

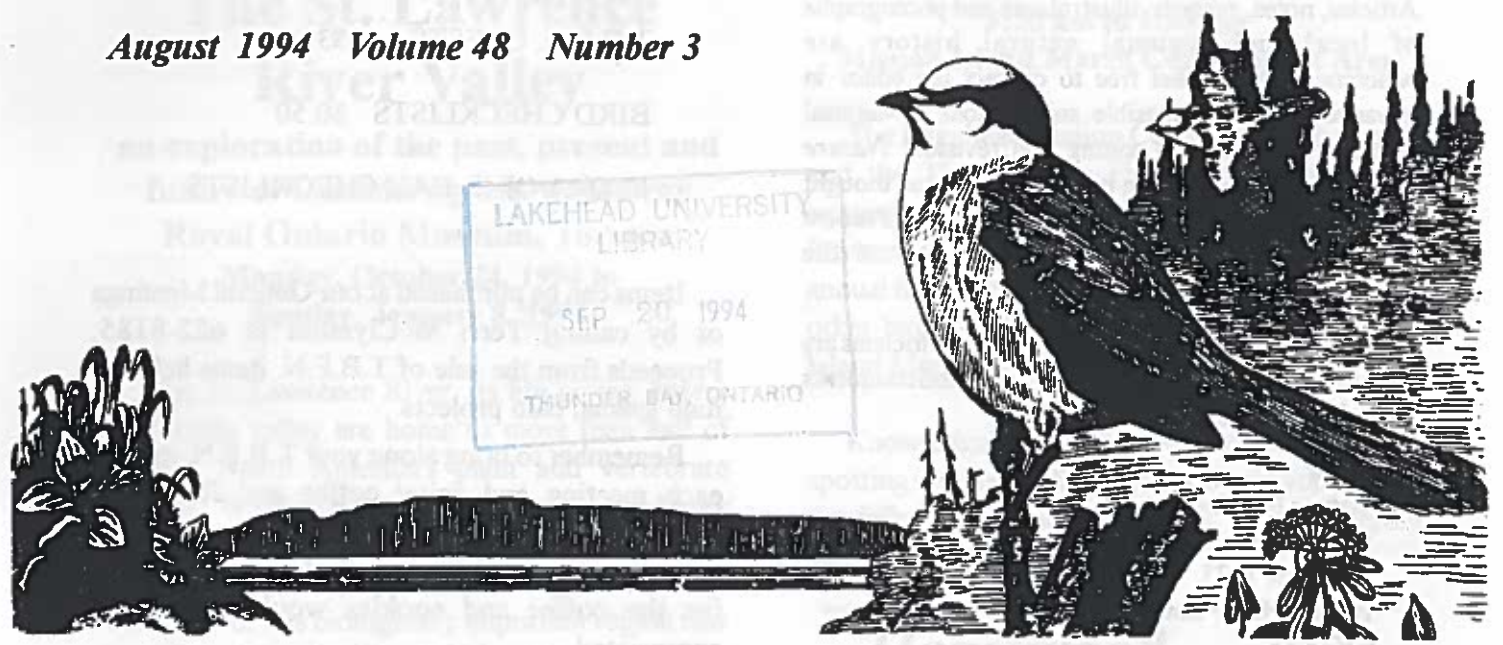
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ISSN 0836-4702



Nature Northwest

August 1994 Volume 48 Number 3



THUNDER BAY FIELD NATURALISTS

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Editorial Policy

Nature Northwest is a quarterly publication of the Thunder Bay Field Naturalists. Each volume of *Nature Northwest* (ISSN 0836-4702) consists of four issues published in February, May, August and November. A subscription to *Nature Northwest* is a benefit of membership.

Articles, notes, records, illustrations and photographs of local and regional natural history are welcome. Please feel free to contact the editor in advance regarding possible submissions. Material accepted is subject to editing and revision. *Nature Northwest* is intended to be informative and thought provoking. Therefore, views expressed in *Nature Northwest* are not necessarily those of the Thunder Bay Field Naturalists or the editor.

Your ideas, suggestions and constructive criticisms are also welcome. All written submissions and comments should be addressed to:

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Deadline for submission of material is the first day of the month in which the magazine is produced.

February issue February 1
May issue May 1
August issue August 1
November issue November 1

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From Our Sales Corner

The following items are presently for sale from the Thunder Bay Field Naturalists:

T.B.F.N. MUGS \$5.00

T.B.F.N. CRESTS \$3.00

BIRD CHECKLISTS \$0.50

FLORA OF T. BAY CHECKLISTS

Items can be purchased at our General Meetings or by calling Terri McClymont at 622-8185. Proceeds from the sale of T.B.F.N. items help to fund special club projects.

Remember to bring along your T.B.F.N. mug to each meeting and enjoy coffee and fellowship following the meeting. We also ask that you please contribute a loonie to the hall rental, and donations for the coffee and cookies would be greatly appreciated.

~ Quarterly Quote ~

What sets a canoeing expedition apart is that it purifies you more rapidly and inescapably than any other. Travel 1,000 miles by train and you are a brute; pedal 500 miles and you remain basically a bourgeois; paddle 100 miles in a canoe and you are already a child of nature.

- Pierre Elliott Trudeau

Bulletin Board



Wanted Alive! The St. Lawrence River Valley

an exploration of the past, present and future of Canada's great waterway
Royal Ontario Museum, Toronto
Monday, October 24, 1994 to
Sunday, January 8, 1995

The St. Lawrence River, its life-giving waters and fertile valley are home to more than half of eastern North America's plant and vertebrate species. **Wanted Alive! The St. Lawrence River Valley**, a new exhibit at Toronto's Royal Ontario Museum (ROM), presents an environmental overview of this biologically important region that stretches from the Great Lakes to the Atlantic Ocean.

