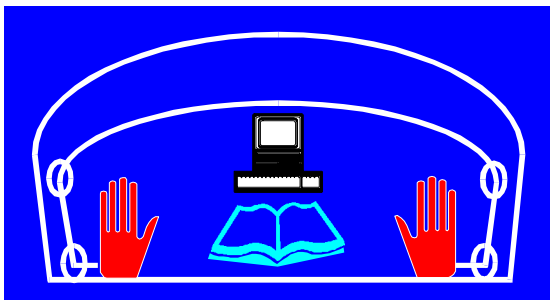

Level Ii Interpretive Guide Instructor's Manual
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LEVEL II

INTERPRETIVE GUIDE

INSTRUCTOR'S MANUAL

Department of Education

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INTRODUCTION:

The Level II Interpretive Guide Course has been designed to focus on the requirements of non-consumptive guiding. This avenue of tourism shows the greatest future growth potential for the Northwest Territories, and much of its success will be determined by the competence of those guides to whom this is entrusted. Not only will those aspects of safety, professional skill and hospitality be demanded, as in the consumptive disciplines of guiding, but also the more difficult concepts of attitude, knowledge and communication.

Ultimately, the Interpretive Guide's role is that of a consummate "storyteller". One who has sufficient knowledge, skill, and tact to be able to draw out the curiosity of his guest and enable him to experience the understanding of those links which connect each life form to the other and to the land itself. The guide functions as a negotiator between reality perceived and reality comprehended; a catalyst which allows, in the best of cases, a spiritual grasp of the wonder of the North. However, this transcendence is not possible unless the guide realizes his obligation to learn all he can regarding his area, and that he has a commitment to continue to add to his knowledge.

This 4 week course requires that the guide candidate be familiar with the concepts of the Level 1 portion of the Guide Development Program. Those general skills presented in Level 1 become the basis of understanding upon which the specific needs of the interpretive guide are constructed. There are intentional areas of overlap which will act as a review and reinforcement for the all important basics.

TABLE OF CONTENTS

COURSE INFORMATION:

There are two major aspects to this course, the academic theory and the hands-on field work. The instructor will need to familiarize himself with the manual and the area of delivery in sufficient time to order or research those resource items required. A list of resource items is included after this section.

The delivery area will determine what will have to be added to the participant's manuals. By using a Land-use map or other means, discover which Big Game, Small, or Furbearing animals are relevant to the course site at hand. Select the Big Game Participant Manual sheets that are appropriate for the area. These contain headings under which the students will write their own researched information. Indicate which fur-bearing or small animals are to be studied, as well as fish and marine life. Using the Big Game sheets as a model, have the students create their own notes from the lecture information or their assigned research.

The plant and bird identification sheets are generic, and a total of 30 of each is recommended. Each of the prepared participant sheets (Big Game, Plants, and Birds) has an accommodation for the common name, the scientific name, and the local or native name. This latter information should be gathered from the students; however, a list of Inuktitut names is included at the end of Module F.

The Resource Package contains site-specific historical and archaeological information on Wager Bay. A different location will require that the instructor do the necessary research prior to course delivery.

The Participant Manual follows the modular designation of the Instructor Manual; however, your class preparation time will be used, in part, to co-ordinate your specific lesson with the items in the Participant Manual. The Modules and units of information are independent and can be delivered in a schedule which best serves the needs of each particular course.

This inter-linking and independence of lesson delivery has been made more convenient for the instructor by including built in cross-reference points. For example, the lesson on creating a list of equipment for the boat can be accessed through three separate channels:

(1) Safety (Module A, Unit 5, Lesson 2)

(2) Checklists (Module A, Unit 8, Lesson 4)

(3) Camp Skills (Module A, Unit 9, Lesson 7)

In this way, site-specific requirements can determine at which point this lesson is most convenient, or when a review or reinforcement of basics can be best accommodated.

The learning needs will be partially determined by the scheduling of the on-the-land or field portion of the course. Ideally, the 10 day field portion will commence in the middle of the second week and will continue through the weekend and complete at the end of the third week. This allows the final week to be used for items better covered in a classroom situation, as well as allowing a presentation of the final exam.

The micro-cosm of a tourism venture is concurrent with the field work and the preparation leading up to it. Student groups of three or four will be formed; each will be an independent group. A rotating duty roster will determine who is the "guide" and who are the "tourists" in each group. All guide functions during travel, cooking, or camp

skills will be monitored by the instructor. Both aspects, hands-on field work and academic learning, meld to achieve the course goals.

Module A, Unit 4: "Interpretation" sets the philosophic goals of this course. Without a full understanding of these principles, the remainder of the course becomes meaningless. The remainder of Module A constitutes a review of those skills necessary in guiding. The depth of exposure to these Units will be course-specific, dependant on student skills. At no time should these be assumed to be in place. Review and reinforcement are necessary to maintain a high standard of competency.

SCHEDULE OF LESSONS:

The Level II Interpretive Guide Course has been designed to allow the instructor great freedom in adapting on-going conditions to a suitable lesson. Although the lesson plans flow in a sequence, it is not intended nor desirable that they be taught this way. Rapid topic changes may be necessary because of situational demands; they may prove efficient in combating short attention spans.

Consider the course as three time divisions. The central portion is the field work. During these 10 days all lessons pertinent to this should be scheduled. This would include:

Interpretive skill practice
Plant identification
Plant collection and mounting
Bird sightings and record
Small animal identification
Big game animal identification
Marine and fish observation (if appropriate)
Geological observations
Stone tool making
Archaeological observations
Site-specific historical observations
Camp skills
Survival techniques
Map reading
Safety and first aid

The 1 1/2 weeks prior to this would include all the introductory material and the lessons governing the preparation of the field exercise. This would include:

Review of tourism basics
Review of professionalism
Philosophy and skills of interpretation
Safety and first aid
Various resource materials regarding hypothermia and near drowning resuscitation
Introduction to map reading
Tour administration
Introduction to geology
Introduction to archaeology

Introduction to history
Introduction to plant information
Introduction to bird information

The final week begins with a review of the field exercise. Use student perceptions to create improved scenarios for tourism attempts. Have the guides cost out the event. This leads naturally into the pricing and business concepts contained in the course. This week would include:

Review of the field trip
Costing of an entire tourism experience
Tour schedule review
Business concepts
Interpretation review
Further work on geology, history, archaeology, plants, animals, fish and birds

EXAMINATION PROCEDURE:

There are three aspects of the guide-candidate which require evaluation. These are: **KNOWLEDGE, SKILL, ATTITUDE.** Regardless of the amount of information carried by the guide, or the skill by which he accomplishes the expected, the final criteria on a pass/fail must be a function of the observed attitude of the participant. This is not to imply that a guide who is deficient in the first two categories need only to excel in attitude; but rather, a pass in the first two requires a pass in the latter to be accepted as such.

Putting this in numerical terms, the minimum passing grade of 70% would be derived in the following way:

ITEM	DISPLAY	VALUE
(A) KNOWLEDGE	(EXAM)	30%
(B) SKILL	((1) Communication (10)) ((2) Guiding Skills (10)) ((3) Project Assessment (10))	30%
(C) ATTITUDE	(Punctuality (10)) (Dependability (10)) (Hospitality (10)) (Professionalism (10))	40%

		100%

(A) KNOWLEDGE: (This division will represent 30% of the total assessment)

The retained information from the course can be measured by the formal exam. This exam will display a balance between two areas. One half of the value will represent the materials covered in Modules A and B: Basic guiding skills and the general history, archaeology and geology of the area. This can be represented as follows:

Module A (Interpretive and general guiding knowledge)	35%
Module B (History, archaeology and geology)	15%
	50%

Module C (Animals)	15%
Module D (Fish)	5%
Module E (Plants)	15%
Module F (Birds)	15%
	50%

(B) SKILL: (This division will represent 30% of the total assessment)

Assessments of skill competence will be made by Instructor observation. This can be accomplished by a checklist of performance objectives to suit the specific needs relevant to the course and the course site. Three areas of consideration will include:

(i)	Communication	(10%)
(ii)	Hands-on guiding skills	(10%)
(iii)	Project assessments	(10%)

Since Interpretation hinges on communication ability, this facet of the guide's skills will be constantly monitored. This can be accomplished during assigned interpretive projects as well as during role-play and field exercises.

Basic guiding competence, which includes attention to safety considerations, as well as those skills reviewed in Module A and demonstrations of C.P.R., will be evaluated by observation. A disregard for safety, or an inability to properly apply C.P.R., shall be sufficient reason to designate a "fail" grade.

Project assessments include an evaluation of the completeness of the plant collection, bird observation sheets, prop kit, and Participant's Manual. Since the Participant's Manual is in the form of a work book, this can be used in lieu of Module quizzes. However, the instructor may wish to include a quiz of his own design as a review function.

(C) ATTITUDE: (This category will represent 40% of the total assessment)

The guide's attitude can be measured in at least 4 areas:

(i) Punctuality
(ii) Dependability
(iii) Hospitality
(iv) Professionalism

From the outset, the guides will be informed that their attention to punctuality will be considered as a criterion. Dependability involves attention to detail, and the ability to work without supervision; Hospitality involves those actions consistent with the definition within the scope of the service industry. "Professionalism" can be assessed in terms of those actions which denote the acceptance of the responsibilities required as well as displaying this in a positive, cheerful way.

Finally, after all these objective attempts, the Instructor needs to perform a subjective evaluation to verify the results. This can be accomplished by asking this question:

"Would I recommend this person to act as a guide for a visiting friend?"

If a positive response is not possible, the instructor must re-consider the prior evaluations to discover the cause of his mistrust, and assess the necessary "fail" status.

LEVEL 2

INTERPRETIVE GUIDE EXAM

STUDENT NAME: _____ FINAL MARK _____/100

(1) List 3 qualities expected of a professional guide.

(a) _____

(3 marks) (b) _____

(c) _____

(2) What does the term "fair value" mean?

_____

(2 marks) _____

(3) Define the following terms:

(a) Revenue

_____

(b) Expense

_____

(4 marks) (c) Profit

_____

(d) Loss

_____

(4) List the 6 main principles of Interpretive Guiding.

(a) _____

(b) _____

(c) _____

(6 marks) (d) _____

(e) _____

(f) _____

(5) Identify 4 items that you should have in your boat.

(a) _____

(b) _____

(4 marks) (c) _____

(d) _____

(6) List 5 of the survival steps.

(a) _____

(b) _____

(5 marks) (c) _____

(d) _____

(e) _____

(7) Draw 2 survival signals and indicate their meanings.

(a)

(2 marks)

(b)

(8) Using the map and compass provided, give the following information:

(a) What is the magnetic declination for the center of the map for the present year?

_____

(b) What is the TRUE BEARING from Point "A" to Point "B"? (These points will be identified by the instructor)

_____

_____

_____

(4 marks) (c) What is the MAGNETIC BEARING from "B" to "A"?

_____

(d) What is the distance, in Kilometers, between them?

_____

(9) On a separate sheet of paper, show a town tour which includes at least 4 items of interest. Include the headings "Time", "Activity", and "Points to Consider".

(5 marks)

(10) Describe the general migration patterns of the ancestors of the Dene and the Inuit.

(4 marks)

(11) Choose either one Dene group or one Inuit group and describe their location and earlier lifestyle.

(4 marks)

(12) What is the purpose of archaeology?

(2 marks)

(13) Can a tourist keep an artifact he has found?

(1 mark)

_____

(14) Define the following terms:

(a) fossil

_____

_____

(b) sedimentary rock

_____

_____

(4 marks) (c) igneous rock

_____

_____

(d) moraine

_____

_____

(e) esker

_____

_____

(f) Precambrian

_____

_____

(g) Paleozoic

_____

_____

(h) Pingo

_____

_____

(15) Identify one big game animal of your area and give the following information:

Animal chosen:

_____

(a) Give the scientific name:

_____

(b) What is its typical adult weight range?

_____

(6 marks) (c) When can the female first mate?

_____

(d) When can the male first mate?

_____

(e) When is the mating season?

_____

(f) Why is the animal important to the region? (relate earlier involvements with local people also)

_____

_____

_____

_____

_____

_____

_____

_____

_____

(16) Identify one fur bearing animal or one marine animal of your area and give the following information:

Animal chosen:

_____

(a) Give the scientific name:

_____

(b) What is its typical adult weight range?

_____

(6 marks) (c) When can the female first mate?

_____

(d) When can the male first mate?

_____

(e) When is the mating season?

_____

(f) Why is the animal important to the region? (relate earlier involvements with local people also)

_____

_____

_____

_____

_____

_____

_____

_____

_____

(17) Identify one small animal of your area and give the following information:

Animal chosen:

_____

(a) Describe, giving identifying remarks:

(3 marks)

(b) What is the major food source?

(c) Describe reproduction details.

(18) Choose a fish of your area and give the following information:

Fish Chosen:

(a) Give the scientific name:

(b) What is its weight range?

(c) Give a description of the fish.

(5 marks)

(d) Discuss its reproduction.

(e) What is its importance to the region?

(19) List the 3 main vegetation areas:

(a)

(3 marks) (b)

(c)

(20) Relate 4 examples of arctic plant adaptation and explain their significance.

(a)

(b)

(4 marks)

(c)

(d)

(21) List the common names of 16 plants identified in the local area.

(8 marks)

(1) _____ (2) _____

(3) _____ (4) _____

(5) _____ (6) _____

(7) _____ (8) _____

(9) _____ (10) _____

(11) _____ (12) _____

(13) _____ (14) _____

(15) _____ (16) _____

(22) Identify a local bird which migrates. State its name and describe its migration route.

(2 marks)

_____

_____

_____

_____

_____

(23) List 3 major northern bird habitats and indicate the bird family and species likely to be found there.

(3 marks)

	HABITAT	FAMILY	SPECIES
(a)	_____	_____	_____
(b)	_____	_____	_____
(c)	_____	_____	_____

(24) List 10 locally identified birds and indicate one northern adaptive characteristic of each.

(10 marks)

	BIRD NAME	ADAPTIVE CHARACTERISTIC
(1)		
(2)		
(3)		
(4)		
(5)		
(6)		
(7)		
(8)		
(9)		
(10)		

RESOURCE MATERIALS:

The resource materials required for a course of this scope constitute a wide range of items from films to frying pans. Much of the course academic necessities will be contained in a resource package. The contents should be replenished as required by referring to the checklist that follows. Other check lists contain suggested Teaching aids, audio-visual aids and course hand-out requirements as well as outdoor necessities. These can serve as inventory controls or as reminders for resources to be ordered prior to course delivery.

The National Film Board is a source of videos or films which can be accessed with sufficient time allowance. A recommendation list and synopsis follows. This is not meant to be exhaustive, simply suggestive of useful material. The instructor has the freedom of using other resources that will achieve the desired effects.

Renewable Resources is a source of information sheets regarding Northwest Territories wildlife. Class sets of appropriate materials can be obtained with sufficient pre-planning.

National Film Board Resources

Note: These are to be reviewed and ordered as appropriate, in advance of course delivery. The Netsilik series is highly recommended.

Edge of Ice 113c 0186 069 55 minutes

Subjects covered:

Beluga and Bowhead whales/Narwhale/Killer Whale

"Nylas ice - pancake - raised edges. Only 1/4 new ice each year
1.7 degrees freezing point Polynia

Sabine gulls - from Peru
thick billed murres
diatoms - algae on bottom of ice
cope pods
nemetode worms
antropods - shrimp-like
ringed seal pup
ivory gull
fulmers
golden plover

Ice process-freezing/drifting/thawing

algae--food chain

The Eskimo - Fight for Life 55 minutes

Netsilik Eskimo

Subjects covered:

Igloo building
Seal hunting - harpoon
Tools

Stefansson - The Arctic Phophet 16 minutes

Subjects covered:

Copper Inuit
Prophet - subs under ice - early travel 1913
Travel Inuit style- Exploring northern Arctic Islands
Footage of early Copper Inuit - Igloo building - clothing

Above the Timberline 16 minutes (Black and White)

Subjects covered:

Plant adaptation - intro to plants
altitude similarities to the arctic

dwarf-creepy-rosette and cushion growth adaptations
small leaves - insulating factors
some animal adaptation

Glaciation 11 minutes

Life and activity of glaciers
How glaciers shaped face of earth
Description of how snow--glaciation--flow because of stress and weight
Morraine - pushed gravel - to terminal morraine
Debris forms outwash terraine

At the Caribou Crossing Place (Part 1) 30 minutes

Netsilik Series

Subjects covered:

Kayaks - bow-making - seagull snare

The Last Mooseskin Boat (Video)

Subjects covered:

Lifestyle - boat construction

Ellesmere Land 106c 0176 220 28 minutes

Subjects covered:

Geological formations
Plant and wildlife ecosystems
40 day period for plant reproduction

Module B, Unit 2, Lesson 3

Stalking Seal on Spring Sea Ice Part 1 and 2 106c 0167 146 34 minutes

Subjects covered:

Netsilik hunter - Thule culture
Use of traditional tools
Stalking seal - social life and customs

Caribou of Northern Canada 13 minutes

Subjects covered:

1971 - calving -early mobility
herd movement cycles (old film)

Face of the High Arctic (1959 old footage)

Subjects covered:

Queen Elizabeth Islands
Geological evolution
Glaciers

RESOURCE PACKAGE CONTENTS

MODULE A RESOURCES

ITEM	QTY.	STATUS
Video, (Tourism Industry Promo)	1	Optional
Video, Arizona Travel	1	Optional
Video, Africa Travel	1	Optional
Video, Shore Survival (Hypothermia etc.)	1	Required
Brochures (US & Cdn. Destinations)	1 class set	Required
NWT Explorers Guide	1 class set	Required
Samples (Business Cards, Reference Letters)	1	Optional
Sample Prop Kit	1	Optional
Accounting Sheets (11 column)	1 class set	Required
Text: Project Wild	1	Required
Texts: First Aid Manuals	1 class set	Required
Text: Interpreting our Heritage (Freeman, Tilden)	1	Optional
Maps: Maps and Wilderness Canoing	1 class set	Required
(Local) Land Use Series	5	Required
(Local) Geological Survey Map	5	Required
Map 900A Principle Mineral Areas	1	Required
W.A.C. Chart	1	Required
(Local) Topographic Maps	5	Required

MODULE B RESOURCES

ITEM	QTY	STATUS
New Park Resource Analysis (Bathurst)	1	Optional
Regional Analysis (Parks Canada)	1	Optional
Text: Rocks & Minerals, Zim + Shaffer	1	Required
Pingos of Tuktoyaktuk (Parks Canada)	1 class set	Required
Mineral Collection in the NWT, Bryan	1	Required
Display- Rocks, Sponge, Fossil Samples	1	Required
Hand Lens	1	Required
Rock Hammer	1	Required
Safety glasses	5	Required
Prospector samples	1	Required
D.R. Urquhart and R.E.Schweinsburg, Polar Bear (1984) Renewable Resources	1	Optional
Map: North America	1	Required
Map: Northwest Territories	1	Required
Video: Lithic & Bone Technology	2	Required
Video: The Last Mooseskin Boat	1	Optional
Film: Stalking Seals on Spring Ice	1	Optional
Film: Stefansson	1	Optional
Slides: Canada's Visual History	1 set	Required
Thule Pioneers	1	Required
Collected Papers on Human History of NWT	1	Required
Archaeology Fieldwork Papers 3 & 4	1	Required
N.W.T.Data Book	1	Required
Data Sheets	1 set	Required
Keewatin Fact Book	1 set	Optional
Northern Perspectives (Archaeology, Social context, Weetalukluk)	1	Required
Casting Materials: Wax, Plastic Shim, Silicone Rubber, Petroleum Jelly, Epoxy Resin, Powdered Fiberglass Filler	Sufficient	Required
Wager Bay Items	1	Required

MODULE C RESOURCES

ITEM	QTY	STATUS
Audubon: Field Guide to North American Mammals	1	Required
Polar Bear - Urquhart + Schweinsburg	1	Optional
Whales: Fragile Giants of the Sea - National Museum of Canada		Optional
The Beluga + Narwhal in the Eastern Canadian Arctic		Optional
The Bowhead Whale - Fisheries and Oceans		Optional
Walrus of the N.W.T. - Renewable Resources		Optional

NOTE:- Choose appropriate information sheets from Renewable Resources

MODULE D RESOURCES

ITEM	QTY	STATUS
Arctic Animals - Jonquil Graves + Ed Hall Renewable Resources	1	Optional
Selected Freshwater Fish - Department of Fisheries and Oceans	1	Optional
Arctic Char - Department of Fisheries and Oceans	1	Optional

Unit 2 - Saltwater Fish

Arctic Cod - Underwater World - Fisheries and Oceans	1	Optional
The Northern Shrimp - Underwater World Fisheries and Oceans	1	Optional

MODULE E RESOURCES

ITEM	QTY	STATUS
Texts:		
Harvesting the Northern Wild, Walker	1 set	Required
Wildflowers of the Yukon, Trelawny	1 set	Required
Wildflowers of the Canadian Rockies, Scotter and Flygare	1	Optional
The Land that Never Melts, Wilson	1	Optional
Vascular Plants of Continental N.W.T. Porsild and Cody	1	Optional
Notes on the Vascular Plants of the Mackenzie Mountain Barrens, Renewable Resources	1	Optional
Common Trees, Lichens, Wildflowers, Renewable Resources	1	Required
Nutrient Bar Graphs, Medical Services	1	Optional
Local pamphlets (BRTA, Keewatin, etc.)	1 set	Optional
Plant Collecting for the Amateur, Museum Methods Manual 1	1	Required

MODULE F RESOURCES

ITEM	QTY	STATUS
Text: Audubon Field Guide - Birds	1 set	Required
Various pamplets: - Canadian Wildlife Service		
Hinterland Who's Who		Optional
Key Areas for Birds in Coastal Regions of the Canaidan Beaufort Sea		Optional
Ducks at a Distance		Optional
Migratory Bird Sanctuaries		Optional
Committee on the Status of Endangered Wildlife in Canada - "Threatened Canadian Wildlife"		Optional
World Wildlife Fund -"Seabirds of Eastern Canadian Arctic"		Optional
Parks Canada - "Birds of Nahanni National Park"		Optional
N.W.T. Renewable Resources - "Birds of Prey"		Optional
N.W.T. Renewable Resources - "Raptor Studies"		Optional
"Birds of NWT: Preliminary checklist of 280 species" (C.W.S.)		Optional
"Common Breeding Birds NWT" - Renewable Resources		Optional
"Inuktitut Names for Different Wildlife Species" - Renewable Resources		Optional
"Birds and Mammals at Bathurst Inlet" - Renewable Resources		Optional
"Birds of Big River Country" - Big River Tourism Association		Optional
"Birds of the Yellowknife"		Optional
"List of Birds: Wood Buffalo Park"		Optional

SURVIVAL PACK EQUIPMENT

LEVEL II INTERPRETIVE GUIDE COURSE

-compass with mirror
-flare gun and flares (small)
-50' nylon parachute cord
-lighter and waterproof matches
-mini-first aid kit
-knife (Swiss army with saw)
-small flashlight
-small candle
-small file and crock-sticks
-snare wire
-needle and thread
-mini fishing gear (line, hooks, lures)
-space blanket
-garbage bag
-aspirins and tooth drops
-lypsyl
-boot laces
-boot repair
-2 granola bars, 3 tea bags, 3 sugar packs
-heat tablets
-tin cup
-small bar soap/alcohol wipes

STUDENT'S EQUIPMENT LIST

LEVEL II INTERPRETIVE GUIDE COURSE

You are required to bring the following items:

1. Sleeping Bag
2. Air or foam mattress
3. Rain gear
4. Fishing equipment (Optional)
5. Bush clothes (suitable for 10 days on the land)
6. Boots (suitable for season)
7. Eating utensils (plates, cups)
8. Personal toiletries (toothbrush, towel, soap, medicine, shaving kit)
9. Pack Sack
10. Camera and film (if desired)
11. Binoculars

Do not bring:

1. Stereo tape decks
2. Playboy magazines
3. Alcohol or other intoxicants

CLASS MATERIAL
LEVEL II INTERPRETIVE GUIDE COURSE

ITEM	QTY	DATE						
T. V. Monitor	1							
Binoculars	1							
Hand Lens	1							
Slide Projector	1							
Spare Bulbs	2							
Video Camera	1							
Batteries	3							
V.C.R.	1							
Set of Wires	1							
V.H.S. Tape	1							
Set of Tapes (Instructional)	1							
35 mm Camera	1							
Rolls of Film	2							
Tripod	1							
Polaroid	1							
Films (Polaroid)	2							
First Aid Books (Inuk/English)	set							
F.A. Equipment	1 set							
F.A.Forms	set							
Arctic College Forms	set							
ONE MASTER SET (15 copies of each handout)								
Big Game Animals								
Small Animals								
Fur Bearing Animals								
Fish								
Marine Animals								
Pens	12							
Pencils	12							
Student Folders	15							
File Folders and Container	10							
Envelopes	10							

ITEM	QTY.	DATE						
Pcs Chalk	10							
Flip Chart	1							
Felt pens	3							
Pkg.s Writing Paper	3							
Compasses	13							
Area Maps	5							
World Map	1							
Brochures	1 set							
Tents	4							
Poles (Optional)	4							
Radio/antenna	1							
Batteries (for radio)	set							
Small Shovel	1							
3/8" Rope	200 '							
Floater Jacket								
Instructor's Survival Gear								

GRUB-BOX CONTENTS

LEVEL II INTERPRETIVE GUIDE COURSE

ITEM	QTY.	DATE					
MOD 431 + 1 single burner	1						
Coleman Stove	1						
412A-262 for each extra generator	1						
MOD 22A Coleman Lamp (Small)	1						
Extra Generator	1						
Funnel	1						
Pkgs. Mantles	1						
Cutting Board (Small)	1						
Dish pans	2						
Utensil Tray	1						
Knives	6						
Soup Spoons	6						
Tea Spoons	6						
Forks	6						
Can Opener	1						
Large Knife	1						
Small Knife	1						
Large Spoon	1						
Egg Flipper	1						
Plates	6						
Cups	6						
Bowls	6						
Spice Ctr. and Spices	1						
Large Frying Pan (Cast Iron)	1						
Small Frying Pan (Cast Iron)	1						
Cooking Pots	set						
Tea Kettle	1						
Flint Striker	1						

MODULE A

UNIT 1 TOURISM

UNIT 2 PROFESSIONALISM

UNIT 3 BUSINESS CONCEPTS

UNIT 4 INTERPRETATION

UNIT 5 SAFETY AWARENESS

UNIT 6 SURVIVAL TECHNIQUES

Lesson 1:	Survival Qualities
Lesson 2:	Group Survival
Lesson 3:	Seven Survival Steps
Lesson 4:	Emergency Signals
Lesson 5:	Creating Survival Equipment
Lesson 6:	Survival Information Workshop

UNIT 7 MAP READING

Lesson 1:	Introduction
Lesson 2:	Land Use Maps
Lesson 3:	Geological Survey Maps
Lesson 4:	World Aeronautical Charts
Lesson 5:	Topographic Maps
Lesson 6:	Symbols, Contour Lines and Elevations
Lesson 7:	Identifying a Reference Point
Lesson 8:	Compass Use
Lesson 9:	Sun and Watch for Direction
Lesson 10:	Finding the North Star

UNIT 8 TOUR ADMINISTRATION

Lesson 1:	Introduction
Lesson 2:	Confirming Schedules
Lesson 3:	Booking a Client
Lesson 4:	Equipment Checklists
Lesson 5:	Grub Box Checklist
Lesson 6:	Menu Development
Lesson 7:	Client's Equipment Check
Lesson 8:	Client Pre-briefing
Lesson 9:	Load Capacity

UNIT 9 CAMP SKILLS

MODULE B

UNIT 1 GEOLOGY

Lesson 1: Introduction
Lesson 2: Geologic Time
Lesson 3: Three Major Rock Types
Lesson 4: Fossils
Lesson 5: Minerals
Lesson 6: Landscape Features
Lesson 7: Geological Areas
Lesson 8: Zone-specific Geology

UNIT 2 EARLY HISTORY

Lesson 1: General Pre-history
Lesson 2: Origins of the Dene Culture
Lesson 3: Origins of the Inuit Culture

UNIT 3 ARCHAEOLOGY

Lesson 1: Understanding Archaeology
Lesson 2: Legal Considerations
Lesson 3: Identification of Sites and Artifacts
Lesson 4: Stone Tool Making
Lesson 5: Making Artifact Castings

UNIT 4 REGIONAL HISTORY

Lesson 1: Impact of European Economics
Lesson 2: Discovering Regional Events
Lesson 3: Discovering Local History
Lesson 4: Discovering Site-specific History

MODULE C

UNIT 1 BIG GAME ANIMALS

Lesson 1: Site-specific Big Game knowledge

Bear (Black)
Bear (Grizzly)
Bear (Polar)
Caribou (Barren ground)
Caribou (Perry)
Caribou (Woodland)
Deer (Mule)
Deer (Whitetail)
Elk
Moose
Muskox
Sheep (Dall's)
Wood Bison

UNIT 2 FUR BEARERS

Lesson 1: Introduction

Beaver
Ermine
Fox (Arctic)
Fox (Red)
Lynx
Marten
Mink
Muskrat
Otter (River)
Wolverine
Wolves

UNIT 3 SMALL ANIMALS

Lesson 1: Introduction

Chipmunk
Hare (Arctic)
Hare (Snowshoe)
Lemming (Brown)
Lemming (Collared)
Mouse (Deer)
Porcupine
Raccoon
Shrew (Arctic)
Shrew (Masked)
Skunk
Squirrel (Arctic Ground)
Squirrel (Northern Flying)
Squirrel (Red)
Vole (Heather)
Vole (Tundra)
Weasel (Least)

UNIT 4 MARINE ANIMALS

Lesson 1: Introduction

Harbour Porpoise
Seal, Bearded
Seal, Harbour
Seal, Hooded
Seal, Ringed
Whale, Blue
Whale, Bowhead
Whale, Fin
Whale, Humpback
Whale, Killer
Whale, Minke
Whale, Narwhal
Whale, Pilot
Whale, Sperm
Whale, White
Walrus

MODULE D

UNIT 1 FRESH WATER FISH

Lesson 1: Introduction

Char, Arctic
Dolly Varden
Goldeye
Grayling, Arctic
Inconnu
Lake Trout
Northern Pike
Sucker, Longnose
Walleye
Whitefish

UNIT 2 SALT WATER FISH

Lesson 1: Salt Water Fish

Char, Arctic (See Unit 1)
Cod, Arctic
Shrimp, Northern

MODULE E

UNIT 1 PLANT INFORMATION

Lesson 1: Vegetation Regions
Lesson 2: Plant Adaptation
Lesson 3: Landscape Effects
Lesson 4: Scientific Names
Lesson 5: Plant Collecting and Mounting
Lesson 6: Plant Identification

MODULE F

UNIT 1 BIRD KNOWLEDGE

Lesson 1: Understanding Bird-watchers
Lesson 2: Examining the Birder's hobby
Lesson 3: Understanding the Range of Migration
Lesson 4: Examining How Birds Navigate
Lesson 5: Bird Adaptive Characteristics
Lesson 6: Northern Adaptation
Lesson 7: Northern Habitat
Lesson 8: Scientific Names
Lesson 9: Discovering Resource Material
Lesson 10: Family Grouping
Lesson 11: Field Guide Use
Lesson 12: Bird Sightings and Record

MODULE A

UNIT 1 TOURISM

Module A Unit 1 Lesson 1

SKILL: **TOURISM AWARENESS**

OBJECTIVE: Becoming Aware of the Role of Tourism in the Economy of the North

METHOD: Discussion
(Optional: Guest Speaker Economic Development and Tourism)

Drawing upon ideas from the guides, create a list of industries which contribute to the economy of the North. Depending on the location of the course, the perceived importance of each category will vary; however, the collected views should contain at least the following:

-mining
-oil revenues
-forestry products
-commercial hunting and fishing
-sport hunting and fishing
-trapping
-tourism
-manufacturing

Once the list is compiled, have the guides suggest a ranking in relation to income generated. Tourism is one of the top three producers. Growth patterns in tourism and fluctuations in the other categories point to the future potential of tourism.

*OPTIONAL TREATMENT: If possible, a guest speaker from Economic Development and Tourism could present particulars about the growth potential of the specific area.

Often tourism is regarded as being simply seasonal in the North. Even with this short duration, the impact of tourism is large and growing.

From the results of a 1983 study "An Evaluation of the Impact of Summer Tourism on N.W.T. Businesses" these findings emerge:

Tourism accounted for:

-1,500 full time jobs for NWT residents
-2,200 part time jobs for NWT residents
-800 full or part time jobs by non-residents
-an impact level of 40% on continuing business
-a gross cash flow in tourism related business of $46 million;

In so far as growth potential, compare the following Ontario Tourism figures for 1986. Tourism accounted for:

-15,000 direct jobs;

-gross sales exceeding $300 million;

-a total economic impact of more than $1 billion.

In Alaska, revenue from guiding alone is $10 to 20 million dollars annually. It is Alaska's seventh most important industry.

CONCLUSION: Change is constant. By being realistic the individual and the community can benefit from anticipating change.

