HALIFAX FIELD NATURALISTS' NEWSLETTER

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Return address: Halifax Field Naturalists c/o Nova Scotia Museum 1747 Summer Street Halifax, NS B3H 3A6





HALIFAX • FIELD • NATURALISTS

Objectives	To encourage a greater appreciation and understanding of Nova Scotia's natural history, both within the membership of HFN and in the public at large. To represent the interests of naturalists by encouraging the conservation of Nova Scotia's natural resources.
Meetings	On the first Thursday of every month at 8:00 pm in the auditorium of the Nova Scotia Museum, 1747 Summer Street, Halifax.
Field Trips	Are held at least once a month, and it is appreciated if those travelling in someone else's car share the cost of the gas.
Membership	Is open to anyone interested in the natural history of Nova Scotia. Memberships are available at any meeting of the society, or by writing to: Membership Chairman, Halifax Field Naturalists, c/o NS Museum. New memberships starting from September 1 will be valid until the end of the following membership year. The regular membership year is from January 1 to December 31. Members receive the HFN Newsletter and notices of all meetings, field trips, and special programmes. The fees are as follows: Individual
Executive 1991	President
Directors	Leslie Butters, Tony Locke, Bob McDonald, Bernice Moores, Mary Primrose, Steven Saunders, Clarence Stevens II, Stephen Ward
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Illustrations

This Issue (No. 66): p. 7 — tide table courtesy Dept. of Transport; tracks adapted from O.J. Murie's A Field Guide to Animal Tracks; all other illustrations from copyright-free sources.

HFN NEWS AND ANNOUNCEMENTS

EDITORIAL

Finally, this Newsletter goes to press! It is short as well as late, because my time has unfortunately been taken up by personal affairs. So this issue comes out close to the deadline for the next one which will appear on time!

Local readers have already received the spring programe and the notice of the Federation of Nova Scotia Naturalists' AGM (May 22-24, Annapolis Royal) in the mail.

Spring is a chancy time in Nova Scotia, with early summer days mixed with late snow and sleet. So there are articles on mammal-watching, making casts from tracks, how some insects avoid being caught by bats on summer nights, and possible niches for space stations.



Ursula Grigg

ENVIRONMENTAL NEWS

The quarry and paving plant proposed for the end of Kearney Lake Road has been refused an operating permit. This quarry, affecting the Black Duck Brook and Blue Mountain area, was opposed at well organised and attended public meetings, which undoubtedly had an effect on the outcome.

There are other important environmental decisions pending. The next will probably be the environmental impact study for the proposed sewage treatment plant for Metro. Its siting on MacNabs Island is being presented as if were decided, but it has not been accepted yet, and was not the first recommendation of the Fournier commission.

MacNabs Island used to be a summer park for Metro residents, who went there to swim, picnic, and enjoy the fairground; no doubt there were naturalists too. The island is not a year-round settlement any more, but there are plans to make it accessible again .s much-needed recreational space. Suggestions include a school nature camp and a Youth Hostel. An industrial complex on the island would affect other uses. Whatever the final decision, it is vital that it is made carefully and with full public input; the results will be with us for a long future. Colin Stewart is HFN's contact with the Friends of MacNabs, the group most concerned with this issue.

HFN is also interested in helping develop a management plan to maintain Point Pleasant Park as forest parkland.

Linking these projects is the Defence Department's plans for the historic fortifications around Halifax. Some of the sites are on MacNabs Island, in Point Pleasant Park and at Fort York. Metro could have a chain of parks providing historical and natural interpretation along with recreational space, if all these decisions are considered together. The Defence Department has been asking for public input; the public meetings are over, but information can be had from the Canadian Parks Service, in Historic Properties, Halifax.

Ursula Grigg

! TIME TO RENEW !

Last call for renewals! If the calendar year noted on your address label is earlier than '92, your subscription has expired. Please send renewals to the Treasurer, Shirley van Nostrand, at the Museum, or hand them to her at a meeting. Thank you!

NEW AND RETURNING MEMBERS

Eric Emery Valerie Freeman-Miller Denise and Barry Jeffrey Janice and Peter Neal Georges Merinfeld Don Warner Gillian and Peter Webster The Weeks family



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SPECIAL ARTICLES

MANTISES VS. BATS: AIR WAR IN THE SUMMER NIGHT

A fierce aerial war is waged at night in the summer skies over Canada. The combatants are not high-tech aircraft using heat-seeking missiles and laser locators, but they are, in their own way, just as sophisticated.