Using maps, photographs, fossil and animal specimens, minerals and life-size models, the exhibit explains the history of the area and shows the negative activities that humans have wrought on its delicate ecosystem. The effects of people on the mammals, birds, fish and invertebrates of the region are described by focusing on individual case studies of the Beluga Whale, Peregrine Falcon, Snow Goose, Lake Sturgeon and Zebra Mussel. **Wanted Alive!** also outlines the efforts of researchers, conservation groups and governmental departments to protect the region and the life it supports.

This travelling display is organized by the Redpath Museum, McGill University. For more information, call the ROM at (416) 586-5551.

Waterfowl Viewing Day

Sunday, September 25
8:30 am to 1:00 pm

Mission Island Marsh Conservation Area

The Lakehead Region Conservation Authority and the Thunder Bay Field Naturalists will be hosting their fall Waterfowl Viewing Day on September 25. The public is invited to view the annual fall migration spectacle of ducks, geese and other birds as they make a brief stop at Mission Island Marsh.

Knowledgeable birders will be on-hand with spotting scopes and field guides to help you identify the different species of waterfowl. Raptors, herons and rarities possible.

Hazelwood Lake Centre

Hazelwood Lake Conservation Area

Everyone is invited to visit the new Hazelwood Lake Centre, operated by the Lakehead Region Conservation Authority.

This year-round, multi-purpose building features a classroom for field trips, meetings rooms, a Great Hall and display room for area visitors and lots of rooms for special events and workshops. There are also cathedral ceilings, picture windows and a deck overlooking the lake.

Drop by this fall and take a look around the picturesque, lake-side setting.

Mutualism Between the Northern Pitcher Plant and Three Dipteran Species

by Sylvie Mauser

In the last *Nature Northwest* (May '94, Vol. 48, No. 2), I addressed the complete carnivorous fauna of the Thunder Bay District dealing with its species, distribution, trapping mechanism and prey attraction. In this article, I will address only one species, the pitcher plant *Sarracenia purpurea*, and its unique and intricate relationship with 3 Dipteran species.

Introduction

In the past, it has been assumed that the benefit of insectivory is the insect-derived nitrogen which the plants probably require since their nutrient poor habitats can not provide it. Recent studies, however, show that insectivory is not simply a dose of nitrogen, but a complex correlation of prey decomposition and mutualism.

Not only does the pitcher plant attract insects as a food source but also offers habitat for three species of flies to rear their offspring (Bradshaw and Creelman, 1984). The best known is probably the "pitcher plant mosquito" *Wyeomyia smithii* (Family Culicidae) which lays its eggs into the pitcher for development. The other two are the midge *Metriochemus knabi* (Family Chironomidae) and the flesh-fly *Blaesoxipha fletcheri* (Family Sarcophagidae).

Life Histories of Mutualistic Species

The mosquito *Wyeomyia smithii* lays its eggs in the newest leaves of the pitcher plant, usually before any rain water accumulates (*S. purpurea* produces a chemical that attracts females of *W. smithii* to lay their eggs into the pitcher) (Fish and Hall, 1978). Other authors, Barr and Barr (1969, cited in Fish and Hall, 1978), stated that the female *W. smithii* lays her eggs directly on the water surface and that direct oviposition in the dry pitcher

would cause desiccation of the eggs. Here, it may be argued that enough moisture is provided by condensation to keep the eggs viable until the next rainfall.

To lay the eggs in the new leaves only, ensures that there is only one generation of mosquito larvae, or at most two overlapping instars (developmental larval stages) per pitcher (Fish and Hall, 1978). The free-swimming mosquito larvae filter-feed on suspended particles, bacteria and protozoa in the mid-zone of the pitcher but surface periodically for gas-exchange through their posterior siphons (Fish and Hall, 1978).

The larvae of *B. fletcheri* (the flesh-fly) have unique structures that protect their spiracles (breathing pores) and provide buoyancy which allows the larvae to float on the water surface (Johansen (1935), cited in Fish and Hall, 1978). Here, as in the Culicidae, the female prefers the newest leaves of *S. purpurea* for oviposition (Fish and Hall, 1978). This allows for the larvae to hatch as the pitcher reaches its peak-capture period (when the leaf is between 10 and 20 days old) in order to utilize the freshly killed prey floating on the water surface (Fish and Hall, 1978).

Unlike the mosquito and flesh-fly larvae, the midge larvae of *M. knabi* can be found in leaves of all ages, suggesting that oviposition is not restricted to the young leaves only (Fish and Hall, 1978). This may be explained by *M. knabi*'s feeding habit and aquatic adaptations (Fish and Hall, 1978). The larvae obtains oxygen directly from the water and therefore can stay submerged during its larval development (Fish and Hall, 1978). It spends this time on the bottom of the pitcher among the settled, decaying insect parts upon which it feeds.

Interrelationships

The interrelationship of the three Dipteran species shows a complex feeding strata (spacial zonation) and timing (temporal zonation); i.e. *M. knabi* thrives in all leaves, regardless of leaf-age, feeding on decaying insects at the bottom, while *B. fletcheri* depends on the freshly killed insects floating on the water surface, which in turn must be synchronized with the pitcher's peak capture rate.

Although the females of both *W. smithii* and *B. fletcheri* lay their eggs in new leaves of *S. purpurea*, the development of the culicid larvae is slightly slower than that of the sarcophagid one (Fish and Hall, 1978). This time lag also corresponds to a time lag between maximum capture rates and maximum number of mosquito larvae; i.e. the mosquito larvae emerge several days after the peak capture-rate of *S. purpurea* (Fish and Hall, 1978). The delay allows for the flesh-fly larvae to start mechanical break-down by boring through the freshly killed insects and thus allowing bacteria (and possibly some enzymes) to start decomposition.

When this takes place, particles small enough for the filter-feeding mosquito are generated; thus ensuring food-supply for the mid-zone. Once this has happened, the midge larvae *M. knabi* can feed on the decaying matter at the bottom of the pitcher. Even when the larvae of the other two dipteran hatch and the peak capture period is passed, *M. knabi* has food and is not temporally dependent on leaf-age or the life-history events of the larvae feeding in the middle and on the water surface.