SKILL: **TOURISM AWARENESS**

OBJECTIVE: Develop an awareness of the tourism potential

METHOD: Discussion

1. Have guides list the various people in the community who are involved in tourism.

This could include:

-guides
-tour operators
-airlines
-hotels, motels
-restaurants
-stores
-arts and crafts co-op

2. Identify geographical and climatic features unique to the community.

3. Identify scenic sites in the community and surrounding area.

4. Identify historical sites in the home community and surrounding area.

5. Discuss the various facilities, services and attractions that could be of interest to a visitor. Have guides list these.

6. Brain storm for ideas on what new facilities, attractions and services could be developed within the community to improve tourism.

CONCLUSION: Tourism potential exists and has the ability to be developed.

Module A Unit 1 Lesson 3

SKILL: **TOURISM AWARENESS**

OBJECTIVE: The guide will be aware of both the positive and negative effects of Tourism

ITEMS REQUIRED: If possible, a guest speaker from Economic Development and Tourism or a representative of the regions' Tourism industry could present this lesson.

METHOD: Lecture and Discussion..

*NOTE: The purpose of this lesson is to identify all the potential effects of tourism, both the good and the bad. However, identification alone is not sufficient. Show how the negative effects can be controlled if they are anticipated.

Break the class into small groups. Challenge one group to list positive effects; have the other list negative ones.

POSITIVE ASPECTS	NEGATIVE ASPECTS
-Economic benefits - can be shared among a number of people in the community-jobs and income.	-Poor planning can result in unhappy customers and frustrated hosts.
-Multiplier effect of economic benefits -spin-off benefits.	-Too many tourists can have a bad effect on the community and be too much to handle.
-Incentive to retain traditional skills can increase pride in culture and environment.	-Abuse of local culture and hospitality - taking photos of people without their permission-invasion of privacy. Lack of information and understanding.
-A 2-way learning experience - visitors learn from you; you learn from them.	-Most tourism development would be seasonal - spring and summer.
-Control of tourism development increases local expertise in planning and operating various types of tours, etc.	-Communities may be taken advantage of by outside tourism operators who offer little economic development to the community.
Possibility for training (guide, hotel staff, etc.) and increased local employment.	-Community subject to such negative influences as drugs, alcohol.

CONCLUSION: Change is constant. By being realistic the individual and the community can benefit from anticipating change.

Module A Unit 1 Lesson 4

SKILL: **TOURISM AWARENESS**

OBJECTIVE: Understanding Industry Involvements

OPTIONAL TREATMENT: Representative of TIA to discuss the industry's role in tourism

METHOD: Display (Video) and Lecture.

In order to show the guides how the industry of tourism operates relate a map of the NWT to the various tourism zones.

The Tourism Industry Association is made up of the following:

-Big River Travel Association
-Northern Frontier Visitors Association
-Western Arctic Visitors Association
-Travel Keewatin
-Baffin Tourism Association
-Arctic Coast Tourism Association

The functions of these associations include:

-providing access to funding for tourism development;
-providing a forum for discussion and resolution of issues;
-providing co-operative advertising;
-providing access to marketing information;
-carrying out public relations activities;
-recommending training needs and workshops;
-acting as a lobby group to call attention to issues;
-replying to requests for zone information;
-encouraging travel to the North.

Some of the financial support comes from members and that represents another cost factor in tourism.

*NOTE: In discussion of the industry role, compare this to Government involvement e.g. Economic Development and Tourism.

NOTE: The student participant manual, item 4, requests the name of the Industry representative as well as the Economic Development Officer. Assure that the students have this information.

CONCLUSION: There are many aspects of the tourism industry that contribute to its growth potential.

Module A Unit 1 Lesson 5

SKILL: **TOURISM AWARENESS**

OBJECTIVE: Examination of Business and Competition

METHOD: Lecture

What is competition?

In order to make this concept clear, the guides can be asked if they have ever competed in anything. Some potential responses could include:

-baseball games;

-hand games;

-other sports or races.

From this the concept of "striving to win" is evolved. Business, too, has to deal with competition.

Is this good or bad?

Competition can be seen as a force that motivates the best to rise to the top. In business it promotes fairness and excellence (relate how the Co-op and the Bay compete).

Draw parallels between business and sports to show how competition forces clear thinking.

In tourism in the NWT - what is our competition?

A list can be compiled of various tourism activities offered elsewhere to underscore the vast amount of competition involved.

CONCLUSION: Competition is a necessary component in the business of tourism.

Module A Unit 1 Lesson 6

SKILL: **TOURISM AWARENESS**

OBJECTIVE: An awareness of the International Competition in Tourism

ITEMS REQUIRED: Video: Tourist Destinations, as well as brochures and magazines that depict world-wide Tourist attractions

METHOD: Display, lecture and discussion.

View promotional tourism videos.

Discuss the potential appeal. What is being offered?

Distribute brochures and magazines that show international attractions. These should include:

-areas with a specialized cultural attraction

-places of unusual scenery

-adventure travel

A list of facilities and prices should be drawn up - include transportation.

Compare these costs with local costs.

Discuss with guides the factors that make outside tourist operations very attractive. Points to emphasize include:

-cheaper rates

-more variety to choose from

-most locations are easier to get to

In discussion, compare the attractions available internationally with those available in the NWT.

How do we stack up?

Why should a tourist choose the NWT?

What must the guide be willing to do to promote tourism?

CONCLUSION: International competition is a force to contend with in the NWT.

Module A Unit 1 Lesson 7

SKILL: **TOURISM AWARENESS**

OBJECTIVE: Canadian Competition

ITEMS REQUIRED: Brochures and magazines showing Canadian Tourist Attractions

METHOD: Display, lecture and discussion

Distribute brochures and magazines that show Canadian Tourist areas. These should include:

-East and West coast scenic attractions

-Rafting and adventure tours

-Naturalist offerings

-Family recreational opportunities

Discuss:

What is being offered?

What price is being asked?

How does Canada compete with the International offerings?

How does the NWT compare?

CONCLUSION: Competition from Canadian operators influences the tourism market of the NWT.

Module A Unit 1 Lesson 8

SKILL: **TOURISM AWARENESS**

OBJECTIVE: The guide will be able to identify NWT competition and

-list various competitors within the NWT

-explain differences and similarities of services offered by competitors

-list factors that will enable an employer's operation to remain competitive in the N.W.T. market.

ITEMS REQUIRED: NWT Explorers Guide, Various NWT brochures

METHOD: 1. List with the guides the various activities available in the N.W.T. These could be categorized under specific Tourism Zones.

2. Review features, services and activities that attract clients to one operation as opposed another. Examples include:

-good service
-price
-good accommodation
-food services
-good access

3. Ask guides to list factors that will enable the employer's operations to remain competitive within the North. The list would include everything above plus the following:

-good management
-good promotion
-information
-hospitable staff
-good conservation practices
-competent trophy handling

CONCLUSION: Although competition exists, it is not overwhelming in its implications. There is opportunity for a creative lifestyle in guiding.

Module A Unit 1 Lesson 9

SKILL: **TOURISM AWARENESS**

OBJECTIVE: Recognition of the need to generate repeat business

METHOD: Discussion and question.

In a lecture format, briefly show the integration of advertisement and promotion required to attract a tourist.

Relate this to the costs incurred in attracting the visitor.

This is only the first step. If this person does not have a pleasurable experience--he will dissuade others from going, and undo all the efforts of previous advertising and promotion.

People tend to repeat enjoyable experiences. They also influence others to try the same experiences. The guide's role is that of facilitator. He must assure a high-quality tourism experience. This high standard enhances his professionalism and ensures repeat business.

(lecture method - psychology of pleasure - approach -avoidance concepts)

Discuss also the concept of the guide as a diplomat; a representative to others of the quality of people found in the N.W.T.

CONCLUSION: Each tourist has to be made to feel welcomed. This will ensure his return and goodwill extended to others to encourage them to visit the area.

Module A Unit 1 Lesson 10

SKILL: **TOURISM AWARENESS**

OBJECTIVE: Promotion of other tourism facilities

METHOD: Question and discussion.

First, state the necessity of ethics. If a guide is working for one employer, he should not recruit business for a competing facility; nor should he use this opportunity to recruit business for himself. As an employee, he must honestly represent the establishment he works for.

However, there is no conflict of interest or breach of ethics to promote other tourist attractions in the area. In fact, this enhances the value of the tourist's experience as well as contributing to the general income of the area.

By question--get the guides to suggest other possible tourist attractions in the area. Some suggestions:

-visiting the arts and crafts shop

-chartering an air sight-seeing flight

-visiting a carver at work

CONCLUSION: The guide should reveal other tourist options which do not conflict with his situation. This will benefit the tourist and the area income.

A butte is located near the Nahanni. Probably capped with a resistant rock, a butte is almost like a cuesta. The difference is that a butte has a flat level top and steep sides of equal height. At the base of the butte is talus, i.e. rubble that has eroded from the butte and collected. Placer gold exists in this area.

At the mouth of the Hay River is a delta, the area where all the sediments carried down by the river are deposited. The gorge through which the Hay River runs is probably a result of the water eroding a channel into the rock.

A few non-renewable resources are mined. The Selwyn Mountains are a location for Tungsten mining. Tungsten deposits resulted when magma intruded into some surrounding rocks. The magma is very hot, its high temperatures metamorphosed the nearby rocks. Together these actions caused tungsten deposits to be formed. Pine Point is mined for lead and zinc just as Nanisivik is. The ore at Pine Point is found in younger Paleozoic rocks while in Nanisivik ore is found in older Proterozoic rocks.

Fossils (corals and shells) should be abundant where the McKenzie highway enters the Big River Country Travel Zone. Here, there is an old barrier reef.

NORTHERN FRONTIER ZONE

The area around Yellowknife is an example of the Canadian Shield within this region. More than 80% of the gold produced in the N.W.T. comes from the camps on the west side of Yellowknife Bay.

Gold was first discovered in sediments in 1865. It wasn't until 1935 when a formal mapping exercise found the true source of the gold in volcanic (igneous extrusive) rocks. What happened was that over time, the volcanic and the small pieces were transported and deposited forming sediments.

Yellowknife also has local lithium deposits found in pegmatites (also igneous intrusive rocks). Pegmatites have much coarser crystals and are more concentrated in rarer elements than most other rocks.

THE WESTERN ARCTIC TRAVEL ZONE

The Western Arctic Travel Zone encompasses both the Cordilleran Mountain Range and the Interior Plains. In the western part of the region are the Franklin, Mackenzie and Richardson Mountains. The mountains consist of sediments that have been slightly to highly deformed (folded). The sediments host gabbroic sills (gabbro is a dark green igneous rock). In the eastern part of the region, the Interior Plains consist mainly of flat lying sediments; some are slightly deformed. These sediments also host some gabbroic sills.

The mountains show a number of features. Before the mountains ever formed, there were flat lying sediments. During the orogeny (mountain building process) the sediments were uplifted and folded. Large folding can be seen from a distance.

For the most part, these mountains were glaciated and show the typical effects, including U-shaped valleys, horns and cirques. North along the Dempster Highway, the Mackenzie Delta begins as soon as the Richardson Mountains end. The Mackenzie Delta, the largest river delta in Canada, is a "triangular" area of flat land at the mouth

of the Mackenzie River. A delta is created when a river carrying large amounts of sediments deposits them at the mouth of the river. Since the amount is too great to be washed away, the sediments accumulate. The river then begins to meander and send small off-shoots, so that eventually the area is a network of small waterways. The huge amounts of sediments can cover a large area giving it a flat, muddy topography.

Aklavik is located on the delta and it was thought that the land was too unstable to support the town.

Northeast of the Mackenzie Delta lies Tuktoyaktuk, a town also located in low lying, flat, wet grounds. Tuktoyaktuk is known for the pingos which occur there. (See: Pingos of Tuktoyaktuk -- A Natural Site of Canadian Significance/Parks Canada.

Oil is the most important non-renewable resource within this travel region. Norman Wells is a major oil producer in Canada and spurs the extensive oil exploration going on within that area. Mineral exploration has a fairly low potential.

UNIT 2 EARLY HISTORY

Module B Unit 2 Lesson 1

SKILL: **GENERAL PRE-HISTORY**

OBJECTIVE: Understanding the movement patterns of early NWT inhabitants

ITEMS REQUIRED: Map of North America (to show migration routes)
Canadian Arctic Prehistory-slide presentation
also Robert McGhee - "Canadian Arctic Prehistory"

METHOD: Lecture and discussion

*NOTE: - the following material aims to give a broad outlook on the forerunners of the Dene and the Inuit. Show how this time frame coincides with ice-age occurrences.

40,000 years ago: Asiatic hunters crossed a land bridge between Alaska and Siberia. These small groups drifted across what is now Alaska and the Yukon, hunting and fishing as they went.

As the Ice Age retreated, these people (Paleo-Indians) populated more and more territory, going south into British Columbia and east to the Mackenzie Valley

Later, a new wave of Asiatic migrants arrived in Alaska. These people made stone tools and were referred to as the Northwest Microblade Tradition.

7,000 years ago: Late Paelo-Indian or Plano bison hunters moved from the plains north into areas that had been covered by ice. They hunted bison and followed the caribou through their migration onto the barrens. Their way of life seems similar to that of the Slavey and Chipewyan. Acasta Lake has yielded some evidence of this time period.

6,000 years ago: The Paleo-Indian had become the first distinctive culture of the Canadian Shield, known as the Shield Archaic. They continued to move with the caribou, following them to the tundra in summer. The people of the Shield Archaic were possibly ancestors of the Cree and other northern woodlands people.

4,000 to 5,000 years ago: A migration of people from Siberia brought the ancestors of the Inuit. Their lifestyle was referred to as the Arctic Small Tool tradition. They used tiny blades and sewed skins. This tradition is also referred to as the Denbigh or pre-Dorset culture. The Arctic Small Tool people soon spread from Alaska to Greenland.

3,500 years ago: The climate of the Northwest Territories grew colder and the treeline shifted to the south. The Shield Archaic people soon abandoned the northern part of their territory as did the Arctic Small Tool people. The latter developed a new Paleo-Eskimo culture, the Canadian Tundra tradition, which ended about 2,500 years ago. At this time a new Inuit culture was

developing from the Arctic Small Tool tradition in the northern region of Foxe Basin.

2,700 years ago: The Dorset culture, named after Cape Dorset, began. These people are recognized as the inventors of the snowhouse, the bone snowknife and the oil burning stone lamp.

2,000 years ago: In the southwest corner of N.W.T., the Northwest Microblade tradition evolved slowly into the Athapaskan tradition and these people could have been the ancestors of the modern Slavey Dene.

At about the same time the Northwest Microblade tradition disappeared from the southern Yukon. A new culture, the Taltheilei Shale Tradition appeared around Great Slave and Great Bear Lakes; areas that had been vacated by the Canadian Tundra people. The origins of the Taltheilei Shale people are not clear, but they appear to have been the direct ancestors of the Yellowknife Chipewyan Dene and maybe other Dene groups.

Other Dene groups in the NWT, such as the Loucheux, a branch of the Kutchin, may similarly descend from the evolving Northwest Microblade cultures of Alaska and Yukon.

1,000 years ago: A new Inuit tradition, the Thule culture, arose near the shore of the Bering Sea. The people of this tradition were whale-hunters and followed the whales as they moved east.

800 years ago: The Thule people had spread through the Arctic from the Mackenzie Delta to Greenland. They had dogs, kayaks, and umiaks. The Thule soon absorbed or eliminated the Dorset people, and are the direct ancestors of modern Inuit.

300 years ago: A return of very cold weather brought about a change of dependence on whales to dependence on smaller sea mammals in many parts of the Arctic. By then, different groups of Inuit and their Dene neighbors to the south had developed slightly differing ways of life.

View the slide set "Canadian Arctic Prehistory".

NOTE- Use the foregoing to stimulate discussion about migration patterns. Point out that the Navajo of the southern U.S. have the same basic language as the Dene of the N.W.T. Seek input for similar parallels in West to East Inuit migration.

CONCLUSION: The guide must be aware of the past in order to interpret the present.

Module B Unit 2 Lesson 2

SKILL: **GENERAL PRE-HISTORY**

OBJECTIVE: Understanding the origins of Dene culture

ITEMS REQUIRED: N.F.B. Video - "The Last Mooseskin Boat" (C0182, 102)

"Collected Papers on the Human History of the N.W.T." Prince of Wales Northern Heritage Centre Occasional Paper No. 1

METHOD: Lecture and discussion

During the last 2,500 years, the Dene have inhabited the forests and barrens of the continental Northwest Territories. The foundation of their lifestyle was the close interaction with the land and its wildlife. Knowledge of weather conditions and the movement of animals was paramount to their survival.

The Dene moved constantly, in response to seasonal change and the migrations of animals such as caribou. Fish was another source to of food and triggered moves to fishing camps in spring.

Specific Dene Groups

The Chipewyan lived in the forest and tundra of northern Alberta, Saskatchewan and Manitoba and the Northwest Territories to the east of Great Slave Lake.

The easterly Chipewyan hunted caribou through to the Keewatin area, and still do. The Yellowknife Chipewyan occupied the east end of Great Bear Lake and Great Slave Lake. They spoke a different dialect and made tools and weapons from copper. The Yellowknife Chipewyan ceased to exist as a separate group. This may have been the result of territorial battles with the Dogrib in combination with changes brought by European fur-traders. The origin of the Dogrib people is uncertain, although their language is similar to the near-by Slavey. Their name comes from a legend in which they are said to be descendants of a supernatural dog-man. They live, as in the olden days, between the north shore of Great Slave Lake and south of Great Bear Lake. They depend mostly on caribou and fish as food sources.

There are several different groups of Slavey. Southern Slavey live near the Hay River drainage, in Alberta, B.C., Great Slave Lake and in the southwest of the NWT. There are three northern dialects and Mountain Slavey was spoken by the people who live in the mountains, west of the Mackenzie and Liard rivers. The Mountain Slavey used huge moose skin boats for transportation and hunted mountain sheep and goats.

The Hare or Hareskin Slavey inhabited the northwestern Great Bear Lake area and hunted small game such as hare, and fish.

The Loucheux are a branch of the Kutchin, an Athapaskan cultural/linguistic group, that stretches from the Peel River in the NWT through Old Crow, Yukon and into Alaska. Their dialect is totally unique to themselves and neighboring Dene groups do not understand it. These people hunted caribou and other game and fish.

NOTE:- Use the foregoing to stimulate discussion on traditional insights of origins. Compare these to other interpretations.

View the video "The Last Mooseskin Boat". Discuss how specific animals are central to the culture of specific groups of people. For example, compare the use of moose by the Shotah Dene with the use of seal by the Netsilik Inuit. Compare other examples.

Depending upon the specific location of the course, use an appropriate section of "Collected Papers on the Human History of the NWT, Prince of Wales Northern Heritage Centre Occasional Paper No. 1". Discuss its relevance to the course site.

CONCLUSION: Present patterns have roots in an important past.

Module B Unit 2 Lesson 3

SKILL: **GENERAL PRE-HISTORY**

OBJECTIVE: Understanding the beginnings of the Inuit Culture

ITEMS REQUIRED:
Map of NWT
NWT Data Book, page 39
"Thule Pioneers" Prince of Wales Northern Heritage Centre-Occasional Paper No. 2"
"Canada's Visual History", slides # 2, 6, 14, 24
Robert McGhee - "Canadian Arctic Prehistory"
Films: Netsilik Series: Stalking Seal on Spring Ice

METHOD: Lecture and discussion

The modern Inuit are descendants of the Thule people who occupied the Arctic about 1,000 years ago. Their lifestyle varied depending on the animal resources. They were nomadic, following caribou, sea mammals or whales. In the summer, they lived in skin shelters, whereas the igloo (snowhouse) was used in the winter. The Inuit also built houses of sod, stone and whalebone.

Specific Inuit Groups

Slight differences between the Inuit groups were determined by the resources in their hunting territories. The Ungava people who lived in northern Quebec and the Belcher Islands, had access to more wood and brush resources and developed basketry skills. They also used the seasonal bird population as resources.

The Sallig people, from Southampton Island in Western Hudson Bay, used polar bear skins for clothing and hunted mainly walrus. Little is known of these people as they were eradicated by disease brought by foreigners. The last of this group died in 1948.

The South Baffin Inuit lived in Baffin Island and hunted all available wildlife species. They had close ties to the Ungava Inuit and would often cross over the Hudson Strait to visit and collect wood.

The Iglulik Inuit populated a large area on north Baffin Island and the Melville Peninsula. Depending equally on the land and sea for their food supply, they were proficient hunters of walrus and baleen whales. They were able to spend more time at recreational activities because they had a large and dependable food supply.

The Netsilik Inuit lived west of the Iglulik people, on or near King William Island. As their territory was mostly ice bound, they became adept at seal hunting on winter and spring ice.

The Caribou Inuit occupied the interior Keewatin. These inland people hunted and fished on the coast only in summer and had

little to do with the sea. These Inuit depended almost completely on caribou. They burned caribou fat in their stone lamps and sometimes had lived without heat in their snowhouses.

The Copper Inuit inhabited Victoria Island and near Coronation Gulf where copper deposits were found. They made tools and utensils out of copper and used it to trade with other groups. They were skillful hunters of seals and followed the caribou and muskox to the tundra in the summer.

The Karngmalit or Mackenzie Inuit existed near the mouth of the Mackenzie River where it flowed into the Arctic Ocean. Their territory was abundant in caribou, muskox, whales, walrus and seals. Their main source of food, bone and fuel came from the white whale or beluga. They lived in large villages with a complex social life. They were wiped out by foreign disease by the early 1920's.

NOTE: - Display slides and interpret the areas discussed. Use the map of the NWT in conjunction with the Aboriginal Peoples map on page 39 of the NWT data book.

Discuss the implications of cultural impact in 1500 A.D.

How does this compare to today's interaction?

View the film "Stalking Seal on Spring Ice". Discuss traditional hunting methods that point to Thule origins. Examine hunting tools in light of the premise that form follows function. Why did the harpoon evolve as a useful maritime weapon?

CONCLUSION: Understanding the impact of different cultures reveals present patterns.

UNIT 3 ARCHAEOLOGY

Module B Unit 3 Lesson 1

SKILL: **ARCHAEOLOGY**

OBJECTIVE: Understanding Archaeology

ITEMS REQUIRED:

Canada's Visual History Volume 53
Articles from Northern Perspectives
"Archaeology in the Northwest Territories"
"The Social Context"
"Daniel Weetaluktuk"
Northwest Territories Archaeology Field Work Number 3 and Number 4
"Thule Pioneers" Prince of Wales Northern Heritage Centre, Paper No. 2

METHOD: Lecture, Display and Discussion

Outline the purpose and methods of archaeology. Be aware that some students may have negative information on this science. (See "The Social Context": Archaeology's image in the Northwest Territories). Bolster a positive view in reference to Daniel Weetaluktuk.

Refer to slides in Canada's Visual History - and/or photos from the "Occasional Papers". Discuss the importance of systematic research of the past. Link this to other knowledge by questions like:

-why are older artifacts found in Alaska rather than in the NWT?

-why are artifacts more commonly found above the treeline?

CONCLUSIONS: The interpretive guide must be aware of archaeology's contribution to current awareness.

Module B Unit 3 Lesson 2

SKILL: **ARCHAEOLOGY**

OBJECTIVE: Understanding the laws protecting archaeological sites.

METHOD: Lecture and discussion

It is extremely important that an interpretive guide is knowlegable in site identification and preservation. Part of interpretation consists of showing guests the historical evidence of previous occupation; however, the guide must be aware that any artifacts and the sites are protected by law. The guest should be informed prior to reaching the site that he may not remove any found objects.

There are three laws which protect archaeological sites in the Northwest Territories.

1. The Northwest Territories Archaeological Sites Regulations, which apply throughout the NWT, state:

Section 3. No person shall excavate or investigate any archaeology site in the territories or remove from the Territories or collect any archaeological specimen unless he has obtained a permit to do so.

2. The Terrritorial Land Use Regulations apply on Federal Crown Lands.

Two sections are relevant to archaeological sites:

Section 10(a). No permittee may, unless expressly authorized in writing by an inspector, conduct a land use operation within 30 meters of a known or suspected archaeological site or burial ground;

and

Section 16. Where, in the course of a land use operation, a suspected archaeological site or burial ground is unearthed or otherwise discovered, the permittee shall immediately,

a) suspend the land use operation on the site; and

b) notify the Engineer or an inspector of the location of the site and the nature of any unearthed materials, structures or artifacts.

3. The Historical Resources Ordinance pertains to Commissioner's Land.

Protection of archaeological sites in these areas is provided by:

Section 9(1) . Whenever, in the opinion of the Commissioner, any prehistoric or historic remains, whether or not designated as an

historic place under this ordinance or under the Historic Sites and Monuments Act of Canada, is threatened with destruction by reason of commercial, industrial, mining, mineral exploration or other activity, the commissioner may order the persons undertaking the activity to provide for adequate investigation, recording and salvage of prehistoric or historic objects threatened with destruction.

If a guide discovers a new site he should contact:

Senior Archaeologist
Prince of Wales Northern Heritage Centre
Government of the Northwest Territories
Yellowknife, NWT
X1A 2L9
(403) 873-7551

The guide should be prepared to give map co-ordinates of the site and a description of what he has found. This is important since the traces of history belong to the people of the N.W.T. Once the traces are disturbed or removed, the knowledge to be gained is gone forever.

CONCLUSION: The interpretive guide is responsible for protecting the historical heritage of his area.

Module B Unit 3 Lesson 3

SKILL: **ARCHAEOLOGY**

OBJECTIVE: Identification of sites and artifacts

ITEMS REQUIRED: Map of the course area. Photos of tent rings, artifacts from (Collected Papers or Visual History)

METHOD: Discussion

Identify sites in the area that are documented. Show their location on the map. Have the participants search their memories for other evidences they have found (e.g. tent rings, sod house areas, old wood fire remnants etc). Pursue any promising leads and perhaps use these in determining the field camp location.

See if there are any locally available artifacts that people have collected previously. Have the participants try to determine the material and function of the item. If any lithic items are discovered, study the method of production. Discuss small-tool work sites.

Using the map, and assessing glacial rebound, attempt to predict potential areas of previous use.

From similar examinations, archaeological finds occur and much can be learned from a careful examination of the artifacts.

The following describes a specific site and what was learned from it.

Five Thule sites were discovered in the Nelson River region in 1980. The main site, the Nelson River site, had depressions which were scooped out in preparation for a house. Since wood is fairly rare, the frames of the houses consisted of driftwood, planks, whale bones, and antlers, all of which were covered by sod and skins.

The Thule usually lived as several families together combining their hunting efforts. It odd, therefore, that only 2 houses were found at the Nelson River Site.

Artifacts

More than 1400 artifacts were found. Some of these were identified using early arctic explorers', traders' and missionaries' journals.

Hunting and Fishing

Open water hunting is proved because some floats were found. These were once attached to harpoon line and used to cause drag to tire out harpooned seals. In addition, 2 types of harpoon heads

were found. Both types can toggle, one was barbed, the other was smooth and had a slot for a stone tip.

No artifacts were found to indicate hunting at breathing holes was practiced. Some archaeologists maintain the Thule didn't know how to hunt from breathing holes at this time.

Archery

Since wood was scarce, the Thule bow was made of small pieces of wood spliced, glued and lashed together. The bow was bent into its final shape and then strengthened by twisted and braided sinews attached along the length of the bow. The bow string was made of braided sinew, and the arrows of single pieces of wood or smaller pieces spliced together.

Barbed Arrow points were found at the Nelson River site.

Misc. Hunting Weapons

Other hunting weapons found include whale bone weights belonging to Bolas, hooks that were baited and small pieces of bones called gorges. All these weapons were used to hunt birds. Barbs which may have been part of a leister (trident-like fish spear) were also found.

Transportation

Fragments of a paddle were evidence that water craft, probably umiaks, were used. Sled parts, as well as models or toys found indicate that the Nelson River people used the komatik. The bottom of the komatik runners were shoed with strips of baleen.

Tools

The Thule did little trading and made most things they needed. Many of the artifacts were tools. Two types of knives were found; a man's knife consisting of a wooden handle into which a blade was inserted and a woman's knife, an ulu, made of a crescent blade with a wood or antler sleeve. The blades were made of thin pieces of slate. Caribou and bear teeth were used for chisels or drills while stones were used to scrape.

The stone scrapers found at the the Nelson River site were all shaped by chipping which produced serrated edges.

Clothing

Winter garments were also found there. These consisted of 2 layers of skin clothing which were sewn using copper needles and thread made of sinew or baleen. Awls, made of small pieces of pointed bone were sometimes needed to make the perforations in the skin.

Personal Adornment

Items found included antler bands which fasten around the forehead, necklaces made of drilled or notched teeth, small buttons and tooth pendants sewn onto clothes to give powers to the owners. A functional pair of snow goggles were found at the Nelson River site also.

Toys

Toys were fairly abundant and had the purpose of teaching children adult ways through imitation. The toys consisted of replicas of hunting tools and sleds and dolls.

Faunal Remains

The quantity of animal bones around the site indicate the success the Thule had exploiting the available resources.

Whales were a very important resource to the Thule since a single whale could support a fair sized group of people and their dogs with food and fuel. Ringed seals were probably the next most important animal for the Nelson River people. The seal's meat and blubber were used for food and fuel while the waterproof skins were used for foot gear and covering kayaks.

From the proportions of the remains found, land animals were not hunted as extensively as sea mammals. Fox were probably hunted for their fur as most of the skeletons remained intact. Caribou provided pelts for winter clothing, while hares were used for food.

No fish bones were found. This may be mainly due to the fact that no nearby lakes were present, and the rivers lacked boulders necessary to construct weirs (fish traps).

Dating

The Nelson River site was dated using radio-carbon techniques and cross-dating. Cross-dating was done by noting that the harpoon heads found were fairly ornate. Through time, harpoon heads have become simpler in design. The Nelson River Site harpoon heads correspond with the late Birnirk or early Thule cultures as they are known in Alaska. Cross-dating verifies the radio-carbon ages of approximately 900 A.D.

From this description of the Nelson site, it can be seen that archaeology consists of many skills. Not only methodical

process, but some "detective" work to guess the lifestyle from the clues.

Discuss some local artifacts.

What do these clues tell you?

CONCLUSION: The interpretive guide must train his powers of observation to detect early traces which can tell a story.

Module B Unit 3 Lesson 4

SKILL: **ARCHAEOLOGY**

OBJECTIVE: Stone tool making

ITEMS REQUIRED: Video - "Lithic and Bone Technology"

A selection of raw materials:
-hammer stones
-chert or suitable materials
-antler tine
-old leather glove
-safety glasses

METHOD: Lecture and demonstration

NOTE:- This lesson can be partially covered in a classroom setting, and the practical stonework can be done later in the field.

There are several important aspects to this lesson. First, the participants will have a hands-on appreciation of the difficulties faced by early inhabitants. Second, in their attempts to duplicate arrowheads or cutting tools, they will identify objects which they may have previously disregarded as potentially man-made artifacts. Third, by the debris created in their work, they will be able to relate to other debris piles in the field,which will now be recognized as tool making places. Finally, this new skill will be added to their own survival skills as well as forming a topic of interest for their guests.

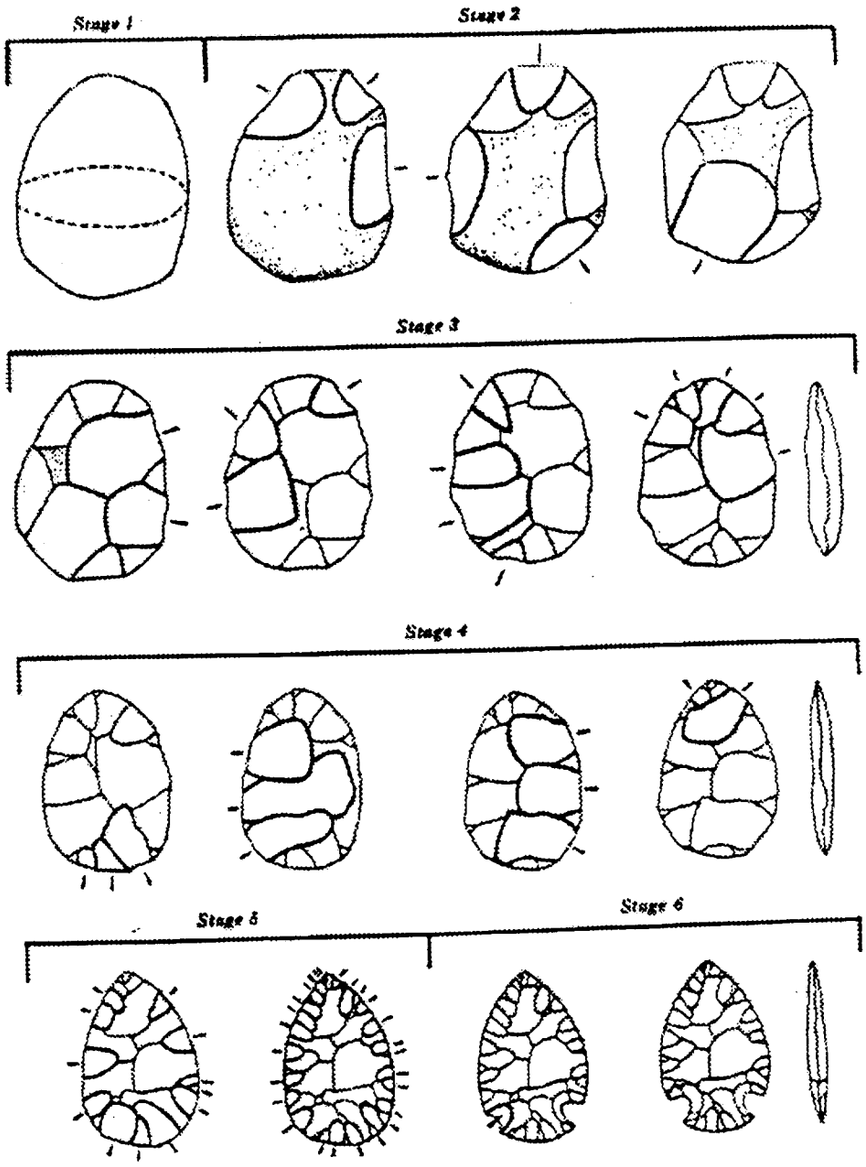
As a field exercise, each participant will be required to create a stone tool.