In fact, the praying mantis uses survival tactics worthy of a modern fighter pilot in its bid to escape predatory bats, says Brock Fenton, professor of biology at York University, Downsview, Ontario. "The way the insects throw themselves into steep spiral dives is an example of electronic warfare." Fenton teamed up with David Yager and Michael May of the University of Maryland to study the ways in which the praying mantis outmanoeuvres bats on the attack.

It all started a few years ago, when Yager and May discovered the praying mantis had a single ear, located in the middle of its body. The purpose of the ear was a mystery, since the praying mantis is silent and silent insect usually don't have ears.

However, there are a couple of exceptions, including some species of night-flying moths. Scientists have known for some time that these moths use their specialised ears to pick up the clicks emitted by the sophisticated echolocation (sonar) system used by hunting bats. This helps them make nifty escapes.

The American researchers wondered if the newlydiscovered mantis ear also helped in evasion of predators. To test this theory Yager set off with a carload of praying mantises to a popular bat hang-out - Fenton's York University laboratory.

However, it was hard to determine exactly what was happening when the mantises and bats were in a closed environment, so the next stop was the Pinery Provincial Park near London, Ontario, where the researchers released two groups of mantises into the air space used by hunting bats. One group consisted of mantises that could hear the bats' echolocation frequency; the second group of mantises had been made deaf.

After 200 to 300 runs, the researchers had seen 11 bat attacks. While the deafened mantises quickly fell prey to the bats, the hearing mantises ducked and dived to elude their predators.

Sometimes the bats followed the diving mantises.

Often, though, they backed off, especially if the mantis crash-landed - a technique that was harmless to the insects but kamikaze stuff for bats.

Another mantis strategy was to cruise 10 to 12 centimetres above the ground, an altitude too low for the bats to track them safely.

But don't credit the mantis with too many brains. While its combat tactics are successful about half the time, Fenton believes that's pure luck.

Having only one ear, the mantis knows there's a bat approaching but it doesn't know from which direction - so the insect thrashes around in a wild frenzy, throwing itself "into crazy and totally erratic power dives and spirals," says Fenton.

Sally Johnston, (Canadian Science News, 16 January 1992)



SPACE STATIONS CLOSE TO PLANETARY ORBITS?

An asteroid that orbits with Mars, and whose presence was predicted by a Canadian and a Finnish astronomer before it was discovered, is helping to confirm a controversial astronomical theory. It is also of interest because it could be a suitable site for a radio telescope or even a space station in the future.

The asteroid, known as 1990MB, occurs at a 'Lagrange point' - an area fixed in front of or behind a planet, along its orbit around the sun. The points are named after the French mathematician Joseph-Louis Lagrange, whose calculations 200 years ago predicted that such points would be found.

Asteroid clusters were discovered in the areas

corresponding to Jupiter's Lagrange points in 1906, but the theory has remained controversial. The discovery of an asteroid at one of Mars's Lagrange points helps to confirm his theory.

Lagrange points exist because of planetary movement and the relationship between the gravitational fields of the planet.and the sun. The points maintain a stable position relative to the planet, moving along its orbit in tandem with it. They tend to sweep up anything along their orbital paths, in including the chunks of rock and debris known as asteroids.

Dr. Kim Innanen, Dean of the Faculty of Pure and Applied Science at York University, Toronto, Ontario, predicted the presence of the asteroid through computer simulations before it was actually discovered. He and his research partner, Seppo Mikkola, of Turku University in Finland, had simulated millions of years of planetary movement on the computer. To their surprise, the computer model predicted that Lagrange points might exist near Mars, and even near Earth.

Then, in June 1990, astronomers discovered the real asteroid, following Mars's orbit at an angle of 60 degrees. Mars, the sun and the asteroid create an equilateral triangle. 1990MB is probably one of a group of similar minor planets orbiting with Mars.

Innanen says the asteroids around Jupiter and Mars may have been present since the solar system formed about 4.5 million years ago. "It's possible that they moved into these positions later, but our computer models show that exquisitely delicate choreography would be required to have this happen," he says. He adds that the planets are very persistent and stable in their orbits, another indication that the asteroids have been there for a long time.