Benefits of Mutualism and Carnivory

The general and widely accepted assumption was that the principal benefit of carnivory in plants was prey-derived nitrogen which would allow these plants to colonize nutrient-poor habitats. However, Bradshaw and Creelman (1984) investigated the mutualism between *S. purpurea* and its inquilines (organisms inhabiting the pitcher) and proposed

that the pitcher plant profits, in addition to obtaining nitrogen, by gaining photosynthetic efficiency.

Since plant-derived digestive enzymes could not be isolated as of yet, Bradshaw and Creelman (1984) investigated the decomposition, or the acceleration of decomposition, of prey by *W. smithii*, and *M. knabi*. They further investigated the uptake of nitrogen and carbon dioxide and the release of oxygen by the leaves.

Bacteria, protozoa and autolytic enzymes (of the prey itself) produced a steady rate of nitrogen in the absence of the Dipteran larvae; however, when *W. smithii* and *M. knabi* were added, nitrogen production rose (Bradshaw and Creelman, 1984). The results showed that nitrogen production was higher in the presence of either one, or both, Dipteran larvae.

The same study further showed that the leaves of the pitcher plant, especially under light conditions, take-up carbon dioxide and release oxygen. At higher temperature, the metabolic rate of the inquilines increases (the midday and afternoon summer temperature in a pitcher plant leaf ranges from 25-40°C), thus releasing more carbon dioxide through respiration. In a pitcher without inquilines, carbon dioxide is reduced, limiting the rate of photosynthesis (Bradshaw and Creelman, 1984). The peak of carbon dioxide production (inquiline respiration) and oxygen production (product of photosynthesis) coincides; thus, benefiting *S. purpurea* as well as the inquilines.

Based on these findings, Bradshaw and Creelman (1984) suggested that increased efficiency of photosynthesis is a major benefit for the pitcher plant.

The above processes take place under aerobic conditions, but if the plant receives too much prey, the conditions become anaerobic (Bradshaw and Creelman, 1984). In anaerobic conditions, the oxygen levels become too low to support the Dipteran larvae and possible other inquilines

depending on oxygen. At this point, the water inside the pitcher becomes fetid and discoloured. This discolouration is caused by *Rhodospseudomonas palustris* (a photosynthetic bacterium common in bogs and water-logged soils) and an unidentified orange-coloured bacterium (Bradshaw and Creelman, 1984). The bacteria, able to live in anaerobic conditions, will continue to contribute to the break-down of the prey when the usual aerobic conditions are not present (Bradshaw and Creelman, 1984).

Summary

In summary, a pitcher plant's inhabitants do not only aid, or possibly be solely responsible for, digestion of the plant's prey, but also greatly enhance the plant's rate of photosynthesis in conditions when it can not easily obtain the needed carbon dioxide.

One may assume that such an intricate relationship portrays nature's harmonious and elegant way of generating life. This would be an ideal sought-after by many naturalists. However, I could not find any documentation that showed that the hatched flies actually ever leave the pitchers. Although all 3 species of Dipterans are very good

fliers (i.e. they can execute difficult manoeuvres and fly straight up), the morphology and colour pattern of the pitcher may make an escape impossible! The pitcher has downward-pointing hairs at its upper and lower third, preventing any insect from climbing-out. Furthermore, the pitcher's hood partially covers the aperture and, in conjunction with the colour pattern, may make it impossible for the hatched Dipterans to recognize where the actual opening is.

If this is indeed the case, the much-marvelled mutualism between Dipterans and pitchers is actually a one-sided relationship that may be termed "pseudoparasitism" (pseudo because the pitcher is not exclusively dependent on the flies; hence, bacteria may break-down the prey and the pitcher can also obtain nutrients from the substrate).

Presently, I am doing some work on pitcher plants and Dipterans at Intercity Fen (Williams Bog). I hope to not only to answer this million dollar question of whether the Dipterans actually escape, but also to find-out more about the pitchers' ecology in conjunction with the three fly species in the North. (Note: all studies dealing with mutualism and prey digestion were conducted in Southern Ontario or in the United States).

~ Quarterly Quotes ~

Hills are always more beautiful than stone buildings, you know. Living in a city is an artificial existence. Lots of people hardly ever feel real soil under their feet, see plants grow except in flower pots, or get far enough beyond the street light to catch the excitement of a night sky studded with stars. When people live far from the scenes of the Great Spirit's making, it's easy for them to forget his laws.

- Tatanga Mani,
Stoney Indian

We simply need that wild country available to us, even if we never do more than drive to its edge and look in. For it can be a means of reassuring ourselves of our sanity as creatures, a part of the geography of hope.

- Wallace Stegner

SPECIALLY FOR KIDS ☺

RAPTORS SOAR!



Raptors (or birds of prey), migrate through our region every year in the spring and fall. They will follow the edge of large lakes, such as Lake Superior, rather than make the dangerous trip straight across the lake.

That is why you can see them at places like Mission Island Marsh in the city, or soaring along the cliff faces of the Sleeping Giant. You might even see them from your backyard if you look up into the sky.

Raptors come in all different sizes and in many shapes, too. They can range in size from the little Saw-whet Owl (only 20 cm tall) to the humongous Turkey Vulture (with a wingspan of 2 metres!).

ACTIVITY

Make a mobile at home, and you can watch raptors soar all year long!

- Draw or trace the outline (silhouette) of a raptor onto a piece of paper. Construction paper or bristol board works best.
- You can use the silhouettes on this page or in a bird book. Make them small or life-size. (You will need a really big piece of paper to make a life-size Bald Eagle!)
- Cut out the silhouette. Punch out a small hole near the middle of the paper and tie a piece of thread or string through the hole.
- Make more silhouettes and then attach them all to a stick or coat hanger to finish your Raptor Mobile.