Use the following diagrams to aid the initial effort.

Bone technology should also be explored. During field camp, participants can progress using a constructed burrin to create a bone arrow point

CONCLUSION: The guide will have an appreciation for the sophistication of "primitive tools".

LITHIC REDUCTION CONTINUUM



Method B Unit 3 Lesson 5

SKILL: **ARCHAEOLOGY**

OBJECTIVE: Making artifact castings

ITEMS REQUIRED:
Video - "Casting"
Raw Materials - wax, plastic shim strips, silicone rubber, petroleum jelly, epoxy resin, powdered fiberglass filler, dye, oil paint, turpentine
Sample artifact

METHOD: Discussion and demonstration

It would be advantageous for an interpretive guide to know how to make castings of artifacts. These could be used in several ways:

-as additions to the "kit", rather than risk carrying real artifacts.

-as local displays, or in hands-on work with young people.

-as a potential "gift" to give to your guest so he is not tempted to remove an actual artifact.

Review the video and note the sequence of necessary steps.

Obtain a sample artifact or choose suitable facsimiles from the stone tools made by the participants. Allow the students to work in groups to prepare the requisite casting. Attempt to duplicate the original work with as much attention to detail as possible. Paint the casting to complete the process.

CONCLUSION: Castings, rather than artifacts themselves should be used for client familiarization.

UNIT 4 REGIONAL HISTORY

Module B Unit 4 Lesson 1

SKILL: **REGIONAL HISTORY**

OBJECTIVE: Understanding how forces of foreign economics affected regional aboriginal culture.

ITEMS REQUIRED: N.F.B. Film: Stefansson - The Arctic Prophet

METHOD: Lecture and discussion

Two major impacts on Northern Life were brought about by European fashion. The whaling trade and the fur trade sought to cater to the European demands by obtaining raw materials from the North.

The Fur Trade

In the 16th century in Europe, the beaver hat became fashionable and so began the fur industry in Canada.

The Hudson's Bay Company was established in 1670. It depended on native hunters to take goods inland from the Company and bring back furs from different tribes.

French traders ventured into the interior of Canada to seek furs. The interaction between these French voyageurs and native women established a new race, the Metis.

The Chipewyan were greatly affected by the fur trade. They acted as hunters, guides, and middlemen. Unfortunately, the negative effect of contact with foreigners was the devastating outbreak of diseases such as smallpox.

Whaling

In 1818, the first commercial whaling expedition off Baffin Island began. This commercial venture was also caused by a European fashion trend.--whalebone was needed for the construction of ladies' corset stays and bustles. Whale oil was also used for lamp fuel, soap, and a base for paints.

Lives of the Inuit groups in Hudson Bay, Davis Strait and the Beaufort Sea became greatly affected by this industry. Inuit worked on the whaling boats and acted as hunters and interpreters.

Though the whaling industry was important to the Inuit, they did not become totally dependent on it. In 1914, the whaling industry became obsolete.

As was the case with the Dene, foreign diseases were a problem and some Inuit groups were totally wiped out.

Points of Discussion:

-What local evidence remains of either trade?

-What are some of the benefits and some of the disadvantages remaining from the fur or whale trade?

-Is a similar exploitation still taking place?

-Can history be related to a client without a sense of blame?

View the film: Stefansson - The Arctic Prophet.

Discuss the viewpoints held in the film regarding the aboriginal people.

-What were some of the "Prophesies?"

-Why was Stefansson successful as an explorer?

-Discuss some of the information on Copper Inuit dress and igloo building.

-What other impacts may the future bring?

NOTE:- It is important that the guides see their roles as resource persons, not as politically motivated crusaders. Point out the benefits of impartial story-telling and the necessity for the guest to draw his own conclusions from the history of the area.

CONCLUSION: The guide must understand the forces which impact aboriginal culture and be able to deal impartially with their rendition.

Module B Unit 4 Lesson 2

SKILL: **REGIONAL HISTORY**

OBJECTIVE: Discovering regional historical events

ITEMS REQUIRED: Various publications from the Tourism Industry or Government sources

METHOD: Lecture and discussion

Using available material, outline the general history of the specific region. For example, the following excerpt from the Keewatin Factbook (available from Travel Keewatin) puts this into perspective.

KEY DATES

5000 B.C. Last "Great Ice Age" ends, first hunters from Asia appear. People known as "Arctic Small Tool Tradition:, use small flint tools.

1000 Climate grows warmer "Dorset" culture appears. Introduce snow houses (igloo).

1300 Further warming period. "Thule" culture from Arctic coast either conquers or absorbs Dorsets. Dog sleds, kayaks, stone houses introduced. Large whaling villages.

1610 Henry Hudson sails into Hudson Bay.

1650 "Little Ice Age" begins. Thules abandon villages for smaller nomadic groups. Hunting shifts from whales to seals and caribou "Modern Inuit " evolve.

1668 French expatriates Radisson and Groseilliers sail into Hudson Bay on the English ship, "Nonsuch".

1670 The Governor and Company of Adventurers Trading into Hudson Bay , (later called Hudson's Bay Company) formed.

1719 James Knight marooned on Marble Island.

1846 Dr. John Rae winters at North Pole River. First explorer to successfully use native methods of travel.

1860 First American whalers appear in Bay to hunt bowhead whales. Due to distance, whalers "over-winter" to hunt for two summers before returning.

1912 First Roman Catholic Mission established at Chesterfield Inlet.

1930 Market for fox furs depressed. Creates economic hardship for Inuit.

1950's Caribou migration/population patterns change drastically, inland Inuit experience famine. Canadian government moves Inuit to communities to provide education and social assistance services.

1957 North Rankin Nickel Mine established. First wage-based economy.

1962 Rankin Inlet's mine closes.

1973 Territorial Government Regional Administration moves from Churchill Manitoba to Rankin Inlet.

1983 Start of tourism in the Keewatin Region.

If the course location allows access to resources (school library etc.) assign various items in the region's history as research work for the participants. Have them prepare their essay for class delivery.

NOTE: Depending on the student mix, the instructor should be aware of the possible necessity of showing how to locate research material.

Discuss the findings to relate to the visible traces of history. Show how to weave these into a "story" rather than a memorized list of dates.

CONCLUSION: The interpretive guide must be aware of the historical events of his region.

Module B Unit 4 Lesson 3

SKILL: **REGIONAL HISTORY**

OBJECTIVE: Discovering local history

ITEMS REQUIRED:
NWT Data book
Vicinity map: Land Use Information Series
Guest Speaker

METHOD: Lecture and research assignment

(1) Find what communities are represented by the course participants. Divide the class into groups so that each group is responsible for the information on one community. Have each group prepare a point form history of their community, as they know it. One spokesman from each group will be responsible for telling the "story" of his community, while the others take notes or ask questions.

(2) Distribute the N.W.T. Data sheets for the appropriate communities (See the following example for Cambridge Bay). Discuss the relevant features of local history. Point out also the other contemporary information that a guide will be expected to know.

(3) The land use information map contains information on known historical sites. Locate any pertinent sites. Discuss the historical events and why this location was significant.

(4) Attempt to locate a local guest speaker who is knowledgeable in local history. Have him present topics of interest. Failing this, search the resources available within the course participants. See if any can contribute knowledge of local events.

CONCLUSION: Knowledge of local history is a prime resource of the interpretive guide.

Module B Unit 4 Lesson 4

SKILL: **REGIONAL HISTORY**

OBJECTIVE: Discovering site-specific history

ITEMS REQUIRED: Various texts and publications
NOTE - It will be the instructor's responsibility to research material required for specific site locations.
See Resource Package

METHOD: Lecture and discussion

Depending upon the course location, a site specific delivery may be required. If there is a recognized area of significant historical interest, discover the available resources and use these to create lessons dealing with the site.

For example, areas like Kekerten Historic Park or Wager Bay are documented in various texts and publications. Magazine articles and Parks Canada data can also be brought to bear on the topic. Within the Resource Package accompanying this text are contained several examples dealing with Wager Bay.

These include:

-Wager Bay - A Natural Area of Canadian Significance, Parks Canada, QS-7056-020-EE-A1

-Wager Bay: A human history review -- Prepared for Sila Lodge by Eskimo Museum, Churchill (1988)

-Wager Bay: A history and a future--David F. Pelly, in The Beaver October/November 1987

During the classes, structure the information to show:

-how it relates to local history
-how it relates to the region in general
-why the course of events took place
-what residual proofs exist to relate to this history
-how the guide can include this in a "story" of the place

Reveal also:

-your methods of research
-sources for the guides to access

NOTE:- Travel Arctic and Parks Canada are good sources of information. Check resources available at Economic Development and Renewable Resources also.

CONCLUSION: Besides seeking local information sources, the guide will be responsible for research on site specific history.

MODULE C

Module C Unit 1 Lesson 1

SKILL: **BIG GAME ANIMALS**

OBJECTIVE: Site-specific big game knowledge

ITEMS REQUIRED: Field Guide to North American Animals
Student Work Sheets (Participants' Manual)

METHOD: Lecture and discussion

1.

Select the big-game animals indigenous to the course site. Distribute the appropriate Participant's notes sheets. (A master-copy follows each animal listed). During the lecture and discussion, have each student make notes under the appropriate headings. There is a blank name category for the Native nomenclature of the animal. There is also a section titled "other information". This should be used to include class participation comments. Encourage the trading of ideas, legends and stories about each animal. Additional note paper can be used if a great deal of information is given. If possible, a guest speaker may be used who is knowledgeable of the area's wildlife.

2.

Discuss the tracks and scats of the animal. Show how these and the animal information can be woven into "stories" for the guests of the interpretive guide.

3.

Show how to use the Field Guide. Allow access for those who wish to do further research on the local animals.

CONCLUSION: The interpretive guide will be knowledgeable regarding the animals of his area.

Ursus americanus

BLACK BEAR

Ursus americanus

HABITAT:

The black bear is a forest dweller. He seems to accept quite readily diverse areas that contain food and cover. Up to 80 per cent of his food intake consists of vegetation, while the rest, in varying degrees consists of found carrion or chance moose calf kills or other opportunities. The bear is readily adaptable to wide extremes of terrain.

DESCRIPTION:

Predominantly black, other colour variations include cinnamon. There are occasional white markings on the chest area in a "V" or diamond shape.

Size and weight variation seems linked to genetic and nutritional considerations. The same aged adult could vary up to 200 pounds in weight, determined by food availability. A weight fluctuation of about 30 percent can occur in the same adult from spring to fall. Males tend to be larger than females, but an average adult weight approximates 250 pounds with extremes of over 400 in the north to 600 in the south. A bear with a spring weight of 250 will measure about 6 feet, nose to tail.

The bear remains dormant during the winter. His body temperature drops only slightly and he can be aroused with a loud sound. During this dormant period (October - April) the bear does not soil its den with any waste matter.

Bears mature sexually at 4 to 6 years and can reach a quarter century longitivity, although this is not common in the wild.

REPRODUCTION:

Mating activity occurs in late - spring - early summer. Fertility is linked to food availability. Normally the female has a single cub; however, in later years with good nutrition twins are common and triplets are not rare.

Delayed implantation is exhibited and the blastocyst does not continue development until about October, when the female dens for the winter.

The cubs are born in January to February. About the size of a human thumb, they weigh only ounces and are devoid of hair or sight. They nurse until about August and normally

den with their mother the following year. At the onset of spring and mating season, they are chased off to fend for themselves.

PREDATION:

Male bears are cannibalistic, so the female shuns male contact after the birth of her cubs. Man is the only other significant predator.

INTERPRETIVE GUIDE COURSE

PARTICIPANT'S NOTES

Ursus americanus

BLACK BEAR

SIZE:

WEIGHTS:

REPRODUCTION:

PREDATION:

OTHER INFORMATION:

Ursus arctos

GRIZZLY BEAR/BARREN GROUND GRIZZLY

Ursus arctos

HABITAT

Grizzly bears can be found in mountainous, semi-open, or barren-ground country. They are distributed throughout Alaska, Yukon, much of the Northwest Territories and southward through most of B.C. and Western Alberta. The term "Barren-ground grizzly" is used to refer to a distinct population of grizzly bears in the N.W.T. This area consists of the northern and eastern MacKenzie and continues to the central Keewatin.

DESCRIPTION

Normally creamy coloured or yellowish-brown to black, their white-tipped hairs give them a "grizzled" appearance. In the barrens, the bears tend to have a lighter colouring. They differ from the black bear in that their face has a "dished" profile, and their shoulders form a prominent hump. Their claws, also, are much longer than the black bear's and this shows up clearly in their tracks. Finally, their size is much greater than that of a black bear. Their shoulder height is about 1 1/2 meters, and their weight can vary from 400 to 600 kg at 8 or 9 years of age.

The Alaskan Brown Bear was once regarded as a separate species; however, it is a brown northwestern coastal grizzly. These can reach 770 kg (1,700 pounds), which would qualify it for the title of the world's largest terrestrial carnivore.

The grizzly has a walk which looks deceptively slow and clumsy; however, it can run as quickly as a horse.

Basically an omnivore, the grizzly will feed on many kinds of plants, including roots or sprouts, fungi, berries, fish, insects and various animals. During the spring, they graze on new grasses, sedges and roots, and switch to berries in the summer and fall. They will also dig insects from rotting logs and small mammals from their burrows. The remains of larger animals are often cached.

When salmon migrate upstream to spawn, these normally solitary bears congregate along rivers, and vicious fights may erupt among them. They are adept at catching fish with a swift snap of their huge jaws. Although they can live long in captivity, their life-span in the wild will average 15 - 35 years.

REPRODUCTION

The grizzly mates in late June to early July. They have one litter of 1-4, with an average of 2. They are born in January to March every other year. The young are exceptionally small, about the size of rats, and weigh about 1/2 kg. The cubs remain with their mother for a second winter. The female may or may not mate again that year. This rather long inter-litter period, together with the small litter size and the late sexual maturity (6-7 years) means that bears are susceptible to over-hunting.

INTERPRETIVE GUIDE COURSE

PARTICIPANT'S NOTES

Ursus arctos _____

GRIZZLY BEAR

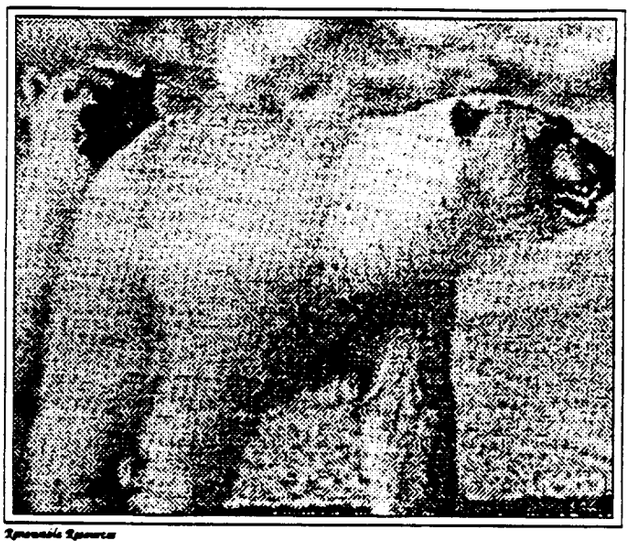
SIZE:

WEIGHTS:

REPRODUCTION:

PREDATION:

OTHER INFORMATION:



Ursus maritimus

POLAR BEAR

(Ursus maritimus)

HABITAT:

Polar bears are circumpolar in range. This can include areas as far North as 88° Latitude and as far south as Newfoundland and the Gulf of St. Lawrence. About 3/4 of the world's polar bears live in the N. W. T. These are generally evenly distributed over most of the Canadian range, with subaverage density in the Northwest and a scarcity in the southeast. Most bears occupy distinct over-lapping home ranges of 150 to 300 km in diameter.

The bears habitat is also determined by season, sex and reproductive status. These areas include:

- Feeding areas - (pressure ridges, floe edges.)

- Maternity denning areas - (usually on land near a sea coast, fequently on southern slopes)

- Summer retreats - (near coast or offshore islands, usually areas where cooling is available)

- Breeding Areas - (usually elevated places or congregation sites in good feeding areas)

DESCRIPTION:

The largest members of the bear family, Canadian adult males can weigh between 450 - 500 kg while the Alaskan variety can reach 1500 pounds or more.

The males measure 2 - 3 1/2 meters and stand about 1.5 meters high at the shoulder. The male's growth continues until about his eighth year. Females grow for about four years and attain weights in the 200 - 300 kg range.

The fur colour changes from the new summer white coat to the winter and spring yellow shades. The hair not only insulates, but transmits ultraviolet light to the dark skin to create warmth. Other environmental adaptations include thick subcutaneous fat layers, small ears, webbed toes and fur covered footpads. The bear has an exceptional sense of smell and good under-water eyesight. It often swims under migratory birds and captures them from beneath.

The bears are travellers, following changing ice patterns. Their normal pace is about 3 M. P. H., but they can gallop at speeds up to 20 M. P. H. or better for short distances. Using their forepaws as flippers, they swim at about

6 M. P. H. and can remain submerged for up to 2 minutes.

Seals make up about 90% of the bears' diet. Often still-hunts are employed by a breathing hole - at times a stalking proceedure is used. Found carrion and summer flowers and plants add to the omnivores' diet.

REPRODUCTION:

Like all bears, reproduction rates are low. A female will not have cubs until she is at least four years old and will have only about two cubs every three or four years. In her lifetime she will produce only 4 to 8 cubs. The extreme life-span of an adult may be 30 years.

Mating season takes place late March until early June. Delayed implantation causes embryonic development to begin about September. Dens are entered about mid-October to early November. The cubs stay with the mother and den with her until they approach 3 years of age. At birth, (Nov. - Jan.) the cubs weigh about 1/2 kg, and increase rapidly to 10 kg by mid-March and 50 by August. They continue to nurse until their second year. Present population estimates suggest 11,000-14,000 bears.

PREDATION:

Hunting accounts for approximately 44% of bear mortality. Between 600-700 bears are taken annually (5%). Other factors include wolf and adult predation of cubs and adult mating fights as well as mishaps and starvation.

MANAGEMENT:

Canada is the only country that permits polar bear hunting. This is managed by a quota system. The quota represents approximately 4% of the total population, and is allotted to various areas on the basis of traditional hunt numbers.

**Note: For area specific information refer to:

D. R. URQUHART AND R. E. SCHWEINSBURG: POLAR BEAR (1984). NORTHWEST TERRITORIES RENEWABLE RESOURCES.

INTERPRETIVE GUIDE COURSE

PARTICIPANT'S NOTES

Ursus maritimus

POLAR BEAR

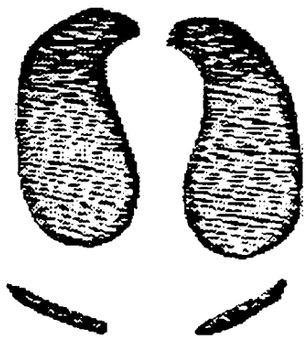
SIZE:

WEIGHTS:

REPRODUCTION:

PREDATION:

OTHER INFORMATION:



Rangifer tarandus

BARREN - GROUND CARIBOU

Rangifer tarandus

HABITAT:

Four subspecies exist:

(a) Woodland caribou: these inhabit the borealforest near Great Slave lake, the MacKenzie River drainage and the tundra of the MacKenzie Mountains.

(b) Peary caribou: generally restricted to the Arctic Islands.

(c) Grant's caribou: mainly in Alaska, but the Porcupine herd ranges into the northwest of the Territories.

(d) Barren-ground caribou: these cover Baffin Island, and the area from Hudson Bay up through Great Bear lake. These are the most abundant, found in 8 major herds: the Bluenose, the Bathhurst, the Beverly, the Kaminuriak, the Northeastern Keewatin, the Boothia Peninsula and the North and South Baffin.

DESCRIPTION:

Males average 110 kg, but the Woodland are generally heavier, while the Peary is the smaller.

Both sexes carry antlers; the males shed in November after the rut, while females retain theirs until the June calving. Calves show their first antlers in the fall at about 3 months of age. They are shed by May or June. The life of a caribou can span a quarter-century.

In early spring, migration northward continues to the calving grounds. Distances of up to 700 km are covered at a pace of 20 to 65 km a day. water obstacles are normally crossed at the narrowest part; however, a caribou can swim at about 3 km/hr for distances up to10 km or more.

REPRODUCTION:

Yearlings can be sexually mature.and about 60% of cows produce calves. Most calves are born in the first 2 weeks of June, and on individual calving grounds, a 5 day time period encompasses births.

Caribou yearly produce single births. The calf can suckle within minutes and in an hour, follow its mother.

The rut occurs for 2 to 3 weeks, ending about mid-November. During the rut, males vocalize with a snoring, bellowing sound.

PREDATION:

Wolf predation accounts for 20-30% of the calves and 5% of adult mortality. Packs may cut off individual animals from the herd or work in relays to tire a caribou. Ambushes are also used by wolves in chasing a caribou to other wolves lying in wait.

Grizzly bears are also a factor in calf predation.

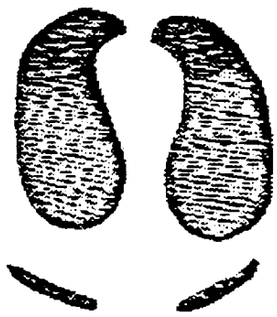
MANAGEMENT:

Few restrictions apply to natives, but resident and non-resident hunters are severely limited.

Aerial surveys and tagging methods are used to estimate herd size - but these estimates vary.

INTERPRETIVE GUIDE COURSE

PARTICIPANT'S NOTES



Rangifer tarandus _____

BARREN-GROUND CARIBOU

SIZE:

WEIGHTS:

REPRODUCTION:

PREDATION:

OTHER INFORMATION:

Renewable Resources

Rangifer tarandus pearyi

PEARY CARIBOU

Rangifer tarandus pearyi

HABITAT

Peary caribou are found in the islands of the Canadian Arctic, except Baffin Island. They forage along slopes or river valleys and upland plains.

DESCRIPTION

Named for Robert E. Peary, the peary caribou is the smallest of the caribou. The bulls range between 66 to 92 kg and the cows between 51 and 68 kg. They have a relatively short head and pointed muzzle. In the summer, their coat is slate grey tinged with brown.

They usually wander in small bands of 3 to 4 during the winter. During summer break-up, they are usually found only on the larger islands and in larger groups. The caribou are constantly on the move to find food such as sedges, willow, purple saxifrage, foliose lichens and grasses. They have a high reproductive rate but also have a high calf mortality.

REPRODUCTION

The Peary caribou can breed as yearlings, and the females can give birth every year. The calves are born around the first three weeks of June. After calving, the cows and calves form groups of up to 30.

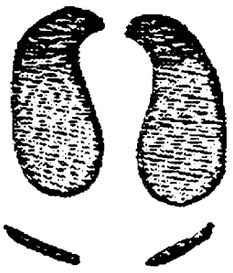
PREDATION

Wolves are considered to be their major predator.

NOTE: The Peary Caribou is considered threatened by the Committee on the Status of Endangered Wildlife in Canada because of the potential or actual adverse effects of hunting, harassment, a harsh environment and a deteriorating climate.

INTERPRETIVE GUIDE COURSE

PARTICIPANT'S NOTES



RENEWABLE RESOURCES

Rangifer tarandus pearyi _____

PEARY CARIBOU

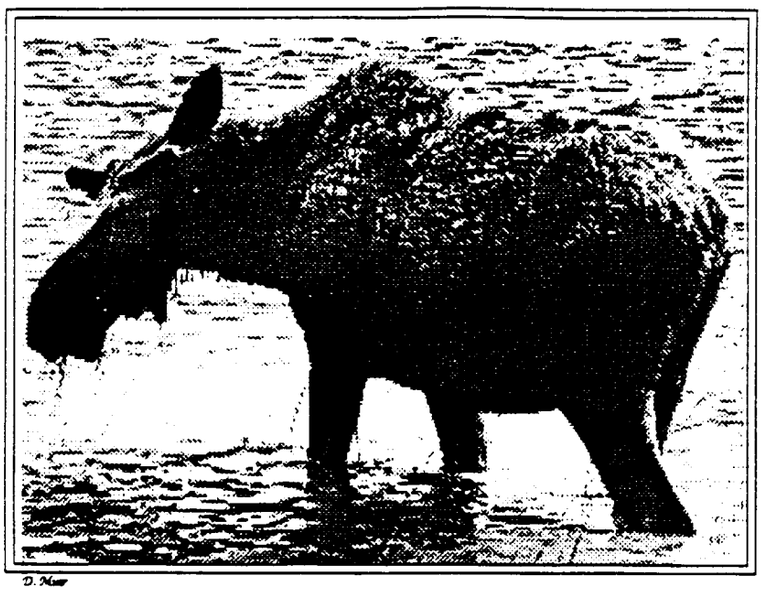
SIZE:

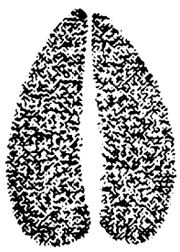
WEIGHTS:

REPRODUCTION:

PREDATION:

OTHER INFORMATION:





Alces alces

MOOSE

Alces alces

HABITAT:

Moose range from Alaska to the northern Rocky Mountains and eastward to Maine. Prince Edward Island is the only Canadian province without a moose population.
In the Territories, moose are normally found in lowland areas. They are common along the Mackenzie and Liard rivers. In winter, they move onto river islands to feed on willow. Mountain areas find the moose upslope in summer, and near river valleys in winter, seeking forest cover.

New growths of willow, aspen and birch provide the best habitat. Water plants are also a source of food. A moose can remain submerged for almost a minute, and dive to depths of 5 meters to pull up weeds. An adult moose will consume 20 to 25 kg of food per day.

DESCRIPTION:

This largest member of the deer family involves about 4 species: *Shiras* of Wyoming, *Americanus*, *Andersoni*, and *Gigas* of Alaska.

Generally, adults stand 2 meters at the shoulder, and weigh between 400 to 800 kg or more.

The thick hide and warm coats create a temperature difference of as much as 70°F between air and hide.

Antlers begin growing in April and reach their maximum size by September. The largest Northwest Territories rack had 33 points and a spread of 66 1/2 inches. This ranks 10th in the record books. Older bulls lose their antlers in December, while the less weighty headgear can be seen as late as February. While running, the moose lifts his muzzle so his antlers lie along his shoulders, and avoid tangling with the branches. A moose can sustain a speed of 50 K.P.H. for about 20 minutes.

Normally solitary, moose may "yard" if snow is deep and food and mobility are limited. However, this does not seem to be the same yarding behaviour that deer exhibit.

REPRODUCTION:

During the rutting season, late September and early October, the bulls exhibit a negative energy balance. They travel more and eat very little. The cows are receptive for 7 to 12 days, but actual oestrus takes place for only

24 hours. If breeding does not take place, successive cycles may occur at 20-30 day intervals.

Dominance is determined by antler size. A rocking of the antlers, slashing and butting at trees and displacement activity at grazing are all aggressive signals. Fighting usually involves a pushing match between equal contenders, which may go on for hours, interspersed with grazing activity.

Calving occurs in May or June. The cow usually chooses a secluded location, like an island or peninsula.

Cows give birth lying down, and a young cow usually produces a single calf, while mature animals yield twins or triplets.

The cow protects the calf from perceived dangers by charging and striking with both front feet. The cow's milk is extremely high in fat content. As a result, the calf gains from 1/2 to 1 kg daily in its first month, and over 1 kg per day by the second month.

Cows are sexually mature by 18 months; males, by 2 1/2 years; however, they rarely breed until 5 or 6 because of dominance order.

PREDATION:

Wolves, bears and man are the prime predators. Since wolves can run slightly faster than moose, they catch and harass the moose by biting and holding on. The combined weight of the wolves serves to slow the moose and often preceeds its demise.

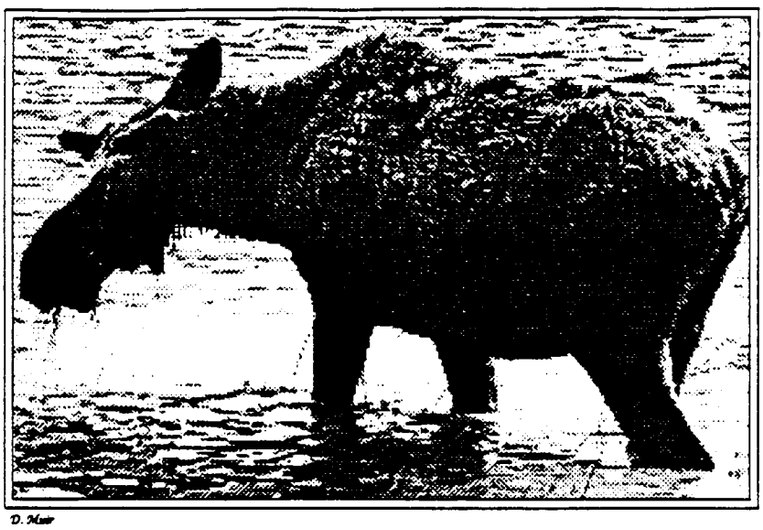
Parasites, like bladder worm, moose ticks, tapeworm, cysts, and liver flukes, also degrade the moose's chances of survival.

MANAGEMENT:

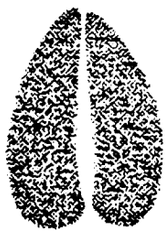
Approximately 500 to 1500 moose are killed annually. Fort Smith and Inuvik regions account for about 95% of these numbers. The greater majority of these kills are by G. H. L. holders.

INTERPRETIVE GUIDE COURSE

PARTICIPANT'S NOTES



D. Muir



Alces alces _____

MOOSE

SIZE:

WEIGHTS:

REPRODUCTION:

PREDATION:

OTHER INFORMATION:

Ovibos moschatus

MUSKOX

Ovibos moschatus

HABITAT:

Habitat specifics are not well understood. Muskox seem to thrive equally well in both rugged or level country. In summer, their food sources lie along seepage meadows, river valleys or shorelines. In winter, they spend more time on hilltops, where winds lay bare the willows and berry bushes that constitute their diet.

Mainland distribution is concentrated north of Great Bear Lake and south of Queen Maud Gulf. The southern extremity is about 50 miles north of the tree-line between Hudson Bay and Great Bear.

Arctic island concentrations exist on Ellesmere, Banks, Melville and Victoria islands.

DESCRIPTION:

The muskox is most closely related to the goat family. Its generic name *OVIBOS* indicates the sheep-cow confusion its appearance gives. Bulls weigh as much as 370 kg and stand 1 and 1/4 meters high at the shoulder; cows are smaller and weigh about 230 kg. They both display exceptional hearing, eyesight and sense of smell.

The long course coat is generally dark brown to nearly black. The outer guard hairs of about two feet in length give rise to the Inuit nomenclature "Oomingmak" (the bearded one). The short fine wool underlayer (qiviut) is exceptionally warm and may yield some economic importance. (U. of Alaska research: 115 animals produced 300 kg of qiviut, valued at $50,000) Muskox begin to shed in May. This results in an increasingly shaggy appearance until the new coat completes in August.

The horns of the muskox begin to grow when a calf is 4 to 5 weeks old. These continue growth in both sexes until the sixth year. On bulls, the horns merge to form a massive boss, whereas cows display a smaller boss divided by a tuft of white hair.

Muskox herds are unstable groupings of 2 to 100 animals. Average herd size tends to be about 15. The variance is caused by season, range condition and bull numbers. The dominant bull is usually the largest and the last to enter the defensive position. His dominance is asserted in various skirmishes involving head-butting with challengers. A dominant cow will lead the herd if no mature bull is present.

REPRODUCTION:

The rut reaches its peak in late summer and continues through September. Lead bulls control harems of several cows, while defeated bulls either group together or remain solitary.

The gestation period is 8 to 9 months, and although temperatures range quite differently through the various areas, calving occurs between April and June. Reproduction is nutrition influenced, since cows in poor feed areas only conceive in alternate years and begin reproducing after their fourth year. Areas of high nutrition show annual calving and cows may conceive as two-year olds.

Muskox calves are born when the snow is deepest and temperatures are well below freezing. They can stand and suckle within minutes of birth. At times of danger, the calf rushes to its mother and sometimes hides completely under her flowing over-hair. By the calf's third winter,the full adult coat is developed. In areas of high reproduction, calves are usually weaned in late fall. In areas of lower nutrition, the calves may continue to nurse until 15 or 18 months old.

Life expectancy is not known, but one was aged at 19 years.

