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Nature NB

Naturaliste du NB Naturalist

Bay of Fundy Sightings • Espèces en Péril : le Pluvier siffleur • The Christmas Fern

Nature NB

924 rue Prospect St.
Suite 110
Fredericton, NB E3B 2T9

Nature NB is a non-profit, charitable organization whose mission is to celebrate, conserve and protect New Brunswick's natural heritage, through education, networking and collaboration. (The former name of Nature NB – New Brunswick Federation of Naturalists / Fédération des naturalistes du Nouveau-Brunswick is retained for legal purposes.)

Nature NB est un organisme de bienfaisance à but non-lucratif qui a comme mission la célébration, la conservation et la protection du patrimoine naturel du Nouveau-Brunswick par l'éducation, le réseautage et la collaboration. (L'ancien nom de Nature NB, soit « Fédération des naturalistes du Nouveau-Brunswick / New Brunswick Federation of Naturalists », demeurera le nom légal de l'organisme.)

Nature NB (NBFN/FNNB) is a provincial affiliate of Nature Canada (formerly Canadian Nature Federation) and the Canadian Nature Network (CNN).

Nature NB (NBFN/FNNB) est un partenaire provinciale (N.-B.) du Réseau Canadien de la Nature (RCN) et affilié de Nature Canada (la Fédération Canadienne de la Nature).

In This Issue *Dans ce numéro*

Please submit articles for the next issue by **October 31, 2012**.
S.v.p. soumettre les articles pour le prochain numéro avant le **31 octobre 2012**.
To / à Janet MacMillan, janetmac@nbnet.nb.ca

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Merci beaucoup à tous les bénévoles dévoués qui ont contribué à cette publication.

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On peut lire dans ***Le Naturaliste du N.-B.*** des rapports touchant l'histoire naturelle du Nouveau-Brunswick. Les articles seront acceptés en français ou en anglais pour être reproduits dans la langue d'origine. Les opinions exprimées sont celles de leurs auteurs. Veuillez faire parvenir toutes articles pour ***Le Naturaliste du N.-B.*** à : Janet MacMillan (janetmac@nbnet.nb.ca). Demandez pour les détails de compatibilité d'ordinateur. Tarifs publicitaires sont disponibles sur demande.

President's Message

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The Questing of Naturalists

One of the joys of being a naturalist is the adventure. Looking for that bird you've never seen; finding in a field the plant you've only seen in a field guide; going to new places and experiencing habitats like bogs, where humans rarely go. All of it can be exciting.

Of course sometimes you don't have to go very far to find adventure.

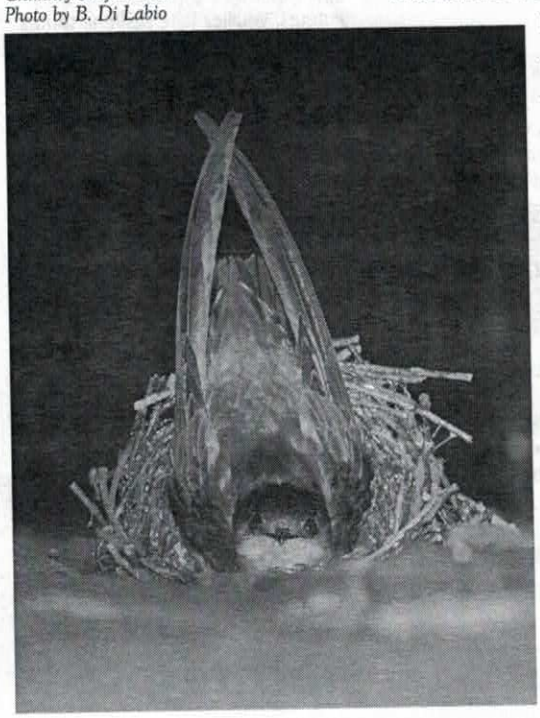
Last fall, an old chimney in Sussex that had been used by Chimney Swifts for many years was torn down. The question asked by Kennebecasis Naturalists and folks from Bird Studies Canada (BSC) was where would the 300 birds recorded in the old chimney in 2011 roost in 2012? After Ally Manthorne from BSC organized local naturalists to conduct a chimney survey of the town, naturalist Judy Stockdale-Dow found a chimney in town filled with 200 birds in early May, just after the birds returned. Many naturalists were relieved that the birds had found a new, local location. In early June 150 birds were found to still be using it. Unfortunately, during a late July survey, this chimney was found to be abandoned with no birds using it in spite of the usual numbers of birds still being seen weaving their way in the skies above the town during the day. The search was on again to find the roost site.

As of this evening, the mystery has not been solved. But what is particularly pleasant is how individuals are personally taking on the challenge. Yesterday I was out with my wife driving very slowly around town with the windows down, our heads poked out looking and listening for Swifts. What a delight to encounter another vehicle travelling in a similar fashion, fellow naturalists also searching for Swifts.

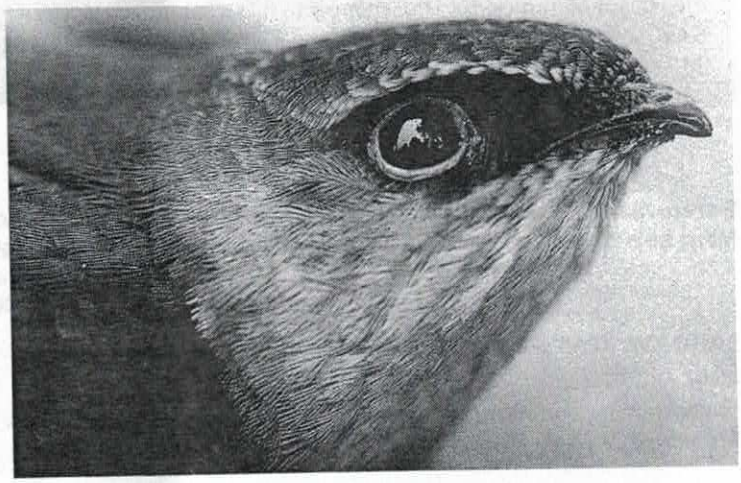
While we were not successful, it was very energizing to share an interest with others.

I know that this scenario is similar to what is happening in many clubs. It is what makes Nature NB's umbrella so worthwhile. I hope all members will continue to share their adventures, for they are the energy and vitality of our organization.

Chimney Swift in nest
Photo by B. Di Labio



Chimney Swift
Photo by G. Peck



Être naturaliste c'est une quête

Mot du Président

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Être naturaliste c'est une quête. Un des grands plaisirs dans le fait d'être naturaliste c'est que chaque sortie est une aventure.

Que vous soyez à la recherche d'un oiseau nouveau, ou que vous découvriez, dans un champ, une plante que vous ne connaissiez auparavant que pour l'avoir aperçu dans un guide de terrain, chaque sortie vous amène dans des habitats différents, dont certains, comme une tourbière sont rarement visité et tout cela peut être fort excitant.