The scientists intuitively felt that Lagrange points would not exist near Mars, because other planets pass close to it and would disturb the points. "This was a case where the computer provided insight when our intuition was wrong," Innanen says.

Astronomers will study 1990MB intensively in coming years, examining its colours and variations in spin, and comparing it to the Martian moons. If similar minor planets are found occupying Lagrange points in the earth's orbit they would be interesting places to explore, and would also have many possible uses , says Innanen.

If the Lagrange points are occupied by asteroids, they would be obvious sites on which to build space stations. Even if there was nothing on which to land, a manned or un-manned space vehicle could simply go to one of the sites, match its speed to the earth's, and take up position there.

Lagrange points would also be good places to do research. They would be free of earth's gravitational and magnetic fields. In the earth's magnetic field, radiation from the sun causes charged particle interaction, which is inconvenient if you are trying to measure natural radiation from the sun. Lagrange points also don't move in and out of the earth's shadow, another advantage for research.

The fact that there are two possible Lagrangre points - one ahead of and one behind the earth means that space stations at each could make simultaneous observations. For one thing, this would enable scientists to 'see around the sun', which always blocks one sector of the view from earth. Some very interesting research projects could be set up.

Sites at Lagrange points could serve as way stations where larger outgoing space expeditions could park and assemble, thus giving an expedition a head start. They wouldn't have to go through the process of escaping from the earth's field of gravity.

But all these uses are far in the future, "just dreams dancing around in the heads of interplanetary scientists. It's definitely next century stuff!" says Innanen. His research is funded by the Natural Sciences and Engineering Research Council of Canada.

> Lorraine Brown (Canadian Science News, 12 December 1991)



NATURAL HISTORY

FINDING MAMMALS

On December 15th., during the first "Halifax/Dartmouth Christmas Bird and Mammal Count", a dozen species of wild mammals, or their signs, were seen in the Metro area. In a more rural setting, the West Hants Bird and Mammal Count tallied 17 species on December 27th.

Mammals are much commoner in Nova Scotia than people are generally aware of, because many of them are active at night, or around dawn and dusk. By the time people are up and out, most animals are tucked safely away, leaving only traces of their nocturnal activities. Fortunately, such evidence is not hard to find if you keep your eyes open.

Animals leave behind a variety of markings as they go about their nightly business These include chews, scrapes, digs, droppings, tunnels, runways and tracks. Of these, tracks and droppings are most often encountered and easiest to identify.

Winter is the best time of year to look for mammal signs; snow, especially when fresh, can provide one with numerous tracks for study. Droppings are also much pleasanter to observe in winter, many being in pellet form and virtually odourless, unlike their summer counterparts!

Identifying tracks and signs is not only fun, it can reveal interesting stories about the creatures which made them, and help one to see those mammals. Once you know they're there, you can go back at a different time of day, perhaps early in the morning or towards dusk. Overcast or windy days are also profitable, especially if you walk into the wind.

Of course, knowing what to look for and how to interpret it makes the adventure even more enjoyable. Two field guides which I use when I am out are Peterson's "Animal Tracks" and Stokes's "Animal Tracking and Behaviour". So, take the time to get out there and explore, and let us know what you see and discover about the world of nature.

Clarence Stevens

MORE ABOUT TRACKS

Next to fresh snow, the best media for recording tracks are sand or damp soil. Sea beaches are particularly good, for the tides smooth out traces twice a day. However, you can sweep patches of sand or soil anywhere with a leafy twig or a small brush, and look for fresh tracks later.

There's something breathtaking about standing outside a tent door on a dark night, knowing that an animal is close to you although you haven't heard a sound. Next mornibg there may be fox or raccoon tracks next to yours. It's more frustrating to find that one missed a mink or otter by seconds on Conrad's Island, one set of tracks loping up among the boulders, and the other running into the sea.

You can make a plaster of Paris cast of a track in a firm medium ...A paper or thin cardboard collar held by paper clips is placed round the print. Plaster of Paris, from a hardware store, is mixed with water to the consistency of thick cream and poured carefully into the print so as to fill each detail and overflow into the collar above ground level. The mixture gets quite hot and takes at least ten minutes to set. The cast is easy to damage until it is cold, so if it can be left awhile it will be stronger. The cast will have to be brushed free of debris.

The hot mixture damages tracks in snow, but this can be minimised by dusting the print with a little dry powder and then not pouring until the plaster is beginning to set.