PREDATION:

Wolves, hunters and rut-induced injuries do not affect the population as severely as climatic conditions. Deep snow or ground-fast ice prevent the muskox from foraging, leading to starvation.

At the approach of danger, the herd runs to high ground or shallow snow. When the dominant bull turns to face the threat, the other herd members close in beside him. Calves and yearlings are pushed into the center of this effective classic formation. Wolf predation seems limited to solitary muskox or calves and yearlings outside of the defensive group.

Muskox are susceptable to over-hunting since their range is predicable and their defense

INTERPRETIVE GUIDE COURSE

PARTICIPANT'S NOTES

Ovibos moschatus _____

MUSKOX

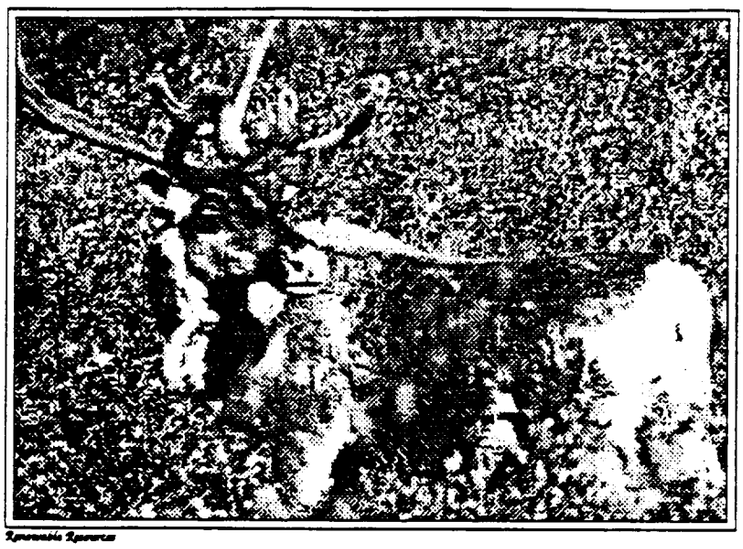
SIZE:

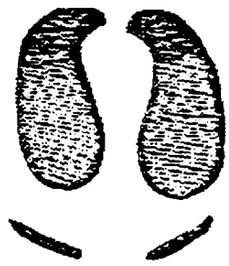
WEIGHTS:

REPRODUCTION:

PREDATION:

OTHER INFORMATION:





Rangifer tarandus caribou

WOODLAND CARIBOU

(Rangifer tarandus caribou)

HABITAT

The woodland caribou is found in mature spruce and other coniferous (boreal) forests from British Columbia to Newfoundland.

DESCRIPTION

They have the darkest colouring of the three caribou types. The woodland caribou has limited white areas on the flank, belly, rump and lower legs, as well as on the neck. The average weights are 180 kg for bulls and 135 kg for cows. Their long dense winter coat provides insulation. Their muzzle and tail are short and well-furred and their large concave hooves help to support them in snow or muskeg. The hooves act as scoops when pawing through snow to reach the lichens underneath. The Woodland caribou are excellent swimmers, as their hooves act as paddles.

Both the males and the females have antlers. The adult bulls usually shed their antlers in November or December (after breeding season). The cows and younger animals carry them much longer, sometimes through the winter. The woodland caribou survives primarily on lichens, which enables them to live in the harsh Arctic. They have an excellent sense of smell, good hearing but extremely poor eye sight.
They do not migrate, but travel short distances to calving grounds or wintering grounds.

REPRODUCTION

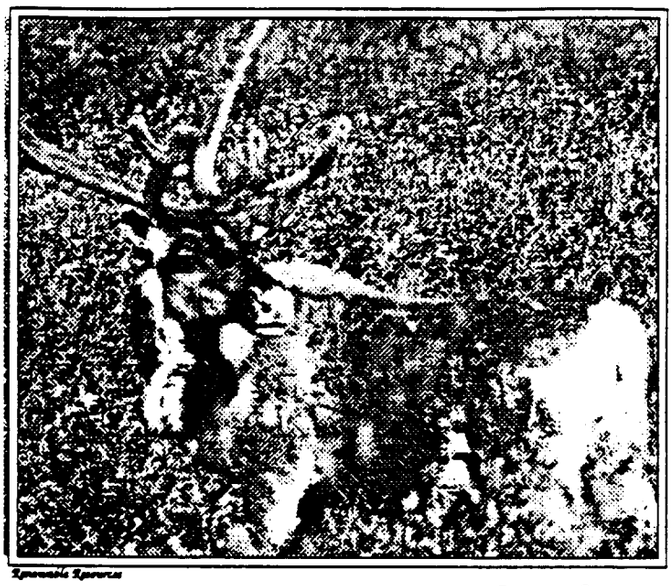
In early April and May, the cows move to the calving grounds. In a one week period in early June, most of the calves are born. Hours after birth, the calves are on their feet and nursing. Two weeks later, they are grazing. The calves double in size in approximately 6 weeks.

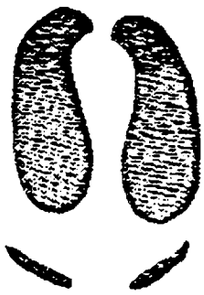
PREDATION

The wolf is the natural predator. A wolf requires food equivalent to, and may kill, 11 to 24 caribou a year.

INTERPRETIVE GUIDE COURSE

PARTICIPANT'S NOTES





Rangifer tarandus caribou _____

WOODLAND CARIBOU

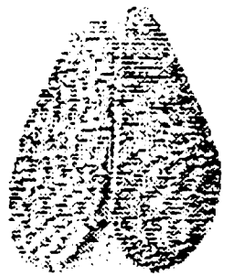
SIZE:

WEIGHTS:

REPRODUCTION:

PREDATION:

OTHER INFORMATION:



Odocoileus hemionus

MULE DEER

(Odocoileus hemionus)

HABITAT

The mule deer inhabits mixed surroundings including forest edges, mountains and foothills.

DESCRIPTION

The mule deer has a stocky body with sturdy legs. In the summer they are reddish or yellowish brown above; and in winter, grayish. The throat patch, rump, inside ear, and inside of the leg are white. The lower parts of the mule deer tend to be cream to tan. They have large ears that move independently. The buck's antlers branch equally, each a separate beam forking into 2 tines. They are primarily active in the mornings, evenings and moonlit nights. The deer may also be active at midday in the winter. The summer forage is chiefly herbaceous plants but also blackberry, huckleberry, salal, and thimbleberry. In the winter they look for twigs of Douglas fir, cedar, yew, aspen, willow, dogwood, serviceberry, juniper and sage. When they run, they have a stiff-legged bounding gait. The mule deer are good swimmers. Often when a mule deer encounters another, they fight. Many of the bucks are solitary, but some band together before and after rutting season. The deer often "yard up" or herd in winter.

REPRODUCTION

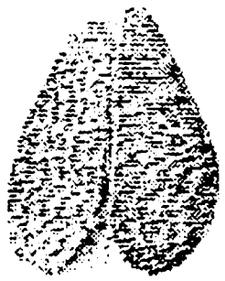
After a gestation of 6 - 7 months, a single fawn is produced by a once-bred doe. The older does usually have twins. The newborns weigh about 8 pounds (4.0 kg). During the first month the fawns are kept concealed.

PREDATION

Cougars, wolves and coyotes are their major predators, as well as the bobcat and bear. The mule deer is prized as trophies and for their flesh.

INTERPRETIVE GUIDE COURSE

PARTICIPANT'S NOTES



Odocoileus hemionus _____

MULE DEER

SIZE:

WEIGHTS:

REPRODUCTION:

PREDATION:

OTHER INFORMATION:

Odocoileus virginianus

WHITE-TAIL DEER

(Odocoileus virginianus)

HABITAT

The white-tail deer inhabit mostly farmlands, brushy areas and woods.

DESCRIPTION

In the summer, the deer is tan or reddish-brown; and in the winter grayish-brown. Their belly, throat, nose band, eye ring, and inside of ears are white. The tail is brown, edged with white above. The buck has antlers with the main beam forward and several unbranched tines. When alarmed, the deer raises it tail which communicates danger to other deer. They are primarily nocturnal, but may be active at any time. The white-tail deer grazes on green plants, including aquatic ones in the summer. In the winter it will browse on woody vegetation, including the twigs and buds of birch, maple, and many conifers.

The deer will usually bed-down near dawn, seeking a concealed cover. They are good swimmers and graceful runners. Bucks and does herd separately most of the year, but in winter gather together or " yard up".
The white-tail deer has become the most plentiful game animal in North America.

REPRODUCTION

The gestation period is 7 months. A young doe usually produces one fawn, while some of the older may produce twins or triplets.

INTERPRETIVE GUIDE COURSE

PARTICIPANT'S NOTES

Odocoileus virginianus _____

WHITE-TAIL DEER

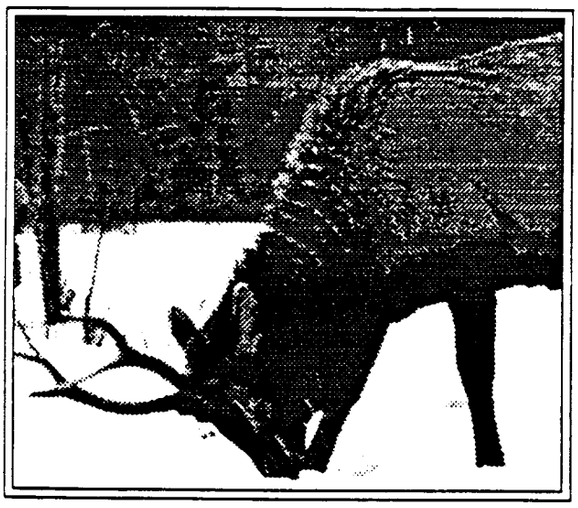
SIZE:

WEIGHTS:

REPRODUCTION:

PREDATION:

OTHER INFORMATION:



Cervus elaphus

ELK "WAPITI"

(Cervus elaphus)

HABITAT

The elk or wapiti can be found from southeast British Columbia and central Alberta east to southern Manitoba and south to central New Mexico and Arizona. In summer, it likes high, open mountain pastures; and in winter, lower wooded slopes and dense woods

DESCRIPTION

The elk are large deer with slender legs and thick necks. They can weight 600-1000 pounds (270-500 kg) and have a height at the shoulder of 4 1/2 feet - 5 feet (137-150 cm). They are brown or tan above, darker underparts with a rump patch and tail of yellowish brown. Males have a dark brown mane on the throat and large many-tined antlers. (6 tines on each side when mature, with main beam up to 5 feet long). Females lack antlers and are approximately 25% smaller than males. Primarily nocturnal, but they are especially active at dusk and dawn. The elk feed on many kinds of plants but are primarily grazers. The availability of food appears to influence the time of mating. During the non-breeding season, cows with their young herd separate from the bulls. The "bugle" or "whistle" of rutting bulls is a challenge to other bulls and a call of domination to the cows. Bull elk may assemble a harem of up to 60 cows.

REPRODUCTION

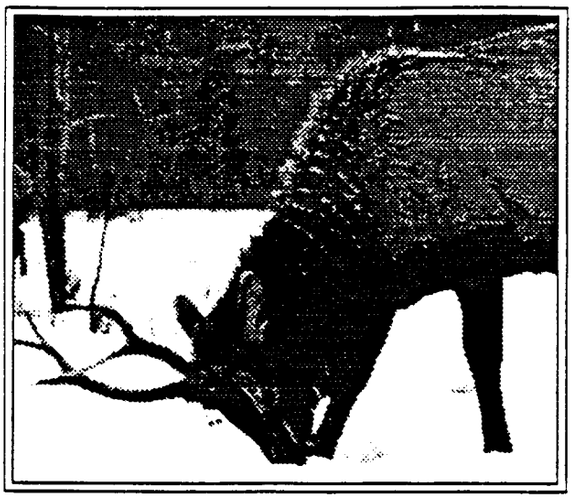
Rutting season is between late August-November. After a gestation of about 255-275 days, a cow leaves the herd to give birth usually to one calf (sometimes 2), weighing 25-40 pounds. After a week, the cow rejoins the herd with her calf. The calf is entirely dependent on milk for one month.

PREDATION

Mountain lion and bears are the elks main predators.

INTERPRETIVE GUIDE COURSE

PARTICIPANT'S NOTES



Cervus elaphus _____

ELK

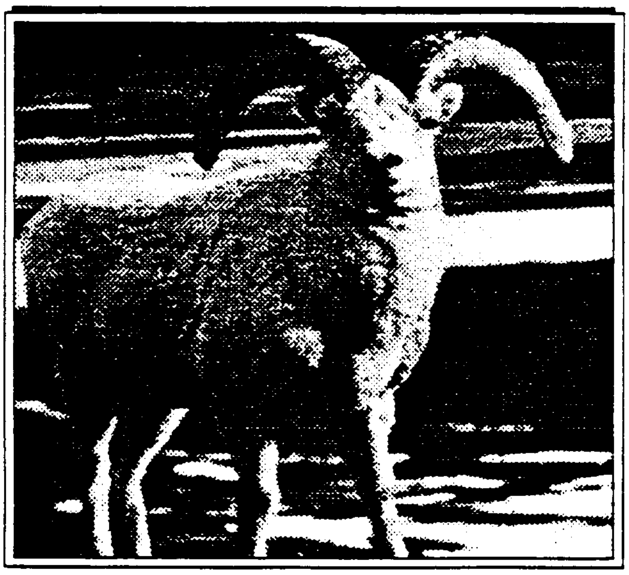
SIZE:

WEIGHTS:

REPRODUCTION:

PREDATION:

OTHER INFORMATION:



Ovis dalli ______________

DALL'S SHEEP

Ovis dalli

HABITAT:

The Mackenzie and Richardson Mountains. In summer the sheep feed on lush alpine flora, gradually moving to their winter range by October. Until May they frequent gently rolling plateaus where snow cover is light.

DESCRIPTION:

Generally pure white with amber coloured horns. Some grey coloured sheep, called Fannin sheep, may be a result of interbreeding with Stone's sheep. Both are thin horn species as opposed to Bighorn sheep found further south.

Males weigh less than two hundred pounds, while females weigh about 120. Both bear horns, but the ewe's are more slender and shorter. The record was measured at 123.5 cm in length. Horn growth is slow; five year olds would have 3/4 curl. Full curl is reached by 8 or 9 years. Sheep can live as long as 14 to 16 years.

REPRODUCTION:

Although sexually mature as yearlings, the dominance of adult males usually results in delayed breeding until 5 years old. Ewes breed at about 1 1/2 years of age. The season extends from mid-November until mid-December. Gestation takes about 175 days. Offspring have a 50% survival rate by the end of the first year. Lambs weigh 2 to 4 kg at birth (usually mid-May to mid-June). They are usually weaned by December.

PREDATION:

Wolves, lynx, wolverine, bear, coyotes and eagles prey on sheep. Hunting pressure is limited by 3/4 curl horn requirement and single tag status.

INTERPRETIVE GUIDE COURSE

PARTICIPANT'S NOTES

Ovis dalli _____

DALL'S SHEEP

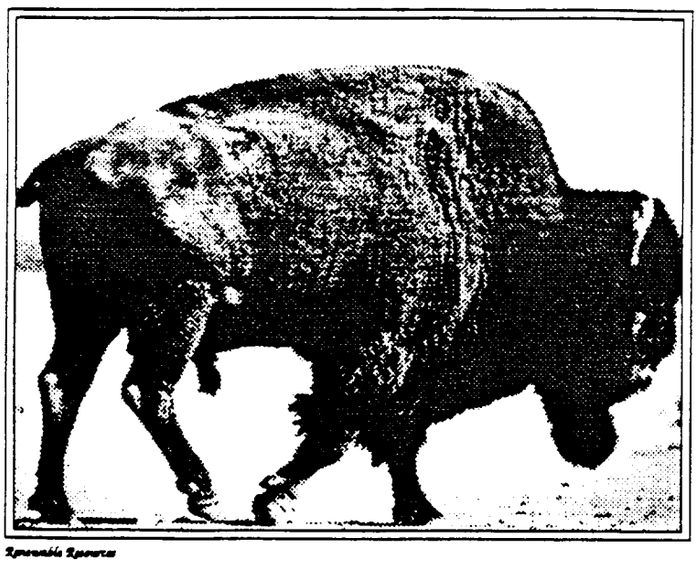
SIZE:

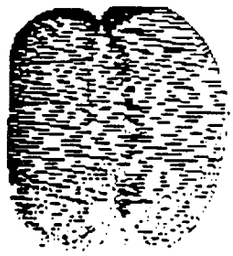
WEIGHTS:

REPRODUCTION:

PREDATION:

OTHER INFORMATION:





Bison bison anthabascae _____

WOOD BISON - "Buffalo"

(Bison bison anthabascae)

HABITAT

Bison are found in four locations in the Northwest Territories; the south Nahanni area, Mackenzie Bison Sanctuary area, Slave River Lowlands and Wood Buffalo National Park.

Bison traditionally inhabited a variety of ranges, including meadows, and arid plains, aspen parklands, river valleys and coniferous forests. They sometimes use separate summer and winter ranges and they may undertake seasonal migrations depending on the availability of forage.

In Wood Buffalo National Park, for example, large numbers of bison winter in the rich open sedge meadows around Lake Claire. These hybrid bison move northward in spring, as far as 250 km, to more closed forest cover interspersed with small meadows. Some of the park bison spend the winter in an area known as the Salt Plains. This area consists of wide meadows and alluvial plains with underground deposits that retain salt in the soil because of drainage. In the spring, the bison move westward to the Alberta Plateau where they inhabit the rich meadows set in a forest cover of white and black spruce, aspen, willow and birch.

In the Northwest Territories, sedges are the most important item in the bison's diet in all seasons. Grasses and other species of vegetation are used if sedges are not available.

DESCRIPTION

Bison are the largest terrestrial mammals in North America. Wood bison are generally taller and less stocky than plains bison. A large wood bison can measure 1.8 m to the shoulder and weight over 900 kg. The plains bison is usually smaller, has shorter legs and a heavier head and hump. Both species have massive humped shoulders, a lowslung head and what appear to be disproportionately slender hindquarters. Males and females have short black horns extending upwards from the sides of the head. Plains bison are lighter in colour than wood bison. Both species have a woolly undercoat overlain by long guard hairs. Long, dark-brown shaggy hair covers the head, shoulders, and forelegs, while the hair on the hindquarters is shorter and lighter in colour. A beard, about 20-30 cm long, grows from the chin. During summer, plains bison develop a heavy coat or "chaps" on their front legs which accounts for

their massive front end appearance. The tail of the wood bison seems longer and hairier than that of the plains bison and finally, the hump on the wood bison is flatter and more angular than the plains bison's.

Bison are easily frightened and an alarmed herd may lose control and stampede. When that occurs, the normally slow plodding animals break into a trot and then a rocking gallop, attaining a top speed of 60 kph. Early hunters took advantage of the bison's propensity to stampede by driving them over cliffs to kill them.

Bison are gregarious and form mixed groups of cows, calves, yearlings, and subadults. Bulls often form groups of their own, but a few are part of the mixed herds at all times of the year.

The herds are wary and sensitive to changes in their environment. The bison's senses of smell and eyesights are extremely well-developed; they can detect movement a kilometer away and distinguish smells from 3 kilometers.

REPRODUCTION

The breeding season in most areas occurs from mid-July to late September, with the peak rutting period in mid-August. Bulls often form groups before the rut and enter the mixed herds when cows come into oestrus. Dominance among bulls is established by behavioral display, sparring matches and occasional violent fights between evenly matched bulls. With upraised tail, a bull may either charge or give aggressive signals such as profile displaying, head-bobbing, snorting, wallowing and stamping. The blood-curdling roar of a rutting bull can be heard up to 5 km away. Sexual maturity is attained at 2 to 3 years of age for both males and females, and while females usually breed at about age 3, males generally do not breed until they are at least 4 or 5 years of age.

The gestation period is from 270 - 285 days, and the cows give birth anytime from April until July. One calf is usual and twins are extremely rare. The calves have reddish-tan coats which turn almost black at about 3 months of age. They nurse soon after birth and within days are bucking and running about. Cows recognize their own calves by smell and chase away strange calves. Although the calves nibble on grass within a few days of birth, they continue to nurse for 7 months. Mortality can be high during the first year. The young calves use up their limited fat reserves during the long cold winters, and are the least adept at foraging. During their first winter, they are especially vulnerable to predators.

PREDATION

In the Northwest Territories, black bears may kill a number of bison calves but timber wolves are the most significant predators. Calves and injured or diseased animals most often fall prey, but a healthy bison is not an impossible opponent for a pack of wolves. Wolf predation can seriously affect calf survival and herd numbers.

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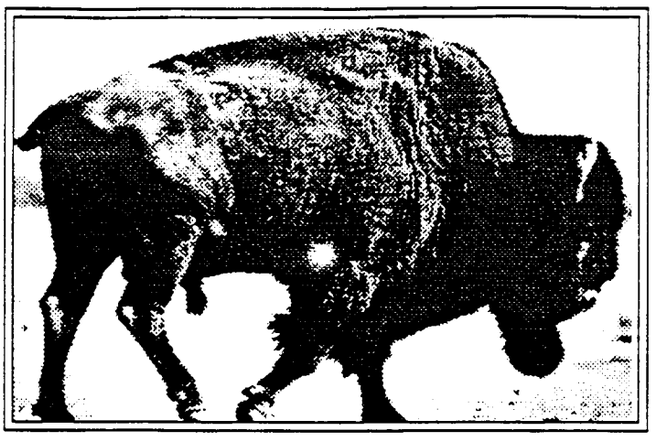
PARTICIPANT'S NOTES



Bison bison anthabascae _____

WOOD BISON

SIZE:

WEIGHTS:

REPRODUCTION:

PREDATION:

OTHER INFORMATION:

UNIT 2 FUR BEARERS

Lesson 1: Introduction

Beaver
Ermine
Fox (Arctic)
Fox (Red)
Lynx
Marten
Mink
Muskrat
Otter (River)
Wolverine
Wolves

Module C Unit 2 Lesson 1

SKILL: **FUR BEARING ANIMAL KNOWLEDGE**

OBJECTIVE: Introduction

ITEMS REQUIRED: Field Guide to North American Mammals
Student Work Sheets

METHOD: Lecture and Discussion

1.

Select the fur-bearing animals indigenous to the course site. Distribute the appropriate Participant's notes sheets. (A master-copy follows each animal listed). During the lecture and discussion, have each student make notes under the appropriate headings. There is a blank name category for the Native nomenclature of the animal. There is also a section titled "other information". This should be used to include class participation comments. Encourage the trading of ideas, legends and stories about each animal. Additional note paper can be used if a great deal of information is given. If possible, a guest speaker may be used who is knowledgeable of the area's wildlife.

2.

Discuss the tracks and scats of the animal. Show how these and the animal information can be woven into "stories" for the guests of the interpretive guide.

3.

Show how to use the Field Guide. Allow access for those who wish to do further research on the local animals.

CONCLUSION: The interpretive guide will be knowledgeable regarding the animals of his area.

BEAVER

(Castor canadensis)

HABITAT

Found in most of Canada along rivers, streams, marshes, lakes and ponds. Found also in river systems on the barren grounds where willows grow in thickets.

DESCRIPTION

The beaver is a very large rodent averaging about 20 kg. It is dark brown with a large, black paddle shaped scaly tail. Large black webbed hind feet, small eyes and ears and large chestnut coloured incisors complete the description.

When beavers are alarmed they signal by tail "slaps" on the water loud enough to be heard at a considerable distance. Their dams of woven sticks, reeds, branches or saplings are caulked with mud. On the barrens, they usually occupy dens in riverbanks rather than lodges. The beaver deposits scent from anal glands which marks the family territory. Primarily nocturnal, they are active beneath the ice all winter. Their lodge has one or more underwater entrances and living quarters in a hollow near the top-vent which admits fresh air. The beaver must choose its living sites carefully. If the water body is too shallow, it may freeze to the bottom in winter and the animals will perish. Beavers can remain submerged up to 15 minutes aided by valves to close off their ears and nostrils. The beaver combs its fur with the split nails of its hind feet and waterproofs it by applying castoreum from scent glands.

REPRODUCTION

The beaver is believed to pair for life. It mates in January - late February and 4 months later a litter of 1-8 kits are born, weighing about 1 pound, well-furred, with eyes open. The young remain with their parents two years. They live in the family units and work co-operatively.

PREDATION

Otter, coyote, red fox, bobcat, wolves and man are among their main predators. Their fine, soft fur is highly prized; its flesh is quite tasty and the tail is considered a delicacy by some residents of the north.

ERMINE

(Mustela erminea)

HABITAT

The ermine is found in most of Canada, in various terrains such as open woodlands, brushy areas and grasslands.

DESCRIPTION

The ermine is a small ferocious carnivore with an average weight of about 80 g and the female weighing 55 g. The ermine coat changes color with the season; the summer the coat is brown/ white below and the winter coat is white except for a black tip at the end of the tail. They are active in both the summer and the winter. Primarily nocturnal, they are sometimes seen in the long daylight of the Arctic summer. The ermine preys on small hares, ground squirrels, pikas, mice and birds. At the beginning of winter, they usually stock up on lemmings,mice etc.

REPRODUCTION

The ermine mates in July and has 4-9 young. The young are born blind and open their eyes in 35 days. They are cared for by both parents.

ARCTIC FOX

(Alopex lagopus)

HABITAT

The arctic fox is found in northern and western Alaska, and the Northwest Territories. They inhabit the tundra, the edge of forests, and in the winter, can be found far out on ice floes. The arctic fox covers great distances on hunting trips. All the Arctic islands have become populated with foxes as they drift on floes of sea ice. On the mainland, their range extends throughout the barrens and somewhat below the treeline.

DESCRIPTION

In summer, the arctic fox is bluish-brown or grayish with white underparts; in winter, white or creamy white. They weigh between 5 - 8 pounds (2.5-4 kg) and have a length of 30-36 inches (75-91 cm). They have black nose pads, eyes and claws and their snout is blunt. Their adaption to subzero habitat includes a compact body with short legs and short ears, dense fur, and thickly haired foot pads which insulate against the cold and provide traction on ice. Relatively solitary, several may congregate around a large carcass or dump. The arctic fox feeds on lemmings, ptarmigan, gulls, loons, voles, ground squirrels, young hares, bird's eggs, fish, berries and occasionally the young of seals and seal lions. Near the coast they eat sea urchins, crabs, molluscs and are adept at catching fish.

REPRODUCTION

The arctic fox have 4-25 young with the average being 4-6 born April - June. The young are cared for by both parents until the family disperses in mid-August. They have their dens in a bank or hillside and in winter may tunnel into a snowbank. The population of the arctic fox peaks every 4 years.

PREDATION

Their flesh is often eaten by Northerners and their pelts are valuable. All foxes are susceptible to rabies, encephalitis and distemper. Trapping arctic foxes represents a major source of income to the Inuit living in coastal settlements on the mainland

RED FOX

(Vulpes vulpes)

HABITAT

The red fox inhabits most of Canada and United States in varied areas ranging from mixed cultivated and wooded to brushlands. In 1918 or 1919 red foxes crossed the Hudson Strait from Ungava to Southern Baffin Island and by the late 1940's had spread over all of the Baffin Island. In 1962 they crossed Lancaster Sound and reached Resolute Bay on Cornwallis Island and Grise Fiord on Ellesmere Island. They are also found on Southampton Island.

DESCRIPTION

The red fox is the same family as the wolves and dogs. The average male weights 5.5 kg and stands 355 mm at the shoulder. Vixens are slightly smaller. Most are golden-red with white underparts, chin and throat, and a long bushy tail with a white tip. The red fox has prominent pointed ears. The back of his lower legs, feet and ears are black. Primarily nocturnal, it eats whatever is available, feeding heavily on vegetation in summer including corn, berries, apples, cherries, grapes, acorns and grasses. In winter it feeds on birds and mammals. Invertebrates such as grasshoppers, crickets, caterpillars, beetles and crayfish compose about one fourth of its diet.

REPRODUCTION

The red fox is thought to mate for life and share the same home range. In late winter, the pair digs a new den, renovates a discarded one or finds a suitable crevice or cave. They mate sometime in January - early March. The gestation period is 51-53 days. Born in March-May the litter size varies from 1-10. The litter size is dependent on the availability of prey species, particularly lemmings. Both parents bring food. In late summer, the young are taught to hunt, and by autumn are independent.

PREDATION

The enemies include wolves, coyotes, wolverine and bears along with trappers.

LYNX

(Lynx canadensis, Felis lynx)

HABITAT

The lynx inhabits most of Canada and Alaska in the deep forest. This is the only wildcat found in the Northwest Territories. Although generally restricted to thick boreal forest, lynx may venture onto the tundra during lean years.

DESCRIPTION

The lynx is buff or tawny with mixed blackish hairs and underparts of cinnamon-brown. Their tail is short and tipped in black. They have long black ear tufts and large pale cheek ruffs. Their feet are very large and well furred. They may weight up to 11-40 pounds (5.1 - 18 kg) and have a length of 29 - 41 inches (74-107 cm). They are mainly solitary animals occupying a home range of 15 to 20 square km. Basically nocturnal, they spend the night prowling along hare runways. Their main diet is hares and they kill up to 200 each year. During the years of hare "crushes" (about every 10 years), the lynx goes hungry and the population declines. The lynx also eats birds, meadow voles, remains of dead moose and caribou and occasionally small winter-weakened deer, caribou or sheep. It caches meat, especially a large kill.

REPRODUCTION

The lynx mates in mid-March to early April and has usually one litter of 2 young born between May-July. The kittens remain with the mother through the first winter.

PREDATION

The main predators are the wolf, mountain lion, and man who values its long silky fur.

MARTEN

(Martes americana)

HABITAT

The marten is found in most of Canada in coniferous forests.

DESCRIPTION

The marten is weasel-like, brownish, varying from dark brown to blond, with paler head and underparts. The legs are darker and they have an orange or buff throat patch. The marten has a long bushy tail, pointed snout and small ears. They spend most of their time in trees. Both sexes establish scent posts by rubbing their scent glands on branches. Their diet includes red squirrels, flying squirrels, rabbits, mice, birds, carrion, eggs, berries, conifer seeds and honey.

REPRODUCTION

They mate in midsummer, and exhibit delayed implantation. Around April,
2-4 young are born blind and naked in a leaf nest.

PREDATION

Their valuable pelts have led to their extirpation in many parts. In other areas, lumbering has destroyed their habitats and reduced populations.

MINK

(Mustela vison)

HABITAT

The mink is found along rivers, creeks, lakes, ponds and marshes. It inhabits most of Canada and the U.S.

DESCRIPTION

The mink has a sleek body with lustrous fur. It is uniformly chocolate brown to black with white spotting on its chin and throat. The tail is long and somewhat bushy. The male mink has a longer tail. Both sexes are hostile to intruders and maintain hunting territories by marking them with a fetid discharge from the anal glands. They swim very well and can climb trees. The mink keep their dens in protected places near water. This can be a muskrat burrow/house, or abandoned Beaver lodge, or hollow log. They will also dig their own in a stream bank. Their preferred prey is muskrats, but they will also feed on rabbits, mice, chipmunks, fish, snakes, frogs, turtles, and marsh-dwelling birds.

REPRODUCTION

The mink mate in midwinter. The males mate with several females but eventually live with one. Three to 6 young are born, blind and naked in the spring. They are weaned at 5-6 weeks. The young remain with their mother until the family disperses in the fall.

PREDATION

Foxes, bobcats and Great Horned Owls are known predators. The mink pelts are highly valued by man.

MUSKRAT

(Ondatra zibethicus)

HABITAT

Found in most of Canada and the U.S., the muskrat inhabits fresh or saltwater marshes, ponds, lakes, rivers and canals. Occasionally found in river systems on the barren grounds and in marshy or delta areas.

DESCRIPTION

The muskrat is a large vole-like rodent weighing about 1.5 kg. It has dense glossy fur, dark brown above and lighter on the sides. Finer softer and paler below to nearly white on the throat. The eyes and ears are small and the hind feet partially webbed with larger forefeet.

The houses are constructed of aquatic plants, especially cattails, piles of roots and mud. On the barrens they usually occupy dens in river-banks rather than houses. Primarily active at night, and beneath the ice all winter, they can remain submerged for long periods. Their main diet consists of vegetation, such as cattails, sedges, rushes, water lilies, and pond weeds. Some freshwater clams, crayfish, frogs and fish are included in their diet.

REPRODUCTION

September is the breeding season. Females produce 1-5 litters per year giving birth to between 1 and 11 young. Often they breed while still nursing. Their young are called kits. The gestation is generally 3 - 4 weeks. The naked young become furred about 2 weeks after birth and can then swim and dive. In a month, they are weaned and soon driven away by the mother.

PREDATION

Raccoon, mink and man are the muskrat's major enemies. Muskrat fur is considered extremely valuable and it is of great importance to the fur trade. Nearly 10 million muskrats are trapped annually. The flesh provides good eating.

RIVER OTTER

(Lutra canadensis)

HABITAT

The river otter is found in most of Canada and Alaska, primarily along rivers, ponds and lakes in wooded areas.