Et, parfois on n'a pas à aller bien loin pour trouver l'aventure.

L'automne dernier, une vielle cheminée, qui avait été utilisé pour nombre d'années par les Martinets ramoneur, a été détruite. La question que se posaient le Club de naturalistes de Kennebecasis ainsi que les gens d'Études d'oiseaux Canada était; Où vont aller en 2012 les quelques 300 martinets qui avaient été recensés, dans cette cheminée, en 2011? Ally Manthorne d'Étude d'oiseaux Canada, ayant organisé notre groupe de naturaliste pour surveiller la ville, ce fut au grand plaisir de tous, que Judy Stockdale-Dow nous fit savoir, au début mai, que les martinets étaient de retour, et quelle avait trouvé une cheminée avec 200 oiseaux dedans.

Plusieurs d'entre nous furent soulagés d'ainsi apprendre que les oiseaux s'étaient trouvé un nouveau logis. Au début juin 150 oiseaux utilisaient toujours le site. Malheureusement lorsqu' un recensement fut réalisé, vers la fin Juillet, il fut constaté que la cheminée avait été abandonnée, et ce malgré le fait qu'en apparence, le même nombre d'oiseaux pouvaient être aperçu le jour se nourrissant dans le ciel au dessus de la ville. Une nouvelle quête s'amorçait pour trouver le lieu de repos des martinets.

À l'heure où j'écris ce message, ce mystère n'a toujours pas été élucidé. Reste, que ce qui est tout particulièrement plaisant pour moi, c'est de voir comment les gens s'investissent dans cette recherche. Hier, moi et mon épouse nous promenions en ville, conduisant lentement avec les fenêtres baissées. Nous avions souvent la tête sortie dans l'espoir d'apercevoir ou d'entendre les martinets. Et quel ne fut pas notre plaisir, de rencontrer un autre véhicule avec des confrères naturalistes qui cherchaient eux aussi pour la même chose. Quoique notre quête ne fur pas couronnée de succès, ce fut très énergisant d'ainsi rencontrer d'autres personnes qui partageaient notre démarche.

Je sais bien que le même genre de scenario se répète dans plusieurs clubs. Et c'est ce qui fait que le regroupement qu'est Nature NB est si important. Je ne peux qu'espérer que tous les membres vont continuer à partager de cette grande aventure qui régénère continuellement l'énergie et la vitalité de notre organisme.

Martinet ramoneur en vol
Photo par R. Stern

An Exploratory Seabird Journey on the Bay of Fundy - July 7, 2012

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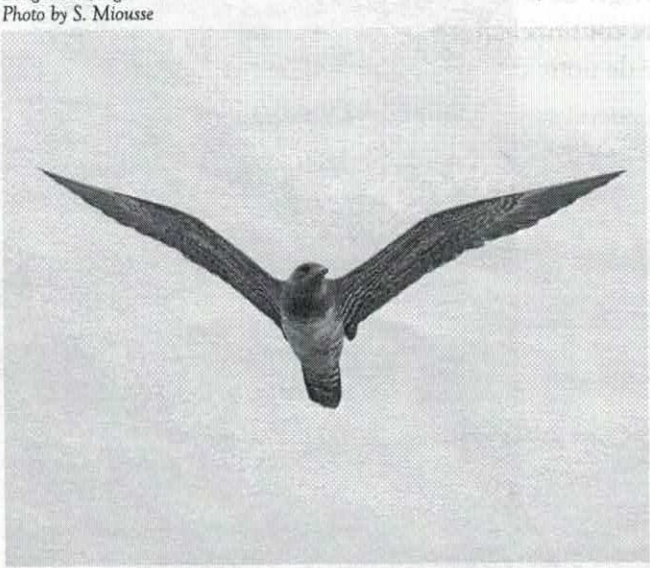
The Bay of Fundy is one of my favourite places anywhere. My wife Jean and I have been taking pelagic trips from Grand Manan for birds and whales since the late 1970's. Every one of them has been interesting and most have provided something unexpected. No two have been the same and I feel every New Brunswick naturalist should have the opportunity to experience a day on the Bay at least once during their lifetime.

So for the past several years I've voluntarily organized at least one pelagic voyage, usually for seabirds, and have registered participants on a first-come, first-served basis. A waiting list usually develops after all the seats are filled, but last minute cancellations often enable those on the waiting list to become participants.

I've used the services of Seawatch Tours in Seal Cove over the years, but Whales-n-Sails based in North Head offers an excellent alternative for anyone wishing to go out for either whales or seabirds.

Until recently we've scheduled pelagic birding during the period from mid-August to mid-September, when the water of the Bay is theoretically the warmest. The thinking was that seabirds that normally avoid the cold Fundy waters might be more inclined to pay a visit when the water temperature is highest.

Long-tailed Jaeger
Photo by S. Miousse



But the discovery of New Brunswick's first documented Cory's Shearwaters in late June and early July of 2010 put a new slant on our thinking. Cory's normally sticks to warmer waters such as those of the Gulf Stream, but at least two appeared off Grand Manan very early in the season, just at the time thousands of other shearwaters and storm-petrels migrate up the Atlantic Coast to spend the summer. Perhaps, as with migrant land birds, these Cory's Shearwaters "overshot" their intended destinations further south and spent a few days here in the Bay before withdrawing.

To further support this new idea, I recalled that New Brunswick has a record of a Yellow-nosed Albatross in late May and of a Red-billed Tropicbird in early July. So for 2012 I decided to schedule two pelagic birding efforts – one on July 7th and another on the more traditional date of September 15th, a potentially rich period because of the large variety of annual fall migrants that pass through the Bay.

An important point is that these trips are devoted to finding BIRDS. Commercial trips out on the water in summer and fall are, by economic necessity, primarily for whales. With a focus on birds and plenty of keen eyes we explore some different areas than when whale watching.

And so it was that a boatload of some 40 hopeful birders left Seal Cove the morning of July 7th in fog and with the somber possibility that it wasn't guaranteed to lift. But we had lots of chum (herring, used to attract seabirds) and a gallon jug of menhaden fish oil kindly provided by First

Mate Durlan Ingersoll and Capt. Peter Wilcox, so we felt confident we might lure lots of birds to the vicinity of the boat.

By the time we were well south of Grand Manan the high cloud above the fog began to thin, allowing the sun to burn through and before long we had unlimited visibility. And with that came some heat, which caused most of us to shed outer clothes – a rare thing out on the Bay.