This process makes a negative so to speak, a model of the foot that made the track. To get a replica of the track itself, the cast is thickly coated with shortening or vaseline and another collar is built around it to twice the depth of the first one. Another batch of plaster is poured into the collar to make a second cast. The grease prevents the two from sticking together.

Ursula Grigg



TABLE DES MARÉES

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HALIFAX HNA Z+4

APRIL-AVRIL							MAY-MAI							JUNE-JUIN									
Day	Day Time Ht./ft. Ht./m Jour Heure H./pi			H./m	H. /m Day Time Ht. /ft. Ht. /m Jour Heure H. /pi H						H./m	/m Day Time Ht./ft.Ht./m Jour Heure H.						H. /pi	H./m				
1 WE ME	0050 0655 1300 1910	1.4 5.4 1.4 5.8	.4 1.6 .4 1.8	16 TH JE	0130 0710 1340 1930	.4 6.0 .6 6.6	.1 1.8 .2 2.0	1 FR VE	0100 0700 1300 1905	.9 5.2 1.4 5.9	.3 1.6 .4 1.8	16 SA SA	0155 0740 1410 1945	5.6 1.1 6.2	.1 1.7 .3 1.9	1 MO LU	0205 0800 1410 2000	.3 5.4 1.2 6.1	.1 1.6 .4 1.9	16 TU MA	0255 0850 1505 2055	,4 5.4 1.4 5.7	.1 1.6 .4 1.7
TH JE	0130 0735 1335 1945	1.1 5.5 1.3 5.9	.3 1.7 .4 1.8	17 FR VE	0215 0800 1430 2010	.2 6.1 .7 6.6	.1 1.9 .2 2.0	2 SA SA	0140 0740 1345 1945	.7 5.3 1.3 6.0	.2 1.6 .4 1.8	17 SU DI	0240 0825 1450 2030	.2 5.7 1.2 6.0	.1 1.7 .4 1.8	2 TU MA	0250 0845 1500 2050	.1 5.6 1.2 6.1	.0 1.7 .4 1.9	17 WE ME	0330 0930 1540 2135	.5 5.4 1.6 5.6	.2 1.6 .5 1.7
FF VE	0205 0810 1410 2015	.9 5.5 1.2 6.0	.3 1.7 .4 1.8	18 SA SA	0300 0845 1510 2055	.1 6.0 .9 6.4	.0 1.8 .3 2.0	3 SU DI	0225 0820 1430 2025	.5 5.4 1.3 6.1	.2 1.6 .4 1.9	18 MO LU	0315 0910 1530 2110	.3 5.6 1.4 5.8	.1 1.7 .4 1.8	3 WE ME	0340 0935 1550 2140	.1 5.7 1.3 6.1	.0 1.7 .4 1.9	18 TH JE	0405 1010 1615 2215	.7 5.4 1.7 5.4	.2 1.6 .5 1.6
SA SA	0240 0845 1450 2050	.8 5.5 1.2 6.0	.2 1.7 .4 1.8	19 SU DI	0340 0930 1555 2135	.2 5.9 1.2 6.1	.1 1.8 .4 1.9	4 MO LU	0305 0905 1510 2105	.4 5.5 1.3 6.0	.1 1.7 .4 1.8	19 TU MA	0355 0950 1610 2155	.5 5.5 1.6 5.6	.2 1.7 .5 1.7	4 TH JE	0430 1030 1655 2230	.1 5.8 1.4 6.0	.0 1.8 .4 1.8	19 FR VE	0440 1050 1700 2255	.9 5.4 1.8 5.3	.3 1.6 .5 1.6
su D	0320 0920 1525 2130	.7 5.5 1.3 6.0	.2 1.7 .4 1.8	20 MO LU	0425 1010 1640 2220	.4 5.7 1.5 5.8	.1 1.7 .5 1.8	5 TU MA	0350 0950 1600 2150	.4 5.5 1.5 5.9	.1 1.7 .5 1.8	20 WE ME	0435 1035 1650 2240	.7 5.4 1.8 5.4	.2 1.6 .5 1.6	5 FR VE	0525 1120 1800 2325	.2 5.8 1.5 5.8	.1 1.8 .5 1.8	20 SA SA	0515 1130 1745 2335	1.1 5.3 1.8 5.1	.3 1.6 .5 1.6