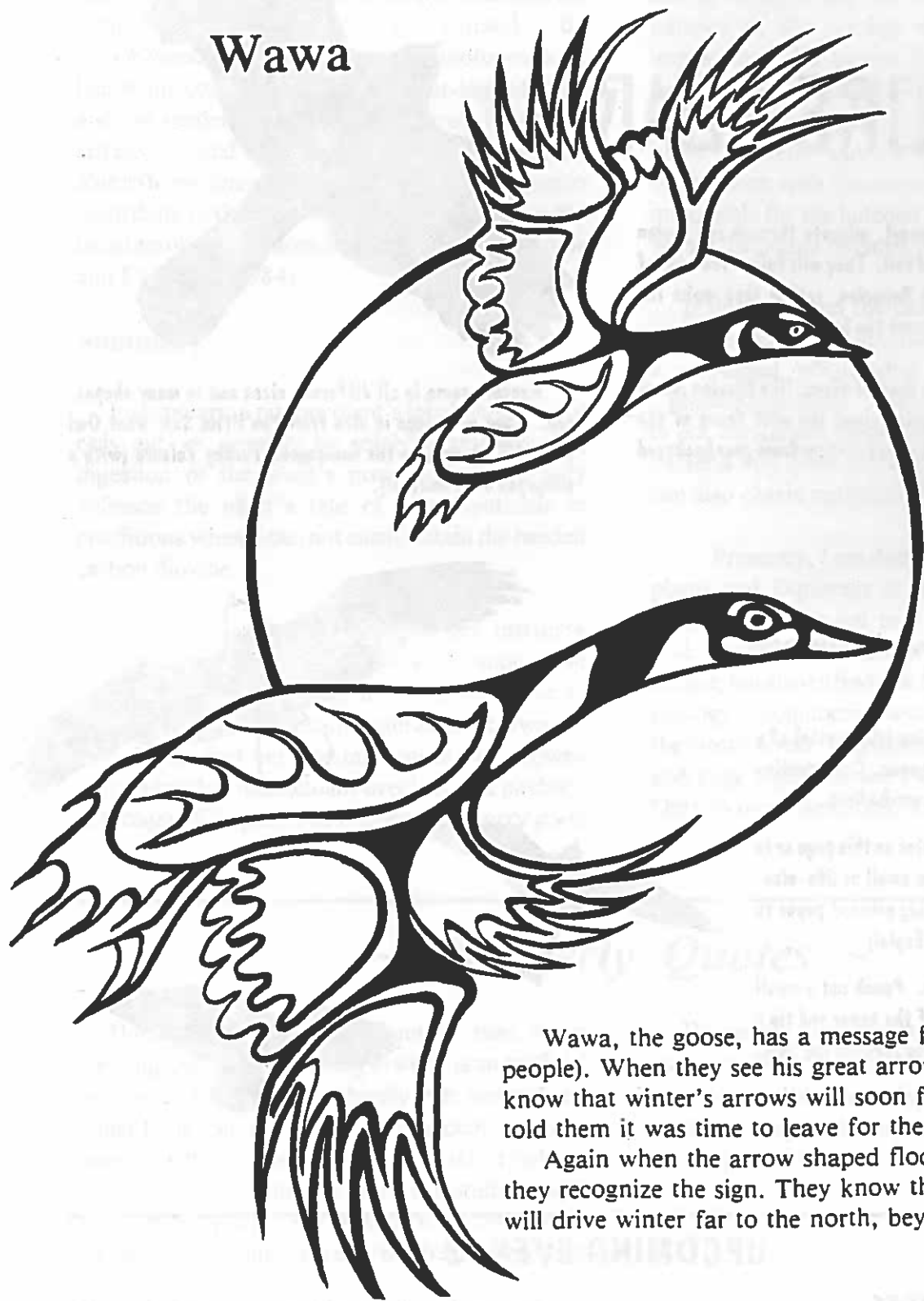


UPCOMING EVENTS

Leafy Treasures
Sunday, October 2, 1994
1:00 to 4:00 pm
Centennial Park

Enjoy a pleasant leaf-collecting walk at CENTENNIAL PARK. We will then go inside the Chalet to make leaf prints on fabric! Meet at the CHALET.

Wawa



Wawa, the goose, has a message for the Anishnabe (Ojibway people). When they see his great arrowheads flying south they know that winter's arrows will soon follow. In the old days this told them it was time to leave for the family's hunting grounds.

Again when the arrow shaped flocks fly north in the spring they recognize the sign. They know that the arrows of the sun will drive winter far to the north, beyond the land of the Crees.

THUNDER BAY DISTRICT BIRD RECORDS

- SPRING & SUMMER 1994 -

The listed records include first (F) and last (L) reported migration dates, and notes on plumage (ad=adult, imm=immature, m=male, f=female, pr=pair, s-m=singing male on territory, juv=juvenile, migr=migrant, N=nest). Species in capitals are considered rare in Thunder Bay District. Send bird records at the end of each month to Dr. N. G. Escott, 133 S. Hill St., Thunder Bay P7B 3T9.

OBSERVERS: Jack Adderley, Gord Allen, Larry Anderson, E.R.(Ted) Armstrong, Jean Hall Armstrong, Sue Bryan, Mike Bryan, Anne & Dave Christianson, William S. Climie, Peter Dennis, Nicholas G. Escott, Geoffrey Gooding, Allan G. Harris, Margaret Hartley, K. Joan Hebden, Matt Holder, Sharon Illingworth, Jennifer Line, Irene Macdonald, Sylvie Mauser, Brian Moore, Don Munro, Linda Sisco, Doug Tate, Tom Tough, George A. Williams, John Woronkewich. TBFN = club field trip; TCBO = Thunder Cape Bird Observatory staff, m.obs. = many observers.