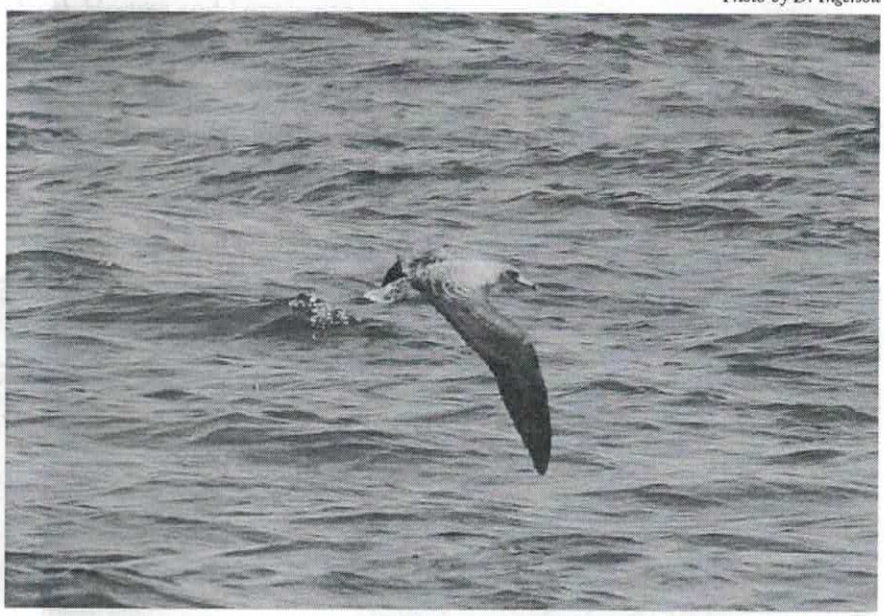
We found plenty of birds once we got into the food-rich waters to the south and east of Grand Manan. Although each of the 40 birders present probably had different estimates of the numbers we saw from 10 AM until 5:30 PM, the official estimate at the end of the day was as follows:

- Red-throated Loon 1
- Common Loon 15
- Northern Fulmar 6-7
- Cory's Shearwater 1-2
- Great Shearwater 400+
- Manx Shearwater 4
- Sooty Shearwater 150
- Wilson's Storm-Petrel 200
- Leach's Storm-Petrel 25
- Northern Gannet 5
- Double-crested Cormorant 3
- Red-necked Phalarope 400
- Herring Gull many
- Lesser Black-backed Gull 1
- Great Black-backed Gull several
- Black-legged Kittiwake 1
- Tern (species?) 10
- Arctic Tern 2
- Pomarine Jaeger 3
- Parasitic Jaeger 4
- Long-Tailed Jaeger 1
- Common Murre 15
- Razorbill 5
- Black Guillemot 10
- Atlantic Puffin 75

The uncertainty about the number of Cory's Shearwater is because Durlan spotted a probable Cory's flying away shortly after we entered the waters at the Prong. It was seen briefly by several of us but aside from appearing large and the right color, we couldn't make out any other identification details. Cory's is a shearwater not readily attracted to chum and it seldom follows boats, unlike the Great and Sooty, so most are observed as chance fly-bys. The bird seen later and photographed may or may not have been the same individual.

The Long-tailed Jaeger is extremely rare in the Bay of Fundy and there are very few documented records. This apparent first summer bird (born last year) was well photographed by several people and although its identity was uncertain at the time, several felt that it was an extremely small and slim jaeger for a Parasitic. Subsequent research certainly points to it being a Long-tailed, but the NB Bird Records

Cory's Shearwater
Photo by D. Ingersoll



Leatherback Turtle
Photo by D. Ingersoll

Committee will eventually have a final say, based on a vote by its members.

The four Manx Shearwaters were all seen well but did not come close to the boat or to the chum. The Lesser Black-backed Gull appeared to be in its third year, showing a largely dark mantle and yellow beak with a black tip.

In the non-bird category, we were surprised and excited to see (Durlan spotted it) an extremely rare Leatherback Turtle swimming in the calm sea somewhere southeast of Grand Manan. A few quick photos were taken and most got glimpses of it just before it dived and didn't resurface. This is the largest of the world's turtles, is highly endangered and is extremely rare here in the Bay of Fundy. Neither Peter Wilcox nor Durlan had ever seen one here before, so we felt very fortunate to have had this brief but memorable encounter. Google "Leatherback Turtle" – it's a very interesting read.

We had noticed thousands of jellyfish in the Grand Manan Channel on the Friday morning crossing to the island, and there may be a correlation between their abundance and the turtle – Leatherbacks feed exclusively on jellyfish and tunicates and ingestion of plastic bags and other plastic articles may be contributing to a steep decline in their numbers in recent decades.

We also had a close encounter with a feeding Basking Shark which permitted us a careful approach before it slipped into the depths and out of sight. This huge eight to 10-meter shark is a filter feeder that cruises at the surface with just its dorsal fin showing when it's feeding in relatively calm conditions.

And we saw some whales. Several Humpback Whales put on a nice show in the area of the Prong, again illustrating the richness of the Bay.

There was also a "herd" of 15-20 Gray Seals of various sizes and ages in that area, all swimming together. I don't recall seeing such an aggregation of seals on previous trips out in the deep water.

We saw at least four butterflies while at sea, likely Red Admirals or ladies (species?), but all remained unidentified.

It was wonderful to have birders from all corners of the province participate in this exploratory voyage. Many were able to meet and spend time with folks they had only written to before, or hadn't seen for far too long. And we had Stew Nut and Nancy White, who drove all the way from Ontario to participate.

Clearly, an early season pelagic birding trip has much potential for rarities, so we intend to schedule at this season again in the future.

All in all, it WAS a great day!

Lesser Black-backed Gull
Photo by P. Mansz

A Birding Incident

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A Yellow-headed Blackbird arrived at feeders in a sub-division in Musquash at suppertime on June 11, 2012.

The homeowner recognized it as a rare species and searched the Internet for someone to whom it could be reported: she was successful. The report filtered down to my "birding buddy", Merv Cormier. He called another interested gentleman and me. This bird would be an NB "Lifer" species: number 296 for him and 291 for me. Merv wanted photos.

Early in the morning of June 12th, Merv and I arrived at the address in Musquash via my vehicle, the other gent via his own. We were expected, met the lady, viewed her photos of a sub-adult Yellow-headed Blackbird, and waited. The bird did not show. Slow and careful cruises of the neighborhood proved unsuccessful. We left.

Little did we know what would happen later.

Shortly after supper I answered the phone. A male voice asked for "David" [my hubby]. I soon noted a puzzled expression on David's face and heard: "I wasn't but my wife might have been", whereupon he handed me the phone. I found myself speaking to an RCMP Officer.

"Yes, I was there this morning. Why? I'm a birder. I, along with 2 friends, were checking out a report of a Yellow-headed Blackbird at feeders last evening."

"Yes, we were expected at the address. We met the lady there, viewed her photos".

I mentioned we had waited around to no avail, and that we did check out the neighbourhood.