DESCRIPTION

The river otter has an elongated body which is dark brown with a paler belly. Their throats are often silver-gray with prominent whitish whiskers. The tail is long and thick at the base gradually tapering to a point. Their feet are webbed. The river otter is active by day. Adapted to aquatic life with its stream-lined body, rudder-like tail and valved ears and nostrils, which keep out water. The otter swims rapidly underwater and on the surface. On land the river otter can run fairly well. Its permanent home is often dug into banks with underwater and exposed entrances. They feed mainly on fish but also small mammals such as mice and terrestrial invertebrates. They vocalize by a high pitch whistle, shrill and chattering call during mating season. They are playful animals and will amuse themselves by rolling around , sliding, diving or "body surfing" along a rapid current (on mud banks or snow). They are sociable most of the year, but during breeding season males may battle.

REPRODUCTION

The river otter mates in early spring. One to 4 young are born blind, and fully furred. Weaned at 4 months, they disperse at 8 months. The males are evicted from the den while the young are small. They return to help care for them when they are half grown.

PREDATION

Because of their durable, thick , beautiful pelt, man is their main predator.

WOLVERINE

(Gulo gulo)

HABITAT

The wolverine is found throughout the mainland Northwest Territories and on some Arctic islands, including Banks, Victoria, Melville and Little Cornwallis. They are not particularly abundant over any part of their range. They are found in forests and tundras.

DESCRIPTION

The wolverine is usually a solitary animal. It can weigh 18 - 40 pounds (8-19 kg) and be 31 - 44 inches (800-1,125 mm) in length. It is bulky, bearlike and dark brown with broad yellowish bands from its shoulders back over the hips which meets at the base of the tail. The ears of the wolverine have light patches. Males are larger than females. Primarily scavengers, they often follow caribou herds to clean up carcasses left by wolves and bears. They do occasionally kill large game but are not efficient hunters. Their diet also contains lemmings, ground squirrels, fish,roots and berries. The wolverine often steals from trap lines, camps, or caches, marking everything it can't eat with musk, urine and droppings. The wolverine is known for its ferocity. It is the most powerful mammal for its size, capable of driving a bear from its kill.

REPRODUCTION

Males and females associate briefly during the mating season from April to September. Between mid-March and late April, 2-5 cubs are born. The females do not mate until their second or third summer and may not breed every year. They make a den, usually under an uprooted tree, or in a crevice, thicket or other protected place.

PREDATION

The wolverine pelts are valued for parka hoods as the long guard hairs prevent the fur from frosting up.

WOLVES

(Canis lupus)

HABITAT:

Except for a few islands, wolves are found throughout the Northwest Territories. The specifics of their location determine their informal nomenclature: "Tundra" as opposed to "Timber" in reference to treeline ; and "Arctic" if they inhabit the islands.

DESCRIPTION:

Adult males average 100 pounds (26-59 kg.) and measure up to 6 1/2 feet (100-205 cm) in length. The tail may represent nearly 1/4 of this measurement. The largest wolves are found in the northwest, while the smallest occur on the arctic islands.

Colour varients include all shades of cream and brown, with pure white at one extreme and black at the other. White is most common in the arctic regions. In warmer climates wolves may shed twice per year, but in the Territories this occurs only in spring. Northern wolves also grow tufts of hair between the pads to protect their feet.

Pack formation can vary from 2 to 36, but 4 to 7 members is average. Members are usually related and hunt, travel and raise pups together. Status of individuals is known and observed. Territories are marked by scent posts; although, above the tree line, territoriality is less defined because of the need to follow the caribou. Tundra wolves may not exhibit all the criteria of a pack and could be temporary associations. Wolf density is determined by prey density. One estimate (1968) suggested a population of 8000 wolves on all caribou ranges combined. However, this seems low in respect to the harvest which approximates 1000 annually. In 1978-79 Coppermine (pop. 850) harvested 800 wolves. The main prey of wolves is big game.

They are skillful and persistant. In the case of Bison, the kill is made several days after the first attack, when the animal is weaker. Caribou are at times driven to a waiting ambush, or chased in relays. It is estimated that up to 50 % of first year calves fall prey to wolves. The specialization is also evidenced by scat analysis in the Slave River Lowlands, where bison represented 88 % of the prey types eaten.

Denning areas for wolves are not normally located near the inhospitable caribou calving grounds. This shifts diet to small rodents and fish at the time.

REPRODUCTION:

The dominant pair in the pack breed and breeding behaviour is suppressed in subordinate members. All pack members take turns caring, feeding and babysitting the pups. This reinforces the pack bond.

Mating takes place in late March, and the 4 to 7 pups are born in May or June (60 day gestation). The female begins digging the den about three weeks after mating and the den is ready about an equal length of time before delivery. Dens are usually in sandy soil, near water, and in a high area which can be used as a lookout post.

Often, when the pups are 3 weeks old, they are moved to a new den. This could be for protection or as a result of over-crowding. At two months, the den is abandoned and a grassy or open area is chosen until the pups are old enouqh to travel. There is a high mortality rate for pups and year-olds, which results in a stable pack size. Packs may split and lone members may attempt to join a new pack, but he may face injury or death in doing so.

PREDATION:

Man is the predator of the wolf. Various bounty incentives and poisons have been tried as controls. However, these have been recently eliminated and trapping and mild hunting pressure are the only controls in place. The wolf population is inexorably related to its prey population and, as such, is normally self-controlling.

UNIT 3 SMALL ANIMALS

Lesson 1: Introduction

Chipmunk
Hare (Arctic)
Hare (Snowshoe)
Lemming (Brown)
Lemming (Collared)
Mouse (Deer)
Porcupine
Raccoon
Shrew (Arctic)
Shrew (Masked)
Skunk
Squirrel (Arctic Ground)
Squirrel (Northern Flying)
Squirrel (Red)
Vole (Heather)
Vole (Tundra)
Weasel (Least)

Module C Unit 3 Lesson 1

SKILL: **SMALL ANIMAL KNOWLEDGE**

OBJECECTIVE: Introduction

ITEMS REQUIRED: Field Game to North American Animals
Student Work Sheets (Participant's Manual)

METHOD: Lecture and discussion.

1.

Select the small animals indigenous to the course site. Distribute the appropriate Participant's notes sheets. (A master-copy follows each animal listed). During the lecture and discussion, have each student make notes under the appropriate headings. There is a blank name category for the Native nomenclature of the animal. There is also a section titled "other information". This should be used to include class participation comments. Encourage the trading of ideas, legends and stories about each animal. Additional note paper can be used if a great deal of information is given. If possible, a guest speaker may be used who is knowledgeable of the area's wildlife.

2.

Discuss the tracks and scats of the animal. Show how these and the animal information can be woven into "stories" for the guests of the interpretive guide.

3.

Show how to use the Field Guide. Allow access for those who wish to do further research on the local animals.

CONCLUSION: The interpretive guide will be knowledgeable regarding the animals of his area.

LEAST CHIPMUNK

(Eutamias minimus)

HABITAT

The least chipmunk can be found in most of southern Canada from Ontario to southern Yukon. It inhabits sagebrush, rocky cliffs, and is often abundant in open coniferous forests.

DESCRIPTION

The least chipmunk is brownish-gray with black stripes. The stripes continue to the base of the tail and the belly is grayish-white. It is an excellent climber. The main diet consists of acorns, seeds, fruits, berries and grasses but it will also eat fungi, invertebrates and small vertebrates.

REPRODUCTION

The least chipmunk has one litter of 5 - 7 young born in May in an underground or treetop nest.

PREDATION

Their main predators are weasels, hawks, foxes and bobcats.

ARCTIC HARE

(Lepus arcticus)

HABITAT

The arctic hare is found in Northern Canada from the Mackenzie River to Newfoundland on the tundra and in rocky areas and hillsides.

DESCRIPTION

In summer they are grayish-brown above and their underparts, tail and back edges of their ears are white. In the winter, they are white, and those in Greenland, Ellesmere and Baffin remain white all year. They weight 6-15 pounds (2.7-6.8 kg) and are 18-26 inches (480-680 mm) in length. Relatively short ears help to conserve heat and their densely furred feet and strong claws are used to dig through crusted snow for twigs and roots of dwarf willow. The incisors of the arctic hare are straighter than most rabbits and are used like tweezers to extract tiny plants from rocky crevices. The arctic hare occurs in groups of 10-60 and on Canada's Arctic islands they can be found in herds of several thousands. They take shelter in depressions, especially on the leeward side of rocks, and face into the wind so that cold air flows over the fur. The arctic hare does not hibernate in the winter. In some places arctic hare may be migratory. Around Nueltin Lake area in Keewatin, they disappear during the summer and reappear from the north in November after freeze-up.

REPRODUCTION

Breeding season is the first two weeks in April. A single litter of 4-8 young are born in late June - July. The young are called leverets. Owing to food scarcity, they are cared for much longer than other hares, being nursed about 2 weeks.

SNOWSHOE HARE

"Varying Hare"

(Lepus americanus)

HABITAT

In the northern forests.

DESCRIPTION

In the summer, the hare is dark brown with the tail being dark above and dusky to white below. In the winter the hare is white, sometimes with mottled brown. The weight ranges between 2-3 pounds (900-1400 gm) and the length about 20 inches (500 mm). The snowshoe hare often rests by day and when disturbed, it may run in circles, with bounds up to 12 feet and speeds of up to 30 mph. The snowshoe hare often tries to hide in the brush rather than run in the open like most hares. Although a good swimmer, it avoids the water. The hare enjoys dust bathing and often uses the dusting wallows of grouse. In the summer, it feeds on grasses, green vegetation, willow and berries. In the winter, on conifer buds and bark of aspen, alder and willow. It also eats meat and can be troublesome to trappers as they often steal bait. When alarmed, the snowshoe hare may thump its hind feet.

REPRODUCTION

The snowshoe hare has 2-3 litters per year of 1-6 young (average 3). The young can run within hours, but may nurse almost a month. Populations are extremely cyclic becoming plentiful every 9-10 years, then swiftly plummeting.

PREDATION

Predators include weasels, foxes, mink, owls, hawks, wolverines, bobcat and especially lynx, which in Canada depend on the hares so heavily as a food supply that its population parallels the hare's following it by 1 year.

BROWN LEMMING

(Lemmus sibiricus)

HABITAT

The brown lemming can be found in wet tundra and alpine meadows in Alaska and the northern part of Canada.

DESCRIPTION

The brown lemming is chestnut brown above with a grayish head and buff-gray below. It has a stubby tail and silvery feet which leave miniature bear-like tracks. The brown lemming is active all winter beneath the snow. The population goes through peaks and crashes influenced by weather and possibly behavioral factors. They feed on buds, bark and willow twigs, sedges and grasses. When lemmings are abundant, so are their predators. Home ranges are very small from 3 1/2 to 6 square yards.

REPRODUCTION

Brown lemmings are prolific breeders. They may have litters every 3 - 4 weeks. Some years they breed year round or they may not breed at all in the winter.
Commonly they have 4 - 8 young.

PREDATION

Their main predators are foxes, grizzly bears, weasels, snowy owls, wolves, ermines, wolverines, hawks, falcons and gulls.

COLLARED LEMMING

(Discrostonyx groenlandicus)

Note: See also "Lemming" Canadian Wildlife Service

HABITAT

The collared lemming can be found in the Arctic tundra, northern and western Alaska and the northern part of the Canadian provinces east to Hudson Bay. In summer; they are usually found in drier rockier places; in the winter in low marshy country.

DESCRIPTION

The collared lemming is buff-gray above with black stripe down its back. It has a pale or tawny ruft across the throat and a short tail. All white in the winter it is the only rodent to change color. The collared lemming is active all winter beneath the snow. It is well adapted for living under the snow as it grows large claws on its forefeet for burrowing. The diet consists of grasses, sedges, bearberry and cotton grass in the summer; in the winter, twigs and buds of willow.

REPRODUCTION

The collared lemmings are prolific breeders. They may have litters as often as every 3 to 4 weeks. Some years they breed year round or they may not breed at all in the winter. Commonly they have 4 - 8 young.

PREDATION

Arctic carnivores, (foxes, wolves, wolverines), owls and gulls are their main predators.

DEER MOUSE

(Peromyscus maniculatus)

HABITAT

The deer mouse inhabits the prairies, brushy areas, and woodlands. It is found in the west from Mexico to southern Yukon and the Northwest Territories. In the East, its range extends from Hudson Bay to Pennsylvania.

DESCRIPTION

The deer mouse is grayish to reddish-brown above and white below. The tail is distinctly bicolored and shorthaired. The woodland species is larger and has a longer tail and larger feet. They feed on seeds, nuts, small fruits, berries, insects, centipedes, and some fungi. The deer mouse routinely stores seeds and small nuts.

For its home, it will dig small burrows or inhabit hollow logs.

PORCUPINE

(Erethizon dorsatum)

HABITAT

The porcupine can be found in most of Canada and western United States in the woods.

DESCRIPTION

The porcupine has a large chunky body with high-arching back and short legs. It has long guard hairs on the front half of the body and quills on rump and tail. Primarily nocturnal, it rests by day in a hollow tree or log, underground burrow or treetop. The quills are used as protection against predators. There are about 30,000 quills, which are modified hairs solid at the tip and base, hollow for most of the shaft, and loosely attached to a sheet of voluntary muscles beneath the skin. The porcupine cannot throw quills, but lashes out with its tail. If the tail strikes the enemy, the loosely rooted quills detach easily and are driven forcefully into the victim, whose body heat causes the microscopic barblets on the end of the quill to expand and become even more firmly embedded. The porcupines diet consists of leaves, twigs, and green plants. In the winter, it chews through the rough outer bark of various trees, including pines, fir, cedar and hemlock, to get at the inner bark (cambium) on which it then subsists. It is fond of salt, which makes it a nuisance around camps since it will chew items that have salt from either perspiration or urine.

REPRODUCTION

The porcupine mates mainly in October and November. After a gestation of nearly 7 months, the single young is born in May or June. The quills are soft when born but harden within half an hour. The life span of the porcupine is 7-8 years.

PREDATION

The fisher is adept at flipping the porcupine over to attack its unquilled underside. Other predators include mountain lion, bobcat, coyote and man. The quills have been used for decorative applique.

RACCOON

(Procyon lotor)

HABITAT

Their habitat varies, but is most common along wooded streams. The raccoon is native only to the Americas and is found in southern part of Canada and most of the United States.

DESCRIPTION

The raccoon is reddish-brown above with black grayish below. The bushy tail has 4-6 alternating rings of black and brown or brownish-gray. The black mask on the face is outlined in white. Their ears are small. It is nocturnal and solitary except when breeding or caring for its young. During cold spells, they sleep for several days, but do not hibernate. It is omnivorous and eats grapes, nuts, grubs, crickets, grasshoppers, voles, deer mice, squirrels, other small mammals, bird's eggs and nestlings. They may raid muskrat houses and eat the young. Along the streams, it preys on crayfish, frogs, worms, fish, dragonfly larvae, clams, turtles, and turtle eggs. It sometimes appears to wash its food, getting its scientific name, lotor, which means "a washer"; however, they are not cleaning the food, but rather are kneading and tearing at it. Wetting the paws enhances the sense of touch.

REPRODUCTION

The males travel in search of a mate. Females accept only one male per season. They have litters of 1-7 young with the average being 4-5. The young are born April-May, weighing about 2 oz. Weaned by late summer, some young are dispersed in Autumn. Some remain but are driven away by the female before her next litter.

ARCTIC SHREW

(Sorex arcticus)

"Saddle-backed shrew"

HABITAT

This species can be found in bogs, marshes and grass-sedge meadows throughout much of Canada and Alaska.

DESCRIPTION

This shrew is recognized by its tricoloured pattern, which gives a saddle-backed appearance. These differ from other shrews in that they are docile, and don't usually attempt to bite when handled. They vocalize with a low rapid chatter.

REPRODUCTION

The young shrew are born between Spring and Fall. Unweaned shrews, will grasp a sibling's tail in their mouth at a sign of danger. This chain forms a caravan with the mother in the lead. The arctic shrew produces two or three litters in a season. In a few weeks the young can leave the nest and mark their own territory.

PREDATION

Their main predators are weasels, hawks and owls.

MASKED SHREW

(Sorex cinereus)

HABITAT

The masked shrew is found throughout the mainland Northwest Territories in moist areas but also fields, brushy areas and woods, bogs and marshes. It is one of the most distributed mammals in North America.

DESCRIPTION

The masked shew is brownish above with a silvery or grayish belly and long tail. It is about 10 cm in length and has a long nose, small eyes, ears and clawed feet. The coat varies in color from grey to dull brown and it moults in the spring and fall. Primarily nocturnal and rarely seen, the masked shrew is a voracious eater and its daily consumption often equals or exceeds its own weight. Their diet consists mainly of insects, (moths, beetle larvae, slugs, snails and spiders). They are often short-lived creatures with their lifespan being 14-16 months. They make a nest of leaves or grass under a log, in a stump or clump of vegetation. The shrew is a loner except during mating season. If a shrew is excited, its heart-rate can exceed 1,200 beats per minute. This can result in its being frightened to death.

REPRODUCTION

The young shrew are born between Spring and Fall. Unweaned shrews, will grasp a sibling's tail in their mouth at a sign of danger. This chain forms a caravan with the mother in the lead. The masked shrew produces two or three litters in a season. In a few weeks the young can leave the nest and mark their own territory.

PREDATION

Their main predators are weasels, hawks and owls.

STRIPED SKUNK

(Mephitis mephitis)

HABITAT

Deserts, woodlands, grassy plains, suburbs, most of the United States and the southern part of Canada.

DESCRIPTION

The skunk is black with 2 broad white stripes on its back meeting at the head and shoulders. On its face, it has a thin white stripe. The bushy tail often has a white tip or fringe. Males are longer than females. The average weight of a skunk ranges from 6-14 pounds (2.7 - 6.3 kg) and the length from 20 - 30 inches (522-800 mm). The skunk's anal glands hold about a tablespoon of a fetid, oily, yellowish musk enough for 5 or 6 jets of spray. When threatened, it raises its tail straight up and sprays the scent 10 - 15 feet. The fluid sprayed in the enemy's eyes causes intense pain and fleeting loss of vision. It makes its home in a den in a burrow abandoned by another animal, but may dig its own or use a hollow log, or crevice. It eats a wide variety of vegetable matter, insects and grubs, small mammals, eggs of ground nesting birds and amphibians. Skunks gorge themselves in the fall in preparation for a lean winter. They do not hibernate, but may hole up during extremely cold weather. Currently the skunk is the chief carrier of rabies in the United States.

REPRODUCTION

The skunk mates in the late winter and in mid-May 4-7 young are born. They are weaned at 6-7 weeks.

PREDATION

The skunks only serious predator is the Great Horned Owl.

ARCTIC GROUND SQUIRREL

(Spermophilus parryii)

***Northern name of "Sic Sic" or "Heek Heek"**

NOTE: See also "Richardson's ground squirrel - Canadian Wildlife Service

HABITAT

The arctic ground squirrel is found in Alaska, Yukon, mainland Northwest Territories and Northern British Columbia. It inhabits sub-alpine brushy meadows, riverbanks, lakeshores, and sandbanks. It is found on the tundra from Anderson River in northwestern Mackenzie to Melville Peninsula and Hudson Bay in the Keewatin.

DESCRIPTION

The arctic ground squirrel is the largest of the North American ground squirrels, weighing about 700-800 g. Their head and shoulders are tawny to reddish; back, reddish to grayish-brown with numerous whitish flecks. The underparts and legs are yellowish or tawny. The arctic ground squirrel is grayer in winter. It wanders far from its home range to forage. In the summer it is very active and feeds on stems and leaves, seeds, fruits and roots of grasses, sedges and other green plants as well as woody plants and mushrooms. On rainy or cloudy days it keeps to its burrow. The burrow is often used for many years and has extensive tunnels with several entrances. These are made in places free of permafrost such as eskers, sand-banks and boulder fields. In the fall, the arctic ground squirrel enters hibernation which lasts more than half the year, (from September or October through April or May).

REPRODUCTION

The arctic ground squirrel mates in May soon after emerging from hibernation. The 5-10 young are born blind and hairless in late June and are weaned at 20 days.

PREDATION

The main predators of the arctic ground squirrel are hawks, falcons, ermine, wolves, arctic fox and grizzly bear. Some Northerners also eat them and use the skins to line parkas. The soft fur is valued for making warm linings and mitts.

NORTHERN FLYING SQUIRREL

(Glaucomys sabrinus)

HABITAT

The northern flying squirrel can be found in eastern Alaska, southern Yukon, southern Northwest Territories, and the southern part of Canadian provinces in coniferous forest and mixed forests.

DESCRIPTION

The northern flying squirrel is nocturnal and nests in hollow trees and stumps. They have very soft fur, rich brown above and white below. They have a loose fold of skin between the fore and hind legs. The squirrel spreads its legs which stretches the flight skin. This allows them to glide from tree to tree. The northern flying squirrel feeds on various nuts, seeds, insects and stores much food for winter use. Its chirping birdlike call is similar to those of the night-flying warblers.

REPRODUCTION

The northern flying squirrel mates in late winter. The gestation is 40 days and a litter of 2-5 are born in the spring. Sometimes a second litter is born in late summer.

RED SQUIRREL

(Tamiasciurus hudsonicus)

HABITAT

Throughout much of Canada and Alaska the red squirrel can be found in any kind of forest.

DESCRIPTION

The red squirrel is the smallest tree squirrel in its range. It is rust-red to grayish-red above with the brightest color being on the sides. Below, it is white or grayish-white. The tail is similar to its back color, but it is outlined with a broad black band edged in white. In the summer, the coat is duller and a black line separates the reddish back from the whitish belly.

The red squirrel feeds heavily on pine seeds. In the fall it cuts green pine cones and buries them in damp earth, sometimes up to a bushel per cache. Other foods are acorns, beechnuts, seeds of hickory, tulip, sycamore, maple, elm, berries, bird's eggs and fungi (mushrooms).

REPRODUCTION

The red squirrel mates in late winter and a litter of 3-7 young are born in March or April. Sometimes a second litter is born in August or September.

HEATHER VOLE

(Phenacomys intermedius)

HABITAT

The heather vole is found in open grassy heather; blueberry patches, in scattered clearings and on mountain tops. It can be found throughout the Southern provinces as well as the Yukon and the Territories.

DESCRIPTION

The heather vole is grizzled brown above, silvery below. It has a short tail and white feet.

In winter, nests on the ground in runways covered with snow. The rest of the year it nests in burrows. The heather vole's diet consists of plants such as bearberry, reargrass, lousewort, and huckleberry as well as twigs, bark and seeds.

TUNDRA VOLE

(*Microtus oeconomus*)

HABITAT

The tundra vole inhabits tundra areas around streams, lakes, and marshes. It is found throughout Alaska, Western Arctic and the northern Mackenzie area.

DESCRIPTION

The tundra vole is grayish to brownish above with yellowish or fulvous cast, white below. The tail is bicolored, dusky to black above, whitish to buff below.

The vole builds a nest of sedges and grasses within its burrows.

It feeds primarily on green grasses and sedges in the summer, while storing rhizomes (especially knotweed and licorice root) and grass seeds for later use. At one time, dogs were trained to find the Tundra Vole's caches of Licorice root.

LEAST WEASEL

(Mustela nivalis)

HABITAT

The least weasel is found in most of Canada in grassy and brushy fields and marsh areas.

DESCRIPTION

The least weasel is tiny and smaller than an ermine. They are brown above, white below with a very short brown tail. They are all white in winter except in southern parts. The least weasel is the smallest carnivore in North America and is primarily nocturnal. They feed mostly on mice, shrews, and moles. They use the abandoned burrow of another small mammal such as a mouse, gopher, or ground squirrel for their dens.

REPRODUCTION

The least weasel mates year round and has up to 3 litters per year. Three to 6 young are born in any month. They are weaned at 4 to 7 weeks.

PREDATION

The least weasel falls prey to foxes and owls.

UNIT 4 MARINE ANIMALS

Lesson 1: Introduction

Harbour Porpoise
Seal, Bearded
Seal, Harbour
Seal, Harp
Seal, Hooded
Seal, Ringed
Whale, Blue
Whale, Bowhead
Whale, Fin
Whale, Humpback
Whale, Killer
Whale, Minke
Whale, Narwhal
Whale, Pilot
Whale, Sperm
Whale, White
Walrus

Module C Unit 4 Lesson 1

SKILL: **MARINE ANIMALS**

OBJECTIVE: Introduction

ITEMS REQUIRED:

Field Guide to North American Mammals: Audubon Society
The Bowhead Whale - Fisheries and Oceans
The Beluga and Narwhal in the Eastern Canadian Arctic- Fisheries and Oceans
The Life of the Ringed Seal - Fisheries and Oceans
Arctic Animals - Jonquil Growes and Ed Hall - Renewable Resources
Guide to Watching Whales in Canada, Department of Fisheries and Oceans
Studying and Managing Arctic Seals and Whales - Department of Fisheries and Oceans

METHOD: Lecture and discussion

Depending upon the course location, either parts or none of this unit will be relevant. In a maritime location, determine which specific animals need to be studied; include the appropriate student manual sheets in the participant notebooks.

Discuss the relationship of the specific animal to the traditional lifestyle. Remind the students that factual compilation is only the background detail. They will have to incorporate this knowledge into the bigger picture of how that specific animal relates to its surroundings and to the traditional lifestyle. Point out the animal's position on the food chain with reference to predation.

Encourage a free trade of ideas from the participants regarding their knowledge or legends pertaining to the animals.

CONCLUSION: The interpretive guide is responsible for understanding the animals in his district.

HARBOUR PORPOISE

(Phocoena phocoena)

HABITAT

This porpoise is generally found in the subarctic and temperate regions, usually inshore and often in bays and estuaries. In the Northwest Territories, it can be found in the Davis Strait and Baffin Bay.

DESCRIPTION

The harbour porpoise is the smallest cetacean within its range; it usually grows to about 1.5 meters in length and weighs approximately 64 kg. This porpoise is dark gray to black on its dorsal surface, lighter below, with a dark gray line running from its mouth to the base of the flipper. It has a triangular dorsal fin and a hint of a beak. The Harbour Porpoise feeds on a diversity of fish such as: herring, pollock, mackeral and hake, as well as, squid and bottom crustacea. One porpoise can eat about 35 - 40 times its weight in food in a year. These are very active animals but tend to shy away from vessels and man and therefore are difficult to observe.

Normal group size is less than 10; when feeding, though they have been seen in groups of 50 or more.

REPRODUCTION

The mating season for the Harbour Porpoise is June to August. The gestation period lasts for 11 months. Calving season is March to July with one young born each year. Lactation period is about 8 months.

PREDATION

The Killer whale is an important predator; however, many perish accidentally when caught in fishermens' nets.

BEARDED SEAL

(Erignathus barbatus)

HABITAT

The bearded seals inhabit the Arctic and subarctic shelf, in relatively shallow water up to 500 feet deep. They move seasonally with drift ice. The bearded seal is found in northern coastal waters and shallow seas from Alaska to Labrador, including Hudson Bay. They are sometimes found in inland lakes in the Keewatin.

DESCRIPTION

One of the largest seals in Canadian waters it is known as the "square flipper". Uniformly grayish to yellowish it is bearded with tufts of long, flat bristles at the sides of the snout. The fore flippers are squared off, with the third digit longer than the others. The skin of the bearded seal is used for Kamik bottoms and harpoon cord because of its strength. The seals go through an annual molt which occurs between March and June. They feed on whelks, clams, crabs, octopus and bottom-feeding fish. Using their long whiskers, they find food on the sea floor at depths of 130 meters or less. They are non-migratory and usually solitary but during breeding season may congregate in groups of up to 50. The bearded seal remain below the Arctic ice, establishing long, cone-shaped breathing holes for air. Their life span may exceed 25 years.

REPRODUCTION

Mating is in May and implantation is delayed until August. In April - May, a single pup is born, eyes open, with a brown woolly coat. The pup weighs about 70 pounds. After nursing for 12 - 18 days, it weighs about 200 pounds; most of it blubber. The females give birth only once every 2 years. Females are sexually mature at 6 years, males at 7.

PREDATION

Polar bears, man and an occasional Walrus are their chief predators. Coastal Inuit consider the vitamin-rich liver a delicacy. Kamiks (soft boots), thongs, and clothing are made from the skin.

HARBOUR SEAL

(Phoca vitulina)

also called "Leopard Seal"

Note: see also- "The Harbour Seal in Canada" - Underwater World - Fisheries and Oceans.

HABITAT

The Harbour Seal is found in coastal waters, mouths of rivers; and, in some northern populations, permanently inland in freshwater lakes. These seals are not common in the Northwest Territories, and occur only in the shallow coastal waters of Hudson Bay, and off the shores of Baffin Island and in Hudson and Davis Straits. They are more prevalent in the areas of the Yukon and Alaska, as well as southern Greenland and Hudson Bay.

DESCRIPTION

The color is variable, a pale grey covered with dark spots or blotches. The underside is creamy with dark brown spots. Some may look almost black because of an abundance of spots. They moult in late summer and early fall. They can weight up to 300 pounds (130 kg.) and be a length of 4-6 feet (120 - 170 cm). They dive to 300 feet and remain submerged up to 28 minutes. The harbour seal feed mostly on fish, including rockfish, herring, cod, mackerel, flounder, and salmon. They eat some mollusks (5% of their diet), including squid, clams and octopus. Sometime they eat crayfish, crab and shrimp. They feed when the tide comes in. In the spring, they may follow fish runs upriver for hundreds of miles. Often they rest together in large groups, but these herds are largely unstructured and impermanent.

REPRODUCTION

The harbour seal gives birth to one pup during May and June. The young are born with the short stiff hair coat of the adult having shed their long fetal hair in the uterus. The mating occurs during late summer and early fall. Once the mother-pup bond is established, harbour seals are solicitous mothers. She will carry her pup on her belly on a long journey. The young pup are suckled for a month, during this time they double their birth weight of 10 kg.

PREDATION

Polar bears, killer whales, and sharks are their main predators aside from man . Golden eagles sometimes prey on pups.

HARP SEAL

(Phoca groenlandica)

Note: - See also "The Harp Seal" - Underwater world - Fisheries and Oceans.

HABITAT

They inhabit drifting pack ice and occasionally venture up streams. Arctic seas from northern Hudson Bay and the west coast of Greenland south along Labrador into Gulf of St. Lawrence, west to the mouth of the Mackenzie River forms their habitat. In the Arctic, they are found mostly in eastern waters where they range through Foxe Basin, the north and east part of Hudson Bay, Hudson and Davis Straits, and the northern most limits of Baffin Bay during the summer.

DESCRIPTION

They are named for the black harp-shaped saddle that runs along each side and over the shoulders. The body is pale grey and the head is black, slightly larger than the ringed and harbour seals. They can weigh up to 400 pounds (180 kg) and be 5 - 7 feet (140-200 cm) long. The harp seal is migratory, following the melting ice northward in late May and spending the summer in Arctic waters . Annual oceanic migrations cover 6,000 miles. The harp seal can dive to 900 feet and remain submerged up to 15 minutes. Their chief foods are small fish, especially capelin and herring. They also eat crustaceans, Arctic cod, halibut and squid. The young pups feed on krill and various shrimp-size invertebrates. In April they begin an annual molt, lasting about a month, which can be termed catastrophic as the coat and even large pieces of skin peel off. Their life span may be up to 30 years. They fast annually during breeding season which causes a formation of rings on the canine teeth which can determine the seal's age.

REPRODUCTION

In February, adults move to the edge of the ice pack, where cows give birth to a single pup. Pups at birth weigh about 12 pounds and are covered with white fur. After being nursed only 2 weeks, the young seal has grown to 90-100 pounds and is abandoned. The young seal sheds the white coat and is replaced by grey, which later becomes creamy brown with dark blotches. When the pups are one month old, they take to the water to learn to swim, dive and catch fish. Mating occurs in the water; breeding peaks in early March.

HOODED SEAL

(Cystophora cristata)

HABITAT

The hooded seal can be found at the edge of the Arctic pack ice in deep water and from the Gulf of St. Lawrence to Greenland waters. In the Northwest Territories, they range throughout the waters of Foxe Basin, Northeast Hudson Bay, Hudson Strait, Davis Strait, and Northern-most Baffin Island.

DESCRIPTION

The hooded seal is steel gray above, often with irregular whitish or brownish blotches. They are paler below. The males range from 600-900 pounds; (300-400 kg) and the females, 400 pounds (180 kg.). Their length can range from 7 - 8 feet (200-250 cm). Both sexes have a hood on their head, larger in males. When inflated, this elastic nasal sac stretches from nostrils to forehead. A fiery red bladder is also forced out of one nostril by air pressure within the hood. This display attracts females during courtship and threatens competing bulls. They moult in late summer and early fall. Their diet consists mainly of fish, herring, capelin, halibut and cod, and they also eat mussels, starfish, squid, and octopus. Except during breeding season, the seals lead solitary lives.

They migrate north in April cutting across Davis Strait towards Greenland. In late August and early September they return south.

REPRODUCTION

In early Spring, they gather on the pack ice off the northern coast of Newfoundland to breed. In late March-early April, a single pup is born weighing about 50 pounds. The pup is slate blue above with a black head and lighter below. When the pup is 2 weeks old, the mother abandons it to mate again.

RINGED SEAL

(Phoca hispida)

NOTE:- See also - "The Life of the Ringed Seal" - Fisheries and Oceans.

HABITAT:

This species of seal prefers areas with land-fast ice, specifically the Arctic Ocean, in areas of more or less solid ice cover. The range of habitat can extend to the subarctic as far south as the Gulf of St. Lawrence. There is also a land-locked population in Nettilling Lake, Baffin Island.