COMMON NAME	M	DATE	NO.	PLUMAGE	LOCATION	OBSERVERS
PACIFIC LOON		05 03	2		Thunder Cape	TCBO
Common Loon		05 15	365	migr	Terry Fox Lookout	NGE
American White Pelican		05 30	11		Hurkett Cove	GG
GREAT EGRET		06 01	1		Hwy 61 @ Moose Hill	Linda Sisco
Tundra Swan	L	05 12	2		Mission Island Marsh	KJH,IM
Snow Goose		05 14	2	1 blue	Dorion Bible Camp	TBFN
Canada Goose		05 19	1	NSE	mouth of Nipigon River	MB,SB
Northern Shoveler		06 25	2	pr	Mission Island Marsh	MB,SB
Canvasback		06 01	1		Current River airbase	JHA
Surf Scoter		05 21	1	m	Bare Point	NGE,m.obs.
White-winged Scoter		05 20	250+	migr N	mouth of Wolf River	AGH,m.obs.
Cooper's Hawk		07 02,10	2	pr	Hwy 590 @ Boreal Road	GAW
Red-tailed Hawk		07 24	1	N1juv	Ouimet	NGE
Merlin		08 01	3	family	Leland @ Walsh	GA
Sharp-tailed Grouse		05 29	12	lek	Black Bay Peninsula	NGE,SM
Virginia Rail		06 18	1	s-m	west end of Whitefish L	AGH
Sandhill Crane		06 07	7	flock	Trewartha Twp. fen	AGH,SM
Lesser Golden-Plover		05 21	9	flock	Paipoonge 10th Conc.	NGE,m.obs.
WILLET		05 11	1		Chapples', Slate River	GAW,TBFN
Upland Sandpiper		05 17	1		Venasky's, Slate River	IM
Hudsonian Godwit		05 21-23	1	m	Mission Island Marsh	KJH,m.obs.
Ruddy Turnstone		05 14	1		Dorion Bible Camp	TBFN
Stilt Sandpiper		05 21	1		Hacquoil's gravel pit	NGE,m.obs.
Wilson's Phalarope	F	05 15	1	f	Chippewa	MB,SB
RED-NECKED PHALAROPE		08 06-07	1		Correctional ponds	AGH,JW
GREAT BLACK-BACKED GULL		05 24	1		Silver Islet, ThunderCape	PD,TCBO

COMMON NAME	M	DATE	NO.	PLUMAGE	LOCATION	OBSERVERS
Caspian Tern		05 20			Hurkett	GAW
Common Tern		06 21-23	300+	145 N	islands in L.St.Joseph	TBFN
Mourning Dove		05 05	1		McKenzie trailer park	LA
Long-eared Owl		07 20	1	specimen	RR tracks @ T.B.Airport	Tom Tough
Boreal Owl		06 18-19	N2Y		Savant Lake	GAW, m.obs.
Common Nighthawk		05 27	2+		Kakabeka Falls	BM
Whip-poor-will		05 22	on	calling	Memory Road	SI
Chimney Swift		07 05	2		above St.Jos.Gen.Hosp.	NGE
RUFIOUS HUMMINGBIRD		07 21-30	1	m	Lappe feeder	A&DC,m.obs.
Red-headed Woodpecker		05 29	2	1m	Sturgeon Bay	JHA,ERA
Three-toed Woodpecker		05 29	2		Black Bay Peninsula fen	NGE,SM
Eastern Phoebe		05 06-07	2	pr	Dorion Bible Camp	ERA
SAY'S PHOEBE		05 12	1		Thunder Cape	MHo,m.obs.
Great Crested Flycatcher		07 26	2	s-m	Big Thunder	AGH
Boreal Chickadee		05 14	8		MacKenzie trailer park	LA
House Wren		06 26	1	s-m	Heron Bay Mission	NGE,WSC
Sedge Wren		07 06	1		Chippewa	GAW
Marsh Wren		07 12	1		Kakabeka	GAW
Eastern Bluebird		06	2	pr,N	Marathon	Doug Tate
Brown Thrasher		07 15	4	2ad,2juv	Rosewood Crescent	GA
American Pipit		05 07	3		Chapple's golf course	SB,MB
Yellow Warbler		06 22	7	s-m	L.St.Joseph islets	TBFN
Black-thr. Blue Warbler		06 19	1	s-m	Whitefish Lake	AGH
Connecticut Warbler		06 26	6	s-m	Savanne Twp	AGH,J.Line
HOODED WARBLER		07 16	1	m	McKenzie Station	Jack Adderly
Scarlet Tanager		05 15	1	m	Summit Avenue	SB
NORTHERN CARDINAL		06 26	1	m calling	Marathon	NGE,WSC
Vesper Sparrow		06 28	1		Stanley	GAW
Savannah Sparrow		06 03	1	N4E	NWP Marsh	MB,SB
Fox Sparrow	L	05 10	1		Vickers Heights feeder	Don Munro
Harris' Sparrow		05 15	3		Mission Island Marsh	IM
Bobolink		05 25	20+		Slate River Valley	IM
EASTERN MEADOWLARK		05 08	1		Thunder Cape (banded)	TCBO
Yellow-headed Blackbird		06 08	3	2m,1f	Chippewa	JHA,ERA
Brewer's Blackbird		06 17	4	3m,1f	Hwy 11/17@ Ouimet C.Rd.	NGE
ORCHARD ORIOLE		05 20	1	m	Memory Road	SI
Northern Oriole		06 02	2		Vickers Heights	M.Hartley
Pine Grosbeak		05 06-07	1	s-m	Dorion Bible Camp	ERA
White-winged Crossbill	F	06 21	10+	2 flocks	Brodribb Bay,L.St.Joseph	TBFN
Common Redpoll		07 01	1	calling	Sleeping Giant Prov.Park	JHA,ERA

BIRDS

by Nick Escott

RUFIOUS HUMMINGBIRD AT LAPPE

Anne and Dave Christianson noticed a different hummingbird at their home on Dog Lake Road in Lappe. It appeared in the late afternoon of July 21, and immediately made itself at home, visiting the 2 hummingbird feeders every few minutes, resting in adjacent pin cherry and spruce trees, and chasing away any Ruby-throated Hummingbirds that came in to feed.