The Officer seemed to relax and remarked that the Yellow-headed Blackbird was a rare bird here. Intrigued, I asked how he knew that. Our conversation revealed his mother is interested in birds (who I knew as she helps with our local Christmas Bird Count every year), and that I had worked with his sister when we were Registered Nurses.

I apologized to him for creating work. He responded that this was a situation that he was enjoying as it was so different from the norm. As we spoke, my mind roamed: I'm a good citizen. I have received clearance through a background search to be allowed access to the Saint John Naturalists' Club (SJNC) migratory sea-bird observation site beyond the gates of Point Lepreau Nuclear Power Plant. I was only birding!

Forty five minutes later, I received a phone call from the RCMP Officer. He asked what the last name of the homeowner was. "I'll check on NatureNB" and passed on the information.

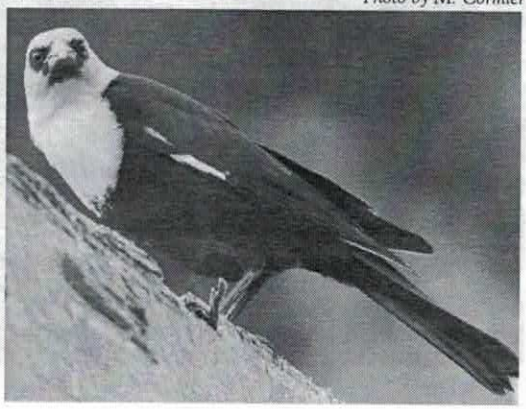
Ninety minutes later, I received a phone call from the "hostess" of the Yellow-headed Blackbird. Yuppers, the Officer had visited her [smile on face]. Hostess and I apologized to each other for the "kerfuffle" created.

She now has phone numbers of local birders, directions to access NatureNB and Birding New Brunswick, and is interested in the SJNC. Better yet, I think we were instant friends!

I will continue to bird although I am contemplating colorful signs stating "BIRDERS" that can be inserted in car windows without obstructing the view.

I will be relating the story of this outing for years to come!!!

Yellow-headed Blackbird
Photo by M. Cormier



Update from the Nature NB Office - Summer 2012

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For more information, visit NatureNB.ca or call 506-459-4209

This summer was a busy one for Nature NB. Thanks to the support from our various funders, Nature NB staff and volunteers participated in a lot of amazing projects and programs.

- With the help of some great volunteers and sponsors, Nature NB created butterfly and bird gardens at the Charlotte Street Arts Center, Cambridge Narrows Community School and Keswick Ridge School. Participating youth learned about the importance of these wildlife spaces and got their hands dirty by planting a variety of vegetation. We look forward to long term learning opportunities as we watch our gardens grow.
- Our Summer Youth Nature Camps have come to a close. Due to limited funding, we reduced the number of camps to 3. Our weeklong overnight camp at the Huntsman Marine Science Center was a huge success with 27 youth participating in a variety of activities including starting an insect collection and assisting Huntsman scientists in a capture and release project. We also partnered with the Boys and Girls Club to share some nature knowledge with their Fredericton summer camps.
- Our Young Naturalists' Clubs have continued to grow with 3 new clubs joining our network. Cambridge Narrow, Lincoln Elementary and Geary Elementary will all have YNC in the upcoming school year. Additionally, thanks to funding from the NB Wildlife Trust Fund, we will be offering our YNCs leaders several professional development workshops to help enrich their current programs.
- Our Species at Risk staff have been working hard all summer, monitoring beaches and keeping track of Piping Plover nesting on beaches in the Acadian Peninsula. Their education campaign has a positive impact of Plover conservation.
- Our Biodiversity Stewardship Project has also been very active this summer. With Environmental Trust Fund support, several volunteer naturalists were able to visit a large number of sites. Updating site conditions is a crucial step in protecting these special areas. For more information, we encourage you to visit our website.
- Did you know that Nature NB is now on Facebook. Like us online and get web-exclusive content and up to date information about upcoming events. Find us at: www.facebook.com/naturenb

Vanessa Roy-McDougall leads Keswick Ridge School students at garden planting. Photo by Nature NB

Des nouvelles du bureau de Nature NB - été 2012

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Pour plus d'information, veuillez visiter NatureNB.ca ou composer le 506-459-4209

Nature NB a eu un été très chargé. Grâce à plusieurs bailleurs de fonds, le personnel de Nature NB ainsi que nos bénévoles ont pu participer à diverses projets et programmes.

Avec l'aide d'excellents bénévoles et parrains, Nature NB a créé des jardins de papillons et d'oiseaux au Centre d'Arts de la rue Charlotte, à l'école Communautaire Cambridge-Narrows et à l'école Keswick Ridge. Nos jeunes participants ont appris l'importance des habitats fauniques de ces endroits, et l'ont amélioré en plantant une variété de végétation. Nous sommes fiers en regardant nos jardins grandir d'avoir créé de nombreuses occasions d'apprentissage, non seulement pour le présent, mais aussi à long terme.

Nos camps d'été Jeunesse Nature sont maintenant terminés. En conséquence des fonds limités, nous avons dû réduire le nombre de camps à trois. Notre camp d'une durée d'une semaine au Centre de Science Marine Huntsman fut une grande réussite avec 27 jeunes participants. Ce camp a inclut plusieurs variétés d'activités tel que la collection d'insectes, ainsi que l'assistance aux scientifiques de Huntsman lors d'un projet de capture puis de remise en liberté de Crabe vert. Nous avons aussi formé un partenariat avec le Club Boys and Girls afin de partager nos connaissances sur la nature dans le cadre de leurs camps d'été à Fredericton.

Nos Clubs de Jeunes Naturalistes (CJN) ont continué à grandir, avec 3 nouveaux clubs s'adjoignant à notre réseau. Cambridg-Narrows, Lincoln Elementary et Geary Elementary auront tous un CJN au cours de la prochaine année scolaire. De plus, grâce à des fonds donnés par le Fonds en fiducie de la faune du N.-B., nous offrirons à nos leader des CJN plusieurs ateliers de développement professionnel afin d'enrichir leurs programmes actuels.

Notre personnel d'Espèces en périls a travaillé fort au courant de l'été à surveiller les plages et à tenir compte des Pluviers siffleur faisant leurs nids sur les plages de la Péninsule acadienne. Leur campagne d'éducation a eu un impact positif sur la conservation des pluviers.

Notre projet de Biodiversité était aussi très actif cet été. Avec du financement du Fonds en fiducie pour l'environnement du Nouveau-Brunswick, plusieurs naturalistes bénévoles ont pu visiter un grand nombre de sites. L'entretien et la mise à jour de ces sites sont critiques afin de protéger ces endroits spéciaux. Pour plus d'information, nous vous encourageons à visiter notre site internet.