MC	5 0400 1000 1610 2210	.8 5.4 1.5 5.9	.2 1.6 .5 1.8	21 TU MA	0505 1055 1725 2300	.7 5.4 1.8 5.5	.2 1.6 .5 1.7	6 WE ME	0440 1035 1655 2240	.5 5.5 1.7 5.8	.2 1.7 .5 1.8	21 TH JE	0515 1115 1740 2320	.9 5.3 2.0 5.2	.3 1.6 .6 1.6	6 SA SA	0625 1210 1910	.3 5.8 1.5	.1 1.8 .5	21 SU DI	0600 1205 1835	1.3 5.3 1.8	.4 1.6 .5
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S TH JE	0655 1225 1920	1.1 5.1 2.1	.3 1.6 .6	24 FR VE	0035 0735 1320 2010	4.9 1.4 4.8 2.2	1.5 .4 1.5 .7	9 SA SA	0025 0745 1325 2025	5.4 .7 5.4 1.8	1.6 .2 1.6 .5	24 SU DI	0055 0730 1330 2015	4.8 1.5 5.0 2.0	1.5 .5 1.5 .6	9 TU MA	0225 0915 1505 2205	5.0 1.0 5.7 1.1	1.5 .3 1.7 .3	24 WE ME	0155 0810 1415 2105	4.4 1.8 5.1 1.6	1.3 .5 1.6 .5
10 FF VE	0 0035 0800 1330 2035	5.3 1.1 5.0 2.1	1.6 .3 1.5 .6	25 SA SA	0130 0825 1420 2100	4.7 1.6 4.8 2.2	1.4 .5 1.5 .7	10 SU DI	0130 0840 1435 2125	5.2 .8 5.4 1.6	1.6 .2 1.6 .5	25 MO LU	0150 0815 1425 2100	4.6 1.6 5.0 1.9	1.4 .5 1.5 .6	10 WE ME	0335 1015 1610 2305	4.9 1.2 5.7 .9	1.5 .4 1.7 .3	25 TH JE	0255 0900 1515 2205	4.4 1.8 5.2 1.4	1.3 .5 1.6 .4
11 SA SA	0140 0900 1450 2140	5.2 1.0 5.0 1.9	1.6 .3 1.5 .6	26 SU DI	0235 0910 1525 2150	4.6 1.7 4.8 2.0	1.4 .5 1.5 .6	11 MO LU	0245 0935 1540 2225	5.0 .9 5.6 1.4	1.5 .3 1.7 .4	26 TU MA	0250 0900 1520 2150	4.5 1.8 5.1 1.7	1.4 .5 1.6 .5	11 TH JE	0445 1115 1700	5.0 1.3 5.7	1.5 .4 1.7	26 FR VE	0400 1000 1610 2300	4.4 1.8 5.3 1.2	1.3 .5 1.6 .4
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13 MC LU	0420 1100 1715 2340	5.3 .8 5.8 1.3	1.6 .2 1.8 .4	28 TU MA	0445 1040 1710 2330	4.7 1.7 5.3 1.6	1.4 .5 1.6 .5	13 WE ME	0505 1135 1735	5.2 1.0 6.1	1.6 .3 1.9	28 TH JE	0450 1040 1700 2340	4.6 1.8 5.4 1.2	1.4 .5 1.6 .4	13 SA SA	0050 0635 1305 1840	.5 5.2 1.3 5.8	.2 1.6 .4 1.8	28 SU DI	0000 0555 1205 1800	.8 4.9 1.5 5.8	.2 1.5 .5 1.8
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SNOW-PRINTS

...I climbed with my niece to the bare top of the hills. Wonderful is to see the footmarks on the snow beautiful ropes of rabbit prints, trailing away over the brows; heavy hare marks; a fox so sharp and dainty, going over the wall; birds with two feet that hop; very splendid straight advance of a pheasant; woodpigeons that are clumsy and move in flocks; splendid little leaping marks of weasels, coming along like a necklace chain of berries; odd little filigree of the field mice; the trail of a mole - it is astounding what a world of wild creatures one feels around one, on the hills in the snow.

> D.H.Lawrence, in a letter to fellow author Katherine Mansfield

> > ! NEXT DEADLINE ! May 22 for June Issue Contributions to the Editor, HFN

c/o NS Museum or phone 455-8160