This new bird was bigger than the others, and a bright rufous colour all over, with a stunning orange-red gorget: a male Rufous Hummingbird. It sometimes alerted observers to its presence by the metallic rattling of its little wings as it flew about. It stayed at the Christiansons' for over a week, coming to feed at least every 15-20 minutes, and resting in the same 2 trees it had frequented from the start. Several TBFN members saw it, and photos were taken. About noon on July 30 it disappeared as suddenly as it had arrived.

The Rufous Hummingbird is migratory, and summers on the west coast from Alaska south to northern California, and east to the Rocky Mountains. It winters in Mexico, and during the fall migration, rare individuals wander eastward and appear in eastern North America. Males move first, in June and July. There have been about 10 previous Ontario records, all since 1966, and all during the period June - December.

The only similar species is Allen's Hummingbird, from which the male Rufous can easily be distinguished by the back colour, which is rusty on Rufous, and green on Allen's. There have been no proven records of Allen's Hummingbird in Canada.

This is the first confirmed record of the Rufous Hummingbird for Thunder Bay District, and it is thus added to the Checklist, as the 325th species. It was considered overdue here, since others have been seen further east in Ontario, presumably having crossed northwestern Ontario to get there.

Trip Reports

Saturday, May 14, 1994
Dorion Bible Camp and Area
Submitted by: Tom Dyke
Field Trip Leaders: Nick Escott

This particular field trip was supposed to cover the Hurkett Cove area. However, the road to the Conservation Area was under construction and we went to the Dorion Bible Camp area as an alternative site.

The weather was also contrary: cloudy, threatening and just 7°C. We made the most of the breaks between rain showers and were rewarded with a commendable total of bird sightings. Our group of 23 walkers covered the shore of Black

Bay northeast of the Bible Camp and to the southwest to the edge of Coldwater Creek.

The 54 species seen during the count period were:

Common Loon	Double-crested Cormorant
Snow Goose	Wood Duck
Green-winged Teal	Black Duck
Mallard	Blue-winged Teal
Northern Shoveller	Ring-necked Duck
Lesser Scaup	White-winged Scoter (17)
Common Goldeneye	Bufflehead
Common Merganser	Red-breasted Merganser
Osprey	Bald Eagle

Field Trip Reports
continue on Page 12 ⇌

In Memoriam - Betty Walker

Submitted by Joan Hebden

Our club lost an outstanding member last February, when Betty Walker died. Members will remember Betty for her photographic work with butterflies.

Betty was born in Saskatchewan, and educated at Kamsack. She met her husband in New Westminster. They married at the end of the war and moved to Port Arthur, Bob's home town. She taught briefly at Hearst, then locally at Riverdale and Black Bay Schools, working with young children until she retired in 1974.

She and her husband were active outdoors people, enjoying cross-country skiing and gardening at their homes first in Current River and then in McGregor Township (Shuniah). Both homes were close to "the bush" that they both loved.

The Walkers were very hospitable, welcoming individual club members and club field trips to share their observations with at their many feeders. They

hosted the Camp Natch group from Minneapolis for "coffee and birds" more than once.

Betty's friendship with Claude Garton increased her knowledge of botany, a useful skill when she began searching for insect eggs for her photographs. Her slide presentations were of professional quality, tracing the life-cycles from egg to caterpillar to pupa to adult.

After her retirement, she visited schools with these presentations and awakened in many youngsters an interest in nature. Her material was so good that "Canadian Geographic" magazine featured an article by her with several pages of photographs she had taken with her trusty Rollie.

We will remember Betty as a generous, dedicated naturalist who was humble about her skills both as a photographer and a serious naturalist. We will miss her.

Saturday, June 11, 1994 and Monday, June 27, 1994

Nipigon Nature Reserve

Submitted by: Sue Bryan

Field Trip Leader: Sue Bryan

A total of 45 people enjoyed the two trips by boat from Nipigon dock to TBFN's new nature reserve at the Nipigon River mouth. Jack and Maureen Dampier were our congenial hosts on their boat, the "Morningstar".

We saw a number of Canada Geese with young goslings, as well as American Bittern, a variety of ducks, a fishing Osprey and Belted Kingfisher in the extensive marshes.

The boat took us along the high cliffs opposite Red Rock, and in for a close look at the famous pictographs on the property. We were pleased to have a number of members of the Archaeological Society along for the outing. During a picnic lunch at the point, we watched a Bald Eagle successfully catch a fish in the shallow bay.

Botanic highlights included the unusual fern, Moonwort (*Botrychium lunaria*), Leathery Grape Fern (*Botrychium multifidum*), Round-leaved Orchid (*Platanthera orbiculata*), and Purple Avens (*Geum rivale*).

Following is composite list of the 56 species of birds observed on the two trips.

Common Loon	Double-crested Cormorant
American Bittern	Great Blue Heron
Canada Goose	American Black Duck
Mallard	Blue-winged Teal
American Widgeon	Common Goldeneye
Common Merganser	Osprey
Bald Eagle	Broad-winged Hawk
Ring-billed Gull	Herring Gull
Belted Kingfisher	Yellow-bellied Flycatcher
Alder Flycatcher	Least Flycatcher
Eastern Phoebe	Tree Swallow
Cliff Swallow	Barn Swallow
Blue Jay	American Crow
Common Raven	Red-breasted Nuthatch
Winter Wren	Ruby-crowned Kinglet
Veery	Swainson's Thrush
American Robin	Cedar Waxwing
Tennessee Warbler	Nashville Warbler
Northern Parula	Yellow Warbler
Chestnut-sided Warbler	Magnolia Warbler
Yellow-rumped Warbler	Black-throated Green Warbler
Black-and-white Warbler	American Redstart
Ovenbird	Northern Waterthrush
Common Yellowthroat	Savannah Sparrow
Song Sparrow	Swamp Sparrow
White-throated Sparrow	Red-winged Blackbird
Brewer's Blackbird	Common Grackle
Purple Finch	American Goldfinch

Sunday, August 7, 1994

Arctic/Alpine Plants of the Superior Shore

Submitted by: Sue Bryan

Field Trip Leader: Sue Bryan

In spite of heavy rains and lightning, nine club members hiked the rugged shoreline of Lake Superior near Caldwell Lake (between Cloud Bay and Jarvis Bay). We identified seven different disjunct plant species:

Selaginella selaginoides (L.) Link

Bog Spike Moss

Dryopteris fragrans (L.) Schott

Fragrant Cliff Fern

Scirpus cespitosus L.