Saviez-vous que Nature NB est maintenant abonné à Facebook? Pour du contenu exclusif à l'internet, ainsi que l'informations à jour concernant des événements futurs, vous n'avez qu'à nous retrouver en ligne à : www.facebook.com/naturenb

Des étudiants qui planifient un jardin à l'école de Keswick. Photo par Nature NB

Celebrating Christmas in June

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"Cryptogamic plants are liable to bud-variation, for fronds on the same fern are often seen to display remarkable deviations of structure. Spores, which are of the nature of buds, taken from such abnormal fronds, reproduce, with remarkable fidelity, the same variety, after passing through the sexual stage." Charles Darwin. 1868. "The Variation of Animals and Plants under Domestication. Volume 1.

As Darwin noted, variation in the structure of ferns is common. Can we find ferns that show "deviations of structure" in New Brunswick? The answer is yes, and one example is the Christmas Fern (*Polystichum acrostichoides*) that can be found throughout southern New Brunswick (Hinds 2000). In Mactaquac Provincial Park, Christmas Ferns occur in mixed woods along rocky, often wet, slopes. They appear as arching clusters of dark green, lance-shaped fronds. The fronds are of two types – vegetative and fertile. The fertile fronds are reduced in size towards the apex and carry many spore bearing structures or sporangia on their undersurfaces (Figure 1).

In early May 2012, a check of Christmas Ferns in Mactaquac Provincial Park revealed that immature clusters of sporangia called sori (singular: sorus) covered the underside of fertile pinnae (Figure 2). Overlapping protective plates of tissue called indusia covered the sori in mid-May 2012 (Figure 3).

As the sporangia mature and enlarge, each indusium becomes noticeable as it separates from the underlying sporangia. Specialized cells within the sporangium develop intermittent wall thickenings that have an important role in the subsequent release of mature spores (Figure 4).

By mid-June, clusters of sporangia covered the underside of each fertile pinna (Figure 5).

As Figure 5 indicates, the Christmas Fern generates a glut of potential new ferns since most members of the Wood Fern family often produce 64 spores per sporangium (Flora of North America Editorial Committee 1993). By the end of June, each sporangium has ruptured along a ring of cells called an annulus

Figure 1. A Christmas Fern in Mactaquac Provincial Park during early May 2012. Last year's fronds (white arrows) die by the end of July. The more erect fertile fronds (black arrows) have developed in the current year. The individual "leaflets" of the fern blade known as pinnae (singular: pinna) are smaller at the tips of fertile fronds than sterile fronds and carry the spore bearing structures.
Photo by W. Coleman.

Figure 2. Clusters of developing sporangia called sori and resembling "doughnuts" ripen under thin transparent cell layers known as indusia (singular: indusium) in mid-May 2012. In this example, two rows of large sori (black arrows) and two rows of small sori (white arrows) are present on the underside of each pinna. Numerous filamentous scales known as microscales are also apparent on the underside of the pinnae..
Photo by W. Coleman

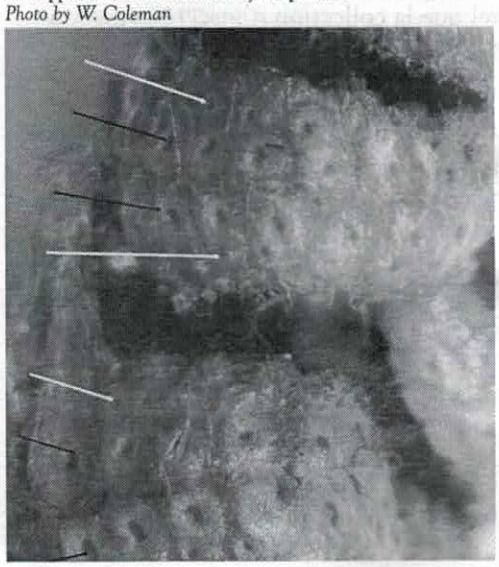


Figure 3. Sori develop on the underside of pinnae in mid-May 2012. The overlapping plates of living transparent tissues (indusia; white arrows) are evident. These integuments or protective tissue plates may shield the developing spores from stresses such as drying or predation by insects or animals.
Photo by W. Coleman

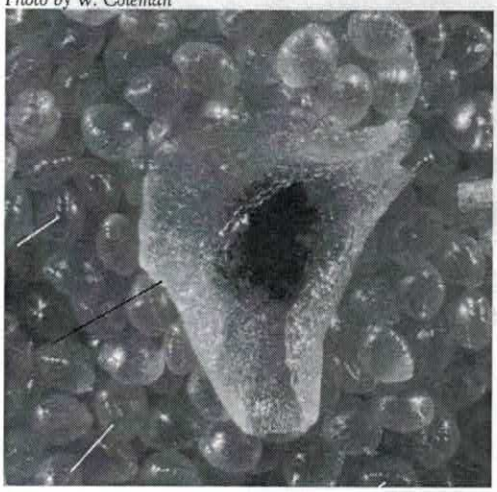
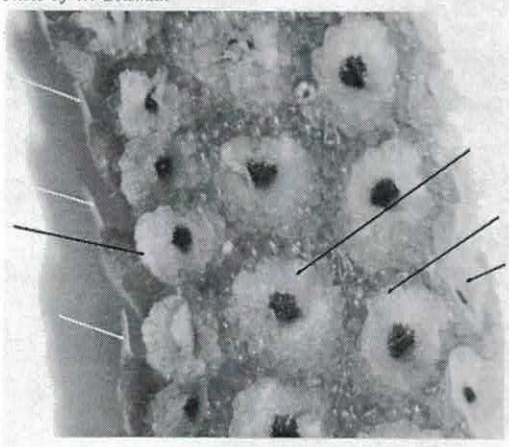


Figure 4. Enlarging sporangia with wall thickenings (white arrows) push the coverings of indusia (black arrows) into separate clumps. At this stage (mid-May 2012), each sporangium is 0.2 mm in diameter. Short stalks hold the sporangia.
Photo by W. Coleman



and spores are released into the air. After this event, only open sporangia containing a few spores remain (Figure 6).

Darwin's Deviations?

A few Christmas Ferns in the Park possessed an altered appearance for such features as pinnae shape or degree of incision on the leaf margins. Sori occasionally developed in isolated round clusters (Figure 7) although the sori were diminished in size and contained fewer sporangia. However, these sporangia appeared functional since they had released small round spores into the environment (Figure 8).

If the changes persist into the next generation, we may be dealing with an adaptation that may, or may not, be beneficial for the fern's survival. Darwin's "bud variation", or genetic crosses with other ferns, may be the cause of these variations. For example, the American scientist, Edgar Wherry, described numerous variations in the form of pinnae (Wherry 1961). Christmas Ferns of Mactaquac Provincial Park show some of these variations.

Fern Hybridization: An Important Step towards a New Species?

When a fern exhibits features common to more than one fern species, botanists become curious. They may be dealing with a hybrid, or "the offspring of sexual reproduction between different fern species" that can occur in "hybrid zones" where both parental ferns come into close contact (Kentner and Mesler 2000). Is this a first critical step towards a new species?