DESCRIPTION:

The ringed seal is the smallest of the seal family. It averages 41/2 feet (150 cm) in length with weights averaging 140 to 180 pounds. The largest male recorded weighed 225 pounds; (101 kg) the eldest, 43 years. The layer of blubber varies from 40 per cent of body weight in late autumn to 20 per cent during the spring fast. This fasting time includes the reproductive and moulting seasons from about April to late June.

They are primarily solitary, but occasionally form loose associations. The sense of sight seems poorly developed; response seems triggered by movement of close objects. Hearing and smell are acute. The young seals tend to stay near the floe-edge or drifting ice.

In shallow-water feeding, they usually submerge for three minute periods followed by about one minute or so at the surface. However their maximum dive potential seems to be about 300 feet and for as long as 20 minutes.

They feed mainly on crustacean macroplankton and somewhat on small fish. This diet is reflected in tooth structure, contrasting to the harbour seal's stronger dentition, more suited to a fish diet. The ringed and the harbour seal bear a very close resemblance in body shape. The ringed seal has a rounder head with a more pointed snout.

REPRODUCTION:

The mating season occurs between mid-March to mid-May. The female is monoestrous in a post-partum period while she is still lactating. Delayed implantation is exhibited for about 3 1/2 months, until approximately August. The single pup is born just prior to mating, so gestation appears to span 11 1/2 months. The males exude a strong offensive musky odour during mating season. Males reach sexual maturity at 7 years, while females mature a year earlier.

The pups are born in snow dens on land-fast ice. These dens can be excavated by the female, or formed naturally at pressure ridges. One entrance leads into the den of about 10 feet by 2 feet dimensions. The pups weigh 10-12 pounds at birth, and nurse for about 2 months. For the first month the pup is covered with a fluffy white lanugo coat.

PREDATION:

Sharks, killer whales, arctic fox and polar bears use the seal for food. The latter two hunt out the pups in their dens, while the polar bear uses a number of styles to gather seals. For the Inuit the ringed seal has been a traditional source of food, skins and manufactured items.

BLUE WHALE

(Balaenoptera musculus)

HABITAT

The blue whale is found in both the Atlantic and the Pacific Oceans. In the summer, they move into the Arctic and antarctic waters. The northernmost limit of their range in Canadian waters is Davis Strait.

DESCRIPTION

The blue whale is pale blue to grey with light spots. They may reach a length of 30 meters and weigh in excess of 100 tons. It is the largest animal which has ever lived. The blue whale has a tiny fin on its back near the rear, and rather small flippers. It has very broad U-shaped head and throat grooves. These grooves extend along the lower jaw, throat and chest, allowing the whale to expand its jaws when feeding. The blue whale has up to 400 black baleen plates suspended from its upper jaw that filters planktonic crustaceans or "krill" from seawater. They eat up to 4 metric tons of krill a day. Usually solitary, they may occur in small groups of 3 or 4. The blue whale can make up to 20 short shallow dives followed by a deep dive lasting about half an hour. They are thought to be long-lived and age estimates of 30 to 100 years have been suggested. The blue whale is considered an endangered species and protected since 1966.

REPRODUCTION

The mating season is in the winter; gestation period is 10 to 12 months. Calving season is around April with one young born every 2 to 3 years. The lactation period is about 7 - 8 months.

BOWHEAD WHALE

(Balaena mysticetus)

"Greenland Whale"
"Right Whale"

NOTE: - See also - "Bowhead Whale" Committee on the status of Endangered Wildlife in Canada. -"The Bowhead Whale" - Fisheries and Oceans.

HABITAT

The bowhead whale can be found in Arctic and subarctic waters in association with pack ice often in shallow areas. They are the only species of baleen whale to inhabit polar waters year round. In summer, they are found in Lancaster Sound, Davis Strait and northern Hudson Bay. In the winter they are in the loose ice or open waters of Davis Strait, off the west coast of Greenland and may venture as far as northern Labrador.

DESCRIPTION

The bowhead whale is black or dark grey with a whitish chin. They have an angular jaw and no dorsal fin. The bowhead may reach 20 meters in length and 50,000 kg in weight. They travel singularly, in pairs, or in pods of up to 50. Using their heads and backs, they can break ice over half a meter thick. Slow moving, they float when killed . The enormous store of blubber made it a target of whalers. They were given the name "right whales" because they were the right ones to hunt. The bowhead feeds on krill or bottom animals. They are considered to be long-lived with a low reproductive rate. Physical maturity in both sexes is reached at a length of about 15 meters.

REPRODUCTION

The reproduction is not well known but they are believed to mate in Spring. The gestation period is 10 - 12 months. Calving season runs between March to August with one young every 2 - 3 years.

FIN WHALE

(Balaenoptera physalus)

HABITAT

In general, this baleen whale is found in Arctic, subarctic and temperate seas with preference for temperate seas; inshore and offshore. The fin whale reaches the Gulf of St. Lawrence in summer and Vancouver Island around March-April.

DESCRIPTION

The fin whale has a rather elongated head with a dorsal fin far back. The throat grooves and the back are black or grey. The lower jaw is dark on the left, white on the right. Their length can be between 18 - 23 meters. The fin whale travels singly or in pods of 2 to 5. The surface activity is usually 5 to 8 blows. The back arches and the flukes are not exposed in the terminal dive. It submerges 4 to 20 minutes. The swimming speeds are anywhere from 10 to 30 knots. They feed on a diversity of small fish and crustacea.

REPRODUCTION

The mating season is in the winter with a gestation period of 11 to 12 months . The calving season is in the winter and one young is born every 2 to 3 years. The lactation period is about 4 months

HUMPBACK WHALE

(Megaptera novaeangliae)

HABITAT

The humpback whale can be found in the Pacific and the Atlantic usually in inshore waters and by the continental shelf. In summer, it migrates to cold waters for feeding. In the winter, it travels to warm waters for calving. Considered threatened in Canada, it has been protected since 1966.

DESCRIPTION

This baleen whale has a length of 11 to 16 meters and is black, brown or grey. The long flippers are 1/3 of the body length. The humpback whale has wart-like knobs on its head and throat grooves.

It usually travels singularly or in pods of 2 to 8. Well known for its acrobatics, it is nicknamed "clown of the sea" for the eye-catching breaches. The humpback whale feeds on a diversity of small fish i.e. capelin, herring, sand lance and krill. This is the so called "singing whale" whose song has been compared to bird's songs.

REPRODUCTION

The mating season is in winter with a gestation period of 11 to 12 months. Calving season is in the winter. One calf is born every 2 to 3 years. The lactation period lasts 10 1/2 to 12 months.

KILLER WHALE

(Orcinus orca)

HABITAT

Killer whales can be found in the Atlantic, Pacific, and Arctic oceans. In the Arctic, they occur in Foxe Basin, Hudson Bay and Hudson and Davis Straits, Lancaster and Eclipse Sounds, and Admiralty Inlet.

DESCRIPTION

The Killer whale is the largest member of the dolphin family. It can grow to a length of 9 meters and weight over 8 tons, with the females being slightly smaller. The whales are predominantly black with white markings from jaw to belly, a white oval patch near the eye and a light saddle behind the dorsal fin on adults.

Killer whales are carnivores and feed on fish, seals, dolphins, porpoises, whales and even aquatic birds. They are ferocious feeders and hunt in packs of 3 - 40. They have been known to dislodge basking seals from ice floes by tipping the floes from below. They follow the migrating narwhals, white whales and seals, just as wolves follow herds of caribou. These whales normally travel in pods of up to 50.

REPRODUCTION

There seems to no particular breeding season and very little is known about the killer whales' numbers, populations, sexual maturity or reproductive rate. The gestation period is about 12 to 16 months and a single calf is born in November or December. Lactation period is one year or more.

PREDATION

Killer whales are not hunted in the Canadian Arctic.

MINKE OR LESSER RORQUAL WHALE

(Balaenoptera acutorostrata)

HABITAT

The Minke or Lesser Rorqual are found in the Arctic, subarctic and temperate waters more commonly found inshore. In the summer, it ventures into bays and estuaries, including Ungava Bay, Hudson and Davis Straits.

DESCRIPTION

The Minke is a small baleen whale whose length is about 9 m. Their streamlined bodies are black with gray to white undersides. A white band on the dorsal side of the flippers helps to identify this species. The head is narrow and pointed. The baleen inside its mouth contains 230-360 plates. Minke whales are solitary animals, though sometimes seen in groups of 2 - 3. Their diet includes krill and small shoaling fish such as capelin, cod and herring.

REPRODUCTION

Mating season is December through May with a gestation period of about 10 months. Calving season is between October and March with one young born every 1 to 2 years. Lactation period is about 4 to 5 months. Males mature sexually when about 6.7 or 7 m long and females mature when about 7.3 m long and 4 years old.

NARWHAL

(Monodon monoceros)

NOTE: - See also "The Beluga and Narwhal in the Eastern Canadian Arctic" - Fisheries and Oceans.

HABITAT

These are found throughout the eastern arctic. They migrate with the ice in the spring and fall and in winter they are in Davis Strait and Baffin Bay. In spring, they move westward through Lancaster Sound and perhaps Hudson Strait. In summer they are seen in Jone, Lancaster and Eclipse Sounds, in Admiralty and Prince Regent Inlets, and to a lesser extent, in northern Hudson Bay and Foxe Basin.

DESCRIPTION

Adults are mottled white; calves are mottled black. Average length is 4.5 meters maximum and they can weigh over a ton. Males may weigh twice as much as females. Occasionally females have a tusk 2 to 3 meters long which spirals counterclockwise. This tusk is actually an erupted incisor on the left side of the upper jaw. The function of the tusk is a mystery, although it may be a secondary sexual characteristic. They are sociable creatures, generally forming groups of about 10. Sometimes during migration, herds of a thousand are seen. The narwhal feed on fish, arctic cod, squid, octopus, molluscs, shrimp and crustaceans. To catch prey, they may dive to about 200 fathoms then return to the surface to breathe.

REPRODUCTION

Breeding occurs about mid-April. The male is probably polygamous. The gestation period is about 15 months. Calving season is summer (July - August) with one young born every 2 years.

PREDATION

Man. The skin of the narwhal is rich in Vitamin C and considered a delicacy with its slightly nutty flavour. It is hunted on a quota system. The tusks are sold to local stores and tourists.

PILOT WHALE

(Globicephala melaena)

HABITAT

These whales are found in subarctic or temperate waters, usually offshore. In the summer, they come in closer to shore and frequent bays.

DESCRIPTION

Pilot whales are toothed whales which are predominantly black or dark brown except for a lighter anchor-shaped pattern on their throat and belly. Some of the distinguishing features are the blunt, bulbous head and a widely based, squat dorsal fin. The flippers are long and sickle-shaped. This medium-sized whale can grow to a length of 4 to 6 meters.

Pilot whales sometimes travel in pods of 5 to 300 but inshore pods of 20 to 50 are more common. Squid is the pilot whale's major food, although it will eat fish (cod, plaice) and amphipods.

Surface activities include; making several frequent blows, submerging for several minutes but not often breaching.

REPRODUCTION

Mating season is April to May. Gestation period is around 15 1/2 months. Calving season is all year but mostly from May to November when one young is born every 2 - 3 years. Lactation period is 21 - 22 months. Female pilot whales mature sexually at about age 6 and males at age 12 or 13.

SPERM WHALE

(Physeter catodon)

HABITAT

Generally, sperm whales are found in all oceans of the world but are more common in temperate and tropical waters.

Sperm whales are migratory, but only bulls travel northward in loose groups, to the arctic waters. In the summer months these bulls can be found in Davis Strait off the coast of Baffin Island.

DESCRIPTION

Sperm whales are the largest of all toothed whales, the largest ones growing over 15 meters long and weighing over 50 tons. Its large head takes up about one-third of the body length and the lower jaw is small and short in comparison. They have no dorsal fin but instead they have a single dorsal lump and ridges along its back. These whales are light grey or almost black and pale slightly with age. Some albinos have been observed. Their large teeth enable them to eat such marine life as fish, sharks, squid and octopus. Each day a large male will eat about 3.5 percent of its body weight in squid. Sperm whales can dive to depths of up to 3 km and remain submerged for as long as 80 minutes.

REPRODUCTION

Mating season is January to July but peaks in April and May. Gestation period is 16 - 17 months. Calving season is May to November when one young is born, every 3 - 4 years. Lactation period is up to 2 years.

WHITE WHALE OR BELUGA

(Delphinapterus leucas)

NOTE: See also, "The Beluga and Narwhal in the Eastern Canadian Arctic" - Fisheries and Oceans.

HABITAT

The Beluga is a toothed whale that spends its summers in shallow waters of estuaries and bays in the Arctic and subarctic. In winter, it migrates in areas of loose pack ice or open water. There are thought to be separate populations occurring in Lancaster Sound, Cumberland Sound, Ungava Bay, Hudson Bay and the Beaufort Sea.

DESCRIPTION

The adults are white, while the juveniles are grey, and the newborns are brown. They vary in length and weight according to location i.e. they are medium-sized throughout the Canadian Arctic (4-5 meters and weighing 540-765 kg) but smaller in Hudson Bay. The females are not as large as the males. They have a round bulbous forehead with a short beak- no dorsal fin. Usually found in small groups of up to 12. During migration, herds of several hundred travel to coastal waters in summer and return to deep open water when the bays freeze over. They feed on fish, bottom invertebrates and squid. The beluga surfaces 2 to 3 times per minute to breathe and submerges 10 to 15 minutes. They are very vocal and have been called the "Sea Canary".

REPRODUCTION

The sexual maturity for females is 4 - 5 year and males 5 - 8 years. The mating season is in the spring. The gestation period is 14 1/2 months. Calving season is June and August with one young born every 3 years. Lactation period is 2 years.

PREDATION

Killer whales, man, and sometimes Polar bears take their toll. Entrapment in the ice is a hazard which usually results in death. Commercial whaling was banned in 1972.

WALRUS

(Odobenus rosmarus)

NOTE:- See also- "Walrus of the N.W.T." - Arctic Wildlife Sketches, Renewable Resources.

HABITAT

The walrus can be found along the continental shelf of the northern seas, especially along the edge of pack ice. They prefer water depth of less than 60 feet. In Canada it is restricted mainly to Hudson Bay, the waters surrounding Baffin Island, and the high Arctic: in the Keewatin; predominantly in the area of Southampton Island.

DESCRIPTION

The walrus has a yellowish to reddish brown hide. It is basically hairless except for the 400 bristles on its muzzle. The males can weigh up to 1600 pounds (750 kg) and be 8 to 12 feet (250-360 cm) in length. The Pacific variety is larger. Unlike seals, they have nails on all 5 toes and no external ears. The walrus has a short round head. Upper canines are 2 large tusks up to 60 cm. long. Cows' tusks are somewhat shorter, narrower, and more curved in the middle. The tusks are used to haul themselves across the ice and up the sides of floes, and used as weapons against bears, boats, and other walrus. A thick tough hide and a thick layer of blubber protect them from the cold arctic seas. The walrus are excellent swimmers, and use their hind flippers alternately for propulsion and can travel about 15 mph. The males mature sexually at 6 years; females at 4 years. The walrus can dive to 300 feet and remain submerged about half an hour. During deep dives, blood goes from the skin to the internal organs, leaving their skin pale. They spend a lot of time out of the water, resting and sunbathing on ice and beaches. When asleep at sea, they hang vertically in the water, with their head held up by a pair of inflatable air sacs in the neck. Their whiskers help them locate organisms on the sea bottom. The walrus feed on clams, mussels, molluscs, sea worms, crabs, snails, squid, and fish. They have been known to feed on seals, which they have killed or found dead. The walrus are sociable animals gathering in mixed herds of up to 2,000 bulls, cows and calves when feeding and migrating. The lifespan of the walrus is up to 40 years.

REPRODUCTION

Courting and mating occur at sea April - May. Bulls do not form harems but may enter courtship battles. Every other year cows give birth to a single calf, weighing 100-150 pounds. The young remain with its mother almost 2 years. The calf often rides on its mother's back by hanging on with its flippers. The average length of gestation is 376 days. The young are completely dependent on milk throughout the first year.

PREDATION

Polar bears and killer whales are their only natural predators. Flesh provides food for Inuit and their dogs. The walrus skins are used for boat covers and leather. The intestines are used for raingear while the bones have been used for tools. The tusks of the walrus are used for carving and the bristles, for toothpicks.

MODULE D

Unit 1 Fresh Water Fish

Unit 2 Salt Water Fish

UNIT 1 FRESH WATER FISH

Lesson 1: Introduction

Char, Arctic
Dolly Varden
Goldeye
Grayling, Arctic
Inconnu
Lake Trout
Northern Pike
Sucker, Longnose
Walleye
Whitefish

Module D Unit 1 Lesson 1

SKILL: **FRESH WATER FISH**

OBJECTIVE: Introduction

ITEMS REQUIRED:
Arctic Animals - Renewable Resources
Selected Freshwater Fish - Department of Fisheries and Oceans
Arctic Char - Department of Fisheries and Oceans

METHOD: Lecture and Discussion

Select those fish appropriate to the course location. Distribute the student work sheets and present the pertinent information. Encourage participant interaction regarding ideas or legends that involve the species studied.

ALTERNATE METHOD:
Assign specific species to class participants. Have them research their fish and present facts in a "story" to their classmates. Supplement any missing information.

Remind the participants to look for links between their subject and its role in the food chain and its adaptation to the environment.

ARCTIC CHAR

(Salvelinus alpinus)

HABITAT:

It is found in pure cold circumpolar waters. Two principal groups are formed by the smaller landlocked freshwater variety and the sea-run (ANADROMOUS) variety. The latter weighing 2.3 to 4.5 kg. (5 - 10 pounds) normally, although larger in some areas. (1970 Tree River record 12.2 Kg. (26.8 pounds).

DESCRIPTION:

The Char is a member of the salmon family. It differs from the trout in that it has teeth only in the forward central part of its mouth, and some of the bone structure of this area (boat-shaped bone upper-mouth) identifies the family grouping. The fine imbedded scales give the skin a smooth texture. Normally silvery coloured with blue/green shading and sometimes with small pink dots, the char changes to dramatic spawning colours.

Sea migration occurs around the 5th year at a size of 15 to 20 cm. The fish returns before ice-up, often the largest return first. During winter, it usually doesn't eat, but lives on its fat reserves. This accounts for a slow growth pattern so 12 years later at full growth, it weighs 2.5 - 3 kg. It can live to 30 without an appreciable gain in weight, although an example of potential is the Russian record of 15.4 kg.

Four species of char exist: Eastern brook trout, Dolly Varden Trout, Lake Trout, and Arctic Char.

REPRODUCTION:

Char spawn first at 10 years of age, and every second or 3rd year after that. In reproductive years it doesn't usually migrate to the sea. A colour change signals the spawning phase. The normal silver gradually becomes orange then red and finally vermillion. The leading edges of lower fins and an upper jaw fold turn white. The males develop a protruding hook on the lower jaw. Spawning temperature of 4 degrees C. occurs in September or October in northern regions.

The female releases 3000 to 7000 eggs below eventual ice levels. These eggs hatch approximately in April and develop into fry by break-up (mid-July).

DOLLY VARDEN

(Salvelinus malma)

HABITAT

Dolly Varden are found in the headwaters of the Yukon, Liard, Nahanni, Peace, and Athabasca Rivers. Dolly Varden are present in the extreme southwestern part of the Northwest Territories, in clear mountain streams.

DESCRIPTION

This troutlike fish grows in lengths of 305 - 457 mm. The freshwater variety are olive-green to brown on the back and upper sides but have paler sides which turn red during spawning. The dorsal surface and sides are marked with yellow, orange, or red spots. The paired fins and anal fin are white, or creamy on the leading edge with a single thin black and thin red line behind. They feed on fish and plankton and prey extensively on salmon and salmon eggs in Alaska.

REPRODUCTION

Spawning occurs in lakes or rivers in Autumn. They spawn usually during the day, in rivers of moderate current with gravel bottoms. The bed is dug by the female while the male aggressively tries to drive other males away.

GOLDEYE

(Hiodon alosoides)

HABITAT

Goldeye live in rivers, lakes, reservoirs, and quiet backwaters. Their range includes the James Bay drainage of Ontario and Quebec, and west to the Mackenzie River, Northwest Territories and south to Alberta.

DESCRIPTION

The goldeye grows in length to approximately 51 cm and can weigh up to 1.4 kg. Their colour is bluish above and silvery below with bright golden-yellow eyes. They have a large mouth with small, sharp teeth. Primarily surface feeders, they feed on aquatic and terrestrial insects, snails, crustaceans and fish. Goldeyes are mainly nocturnal and their eyes are adapted to dim light conditions.

REPRODUCTION

In the spring, semi-buoyant eggs are laid in rivers, or in backwater lakes and ponds. Eggs contain a single, large oil globule and are steel-blue in colour when near maturity. The eggs hatch in about 2 weeks and the hatchlings are barely over 7 mm long.

PREDATION

Goldeyes are commercially important in Canada as a smoked fish. The main predators of the goldeye are: northern pike, walleye, sauger, and inconnu. Cormorants and several other birds are thought to prey on them as well.

ARCTIC GRAYLING:

(Thymallus arcticus)

HABITAT:

The distinctive iridescent dorsal fin is the identifier of this species. Generally shades of grey and silver, the grayling quickly looses is iridescent colours out of the water.

Generally found in clear streams, the grayling will occasionally be found in lake areas near river connections. Often small schools will congregate in the deeper pools of a clear stream. Flies constitute a major food source and the grayling usually follows his target downstream a short distance before leaping out of the water or taking the fly with a quick surface jab.

REPRODUCTION:

At about 3 years of maturity, the grayling spawns in the spring, producing about 1,000 to 13,000 eggs. Males defend a specific area and the females deposit eggs without a nest construction. Males grow larger than females, and 2 to 3 pounds is an average large weight. Great Slave Lake produced a 5 pound specimen.

INCONNU

(Stenodus leucichthys)

HABITAT

The inconnu lives in large rivers and in shallow waters of lakes. It ranges through the Mackenzie River to Great Slave Lake and up the Slave River to Fort Smith, and to Fort Nelson, B.C. on the Liard River.

DESCRIPTION

Inconnus have an elongated body with the length normally 457 - 762 m.m. The head which is 24 - 28% of the total length, is long, broad, and shallow. It is the largest species of Whitefish; one weighing approximately 63 pounds and measuring 59.25 inches long, was caught at the mouth of the Mackenzie River in 1936. The overall color of the inconnu is silvery but green to pale brown on its back. Both the sides and belly are silvery white. The dorsal and caudal fins are tipped with dark pigment.

The adult inconnu feed on a variety of small fish, mainly young whitefish, northern pike, nine-spine sticklebacks, young goldeye, minnows, arctic lamprey, and occasionally small inconnu.

REPRODUCTION

The inconnu spawn in flowing water in late summer or early fall. Egg numbers may vary from 125,000 to 325,000.

PREDATION

Mature inconnu, northern pike, burbot and man are its main predators.

LAKE TROUT

(Salvelinus namaycush)

HABITAT:

It is widely distributed across the North and even found some of the Arctic islands. Found naturally only in North America, some have been planted in New Zealand, South America and Sweden.

Cold water (4-10 degrees C) is preferred. In the South, they are deep dwellers, in the North, closer to the surface. In the Spring and Fall they swim over ledges or along rocky shorelines at a depth of a few meters. Not great travelers. 25 km. is a major range with the majority traveling much less. The longest recorded distance was 268 km. They seem to return to the same spawning grounds.

DESCRIPTION:

One of the members of the Salmon family and closely related to char, Salvelinus Namaycush, is a very desirable sport-fish. Depending upon light and temperature conditions, colouration can be olive grey to light grey on the back, pale yellow on side, often with a red shade below. Front edges of lower fins are usually orange in northern fish, and white in the south. Large lakes produce an over-all silvery colour. It is distinguished by the deeply forked tail, and teeth which grow on jaws, inner mouth and tongue.

A 47 Kg. trout was netted in Lake Athabaska in 1961.

REPRODUCTION:

Maturity can occur as early as 6 years in the South 12 at Great Slave or 16 at Great Bear. Usually they spawn every second autumn, but in the North, this can be extended to every year.

Females lay from 1,000 to 15,000 eggs among rocks at depths of 5 to 37 meters in 8 - 13 degree C temperature. The eggs hatch between March to June and the young spend the next few years in shallows.

Slow growth is witnessed in the North. A 10 year old trout can be large as 5.5 Kg. in Utah or as small as 1 Kg. in Great Bear. This accounts for the inability of Lakers to withstand heavy fishing. Catch limits in Great Bear and Great Slave are lower than elsewhere.

NORTHERN PIKE

(Esox lucius)

HABITAT:

Pike occupy wide ranges that are both circum-polar and south extending. It is usually found in warm, slow vegetated rivers or weedy bays.

DESCRIPTION:

The Pike is long and slender and has a flattened snout. Dorsal and anal fins are placed near the tail. A camouflaged colouring of green to olive/ brown changes to yellow-white on the belly. Yellow or white ovals exist in longitudinal rows on the body.

Pike are voracious feeders, which make this abundant game fish an easy one to catch. Springtime shallows give way to deeper water– areas of pike activity for the summer. Weedy bays, weed lines and river entry areas are favourite haunts.

REPRODUCTION:

Spawning occurs in the spring usually in shallow areas of bays,.marshes or inlet streams. A female is accompanied by two or more males who fertilize the 30,000 to 100,000 eggs. Maturity occurs about the fourth year.

PREDATION:

Larger pike and man affect the pike population.

LONGNOSE SUCKER

(Catostomus catostomus)

***Related species White Sucker (Catostomus commersoni)**

HABITAT

In Northwestern Canada, the Longnose sucker is more common than the Lake Trout and Northern Pike. It can be found in New Brunswick, Quebec, Central Ungava, Western Labrador and generally throughout the remaining provinces and territories.

DESCRIPTION

The longnose suckers' cylindrical body is usually 305 - 356 mm in length. Its head is moderately long and covers 20% of its total length. It has a long, fleshy snout which extends beyond its mouth and creates the "sucker-like" appearance. The adults are generally dark olive with brassy reflections above while cream to white below. The food of the longnose sucker varies depending on place, size and season, but it is primarily a bottom feeder.

REPRODUCTION

Longnose suckers spawn in the spring, in streams or shallow areas of lakes. They enter spawning streams as soon as stream temperature exceeds 41 degrees F. (5 degrees C). Spawning often takes place in stream water 152 - 279 mm deep with a current and gravel bottom. Two or four males will crowd around one female, clasping her with, or beating against her with, their anal fins. No nest is built and egg numbers range from 17,000 to 60,000 per female. The young remain in the gravel 1 - 2 weeks and emerge in June.

PREDATION

The young fall prey to a large variety of predaceous fish and fish-eating birds.

WALLEYE

(Stizostedion vitreum)

HABITAT:

Generally dispersed throughout tree-line locations up to Great Bear Lake and the Mackenzie River delta.

DESCRIPTION:

The Walleye is probably the most economically valuable fresh-water fish in Canada. A member of the perch family, it is also known as pickerel, pike perch, dore and wall-eyed pike. Normally its colouration consists of dark green on the back, yellow on the sides and white on the belly. These are variable depending on habitat, and more vivid colours are seen in clear water dwellers. Typical to the species is a dark blotch at the base of the first dorsal fin and a white tip on the lower caudal fin. The average weight is about 1 Kg., while the record (Tennessee) is approximately 11 Kg.

Walleye have a special light-sensitive layer in their eyes. This accounts for their name and for the twilight or dark feeding habits. They are sensitive to bright light and spend daylight near the bottom of the lake. During winter, they tend to use the same habitat, but preferring thicker layers of snow or ice while avoiding strong currents.

Walleye remain in loose but separate schools with separate spawning grounds. Maturity occurs at 2 to 4 years for males and 3 to 6 years for females. In the north, these fish can live longer than 20 years.

Parasites are common to the walleyes, protozoans, trematodes, cestodes, nematodes, and even broad tapeworm can be present, as well as black-spot and yellow grub. These are successfully killed by cooking.

Dermal sarcoma, a viral disease, creates pink tumor-like lesions on the body. This seems less prevalent in summer water temperature.

REPRODUCTION:

Depending on latitude, spawning can occur in spring or early summer, but can be omitted if the water temperature is not favourable (6 to 11 degrees C). The males move to the spawning grounds first—usually rocky areas or gravel shoals. Females deposit 25,000 to 600,000 eggs during a single night, and these can be fertilized by more than one male. The success rate for fertilization is from 5 to 20 percent. The eggs hatch in 12 to 18 days and within 2 weeks, the young move to upper levels of open water. These return to the bottom levels at the end of summer. Growth is slow in the north; however females grow more quickly than males.

LAKE WHITEFISH

(Coregonus clupeaformis)

HABITAT

Lake whitefish are found in the large rivers and lakes of Alaska, Canada, Northern New England, the Great Lakes and Northern Minnesota.

DESCRIPTION

Lake whitefish grow to a length of 38 cm. and may weigh up to 19.1 kg. Their bodies are silver-grey with a darker back. The placement of the mouth on a whitefish is below the snout, since the whitefish are generally bottom feeders, and feed on aquatic insect larvae, molluscs, and plankton. Lake Whitefish differ from other whitefish in that they have 23 - 33 fairly long gill rakers and nostrils with two flaps.

REPRODUCTION

Spawning occurs in late summer or fall. Whitefish shed their eggs over gravel beds or rocks; hatching then occurs in April and May.

PREDATION

Lake whitefish are the most valuable commercial fish in the Northwest Territories.

UNIT 2 SALT WATER FISH

Lesson 1: Salt Water Fish

Char, Arctic (See Unit 1)
Cod, Arctic
Shrimp, Northern

Module D Unit 2 Lesson 1

SKILL: **SALT WATER SPECIES**

OBJECTIVE: Introduction

ITEMS REQUIRED: Arctic Animals - Renewable Resources
"Arctic Cod" - Department of Fisheries and Oceans
"The Northern Shrimp" - Dept. of Fisheries and Oceans

METHOD: Lecture and Discussion

NOTE: It is beyond the scope of this course to identify a host of salt-water dwellers. However, those following, or any species which are requested can be amplified through the publications of the Department of Fisheries and Oceans.

American Plaice
Arctic Cod
Atlantic Halibut
Atlantic Mackerel
Atlantic Salmon
Atlantic Snow Crab
Grey Seal
Harp Seal
Lingcod
Northern Shrimp
Pacific Herring
Redfish (Ocean Perch)
Red Tides
Sea Scallop
Selected Shrimps of British Columbia
Turbot
Yellowtail Flounder
American Smelt
Atlantic Groundfish
Atlantic Herring
Atlantic Pelagic Fish
Atlantic Shellfish
Capelin
Harbour Seal
Irish Moss
Lobster
Oyster
Pollock
Red Hake
Roundnose Grenadier
Selected Freshwater Fish
Spiny Dogs
Thorny and Smooth Skates
Witch Flounder

Any of the above can be received as resources from:

Communications Directorate
Department of Fisheries and Oceans
Ottawa, Ontario
K1A 0E6

ARCTIC COD

(Boreogadus saida)

***There are six species present in Arctic marine waters: polar, arctic, saffron, Atlantic, Greenland cod, and threebear rockling.**

Note: See also "Arctic Cod" - Fisheries and Oceans.

HABITAT

Circumpolar in distribution, its been sighted at a latitude of 84 degrees 42'N, which is further north than any other fish species. It inhabits Arctic seas off northern Russian, Alaska, Canada and Greenland. Specifically in Canadian waters it is present in the Beaufort Sea, the Arctic Archipelago, Hudson Bay, Baffin Bay, along the Labrador coast, eastern Newfoundland coast and the northern and eastern Grand Banks.

DESCRIPTION

The arctic cod has an elongate body which tapers toward the tail. It may grow to the length of 38 cm. but 30 cm. is normal. It is noted that size decreases from north to south, those near Labrador are larger than those near Newfoundland. The arctic cod can be distinguished from other cod species by its more slender body, its deeply forked tail, its projecting lower jaw and the rather small barbel suspended from its chin. Its back and upper body is generally brownish with many black spots. Below it is silvery. The fins are dark, nearly black with a narrow pale edge. A pale lateral line runs down each side from head to tail. The scales are small.

The arctic cod feed on drifting plankton. The larger cod will feed on cope-pods, amphipods, arrow worms, and eat small members of its own kind. The cod has a short life span. Age can be determined by counting the annual rings of the ear bones.

REPRODUCTION

The arctic cod is mature when about 20 cm. long and three years old. Spawning is thought to occur in late autumn and winter. Fully mature, female Arctic cod produce eggs ranging from 1.5 to 1.9 mm in diameter. They release 9,000 to 21,000 eggs. Spawning occurs under the Arctic ice cover.

PREDATION

Narwhals feed predominantly on Arctic cod. White whales and ringed seals also feed on these to some degree. Sea birds, especially murres, depend heavily on Arctic cod.

THE NORTHERN SHRIMP

(Pandalus borealis)

Note: See also "The Northern Shrimp" - Fisheries and Oceans.

HABITAT

Northern shrimp are found in both the Atlantic and Pacific oceans. In the Atlantic, they occur as far south as the Gulf of Maine and extend to the Davis Strait.