Tufted Club Rush

Sagina nodosa (L.) Fenzl

Pearlwort

Pinguicula vulgaris L.

Common Butterwort

Primula mistassinica Michaux

Birdseye Primrose

Euphrasia hudsoniana Fern. & Wieg.

Eyebright

A number of other interesting plants were seen. Orchids included Hooded Ladies' Tresses (*Spiranthes romanzoffiana*), Dwarf Rattlesnake Plantain (*Goodyera repens*) and Blunt-leaved Orchid (*Platanthera obtusata*). Round-leaved Sundew, Rosemary and Laurel grew around the shoreline pools, and Smooth Ninebark was in full bloom.

Due to the heavy rain, few birds were noted (see list below). We did see a Least Chipmunk on the rocky shore and noted many young salamanders in the shoreline pools.

Bird List:

Common Loon	Double-crested Cormorant
Herring Gull	American Kestrel
Black-capped Chickadee	Red-breasted Nuthatch
Hermit Thrush	Cedar Waxwing
Black-and-white Warbler	Song Sparrow
White-throated Sparrow	

Field Trip Reports continued from Page 13

Broad-winged Hawk	Kestrel
Merlin	Killdeer
Greater Yellowlegs	Lesser Yellowlegs
Spotted Sandpiper	<u>Ruddy Turnstone</u>
Herring Gull	Ring-billed Gull
Tree Swallow	Crow
Raven	Black-capped Chickadee
Winter Wren	American Robin
Solitary Vireo	Nashville Warbler
Magnolia Warbler	Yellow-rumped Warbler
Palm Warbler	Black & White Warbler
Ovenbird	Chipping Sparrow
Song Sparrow	Swamp Sparrow
White-throated Sparrow	Red-winged Blackbird
Brown-headed Cowbird	Purple Finch
Pine Siskin	

**Where the Birds Are:
A Guide to All 50 States and Canada**

Written by: John Oliver Jones
 Publisher: Wm. Morrow & Co., Inc., New York
 Printed: 1990
 No. Pages: 400
 Price: \$16
 Reviewer: David Ellingwood

One of the greatest challenges of birding in unfamiliar territory is knowing where to look first. Then, you have to wonder what you might see and if this is even the right time of year to see it!

It would be much easier if only you could just look it up before you left home and have your birding blitz all planned out ahead of time. "Where The Birds Are", by John Oliver Jones, will help you do just that.

Inside, you will find a state-by-state inventory of the best places to bird. Marked on the state map are wildlife refuges, parks, conservancy lands, other hotspots and major roads. A brief description of every site is provided. Some of the more significant sites also have information on species, peak times and specific directions.

If you are planning a trip to an area, refer to the state maps and see what sites will be along your way. You can also use the book like a travel guide and dream of visiting places where Chachalacas or Pyrrhuloxias can be seen.

The second half of the book is a seasonal abundance chart for selected sites in each state.

Some 548 species of birds are represented on the charts. The endless pages of charts can be intimidating at first, but they do contain a wealth of information. Many bird checklists use a similar format for abundance information.

The only problem that I have with "Where The Birds Are: A Guide to All 50 States and Canada" is the fact that all the great birding hotspots in Canada are covered by a mere five pages! Since only National Wildlife Areas, Migratory Bird Sanctuaries and Ramsar Sites are noted on the Canadian map, Saskatchewan ends up looking like a Christmas tree, while other parts of the country, including Northern Ontario, look like vast wastelands.

I would highly recommend "Where The Birds Are" to anyone who is doing a short or extended birding trip to the States. It is an invaluable reference to birding hotspots and will lead you to some great birding.

READ ANY GOOD BOOKS???

Have you particularly enjoyed a nature book you read recently? Share your reading experiences with other readers of *Nature Northwest* through a briefbook review. All amateur critics are welcome.

Books should be of recent publication and can cover any nature-related topic, such as plants, birds, animals, parks management and so on.

Send your reviews to the Editor, *Nature Northwest*, care of the Thunder Bay Field Naturalists.

GENERAL MEETINGS - Fall 1994 to Spring 1995

LUNAN HALL
 St. Paul's United Church
 349 Waverly Street
 8:00 to 10:00 p.m.

All scheduled meetings (except the Annual Dinner) will once again be held in the "Lunan Hall" at St. Paul's United Church. We look forward to meeting new members and renewing old friendships. Please note that Myra McCormick will be filling in for Judy Petch as Programs director this fall.

Monday, September 26, 1994
**"Timber Management Plans-
 Public Participation Is Vital"**

Naturalist clubs are being increasingly called upon to participate in working groups, steering committees and open houses for Timber Management Plans. Special guest, Chris Lompart (Env. Researcher, F.O.N.) will provide some insights into the complexities of these mysterious documents and outline some of the current environmental issues facing our local forests.