In 1889, John Britton recorded an extremely rare hybrid on Keswick Ridge that was formed from an interspecific cross between Braun's Holly Fern (*Polystichum braunii*) and the Christmas Fern (Hinds

Figure 5. Sporangia are clustered on the underside of pinnae that have bristle-tipped edges (white arrows). The indusia (black arrows) remain attached to the pinna surface in four rows.
Photo by W. Coleman

A Home for Water Bears?

A check of fertile fronds after heavy rains in May revealed unique residents: the trapped water around developing sporangia was home for numerous small animals called Tardigrades or "Water Bears". At less than 0.2 mm long, these "extremophiles" could be seen with a 10X magnifying glass as they scurried among sporangia. Although most Tardigrades feed on plants by piercing cells with their stylets and sucking out the cell contents, their preferred food in the fertile fronds remains to be determined. See http://en.wikipedia.org/wiki/Water_bear

Hybrids were so interesting to Darwin that he devoted an entire chapter to them in his monumental book, "The Origin of Species by Means of Natural Selection" (Darwin 1872).

2000). This natural hybrid was named Potter's Holly Fern (*Polystichum x potteri*). This hybrid was found in an area of New Brunswick where the more northerly-distributed Braun's Holly Fern overlapped with the more southerly-distributed Christmas Fern. However, Potter's Holly Fern was not described fully until 1986 when the New England Botanical Club published a detailed report in their journal, Rhodora (Barrington 1986).

Barrington noted that this hybrid was common in New England. When he examined plants in the field as well as dried herbarium specimens, he concluded Potter's Holly Fern was often overlooked since this hybrid may exhibit intermediary characteristics of the parents. Barrington outlined a number of intermediary features that included size and shape of the indusium, shape of the sporangium, the relative positions of spore clusters or sori, and the presence or absence of well-divided pinnules (that is, divisions of the pinna).

Does this hybrid occur in Mactaquac Provincial Park? A study of the Christmas Fern and Braun's Holly Fern in the Park may unravel this mystery.

Can the Christmas Fern Adapt to Change?

Elegant in June when they are prolific spore producers, Christmas Ferns are also a "welcome sight in winter woods" due to their wintergreen fronds (Cobb et al. 2005). We are fortunate, since wintergreen ferns are a familiar sight in New Brunswick (Coleman 2011).

Although Christmas Ferns are common in southern New Brunswick, their future distribution may alter as climate change occurs. Are they prepared for changes to their environment? Past swings in the global climate have led to major shifts in the distribution and composition of flora and fauna (DiMichele, Pfefferkorn and Gastaldo 2001). Since increased drying events are predicted to occur in numerous global regions in the near future, the Christmas Fern may be threatened. However, because hybridization with other species such as Braun's Holly Fern is possible, Christmas Ferns may have the necessary flexibility to adapt successfully – and rapidly – to future challenges.

Figure 6. By the end of June 2012, most spores have been released from open sporangia such as the one pictured above. The small round spores (black arrows) are only three microns in diameter and are easily distributed by wind.
Photo by W. Coleman

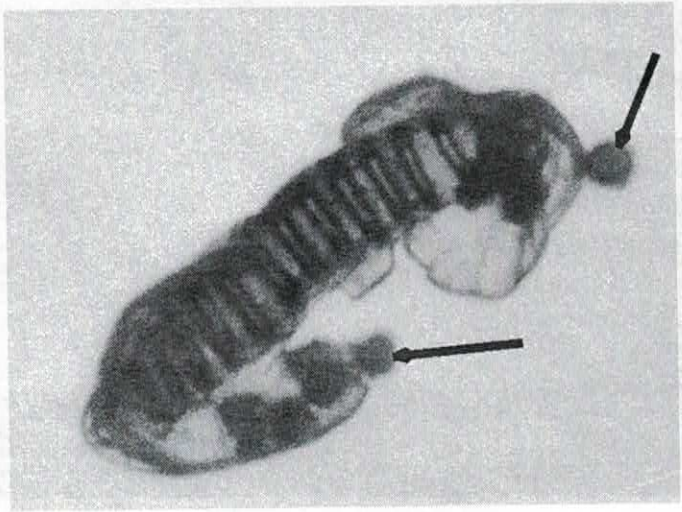
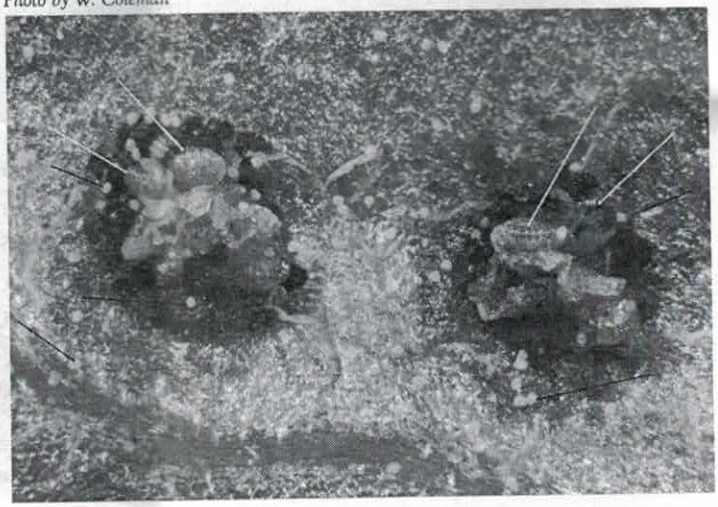


Figure 8. A close-up view of two sori from Figure 7. Spores (black arrows) that appear normal have been released from a few sporangia (white arrows) although some of these sporangia appear malformed.
Photo by W. Coleman