DESCRIPTION

Shrimp are crustaceans and belong to the same family as lobsters, crabs and crayfish. They have a hard outer shell, jointed legs and breathe through gills. The northern shrimp are pale scarlet and have a pair of large compound eyes. They attain a total length of 15 to 16 cm. There seems to be a relationship between size and the depth where they live, larger animals generally occuring in deeper waters. In order for the shrimp to grow, they must periodically shed their hard outer shell. This process is called moulting (ecdysis). The growth acutally begins when they are without the shell, water absorbed is replaced by body tissue. The northern shrimp feed on the bottom during the daytime on worms, small crustacea, detritus and marine plants. They feed on pelagic crustacea (krill) at night when the shrimp migrate vertically in the water column.

REPRODUCTION

The northern shrimp is a "protandric hermaphrodite"; it first functions sexually as a male, undergoes a brief transitional period and remains a female thereafter. The eggs are layed during late summer and fall and remain attached to the abdominal appendages of the female until spring.

An average sized female carries about 1,700 eggs. The eggs hatch into larvae which float near the surface and feed on planktonic organisms.

PREDATION

Shrimp are food for many species of fish, especially Greenland halibut and cod and also harp seals.

MODULE E

Plant Information

MODULE E

UNIT 1 PLANT INFORMATION

Module E Unit 1 Lesson 1

SKILL: **PLANT INFORMATION**

OBJECTIVE: Becoming aware of the main vegetation regions

ITEMS REQUIRED: Map: Explorers Map of the N.W.T.
Film: Spruce Bog - N.F.B.

METHOD: Lecture and Discussion

Using the display map, outline the approximate limit of the tree-line. Although the Mackenzie district has trees extending almost to Tuktoyaktuk, at 69 degrees latitude, this diminishes in a southeasterly direction until it intercepts Churchill, just south of 60 degrees latitude.

Discuss why this effect takes place.

*NOTE:- one of the contributing factors is the 50 degrees F isotherm for the warmest month of the year. This can also be determined by the formula W = 9 degrees - 0.1 C, where "W" represents the temperature of the warmest month in centigrade and "C" represents the temperature of the coldest.

e.g. If the mean temperature for the coldest month is -40 degrees C, the mean for the warmest month must be at least +13 degrees C before trees can grow.

The tree-line is considered the demarcation zone that divides the Arctic and subarctic regions. These terms then, reflect the vegetation types rather than the positioning according to the arctic circle.

There are 3 main vegetation regions: (See also Module F, Unit 1, Lesson 7)

1. Arctic Tundra
2. Subarctic (forest-tundra)
3. Taiga (boreal coniferous forest)

1. Arctic Tundra

That portion north of the tree-line is considered arctic tundra. The word "tundra" is derived from the Finnish word "tundren" which describes a treeless rolling plain. This is an area of continuous permafrost which features areas of Rocky uplands or glacial drift plains in the south. The northern part of the N.W.T. mainland and arctic islands are characteristically rocky uplands with little or no soil deposits. Even here some ground birch, Labrador tea, arctic ferns and lichen grow. The Glacial plains support grasses, and flowering plants like the arctic poppy, arctic dandelion and the Mountain Avens.

2. Subarctic Region

The transition zone of the tree-line and south of it is referred to as the Subarctic. This is an area of tundra with various vegetation. At its northern limit, low shrubs and some scattered coniferous trees take root. Further south muskeg swamps containing spruce, tamarack, smaller shrubs and cranberry bushes are in evidence. The larch and white birch are also among the first to appear in the northerly limits.

NOTE: The resource film: Spruce Bog from N.F.B. outlines the life cycle of the muskeg swamps.

3. Taiga Region

The taiga is a heavily forested region. Only a small portion of the N.W.T. land mass falls in this category. The most common trees in this region would be spruce, balsam, fir, jackpine, birch, tamarack and aspen.

CONCLUSION: The guide will be aware of the relevance of the tree-line and the three vegetation regions.

Module E Unit 1 Lesson 2

SKILL: **PLANT INFORMATION**

OBJECTIVE: Identifying Arctic plant adaptation

ITEMS REQUIRED: Harvesting the Northern Wild, Marilyn Walker
Wildflowers of the Canadian Rockies, Scotter and Flygare Wildflowers of the Yukon - J. G. Trelawny
The Land that Never Melts, Roger Wilson

METHOD: Lecture and discussion

The Arctic condition imposes severe demands upon plant life. Discuss the following:

1. The arctic is a desert.

Discuss this concept with the participants. Look up "Desert" in the dictionary; relate this term to the arctic. The students may object initially to the term, since they envisage deserts as "dry", whereas the tundra is often wet. Point out that annual precipitation is only 13 cm. in the North, increasing to only 40 cm. in the south. The permafrost and cool air trap and maintain the visible moisture.

2. The arctic is cold.

In the Eastern arctic, there are only 40 frost-free days per year. This increases to 50-60 in the Western and Barrenland areas of the subarctic and as much as 100 in the Mackenzie Valley and Great Slave areas. How will this affect plant growth? The low winter temperatures are severe on arctic plants whose roots are above permafrost and yet don't have the benefit of protection from above in the form of leaf litter or deep snow.

In order for plants to survive and flourish, they had to adapt to these hardships. There are 834 different flowering plants in the arctic. Even in the north of Greenland, north of 80 degrees latitude, 76 species of flowering plants and ferns have been recorded.

How do they survive?

Ask the students to describe some arctic plants. Use either "Wildflowers of the Canadian Rockies", "Harvesting the Northern Wild", or "The Land that Never Melts" to display photos. Point out the process of adaptation in the examples given. Show how the climate shapes the plant's life. Some of your observations will include:

-dark colors. This enables the plant to absorb more heat.

-clumped together in a mat. This not only conserves heat, but also aids in resisting the force of the wind.

-grow close to the ground. Another heat saving and wind-defeating adaptation. These three responses have yielded temperatures as much as 40 degrees F higher than air temperatures. At 10 degrees F a clump of moss at noon had an internal temperature of 50 degrees F.

-hairy stems and wooly seed covers. (Insulation)

-small leathery leaves. "Xerophytes" refers to a plant grouping of traits adapted for prolonged drought. These last two descriptions not only insulate heat loss, but moisture loss from the drying winds also.

-small, light seeds. Here the plant takes advantage of the almost constant winds to scatter its seeds. These will travel great distances over ice and snow to reach new areas.

-flowers that point downwards. These bell-shaped flowers trap rising warm air.

-bright flowers shaped like a parabola. The arctic poppy and mountain avens turn sunward so their flower shape concentrates heat at their centers.

Since the growth season is short, most plants are perennials and depend on sprouting from the existing stem and root systems. The roots themselves are usually short. (permafrost)

Other adaptations include the use of the arctic day. Many plants will not survive if taken to the South, since they require the almost continuous sunshine of the arctic growing period.

The further north one looks, the fewer "woody" plants exist. On Melville Island, of the 86 species of vascular plants, only 2 have woody stems. These have been used to record the slow growth process, for a thumb-sized cross-section of Lapland rhododendron had 400 annular rings.

Mysteries still exist, for it is not known how arctic plants can withstand the alternate freezing and thawing that would surely kill southern plants.

CONCLUSION: The guide will become aware of the adaptations displayed in Arctic plants.

Module E Unit 1 Lesson 3

SKILL: **PLANT INFORMATION**

OBJECTIVE: Identification of Arctic Landscape effects on plant-type distribution

ITEMS REQUIRED: (See Introduction) "Notes on the Vascular Plants of the Mackenzie Mountain Barrens and Surrounding Area", Renewable Resources

METHOD: Lecture and Discussion

Ask the question: "What is an ecosystem?"

Point out the basis for the understanding of interrelationships between plants and their surroundings. Show also that plants don't adapt to the Arctic in general, but specific plants can be expected to occur in specific types of surroundings; in effect, they form communities.

What kinds of landscapes exist in the Arctic?

This question will result in several responses which you should categorize into 4 main types.

There are 4 major groups of plant communities in Arctic.

1. Rock desert or fell-field communities
   (a) rock desert
   (b) unstable screes and stone creeps
   (c) Gravelly river flats and fans

2. Tundra communities
   (a) Dwarf-shrub heath
   (b) Lichen and moss
   (c) grasslands
   (d) willow and alder
   (e) Marsh and wet tundra
   (f) snowflushes

3. Shore communities
   (a) lagoon and salt marsh subject to floods
   (b) Sand dunes and gravel beaches
   (c) Rocky shores

4. Vegetation of freshwaters
   (a) Snow patch communities
   (b) Ponds and lakes
   (c) brooks and rivers

Have the guides describe the plants most often found in each of the categories. Discuss why these plant communities show successful adaptation to specific landscape demands.

CONCLUSION: The guides will relate plant ecosystems to landscape demands.

Module E Unit 1 Lesson 4

SKILL: **PLANT INFORMATION**

OBJECTIVE: Understanding the components of scientific names

METHOD: Lecture

*NOTE: It is beyond the scope of this lesson to teach the taxonomic hierarchy--it is sufficient for the guides to realize the purpose of the system.

Plant names may cause some confusion since there are often several common names for the same plant; or worse, two different plants with the same common name. For example, Cloudberry (Rubus chamaemorus L.) is also called:

-bake-apple
-baked-apple berry
-foxberry
-maltberry
-muskeg berry
-Mars apple
-salmonberry

The last name is also applied to a totally different plant in B.C. which doesn't grow in the N.W.T.

There is normally only 1 scientific name for the plant. This represents a system used worldwide known as the ICBN (International Code of Botanical Nomenclature).

During the 15th and 16th centuries, plant descriptions were given in Latin. As each new plant was catalogued, the descriptions became longer and longer. Finally, a better system was needed and the "Binomial System of Nomenclature evolved.

The first part of the scientific name is the genus; the second part is the specific epithet; together they form the species name.

This name is followed by an abbreviation of the names of the person or persons who first used that plant name. For example, in Rubus chamaemorus L., the "L" stands for Linnaeus, a botanist who lived in the 1700's.

Most of the words come from the Latin or Greek, but sometimes modern words are used in spellings that make them look Latin. Usually though, the epithet contains some meaning. (Compare this also to Module F Unit 1 lesson 8)

CONCLUSION: Although a guide need not be proficient in scientific names, he should make an effort to identify the more common ones.

Module E Unit 1 Lesson 5

SKILL: **PLANT INFORMATION**

OBJECTIVE: Plant Collecting and mounting

ITEMS REQUIRED: "Plant Collecting for the amateur": Museum methods Manual 1, T.C. Brayshaw

Mounting Method 1 Raw Materials:

-ziploc bags
-newspapers
-cardboard separators (12" x 18" from boxes)
-felt or building paper
-foam rubber batts
-rubber cement
-2 plywood press backs 12" x 18 x 1/4"
-cord for tying press

Mounting Method 2 Raw Materials:

-ziploc bags
-clear adhesive cellulose acetate (Mactak)
-white railroad board (10 "x 12") backing
-identification labels
-Plywood jig:
1 piece 11 1/4 x 13 1/4 x 1/4
1 piece 1 1/4 x 13 1/4 x 3/4
1 piece 1 1/4 x 10x 3/4 with 45 degree bevel

METHOD: Lecture and display

Discuss the concept of a herbarium. Inform the students that they will be responsible for collecting preserving and identifying plant specimens from the area.

Using the booklet "Plant Collecting for the Amateur" outline what is expected in collection methods. Discuss drying methods and preferred methods of mounting and filing.

OPTIONAL METHOD

Demonstrate the mounting method using cellulose acetate. The advantages of this system include dispensing with drying and pressing. The plywood jig is simply a 1/2 frame or 90 degree jig with the bottom bevel facing inwards.

Instructions

1. Keep the collected plants in a fresh condition for mounting. Wilted leaves and flower parts are usually more difficult to handle.

2. Reduce thickness of bulky plant specimens to make mounting easier. When flower and stem parts exceed 1/8" or so in thickness,

it is best to reduce them. This is done by splitting off one side of the stems or cutting the flowers approximately in half.

3. Remove the protective paper which covers the adhesive on the plastic sheet. Lay the plastic on a flat surface with the adhesive side up. Cut and adjust the plant specimen to fit the size of the cardboard. Leave a half-inch margin on all sides to provide for a perfect seal. After a preliminary trial of arranging and centering the plant on the cardboard, place the specimen on the plastic. The side of the plant which will be seen in the finished mount must be placed down and in contact with the plastic. Carefully press and smooth out each leaf and flower or fruit.

4. Print identifying information such as common name, scientific name, and date and place of collection, on the face side of the cardboard in black ink. Along the top and lower edge of the card is best. Additional information may be printed later on the back of the card.

5. Join the butt ends of the card (printing down) and the plastic along the edge. A simple "jig" made of two strips of wood tacked down to form a right angle will help to align the plastic and cardboard. Then allow the card to fold like one side of a hinge over the mounted plant beneath. Firm the butt edge of the card first. Then, using both thumbs, rub the heavy central or stem section of the plant firmly until the imprint of the stem (flowers etc.) is plainly visible on the cardboard. This is important, for the cardboard must be bent to provide a large portion of the space to be occupied by the mounted plant. Then rub the sides and top of the card to get firm contact.

6. Turn the card plastic side up, and give a final smoothing by hand. A hard instrument, such as the back of a pocket knife, should not be used for rubbing. Such treatment often scars the plastic and bruises the plant specimen. After, mounting moisture from the pressed plant slowly escapes through the cardboard back. Freshly mounted specimens should, therefore, be spread out face down for a few days to allow them to dry. After this, they may be stacked and filed.

CONCLUSION: The guide's herbarium will be a learning tool and a pleasing client display item.

Module E Unit 1 Lesson 6

SKILL: **PLANT INFORMATION**

OBJECTIVE: Plant identification

ITEMS REQUIRED: Resource Texts (suggested)

-Vascular Plants of Continental Northwest Territories, Canada (Porsild and Cody)
-Harvesting the Northern Wild - Marilyn Walker
-The Land that Never Melts - Roger Wilson
-Wildflowers by the Canadian Rockies - Scotter + Flygare
-Notes on the Vascular Plants of the Mackenzie Mountain Barrens and surrounding area - Renewable Resources
-Common Trees of the Northwest Territories-Renewable Resources
-Common Lichens of the N.W.T. - Renewable Resources
-Common Arctic Wildflowers of the N.W.T.-Renewable Resources
-Various local plant pamphlets: (e.g.)

-Roadside Wildflowers of the Big River Country Zone
-B.R.T.A.
-Keewatin Flowers - Travel Keewatin
-"Flora" - Bathurst Inlet Lodge
-Nutrient Bar Graphs - Medical Services Branch

METHOD: During the field portion, the participants will be expected to identify and collect local plants. This will be for 2 purposes; the formation of a plant collection, and the gathering of edible plants. In this latter instance, the edible plants will be prepared as an inclusion with the day's meal. Not only will this present a "Northern" experience for guests, but also broaden the survival skills of the guide. (See the nutrient bar graphs of plant food values in the Resource Package).

The collected plants will be recorded in the participants' manuals on the supplied forms. During class portions, commonly found plants will be presented by selected participants and any traditional uses or legends will be recorded.

This will add to the guide's area knowledge and supply information for the "stories" which will later be told to guests.

A sample of the participants manual sheet follows this lesson. Each guide will be required to be familiar with approximately 30 plants of his area.

CONCLUSION: The interpretive guide will be able to identify common plants of his area and show how they link to the ecosystems.

PLANT IDENTIFICATION SHEET

Common Name	Scientific Name	Local Name

OTHER NAMES:

DESCRIPTION:

LOCATION:

REMARKS:

MODULE F

Bird Information

UNIT 1 BIRD KNOWLEDGE

Module F Unit 1 Lesson 1

SKILL: **BIRD KNOWLEDGE**

OBJECTIVE: Understanding bird-watchers

ITEMS REQUIRED: Attached news item

METHOD: Lecture and Discussion

Many of the guides may be unfamiliar with the motivation of "birders". Read the attached news item and discuss the concept of bird-watching.

Initiate a discussion in which the following ideas are addressed:

How many people are involved in this hobby? What types of people are attracted to it?

What effect would this have on tourism?

Compare the "hunting" drive of men on the land to the drive of a "hard lister".

Besides a guide who is competent, what other qualities might a birder look for?

How would most birders react to hunting?

What other special considerations should a guide give to birders?

CONCLUSION: Bird watching is a rapidly growing field and the Interpretive guide must be sensitive to its requirements.

Lullabies in birdland

Spring is sprung The grass is riz I wonder where The birdies is?
—Folkloric poem

In May, the peak period of spring migration, the birds are just about everywhere. Yellow-rumped Warblers are passing through Alberta, Ross's Gulls are alighting in Manitoba and Great Blue Herons are flocking to Prince Edward Island. Last week Ontario's Point Pelee National Park saw the return of the Prothonotary Warbler, Acadian Flycatcher and White-eyed Vireo—and large numbers of a different species: the Tilley-hatted, Sneaker-footed Canadian Birder. The growing number of humans in the woods and on the beach this spring underlines the emergence of birding as one of the nation's favorite recreational activities. Declared P.E.I. naturalist Geoffrey Hogan: "It's the fastest growing hobby sport in Canada."

Originally a blood sport—participants used to tally birds after shooting them—birding eventually became the gentler and frequently ridiculed pastime of bird-watching, with an image conjuring up visions of elderly recluses wearing pith helmets, pince-nez and an assortment of ill-fitting tweeds. But over the past few years bird-watching has caught on with large numbers of younger North Americans, seemingly giving the pastime a new respectability. "Those eccentric bird watchers seem to be a thing of the past," said David Elphinstone, a naturalist at Calgary's popular Inglewood Bird Sanctuary. "It is more of an approved activity these days."

Indeed, according to recent estimates, 1.2 million Canadians consider themselves serious birders—meaning that they watch regularly, use a field guide, keep lists and are able to identify a hundred or more species. An additional 3.6 million describe themselves as casual watchers—so-called backyard birders.

As a result, birding has developed into a booming industry. Dedicated birders spend millions of dollars yearly on their hobby—the greatest portion on travel. Galvanized by bird-alert hotlines, many will dash off at a moment's notice in the hope of spotting a rare specimen. They participate in field trips, workshops, "Bird-and-Breakfast" outings and "Big Day" events—where they compete to see how many different species they can list in a day. They visit places where local birds abound—the Okanagan Valley in British Columbia, Fish Creek Provincial Park in suburban Calgary and Oak Hammock Marsh in Manitoba—and they undertake expensive junkets to Panama, Costa Rica, Australia and elsewhere in pursuit of tropical species. Among the more peripatetic is a group whom scholars have identified as the "hard listers"—birders who are dedicated to stalking and observing different species and noting their sightings on what they call their life list. This year Pelee officials declared May 10 to be Norman Chesterfield Day in honor of Canada's most famous hard lister, the 75-year-old mink rancher from nearby Wheatley, Ont.,

LYNCH/MASTERFILE

BLACK/MASTERFILE

Birders at Point Pelee (above); warbler (opposi

whose life list of 6,260 sightings has earned him a place in the *Guinness Book of World Records*. Hundreds of people turned out that day to honor Chesterfield and salute him for his most recent achievement: the intrepid birder, tipped off by a bird-alert hotline, flew off to Newfoundland on April 26 to track the Greater Golden Plover—and triumphantly recorded it as his 500th species sighted in Canada.

In addition to their outlay on travel, hard-core birders also invest heavily in equipment. Although the backyard or beginning birder can get by with a $50 pair of binoculars and a $20 field guide, serious birders spend thousands of dollars on birding paraphernalia. As examples: Bushnell Customs, one brand of field glasses recommended by the Audubon Society, cost $300; the more sophisticated Zeiss or Leitz models sell for $2,000 ($3,000 when equipped with a motorized zoom lens). The popular Bausch & Lomb spotting scope—a telescope-like instrument that gives greater magnification—costs $700.

Birders also spend money on clothing—from the ubiquitous brimmed, canvas Tilley bush hat ($39) manufactured in Ontario, to the handcrafted wool sweaters ($100 to $185) made by Charlottetown-based Great Northern Knitters Inc. Indeed, Great Northern's president, Michael Jardine, reports that sales to birders have doubled in the past year. In addition, birders lavish funds on photographic equipment and supplies, walking shoes, guide-

WILKES/POINT PELEE NATIONAL PARK

n (below): participating in the fastest growing hobby sport in Canada

books, coffee-table books, magazines, sound recordings of bird calls, tape decks, computer software for keeping "'e lists, souvenirs, sun block, sun-.sses and insect repellent—and bird-seed for backyard feeders.

Studies conducted during the bird migrations at and around Point Pelee—the triangular spit of marsh, forest, fields and beach on Lake Erie at the southernmost tip of Canada's mainland—have shed further light on birders' spending habits. Indeed, not only has the national park become a mecca for an estimated 525,000 visitors around the world each year, but now experts are training their sights on the birders in the crowd. For the past five years a research team from the University of Alberta in Edmonton, headed by James Butler, professor of parks and wildlife, has studied Point Pelee as a model for birders' behavior. Their recently published interim report revealed that total spending in the month of May, 1987, alone was $2.1 million in the park and three adjacent communities.

According to the report, birders are a wealthy group indeed. The average household income is $57,000, compared with $38,000 for Canadians as a whole. Birders, Butler says, are also highly educated: more than 60 per cent have university degrees, and, of those, 10 per cent have doctorates. For the most part, he adds, local residents perceive the visitors as pleasant, honest and sociable. Butler's study also documents overwhelming approval among members of the business community. May birders, said one businessman, "signal the start of the tourist season and are a vital injection of dollars into the community." Said another: "You can often smell money all over them."

Still, birders have their detractors—including residents of birding areas who claim that birders encroach on their privacy. Declared one annoyed proprietor of a rental cottage in Prince Edward Island, comparing visitors to the local Piping Plovers whose nests—fenced off by wildlife officials—occupy valuable space on the beaches: "These birder kooks are as silly as those little birds stupid enough to build their nests and lay their eggs right in the middle of the beach. Our tourist guests pay $100 a day. They should have precedence over birds." But most birders are likely to ignore such criticism. A single-minded lot, they are not easily distracted—unless compelled by a bird-alert. Said Verna Higgins, a biologist at the University of Toronto who has undertaken birding excursions to Australia, New Guinea and Panama: "The only way to talk to a birder is in a dark room."

Last week a visitor to Point Pelee, Don Hollums, director of the E. L. Johnson Nature Centre in Bloomfield Hills, Mich., near Detroit, promised to be an exception. Hollums, perched awkwardly on a rock jutting out from Point Pelee's sandy shores, enthusiastically described his $2,000 birding trip to the Galápagos Islands off Ecuador last year, and seemed prepared to talk about his passion for hours. But then, a warbler flew by. Gazing after it longingly, Hollums politely excused himself and took up the chase.

—MARY McIVER with MAXINE McDOWALL in Point Pelee and correspondents' reports

A birder's resolute quest

He came close to drowning—twice—in Indonesia. He survived an earthquake in Peru. But in his determined quest to add more species to his record-holding life-list, Norman Chesterfield is undeterred by pending catastrophes—unless events interfere with his birding activities. In a facetious postcard to a friend written from Saigon in 1968, at the height of the Vietnam War, he wrote: "Don't think I'll stay too long here. It's difficult to relax when you're birding. Also, the booby traps seem to scare the birds away."

Chesterfield recalls that even as a young boy he was interested in birds. But after he and his family moved to Wheatley, Ont.—on Point Pelee's doorstep—in 1954 he discovered that he was frustrated by his inability to identify the variety of colorful migrants passing through his backyard. In the spring of 1955, when he was 42, he took part in a birding hike at Pelee—and from that point on, he says, he was hooked.

Since then, his quest has taken him to every continent but Antarctica and at least 125 countries—including such faraway places as Madagascar, China and New Guinea. Chesterfield says that his only regret is that he waited so long to become a serious birder. "If only I had started 10 years earlier," he said, "I could have reached 7,000 species." Still, because Chesterfield has identified more than two-thirds of the world's approximately 9,000 known species, his exploits evoke the sense of wonder usually accorded the Greater Golden Plover—his 6,260th bird, and 500th in Canada.

—J. ROBERTSON GRAHAM in Wheatley

Module F Unit 1 Lesson 2

SKILL: **BIRD KNOWLEDGE**

OBJECTIVE: Examining bird study as a hobby

METHOD: Lecture and discussion

In order to further appreciate his client's needs the interpretive guide will have to examine the concept of bird-watching as a hobby. For some guides, this concept will be a difficult one to grasp. In practical terms, some birds taste better than others, and that is one level of awareness. However, in order that his client's needs are understood, the guide must see the value system behind the hobby.

Place the guides in groups and have them come up with a list of responses to the following questions:

-Why are birds considered interesting?

-Where do the birds go in the wintertime?

-How many types of birds live around here?

-If you were going to guide bird-watchers, what type of people would you expect to meet?

The responses will shape some ideas into more acceptable forms. For example, the first question may yield responses like:

-they are like clocks that tell of spring

-they seem only to visit--raise their young and then go away somewhere

-they have predictable patterns and return to known areas

-they must be good navigators

-they stay in recognizable groups, Eider ducks are different than Old Squaw ducks

-they make different sounds, in some cases like they are talking

Some of these concepts will begin to yield questions not considered earlier. How do they know where and when to travel?

The responses are not as important as the attitude. Birds are interesting creatures. This interest appeals to over 2 million people. Other advantages of this hobby are:

-Bird-watching can be pursued by anyone, at all ages, and of all walks of life.

-All animals are interesting, but birds come and go and, therefore, give more variety.

-It is challenging to be able to identify the various types.

-It is a hobby that becomes better with experience.

-It is a pleasant way to involve hiking and the out-of-doors.

This lesson should conclude with a desire to learn more about birds, and a greater awareness of the hobby of bird-watching.

CONCLUSION: Bird-watching is a hobby that grows with understanding.

Module F Unit 1 Lesson 3

SKILL: **BIRD KNOWLEDGE**

OBJECTIVE: Understanding the range of migratory birds

ITEMS REQUIRED: Map of North America, or a World map

METHOD: Lecture and discussion

Discuss the concept of migration; compare this to the caribou. Show how birds move great distances to achieve their seasonal needs. Use the map to locate the main flyways listed below.

Most of the bird species found in the Northwest Territories are summer residents or transients. Cold temperatures, lack of food, darkness, and deep snow cover of winter makes year around survival in the North impossible for most birds.

The beginning of migration--when birds leave their wintering or breeding grounds--is determined by increasing or decreasing day length. The spring arrival of migrant birds in the Northwest Territories depends on such things as when open water becomes available, and when food--insects or green plants--become available. Fall migration from the Northwest Territories often begins as soon as the young leave the nest, or as soon as nesting is finished. The first leg of the fall migration may be to an intermediate, or staging, area where the birds rest and eat to build up energy reserves--fat deposits--before continuing their southward trip.

Some species migrate during the night, and some migrate during the day. Still others migrate during the day or night. Species which can feed while flying, such as hawks or swallows, usually migrate during the day, feeding as they go. Those species which seek out food by intensive searching such as shorebirds, flycatchers and other songbirds, usually feed during the day and migrate during the night.

Migrating birds show up on radar screens. Judging by these radar observations, most migrating birds fly between 30 and 70 kilometers per hour, ground speed; 90 per cent of birds migrating at night fly below 1500 meters, and 99 per cent below 3000 meters. How high birds fly when migrating may be affected by clouds or the time of the night: birds generally fly lower when there is a cloud cover, and they generally reach their highest altitude around midnight, and gradually decrease their altitude as morning draws near.

Some bird species tend to migrate in broad fronts in North America. However, many species, especially waterfowl, tend to travel along five general North American migration "corridors" or "flyways". These flyways are in a north-south direction. Birds from the Northwest Territories broadly "funnel" into all of these routes and the routes become narrower as they approach the mid and southern United States. These routes are:

1. An extreme eastern route used by some shorebird species which first fly east to the coasts of Newfoundland, Nova Scotia and New England, and then south over the Atlantic Ocean to the Lesser Antilles and the northeastern coast of South America. This route is used primarily during fall migration.

2. Another eastern route called the "Atlantic Flyway", is from Hudson Bay to the east coast southward to the Bahamas, Hispaniola, Puerto Rico and the Lesser Antilles to South America.

3. The Mississippi Flyway takes all of central Canada--up to the High Arctic--southward down the Mississippi River valley in the United States to the Gulf Coast, across the Gulf of Mexico to Mexico and South America.

4. The Central Flyway covers Alaska, eastern Yukon territory, the Northwest Territories, south through the Great Plains to the Gulf Coast and Texas, southward through Mexico, Central America to South America.

5. The Pacific Flyway takes in all of the western portion of North America from the Northwest Territories, Yukon, Alaska through California, down the west coast of Mexico to South America.

CONCLUSION: The guide will understand migration patterns and "flyway" routes.

Module F Unit 1 Lesson 4

SKILL: **BIRD KNOWLEDGE**

OBJECTIVE: Examining how birds navigate

ITEMS REQUIRED: Map of North America

METHOD: Discussion and Lecture

Use the map to display travel corridors. Outline the fact that banded birds have been proven to return to the same nesting area. Ask the question: "How do birds navigate?"

How birds find their way to and from their breeding and wintering ranges is only partly understood by scientists. It seems there are different methods used by different species to find their way, or "orient" themselves. Some birds seem to use more than one method, or a combination of several methods. Some ways used may include:

1. Innate Sense of direction. Experiments have shown that some captive birds, when released, fly parallel courses to their normal migration courses, which leads scientists to think birds may have an inborn, or innate, sense of direction.

2. Some species use visual clues--features such as mountain ranges, lakes, coastlines, or rivers--much as you use visual clues to get from place to place. In the case of bird species, the young birds learn from their elders, the birds only need to remember the landmarks over which they fly.

3. Experiments have shown that birds can somehow detect magnetism, and birds may be able to orient themselves by detecting the magnetic fields of the earth.

4. Other experiments have shown that in some bird species, the movement of the sun and the stars in the sky is an important clue for orienting themselves.

Migrating birds probably use several methods to find their way. The great migrators, however, seem to be able to sense their latitude and longitude from the stars and sun, using some sort of precise, internal timekeeping to allow them to compensate for the movement of these heavenly bodies.

CONCLUSION: The guide will be prepared to respond to questions regarding migration and orientation.

Module F Unit 1 Lesson 5

SKILL: **BIRD KNOWLEDGE**

OBJECTIVE: Discovering bird adaptive characteristics

ITEMS REQUIRED: Audubon Field Guide

METHOD: Discussion and observation

As a beginning exercise in bird familiarization, have the students find examples of local birds. In order to increase powers of observation, have them discuss various birds and their observed activities. With student suggestions, make a list of specific characteristics that help the bird survive. For example:

Geese have webbed feet which help them in swimming, and they have lots of down feathers which help insulate them from the cold waters in which they swim.

Hawks have strong feet with sharp, clawed toes which help them hold onto their prey while they tear meat into pieces small enough to swallow with their hooked bills.

Loons have rather small wings and their feet are placed to the rear of their body. This reduces friction, or "drag" while they swim underwater.

Falcons have stream-lined bodies which help them fly swiftly, which is necessary for them to overtake flying birds, their prey.

Soaring is a way of flying which requires less energy than flapping flight. Red-tailed Hawks have broad wings and tails which help them soar while they search for food.

Special feathers in the wings of owls allow them to fly quietly, without flapping noise, making it easier to surprise and capture prey.

The Osprey has a reversible toe which can be used like we use our thumbs---for grasping. They also have spine-like projections on the bottoms of their feet which help them hold on to slippery fish.

Woodpeckers have long claws on their toes for grasping the bark of trees, and they have short strong tail feathers which they use to balance themselves against the tree trunks and strong sharp bills for piercing into trees in search of tree-boring insects.

Pelicans have large sacks which they use like a fishing net.

Mergansers have rows of toothlike projections on the edges of their hooked bill which help them hold onto slippery fish.

Grosbeaks have heavy, cone-shaped bills with very strong jaw muscles for cracking hard shells of seeds.

Remind the students of their own tendancy to draw their hands into their sleeves in the cold.

Just as you would stand behind a building or tree to escape cold winds, many birds seek out warmer "microclimates" such as dense thickets or natural cavities in trees or cliffs. Snow buntings and grouse dive into snowbanks to sleep, for the temperature below the surface is much warmer, and snow is a good insulator. Compare this to an igloo concept.

The timing of all activities is critical for any northern breeding bird. Some species of birds find their mates and form pair bonds on their wintering grounds or during their spring migrations. This is a way of saving time, for instead of "wasting" extra days courting and forming bonds, the pair is able to immediately select a nesting site and begin the breeding cycle. This is an advantage for migrant birds breeding in the far North, for the summer is short and should fall come, those birds which have taken the shortest possible time to raise their young will be more likely to successfully complete their reproductive cycle and maintain their population.

CONCLUSION: The interpretive guide will be able to describe Northern bird adaptation.

Module F Unit 1 Lesson 7

SKILL: **BIRD KNOWLEDGE**

OBJECTIVE: Examining the 3 major Northern Bird habitats

ITEMS REQUIRED: Map of Canada

METHOD: Lecture and Discussion (See also: Module E Unit 1 Lesson 1)

There are three major habitat types in Canada's North: the taiga, or (boreal forest), the tundra, and the open sea, straits and coasts (marine).

