvae are stem borers and damage plant tissue from about 7 cm from the tip of the plant.

Use as a Biocontrol

Milfoil weevils occur in natural populations in much of North America on their native host, Northern watermilfoil (Myriophyllum sibiricum). They often reach sufficient densities to suppress invasive Eurasian watermilfoil (Myriophyllum spicatum) infestations after a prolonged infestation or artificial augmentation. Studies indicate that for effective control a density of about 1 weevil per two stems of milfoil (0.5 weevils per stem) is necessary .[3] There are mixed reviews that fish such as bluegills can reduce weevil populations as research has only been conducted in very limited settings.[4] Augmenting native weevil populations as a biological control is effective as long as there is a small amount of milfoil to sustain the population. Milfoil weevils are commercially available as a management option for Eurasian water milfoil by a firm based in the United States and Canada. .[5][6]

References

1. ^ Ellen Healey (December 17, 2008). "*Euhrychiopsis leconti* and *Myriophylum spicatum*. Establishing a balance In Candlewood Lake: Response to stocking weevils in Eurasian watermilfoil weed beds" (http://cla.visualaccesstech.com/CLAUpload/Healey_Research_Paper.pdf) . Candlewood Lake Authority. http://cla.visualaccesstech.com/CLAUpload/Healey_Research_Paper.pdf.
2. ^ Ross H. Arnett, Jr., Michael C. Thomas, Paul E. Skelley & J. Howard Frank (2002). *American Beetles Volume 2. Polyphaga: Scarabaeoidea through Curculionoidea*. CRC Press. ISBN 0-8493-0954-9.
3. ^ Laura L. Jester, Michael A. Bozek, Daniel R. Helsel & Sallie P. Sheldon (2000). "*Euhrychiopsis lecontei* distribution, abundance, and experimental augmentations for Eurasian watermilfoil control in Wisconsin Lakes" (http://www.apms.org/japm/vol38/v38p88.pdf) . *Journal of Aquatic Plant Management* **38**: 88–97. http://www.apms.org/japm/vol38/v38p88.pdf.
4. ^ Raymond M. Newman (2004). "Biological control of Eurasian watermilfoil by aquatic insects: basic insights from an applied problem". *Archiv für Hydrobiologie* **159** (2): 145–184. DOI:10.1127/0003-9136/2004/0159-0145 (http://dx.doi.org/10.1127%2F0003-9136%2F2004%2F0159-0145) .
5. ^ EnviroScience, Inc. (2011). "Milfoil Solution" (http://www.enviroscienceinc.com/lake-management/41-lake-management-milfoil-solution/) . *Lake Management*. http://www.enviroscienceinc.com/lake-management/41-lake-management-milfoil-solution/.
6. ^ Milfoil Solution, Inc. (2012). "Milfoil Solution" (http://www.milfoilsolution.ca) . *Lake Management*. http://www.milfoilsolution.ca.