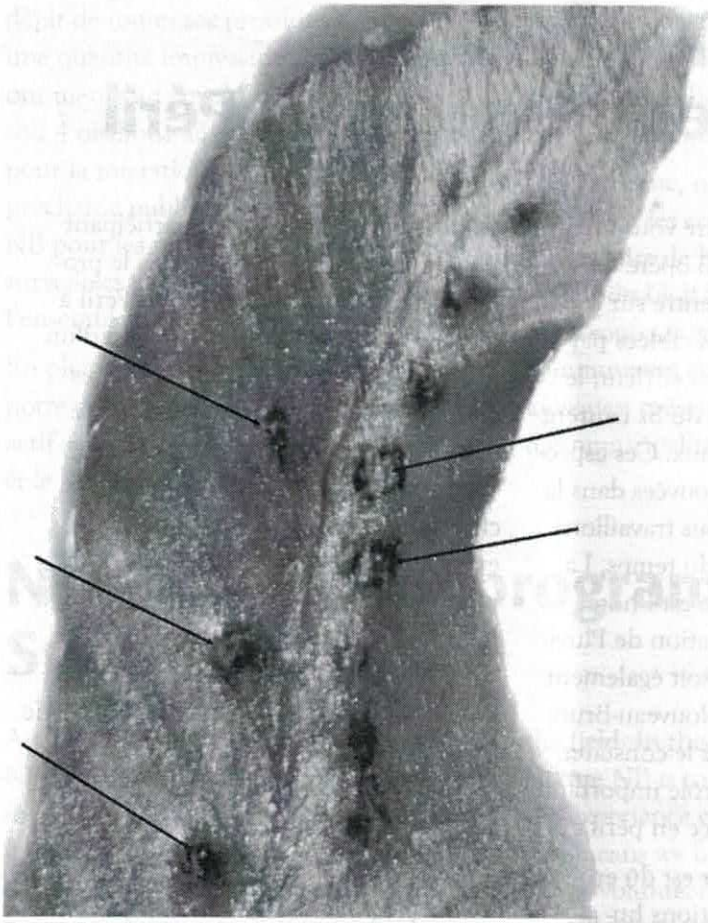


Figure 7. Does this pinna belong to a Christmas Fern hybrid? The tip of the pinna shown above appears dark green and possesses bristly edges but lacks the leathery surface of the Christmas Fern. Small round sori develop in discrete locations near the midrib of the pinna (black arrows), a feature often found with Braun's Holly Fern. In a number of cases, the sori appear small and abnormal. Photo by W. Coleman

"... many branches of biology continue to see species as discrete and fundamental units, rather than as poorly differentiated way-stations in a continuous hierarchy of biodiversity." Mallet (2005).

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Des nouvelles de vos programmes : Espèces en Péril

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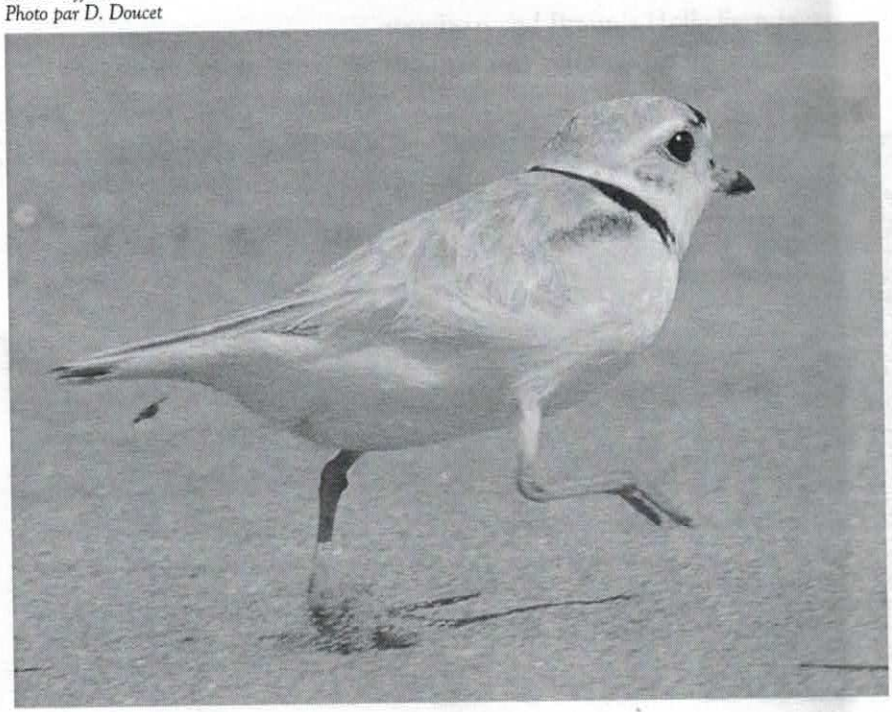
Comme la plupart d'entre vous le savent déjà, Nature NB opère un programme spécialement centré sur les espèces en péril. Les espèces ciblées par le programme sont le Pluvier siffleur, le Martinet ramoneur, l'Aster du St Laurent et certaines colonies d'oiseaux. Ces espèces sont principalement retrouvées dans la Péninsule acadienne où nous travaillons pour la plus grande partie du temps. La zone côtière de la péninsule est l'hôte d'environ 20% de la population de Pluvier siffleur de l'Atlantique, soit également 60% de la population du Nouveau-Brunswick. Comme vous pouvez le constater, notre programme joue un rôle important dans la survit de cette espèce en péril.

Le statut du Pluvier siffleur est dû en grande partie aux perturbations humaines, à la circulation sur les habitats sensibles tels que les plages, à la perte d'habitat et à la prédation. Toutefois, il est possible de les aider en participant à leur rétablissement. Cette été, le programme Nature NB - Espèce en Péril à mis l'emphase sur la mise en place d'un projet afin d'emmener les volontaires sur le terrain. Ainsi, Nature NB tente d'améliorer la qualité de l'expérience offerte aux bénévoles. Ainsi, nous cherchons à accroitre la participation en nombre et en heure des volontaires, nous permettant ainsi d'augmenter la surveillance sur nos couples de Pluvier siffleur. Ceci dit, une meilleure surveillance de la population nous permettra de concentrer nos efforts de protection et de conservation sur les plages avec le plus de besoin. Ceci procure ainsi une meilleure productivité de l'espèce (jeunes à l'envol par couple surveillé) et participe grandement à l'atteinte des objectifs à court et long terme tel qu'indiqué par le plan national de rétablissement du Pluvier Siffleur. Depuis quelques années déjà, les groupes de protection et conservation du Pluvier siffleur mettent l'effort sur la participation des bénévoles à leur efforts. Nature NB, avec l'aide de Parcs Canada, travail à augmenter les efforts commun par la participation des collectivités dans la conservation du Pluvier siffleur.

Pluvier siffleur
Photo par D. Doucet



Pour ce qui est des résultats de la saison de nidification du Pluvier siffleur, nous en sommes qu'aux données préliminaires. En ce qui concerne le compte de fin d'année, nous avions environ 30 paires. Une légère baisse pour notre part, depuis les dernières années. En ce qui concerne la productivité, celle-ci semble bonne pour cette année malgré les quelques tempêtes et marées de début de saison qui ont fait perdre leurs nids à certaines paires. En

dépit de toutes ses pressions négatives, une quantité impressionnante de paire ont menés à l'envol une couvée complète, soit 4 oisillons de plus de 21 jours prêts pour la migration! Ouvrez l'œil dans la prochaine publication du Naturaliste du NB pour les résultats officiels des paires surveillées par Nature NB et ceux de l'ensemble de la population atlantique.

En plus du travail sur le Pluvier siffleur, notre programme fut également très actif avec Étude d'Oiseaux Canada et le Maritime Swiftwatch pour les inventaires des activités du Martinet ramoneur au Nouveau-Brunswick. Le dortoir de Bathurst à enregistré jusqu'à 363 oiseaux ce printemps!