Monday, October 24, 1994
**"Natural History of the
 Queen Charlotte Islands"**

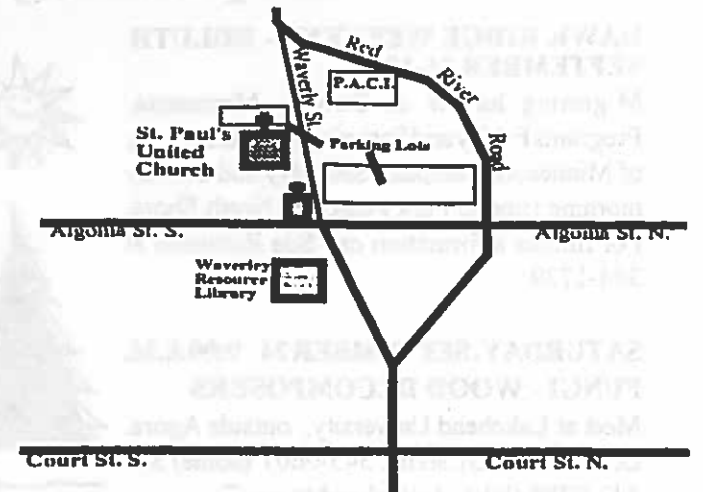
Join veteran TBFN member Harold Kish in an exploration of the unique environmental features of this West Coast archipelago.

Monday, November 28, 1994
**"Fire as a Factor in Forest Ecosystems of
 Northwestern Ontario"**

Fire has long played an important role in the development and maintenance of forest types in this region. Have we been giving fire enough credit? Bill Addison will examine this 'hot' topic.

Monday, January 23, 1995
ANNUAL MEETING and Members Night

Bring along your ten best slides of 1994 to share and tell!



February, 1995
ANNUAL DINNER
 Columbus Centre, May St. & Arthur St.

Join us for a delicious buffet meal; *followed by:*
**"Betty's Butterflies:
 A Betty Walker Retrospective"**
 We honour the memory of one of TBFN's most gifted photographers with a showing of the best slides from her remarkable collection.

Monday, March 27, 1995
"Native Perspectives"

There are profound differences (and perhaps some surprising similarities) between Native and non-Native outlooks and attitudes toward the environment, conservation and resource use. Professor Dennis McPherson, Chair of Lakehead University's Indigenous Learning Department, has spent many years researching and teaching on these matters. We invite you to join us for this presentation by one of region's most thoughtful and dynamic educators.

Monday, April 24, 1995
"First Aid for Owls and Other Raptors"

Over the last few years, Jack Stewart, an animal control officer with the City of Thunder Bay, has devoted much of his spare time to the rehabilitation of injured owls and birds of prey. Jack is a lively raconteur, with a wealth of offbeat animal stories to tell. He may even bring some feathered clients to show us.

Upcoming Field Trips

HAWK RIDGE WEEKEND - DULUTH SEPTEMBER 16-18

Migrating hawks at Duluth, Minnesota. Programs Friday and Saturday at the University of Minnesota Campus; Saturday and Sunday morning trips to Park Point and North Shore. For further information call Sue Robinson at 344-1739.

SATURDAY, SEPTEMBER 24 9:00 A.M. FUNGI - WOOD DECOMPOSERS

Meet at Lakehead University, outside Agora. Leader: Dr. Ed Setliff 345-0607 (home) and 343-8788 (lab). Call ahead to confirm.

SATURDAY, OCTOBER 1 9:00 A.M. FALL MIGRANTS AT CHIPPEWA

Meet at Chippewa Beach parking lot. Dress warmly and bring lunch. Coffee and tea will be supplied. Leader Susan Robinson 344-1739. Please call ahead to confirm.



SATURDAY, OCTOBER 8 10:00 A.M. SILVER ISLET MIGRANTS

Meet at Pass Lake Corner truck stop. Bring lunch and refreshments. Leaders: Tom Dyke 622-9980 and Jack Evans 475-0222.

SATURDAY, NOVEMBER 5 8:00 A.M.

LATE FALL MIGRANTS

Meet at Mission Island Marsh Conservation Area. Dress warmly. Bring lunch and refreshments. This is an all-day outing. Participants can leave at any time. Expect waterfowl, and late sparrows. Rarities possible. Leader: Nick Escott 345-7122.

MONDAY, DECEMBER 26 BOXING BAY BIRD COUNT

For details contact Nick Escott 345-7122.

JANUARY CARIBOU TRACKING

For details contact Al Harris 344-7213.

THUNDER BAY FIELD NATURALISTS - INFORMATION 1994

The Thunder Bay Field Naturalists club is a non-profit organization dedicated to: the study of natural history; the wise use of natural resources; the preservation of natural areas; and teaching the public to understand and protect nature.

Annual Membership Fees: (as of Aug/94)

Family	\$17.00	Single	\$15.00
Students	\$13.00	Seniors (65+)	\$13.00
Corresponding	\$13.00		

All memberships include a subscription to *Nature Northwest*. Requests for membership can be sent to the address below.

Mailing Address:

Thunder Bay Field Naturalists
P.O. Box 1073
Thunder Bay, Ontario
P7C 4X8

Meeting Dates:

The fourth Monday of September, October, November and January, March and April, at 8:00 pm (20:00 h). The annual dinner meeting is usually held in February.

Officers

Honorary President	Vacant	
President	Al Harris	344-7213
Past President	Myra McCormick	345-6485
First Vice-President	Jean Lister	344-3815
Treasurer	Carol Hryczyn	623-0264
Recording Secretary	Annette van Niejenhuis	345-1282
Social/Publicity Secretary	Julian Holenstein	345-7784

Directors

Nature Reserves	Sue Bryan	345-6446
Juniors	Heidi Strobel	767-8418
Field Trips	Deneen Brigham	345-7784
Programs	Judy Petch	344-1012
Bird Records	Nick Escott	345-7122
Memberships	Mike Jones	344-1961
Sales	Terri McClymont	622-8185
Editor- <i>Nature Northwest</i>	David Ellingwood	343-9415
FON Director	Myra McCormick	345-6485
Briefs	Brian Moore	344-2986
At Large	Warren Mazurski	577-6526

Coordinators

Phoning	Mary Ann Maybroda	622-2500
Bluebird Project	Jean Lister	344-3815