Cet automne, nous continuons notre travail sur les espèces en péril en faisant l'inventaire de la population locale de l'Aster du Golf St Laurent. De plus, nous sommes toujours actifs dans la communauté grâce à de nombreux kiosques, présentations et ateliers auprès des municipalités, organismes et écoles.

News from our programs: Species at Risk

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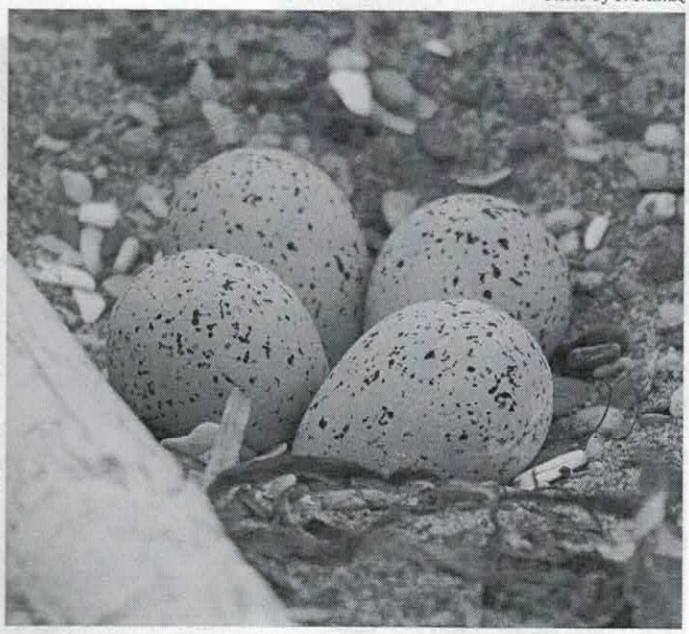
As many of you already know, Nature NB has a program specifically dedicated to species at risk. The species of focus for that program are the Piping Plover, the Chimney Swift, and the Golf of St. Laurence Aster, as well as some bird colonies. Most of these species are well represented in the Acadian peninsula and so that is where much of our work has been centered. The coastal region of the peninsula hosts about 20% of the Atlantic population of Piping Plover, which also equates to about 60% of the New Brunswick population. Consequently, as you can imagine, our program plays a leading role in the survival of this species.

The precarious status of the Piping Plover is generally related to a set of factors that include human disturbance, traffic on sensitive habitats like beaches, loss of habitat and predation. However it is possible to help them by participation in recovery programs. This summer, the emphasis for our Nature NB - Species at Risk program was the implementation of a project to help get volunteers into the field. In this context the objective of Nature NB is to improve the quality of the experience offered to volunteers. By this means we hope to increase the number of volunteers as well as their hourly contribution, which will in turn allow us to step up our surveillance of our Piping Plover nesting couples. This being said, a heightened surveillance program will also make it easier for us to concentrate our conservation and protection efforts on beaches with special needs. The design is to, in this way, promote a higher productivity of the species (young fledged per nesting couple) and so better participate in both the short and long term

Piping Plover nest
Photo by P. Mansz



objectives as described by the national Piping Plover recovery plan. For a number of years now, the many groups working on the protection and conservation of the Piping Plover have been putting the emphasis on the participation of volunteers in their work. Nature NB, in coordination with Parks Canada, is also trying to increase the general effort by promoting the involvement of communities in the conservation of the Piping Plover.

If we now turn to the results of this year's Piping Plover nesting season, the data is still being analyzed, but we have some preliminary numbers to report. As of our end-of-year surveys we had 30 nesting pairs. If confirmed, that would mean a slight decrease compared to the last couple of years, but on the other hand productivity seems to have been good. Even with the sad fact that, as usual, storms and high tides did result in the loss of their nest for several couples at the start of the season, the good news is that an impressive number of pairs were able to fledge a complete clutch of 4 fledglings aged 21 days or over, and are ready for migration! Keep an eye out, in the next NB Naturalist, for the official results for the pairs monitored by Nature NB, as well as the data for the Atlantic population as a whole.

In addition to working hard with Piping Plover our program was also quite active in collaboration with Bird Studies Canada and the Maritime Swiftwatch project, monitoring the presence and activity of Chimney Swifts in New-Brunswick. The Bathurst roost reported up to 363 birds this spring!

This autumn, our work on species at risk will continue as we undertake our survey of the local Golf of St Laurence Aster population. We will also be quite active in the community with kiosks, presentations, and workshops for municipalities, organisms and schools.

Piping plover female and male pair
Photo by P. Mansz

Fringed Loosestrife (*Lysimachia ciliata*) [Lysimaque Ciliée]

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Fringed Loosestrife (*Lysimachia ciliata*) [Lysimaque Ciliée] is a native species that is found in the rich flood plains of rivers and brooks throughout the province (fig 1). It is found from Alaska east across southern Canada to Nova Scotia and south to Oregon and Florida. Fringed Loosestrife (*Primulaceae* family) is unrelated to the notorious, non-native Purple Loosestrife (*Lythrum salicaria*, *Lythraceae* family), an invasive plant that pushes its way into wetlands displacing native plants.

The smooth-margined leaves branch oppositely (fig 2) off a tall (up to 1 m) stem. Perhaps the most distinctive feature of the leaves, and from where the common name is derived, is the leaf stalk (petiole) which is relatively long (1-5 cm) and is fringed on two sides with hairs that are easily visible to the naked eye (fig 3). The five petalled yellow flowers (2cm wide) (fig 4) are also on long thin stalks (pedicels) that originate at the base of leaf stalks. The flowers produce an oil and pollen which is attractive to various bees and moths. The blooms mature into a seed pod containing up to 50 seeds, though the plants tend to spread easily through rhizomes (underground stems).

Interestingly, there is very little written about this plant's uses other than as an ornamental in the garden. The seeds are for sale from numerous sellers and there is a red-leaved variety named "Firecracker."

When you find this plant, you know that you are on damp soil that is richer (more calcium) than many other sites, and that you might be wise to look closely for uncommon or rare neighbouring plants.

Figure 1. Image by F.S. Mathews

Figure 2. Photo by G. Bishop

Figure 3. Photo by G. Bishop

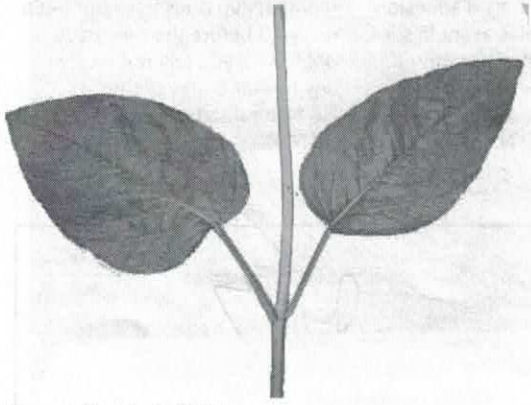

Figure 4. Photo by G. Bishop

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