(A) The Taiga, or Boreal Forest

The taiga forms a continuous belt from Newfoundland and the Labrador coast westward to the Rocky Mountains and northwestward to Alaska.

White Spruce and Black Spruce are characteristic tree species; other prominent conifers are Tamarack which generally ranges throughout; Balsam Fir and Jack Pine in the eastern and central portions; and Alpine Fir and Lodgepole Pine in the western and northwestern parts. Although the boreal forests are primarily coniferous, there is a general mixture of deciduous trees such as White Birch and poplar. The proportion of spruce and larch increases to the north, and with the more rigorous climate, the forest gives way to an open lichen-woodland which finally changes into tundra.

Some characteristic bird species of the taiga include: Goshawk, Sharp shinned Hawk, Merlin (Pigeon Hawk), Spruce Grouse, Boreal Owl, Black-backed Three-toed and Northern Three-toed Woodpeckers, Gray Jay, Boreal Chickadee, Red-breasted Nuthatch, Varied and Hermit Thrushes, Townsend's Solitaire, Golden and Ruby-crowned Kinglets, Cape May and Yellow-rumpted Warblers, Redpoll, Dark-eyed Junco, crossbills (conifer woods),Kestrel, Downy and Hairy Woodpeckers, Yellow-bellied Sapsuckers, Common Flicker, Least Flycatcher, Western Wood Pewee, Tree Swallow, Swainson's Thrush, vireos, Yellow Warbler, White-throated Sparrow.

Beaches: bare areas of rocks and sand with little or no vegetation, bordering large bodies of water. Characteristic bird species: shorebirds, like the solitary or spotted sandpiper; especially during migration, waterfowl.

Lakes: Large bodies of water of varying depth with little or no rooted vegetation. Characteristic bird species: fish-eating birds such as loons, mergansers.

Ponds: small, shallow bodies of water with plants, floating and submerged, rooted over most of the bottom. Characteristic bird species: dabbling ducks, geese, snipe, swamp swallow.

Marshes: inundated land with emergent herbaceous plants--bulrushes, cattails, sedges, grasses, etc. Characteristic bird species: Snipe, Swamp Sparrow, Northern Harrier, Puddle Ducks.

Swamps and bogs: undrained wetlands with wooded vegetation. Bogs are more common in the cooler northern regions, and feature coniferous growth. Characteristic bird species: Alder Flycatcher, Snipe, Swamp Sparrow, Solitary Sandpiper, Northern Waterthrush.

(B) The Tundra

The tundra is found in Northern Alaska and Northern Canada, south along the coasts of Hudson Bay and through most of Labrador to Newfoundland. The tundra is treeless and the dominant vegetation consists of grasses, lichens, sedges and occasional willows. The tundra is relatively barren, with little diversity of habitat, hence, few species. Characteristic bird species include longspurs, Snow Buntings, Tree Sparrows, Water Pipits, Plovers, Snowy Owls, Rough-legged Hawks, Golden Eagles, and Gyrfalcons. In the wetlands there are Ducks, Whistling Swans, Geese, Loons, Phalaropes, Sandpipers, and Turnstones.

(C) Open Sea, Straits and Coasts (Marine)

The northern oceans are rich in plankton and plankton-feeding fishes and consequently are a food rich habitat for birds, especially during the summer. The north coast of continental North America and the straits and coasts of the Arctic Islands are the summer home of many marine birds. Birds of the sea can be divided into two general groups: pelagic, or open sea birds and inshore birds.

The open seas are a highly-uniform habitat and although they vary in temperature and abundance of life, they are all large, wet and salty. Birds' reproductive methods --eggs, nests--have prevented them from adapting entirely to a marine existence. The seas cover 5/7ths of the earth's surface, yet they harbor only three per cent of the world's bird species.

Pelagic birds spend most of their lives far out to sea, coming ashore only to nest. The most important difference which makes this possible is the presence of salt glands, which allows them to drink salt water. Pelagic birds are colonial nesting on cliffs and shoals or skerries.

Inshore birds generally venture not farther to sea than five or ten kilometers and feed upon shallow-water life forms. Like pelagic birds, they are generally colonial, nesting on cliffs or islands.

Characteristic bird species of marine habitats include: Loons, Fulmar, Brant, Eider Ducks, Scoters, Jaegers, Gulls, Terns, Thick-billed Murres, Black Guillemots.

CONCLUSION: The environmental clues will aid the guide in expecting which birds are likely to be observed.

Module F Unit 1 Lesson 8

SKILL: **BIRD KNOWLEDGE**

OBJECTIVE: Understanding the naming of birds

ITEMS REQUIRED: The Audubon Society Field Guide to North American Birds

METHOD: Lecture and discussion

The naming of items causes some confusion, since often the same item can have more than one common name. (See: Plant Information, Module E, Unit 1, Lesson 4). For example, some people call the Common Goldeneye by the name "Whistler", yet both refer to the same duck. The scientific name is often given to clearly identify a specific bird. The scientific name is composed of words written as if they were Latin. This gives several advantages:

-the name can be understood by all countries, regardless of language

-the first part of the name (capitalized) identifies the genus

-the second part identifies the species

-the third (if present) identifies the subspecies.

Since the genus is first mentioned it helps to identify closely related species. For example, the Least Sandpiper (Calidris minutilla), the Solitary Sandpiper (Tringa solitaria) and the Pectoral Sandpiper (Calidris melanotos) are all sandpipers, but only two are closely related, although all 3 belong to the same family, "Scolopacidae", which includes curlews, phalaropes and yellowlegs, among others. In fact, there are 90 species of Sandpipers in the world.

CONCLUSION: It is not the intention of this lesson that the guides become proficient in scientific name use; however, they should be familiar with the concept.

Module F Unit 1 Lesson 9

SKILL: **BIRD KNOWLEDGE**

OBJECTIVE: Discovering resource material on birds

ITEMS REQUIRED:

"Hinterland Who's Who" - Canadian Wildlife Service
"Key Areas for Birds in Coastal Regions of the Canadian Beaufort Sea" - Canadian Wildlife Service
"Ducks at a Distance: " A Waterfowl Identification Guide" - Canadian Wildlife Service
"Migratory Bird Sanctuaries" - Canadian Wildlife Service
"Seabirds of the Eastern Canadian Arctic" - World Wildlife Fund
"Birds of Nahanni National Park Northwest Territories" - available from Parks Canada
"Birds of Prey of the Northwest Territories: Arctic Wildlife Series" - N.W.T. Renewable Resources Wildlife Service
"N.W.T. Wildlife Notes: Raptor Studies" - N.W.T. Renewable Resources Wildlife Service.
"Threatened Canadian Wildlife" Committee on the Status of Endangered Wildlife in Canada

METHOD: Display and Discussion

Choose the appropriate literature for the course site and allow students to access this and make notes. Special effort should be made to point out the mailing addresses so that the participants could make use of this in the future. Indicate the fact that further references are also suggested within the pamphlets.

Assign specific birds or topics to be researched by class participants. Use this opportunity to have them practice their "story-telling" skills while they give pertinent information to the other students, as well as building the links between the specific bird, the habitat, and the traditional uses or stories of the bird.

The listening students should make notes in the participant manuals under the prescribed headings.

CONCLUSION: The interpretive guide must be aware of the necessity and sources of reference material.

Module F Unit 1 Lesson 10

SKILL: **BIRD KNOWLEDGE**

OBJECTIVE: Learning about bird families

ITEMS REQUIRED:
Audubon Field Guide
Participant's manual sheets

METHOD: Display and discussion

Of the 41 families of birds found in the Northwest Territories, identify those pertinent to the course area. Within those families, have the students record local species and make notes regarding the Field Marks, Habitat, Nesting Range, and Remarks, as listed in the Participant's manual. The guides should aim to identify and be familiar with a minimum of 20 and hopefully as many as 30 birds.

Compare the traditional name to the common name and discuss this identification at field camp.

Although the Audubon Field Guide does not list birds by family groups, it is in the interest of the guide to be aware of these groups and to realize what local species are represented.

CONCLUSION: The guide will be aware of bird family groupings and be able to identify families within his area.

1. **LOONS** *(Gaviidae)*

Number of species in Canada: 5

Loons are generally large fish-eating birds, excellent swimmers able to dive to depths of 200 feet, but almost unable to move on land because their legs are set well to the rear of their bodies for more efficient underwater swimming. Loons are heavy-bodied with relatively small wings. When taking flight they thrash along the surface, and require a long "runway" to become airborne. Hence, they nest on large lakes or ponds. The parents fish for the young mostly on large lakes or seas in the area, returning with fish in their long pointed bills, to feed their constantly swimming young. Species found in the N.W.T.: Common Loon, Yellow-billed Loon, Arctic Loon, (Pacific Loon), Red-throated Loon.

2. **GREBES** (*Podicipedidae)*

Number of species in Canada: 6

Grebes are diving birds, with species ranging in size from a small duck to a goose. All have lobed feet--small flaps along their toes. Like loons, they are awkward on land, and require relatively long "runways" to take flight. Grebes generally build their nests of rotting vegetation among aquatic plants such as cattails, bulrushes and sedges. They feed on small fish, crustaceans, tadpoles and aquatic insects. Species found in the N.W.T.: Red-necked Grebe, Horned Grebe, Pied-billed Grebe.

3. **SHEARWATERS and FULMARS,** *(Procellariidae)*

Number of species in Canada: 14

Birds of this family are seabirds that rarely come to land except to breed. They eat mostly plankton and fish, although some species eat other birds, eggs, carrion (decaying flesh), or garbage from ships. Most nest colonially in underground burrows, but some nest on seacliff ledges. The flight pattern, several flaps and a glide, is distinctive. Incubation and care of the young birds is shared by both sexes. This is called 'natal care'. Species found in the N.W.T.: Fulmar.

4. **PELICANS** *(Pelecanidae)*

Number of species in Canada: 2

Pelicans are huge water birds with long, flat bills and great throat pouches, long necks and strong bodies. They are strong fliers, and soar well. Pelicans feed from the surface or by diving from the air into the water, scooping up fish in their pouches. They fly with their head hunched back on their shoulders and long bill resting on their breast, flocks fly in orderly lines. Pelicans nest in colonies, and both parents provide natal care. Species found in the N.W.T.: White Pelican.

5. **HERONS AND BITTERNS** (*Ardeidae)*

Number of species in Canada: 12

Members of this Family are large wading birds with long necks and spear-like bills. In flight, heads are tucked back with the neck forming an "S" and their long legs trail behind. They feed on fish, frogs, crayfish and other aquatic life. The female builds the nest, but both sexes incubate and feed the young. Species found in the N.W.T.: American Bittern.

6. **SWANS, GEESE AND DUCKS** *(Anatidae)*

Number of species in Canada: 49

A. **SWANS** *(Subfamily Cygnini)*

Swans are huge, all-white swimming birds. They have longer necks and are larger than geese. Like some geese, they migrate in lines or in V-formations. They feed on aquatic plants and seeds by immersing their head and neck, sometimes "tipping-up". Species found in the N.W.T.: Whistling Swan. (Also called Tundra Swan)

B. **GEESE** *(Subfamily Anserini)*

Geese are large waterfowl--larger, heavier-bodied with longer necks than ducks. They are noisy in flight, and generally fly in a line or V-formation. The sexes are colored alike. They frequently graze on land. They eat mainly grasses, seeds and aquatic plants. Species found in the N.W.T.: Canada Goose, Brant, White-fronted Goose, Snow Goose, Ross' Goose.

C. **SURFACE-FEEDING (PUDDLE) DUCKS** (*Subfamily Anatini*)

"Puddle Ducks" or "Dabblers", characteristic of shallow waters, ponds, and marshes, feed by dabbling and "tipping-up". Unlike diving ducks, when frightened they spring directly into the air instead of running along the water's surface. Most species have an iridescent patch, or speculum, on the trailing edge of the wing, although this may be concealed when swimming. The sexes are unlike in breeding plumage--females are generally drab browns, males are more colourful--but during the summer the males molt their colorful plumage, becoming drab brown until their second molt in the fall in which they regain their bright colors. Puddle ducks feed on aquatic plants, seeds, grass, small aquatic animals and insects. Species found in the N.W.T.: Mallard, Pintail, Green-winged Teal, Blue-winged Teal, American Wigeon, Shoveler.

D. **DIVING DUCKS** *(Subfamily Aythyini)*

The ducks of this subfamily are more strictly aquatic than the puddle ducks, frequenting seas, lakes, rivers and ponds. All dive for their food, whereas puddle ducks dive only when pressed by danger. In taking flight they patter along the surface while becoming airborne. They feed on small aquatic animals and plants, molluscs and crustaceans. Like the puddle ducks, the sexes are unlike. Species found in the N.W.T.: Redhead, Canvasback, Greater Scaup, Lesser Scaup, Common Goldeneye, Bufflehead, Oldsquaw, Harlequin Duck, Common Eider, King Eider, White-winged Scoter, Surf Scoter, Common Scoter.

E. **STIFF-TAILED DUCKS** *(Subfamily Oxyurini)*

The members of this subfamily are small, freshwater ducks with stiff, spike-like tail feathers and very short tail coverts. The tails are frequently held straight up, especially in courtship displays. They eat small aquatic life, insects and water plants. The sexes are unlike in plumage during the breeding season. Species found in the N.W.T.: Ruddy Duck.

F. **MERGANSERS** (*Subfamily Merginl*)

Mergansers are ducks which have slender, cylindrical bills, hooked at the tip and equipped with well developed, sharp backward-directed teeth-like lamellae ideal for catching and holding fish, their primary food. Most species have crests on their heads, and are long-lined slender-bodied. They patter on the surface when taking off and their flight is swift and direct. The sexes are unlike. Species found in the N.W.T.: Common Merganser, Red-breasted Merganser.

7. **HAWKS, KITES, HARRIERS, EAGLES** *(Accipitridae)*

This family includes the diurnal birds of prey (appear during daylight hours).

A. **ACCIPITERS** *(Subfamily Accipitrinae)*

Accipiters are long-tailed hawks which have short rounded wings. They are primarily woodland birds, hunting among trees and thickets, and they seldom soar. The typical flight pattern is several short quick wing beats and a glide. The sexes are alike, the female is larger than the male. Accipiters feed mainly on birds, and some small mammals. Species found in the N.W.T.: Goshawk, Sharp-shinned Hawk.

B. **TRUE HAWKS AND EAGLES** *(Subfamily Buteoninae)*

Members of this subfamily are large, have broad wings and broad, relatively short rounded tails. These are the soaring hawks. Within some of the species of this subfamily there is considerable variation in plumage, sometimes making field identification difficult. Some of the species also have black or melanistic phases. Food includes rats, mice, rabbits, occasional birds, and reptiles. Swainson's Hawk eats many grasshoppers, Bald Eagles eat dead or dying fish, primarily. Species found in the N.W.T.: Red-tailed Hawk, Swainson's Hawk, Rough-legged Hawk, Golden Eagle, Bald Eagle.

C. **HARRIERS** *(Subfamily Circinae)*

Harriers are hawks of the open country, most often seen flying slowly, close to the ground, in search of their principal food, rodents and small birds. They are long slim hawks with slender, angled wings and long tails. Species found in the N.W.T.: Marsh Hawk, (also called Northern Harrier).

8. **OSPREY** *(Pandionidae)*

The Osprey Family is represented by one species, the Osprey, a large fish-eating hawk. Ospreys catch fish by hovering, often at considerable heights, then plunging feet-first into the water. Its bill is strongly hooked, and its feet are adapted for catching and holding slippery fish--the talons are long and sharp, the outer toe is reversible, and the soles of the feet have spike-like projections.

9. **FALCONS** *(Falconidae)*

Number of species in Canada: 6

Falcons are streamlined birds of prey characterized by long, pointed wings and longish tails. The wingbeats are rapid; the pointed wings are adapted for speed, not sustained soaring. As in most birds of prey, the female is larger than the male. Their primary food is birds, rodents and insects. Species found in the N.W.T.: Gyrfalcon, Peregrine Falcon, Merlin (Pigeon Hawk), Kestrel (Sparrow Hawk).

10. **GROUSE AND PTARMIGAN** *Tetraonidae)*

Members of this family are chicken-like ground dwellers with completely or partially feathered legs. The males engage in elaborate courtship displays and are generally polygamous (more than one mate). Some species have traditional courtship grounds where the females come to mate. Most are cryptically (concealing in design) colored in grays, browns and blacks; the ptarmigan turn white in winter. They nest on the ground; the female incubates and raises the young. Species found in the N.W.T.: Blue Grouse, Spruce Grouse, Ruffed Grouse, Willow Ptarmigan, Rock Ptarmigan, White-tailed Ptarmigan, Sharp-tailed Grouse.

11. **CRANES** *(Gruidae)*

Number of species in Canada: 3

Cranes are large, long-necked, long-legged birds with rather long straight bills. In flight, cranes carry their neck straight and extended, feet trailing astern. Cranes are loud-voiced, and have spectacular courtship dances. They nest on the ground, and both sexes incubate and rear the young. They are omnivorous: they eat both vegetable and animal matter. Species found in the N.W.T.: Whooping Crane, Sandhill Crane.

12. **RAILS, GALLINULES, COOTS** *(Rallidae)*

Number of species in Canada: 10

This family is comprised of secretive marsh birds, mostly--expert skulkers able to move among marsh vegetation with mouse-like dexterity. They are often noisy, especially at night and are most often heard rather than seen The eggs are incubated by both sexes, the young are precocious--hatched with eyes open, down covering and capable of walking and running shortly after hatching. Food is mainly seeds, insects and snails. Species found in the N.W.T.: Sora, Yellow Rail, American Coot.

13. **PLOVERS** (*Charradiidae)*

Number of species in Canada: 12

Plovers are plump-bodied shorebirds with short necks, rather large eyes, and short bills. The bill is soft with a hard tip. The hind toe is usually boldly patterned. Sexes are alike or similar. Plovers feed on small marine life, insects and some vegetable matter such as seeds. They seldom wade when feeding. Species found in the N.W.T.: Ringed Plover, Semipalmated Plover, Killdeer, American Golden Plover, Black-bellied Plover, Ruddy Turnstone.

14. **WOODCOCK, SNIPE, SANDPIPERS, CURLEWS** *(Scolopacidae)*

Number of species in Canada: 51

This is a varied Family of wading birds frequenting marshes and shores. They are quite gregarious and especially during migration, can be found in large flocks. Their bills are more slender than those of plovers, and are soft and somewhat flexible throughout their length. The adults are usually cryptically colored in browns, grays and whites, and the sexes are alike. Most species nest on the ground. The young are precocial. They feed on insects, small crustaceans, molluscs, worms and other invertebrates and occasionally seeds and berries. Species found in the N.W.T.: Common Snipe, Whimbrel, Eskimo Curlew, Upland Plover, Spotted Sandpiper, Solitary Sandpiper, Greater Yellowlegs, Lesser Yellowlegs, Knot, Purple Sandpiper, Pectoral Sandpiper, Least Sandpiper, Dunlin, Short-billed Dowitcher, Long-billed

Dowitcher, Stilt Sandpiper, Semipalmated Sandpiper, Buff-breasted Sandpiper, Hudsonian Godwit, Sanderling.

15. **PHALAROPES** (*Subfamily Phalaropodinae*)

Phalaropes are the most aquatic of the shorebirds--they swim as well as they can wade or walk. They are gray and white in the winter, and patterned with reds and browns in the late summer. The roles of the sexes are reversed, the females are larger and brighter colored than the males, the females conduct courtship and they lay eggs, but leave the male to incubate them and care for the young. Phalaropes feed on crustaceans and insects, and can often be seen spinning in small circles which creates a whirlpool in which their food is trapped. Species found in the N.W.T.: Red Phalarope, Northern Phalarope, now called the Red-necked Phalarope.

16. **JAEGERS AND SKUAS** (*Stercorariinae*)

Including the larger family Laridae, Number of species in Canada: 42

Jaegers are predatory seabirds with falcon-like narrow angled wings and hooked beaks. They prey on mammals, eggs and young of other birds, but feed also on insects, fish, carrion and berries. They are strong, fast fliers and often pirate food from terns and gulls, harassing them until they drop whatever food they are carrying. The sexes are alike in coloration, and both share incubation. Species found in the N. W. T.: Pomarine Jaeger, Parasitic Jaeger, Long-tailed Jaeger.

17. **GULLS** (*Subfamily Larinae*)

Gulls and terns are long-winged swimming birds, and superb fliers. Most members of this family are white with gray backs, white or black wingtips and sometimes dark heads or crests. The sexes are alike. All are gregarious (found in groups) and most nest colonially. Both parents incubate and provide natal care. Gulls are omnivorous--their diet includes marine life, plant and animal life, refuse, carrion. Terns feed on small fish, which they capture by hovering, then plunging headfirst into the water. Species found in the N.W.T.: Glaucous Gull, Iceland Gull, Herring Gull, Thayer's Gull, California Gull, Ring-billed Gull, Mew Gull, Bonaparte's Gull, Ivory Gull, Black-legged Kittiwake, Ross' Gull, Sabine's Gull, Common Tern, Arctic Tern, Caspian Tern, Black Tern.

18. **AUKS, MURRES, PUFFINS** (*Alcidae*)

Number of species in Canada: 17

Members of the Alcidae Family are small to medium sized sea birds with short necks, chunky bodies, small pointed wings, and short legs set well back. On land they stand upright, penguin-like. Dovekies and murres are gregarious, and nest in small colonies or scattered pairs. They are strong fliers, and excellent swimmers and divers. They use their wings when swimming underwater. They feed on fish and other marine animals. Species found in the N.W.T.: Thick-billed Murre, Dovekie (occasionally), Black Guillemot.

19. **OWLS** (*Strigidae*)

Number of species in Canada: 15

Owls are generally nocturnal (usually found in dark periods of the day) with large heads, flattened faces forming conspicuous "facial discs" and large, forward-facing eyes. Predatory, they have hooked bills and hooked claws. Because of the special structure of the flight feathers, their flight is noiseless, moth-like. The sexes are similar, the females larger. Food includes rodents, birds, reptiles, fish and large insects. Species

found in the N.W.T.: Great Horned Owl, Snowy Owl, Hawk Owl, Great Gray Owl, Long-eared Owl, Short-eared Owl, Boreal Owl.

20. **NIGHTJARS** *(Caprimulgidae)*

Number of species in Canada: 5

The lone representative of this family occurring in the NWT is the Common Nighthawk. This bird is a slim-winged gray or gray-brown bird seen high in the air, especially at dusk. The courtship display is aerial, with the male diving toward earth, and at the end of the dive a booming noise is made. Nighthawks feed on insects caught while in flight. As many as 500 mosquitoes have been found in the stomach of a single nighthawk.

21. **KINGFISHERS** *(Alcedinidae)*

Number of species in Canada: 1

Kingfishers are solitary birds of the forested zones, with large heads, long, thick bills and small weak feet. They are fish-eaters--they hover, then plunge headfirst into the water to capture fish. They are frequently seen perching on a snag at the edge of rivers, lakes, bays, ponds, coasts, watching for prey. They nest in holes in banks, and both sexes incubate and care for the young. Species found in the N.W.T.: Belted Kingfisher.

22. **WOODPECKERS** *(Picidae)*

Number of species in Canada: 14

Woodpeckers are chisel-billed, wood-boring birds with strong zygodactyl feet (two toes front, two rear), long tongues and stiff spiny tails which act as props when climbing. Their flight pattern is usually undulating--rapid wing beats then a glide. In most species, males have some red on their heads. They have loud, harsh voices, and drum with their bills. They dig holes in trees in which they nest, and many other bird species are dependent on abandoned woodpecker holes for their nests. Woodpeckers feed mainly on tree-boring insects, but some eat ants, flying insects, berries, acorns, and sap from trees. Species found in the N.W.T.: Common Flicker, Pileated Woodpecker, Yellow-bellied Sapsucker, Downy Woodpecker, Black-backed Three-toed woodpecker, Northern Three-toed Woodpecker.

23. **TYRANT FLYCATCHERS** *(Tyrannidae)*

Number of species in Canada: 26

Flycatchers are characteristically found perched quietly upright on exposed branches from which they make quick forays to snatch up passing insects. They are small, and generally inconspicuously colored. They have short, flattened bills with short bristles at the base which act something like a butterfly net. They have poorly developed songs, because of the physical similarity of the species, often the song is the only means by which they can be identified to species in the field. The female incubates but the male helps build the nest and feed the young. Species found in the N.W.T.: Eastern Kingbird, Easter Phoebe, Say's Phoebe, Yellow-bellied Flycatcher, Alder (Traill's) Flycatcher, Least Flycatcher, Western Wood Pewee, Olive-sided Flycatcher.

24. **LARKS** *(Alaudidae)*

Number of species in Canada: 2

Larks are brown, streaked terrestrial birds. They are fairly gregarious, and strong fliers. Larks have very musical voices, and often sing high in the air during courtship display flights. The sexes are similar. The female incubates and the male feeds her on the nest and helps feed the young. Food is mainly seeds and insects. Species found in the N.W.T.: Horned Lark.

25. **SWALLOWS** *(Hirundinidae)*

Number of species in Canada: 8

Swallows are small, gregarious insect-eating birds that spend much of their waking time catching insects on the wing. They are strong fliers but because of their short legs and weak feet, they walk only with difficulty. Swallows have short bills but wide gapes (wide when open). The plumage is usually darker above than below, often with some iridescence. The sexes are alike. They nest in hollows in trees, burrows dug in banks, or build mud nests, some species colonially. The male helps feed the young. Species found in the N.W.T.: Tree Swallow, Bank Swallow, Barn Swallow, Cliff Swallow.

26. **MAGPIES, CROWS AND JAYS** *(Corvidae)*

Number of species in Canada: 11

The Corvids are bold, inquisitive and highly adaptable birds. Often gregarious, they have loud, harsh voices and are considered by many people to be the cleverest of the birds. They are omnivorous, and occasionally predatory. One, the Common Raven, is a conspicuous winter bird of northern settlements. Nest-building and care of young is done by both sexes. Species found in the N.W.T.: Gray Jay (Whiskeyjack), Black-billed Magpie, Common Raven, Common Crow.

27 **TITMICE** *(Paridae)*

Number of species in Canada: 7

The species of this family are small birds with soft, thick plumage usually boldly patterned (never streaked, barred or spotted) in grays, browns, yellows, black or white. They have short, stout, pointed bills, short strong legs and short rounded wings. The sexes are usually alike. They are gregarious, active, curious, and unafraid. They often roam in small bands, especially during the winter. They eat insects, seeds, some berries, and can be readily attracted to bird feeders by suet or sunflower seeds. The female incubates the eggs, but both parents feed their young. Species found in the N.W.T.: Black-capped Chickadee, Gray-headed Chickadee, Boreal Chickadee.

28 **NUTHATCHES** *(Sittidae)*

Number of species in Canada: 3

Nuthatches are solitary, arboreal--dwelling in trees--small birds generally gray to blue above, white or brownish below, often with black or brown top of head and eyeline. The sexes are alike. They have strong woodpecker-like bills, powerful feet, stubby tails and are the only tree climbers that habitually go down tree trunks headfirst. They feed on bark insects, seeds, nuts, and can be attracted to bird feeders by suet and sunflower seeds. Species found in the N.W.T.: Red-breasted Nuthatch.

29. **WRENS** *(Troglodytidae)*

Number of species in Canada: 8

Wrens are small, chunky birds, generally brownish. They have medium to long slender bills, often down-curved. They are not gregarious, but very active and inquisitive. Their wings are short and round, their tail is usually short, and often cocked up. They are generally found in tangles of underbrush. Wrens have harsh chattering calls, and musical, bubbling songs. They are mainly insect-eating, but also eat worms and other small invertebrates.
Species found in the N.W.T.: Winter Wren.

30. **THRUSHES** (*Family Muscicapidae Subfamily Turdinae)*

Number of species in Canada: 22

Thrushes are small to medium-sized large-eyed, slender-billed, usually stout-legged songbirds. Their colors are mostly browns, grays, and blues, often blended. The young are usually spotted below. Females build the nests, incubate and brood the young, but the male helps feed the young. Their food is mainly insects and fruit, but they also eat worms, molluscs, seeds and leaves. They generally have highly-developed beautiful songs. Species found in the N.W.T.: American Robin, Varied Thrush, Hermit Thrush, Swainson's Thrush, Gray-cheeked Thrush, Wheatear, Townsend's Solitaire.

31. **GNATCATCHERS, KINGLETS** *(Subfamily Sylviinae)*
This family is comprised of typically small arboreal birds with small bills, short legs and medium-length rounded wings. Colors are usually plain drab browns, grays or olive-greens. Their voices are varied, pleasant and many species have well-developed songs. They feed largely on insects and other small animal life. The young are reared by both parents. Species found in the N.W.T.: Golden-crowned Kinglet, Ruby-crowned Kinglet.

32. **PIPITS, WAGTAILS** *(Motacillidae)*

Number of species in Canada: 4

Motacillidae members are slender-bodied terrestrial birds with thin, pointed bills, rather long slim legs, and elongated hind toes. They have long tails which are usually edged with white or yellow. They are gregarious except during the nesting season. They never hop, but rather walk on the ground. They typically dip up and down when standing. Food includes insects, spiders and seeds. Species found in the N.W.T.: Water Pipit.

33. **WAXWINGS** *(Bombycillidae)*

Number of species in Canada: 2

Waxwings are medium-sized, crested arboreal birds which are generally colored with fawn-browns and grays, with secondary wing feathers tipped with waxy, red droplets. They have short, thick, slightly-hooked bills, and soft lisping calls with a weak chattering song. Their flight is strong, fast and graceful. Incubation is done largely by the female, but the young are fed by both parents. They eat mainly berries and fruit, some flowers, buds and insects. Species found in the N.W.T.: Bohemian Waxwing, Cedar Waxwing.

34. **SHRIKES** *(Laniidae)*

Number of species in Canada: 2

Shrikes are soft-plumaged birds with proportionally large heads, stout, strong, sharply-hooked and notched bills, and strong legs with sharp claws. Beautiful songsters, they are usually gray above and white below, and are aggressive, fearless, and usually alone. They watch for prey from prominent perches. Shrikes feed on large insects and small vertebrates such as birds and mice. They are also known as "butcher birds" because of their habit of hanging their victims on sharp thorns or barbed-wire fences for later consumption. Species found in the N.W.T.: Northern Shrike.

35. **STARLINGS** *(Sturnidae)*

Sturnidae is an Old World, or European, family of which two species have been introduced into North America, the Crested Myna and the Starling. Of these two species, the Starling has become widely established to the point of being a nuisance. The Starling is very gregarious, garrulous (noisy), short-tailed, and black-bird like. They nest in cavities and, because they are so aggressive, have displaced some native cavity-nesting species, such as the bluebird or tree swallow and may be responsible for the decline of the Red-headed woodpecker. The range of the Starling is still expanding northward--they reached the southern Mackenzie in 1964. They are omnivorous feeding on insects, berries and seeds.

36. **VIREOS** *(Vireonidae)*

Number of species in Canada: 8

Vireos are small, arboreal (lives in trees), plain-colored birds, olive-green to brownish-gray above, yellow to gray or white below. Their plumage is never streaked or spotted. They have rather heavy, slightly hooked and notched bills, and their movements are slow and deliberate. They sing often, and have beautiful songs. Vireos are generally solitary, frequenting less dense woodlands, forest edges, and scrublands where they search leaves and branches for insects. Species found in N.W.T.: Solitary Vireo, Red-eyed Vireo, Warbling Vireo.

37. **WOOD WARBLERS** *(Family Emberizidae, subfamily Parulinae)*

Number of species in Canada: 106

Wood warblers are the "butterflies" of the bird world--brightly colored, dainty, constantly flitting jewels. They are usually small, essentially solitary, arboreal, and most have thin, high-pitched songs, some of which are quite beautiful. They feed mainly on insects, but some species also eat fruits, berries and seeds. The females build the nests and incubate, but both parents care for the young. Species found in the N.W.T.: Black and White Warbler, Yellow Warbler, Tennessee Warbler, Orange-crowned Warbler, Magnolia Warbler, Cape May, Yellow-rumped (Myrtle) Warbler, Bay-breasted Warbler, Blackpoll Warbler, Palm Warbler, Ovenbird, Northern Waterthrush, Wilson's Warbler, American Redstart.

38. **WEAVER FINCHES** *(Ploceidae)*

Ploceidae is another Old World Family represented in North America by the House Sparrow, which was introduced in 1850. The House Sparrow (not related to our native sparrow) feeds mainly on insects and seeds, and is most commonly found in the vicinity of man's buildings and farmlands.

39. **MEADOWLARKS, BLACKBIRDS, AND ORIOLES** *(subfamily Icterinae)*

Members of this family are small to medium-sized birds with conical (cone-shaped) straight, pointed bills, long, pointed wings, strong feet, and legs. They are usually gregarious, sometimes highly so. Their voices are generally loud, harsh, bubbling, and some species have well-developed songs. Breeding habits vary, but the female usually builds the nest, incubates and feeds the young. They are omnivorous eating all sorts of animal and vegetable foods. Species found in N.W.T.: Red-winged blackbird, Rusty Blackbird, Common Grackle, Brown-headed Cowbird.

40. **TANAGERS** *(Thraupinae)*

Tanagers are small--generally less than 200 millimeters long--arboreal solitary birds. They are usually bright-colored with bold contrasting patches of black, red, yellow, blue, brown or white. They are compactly built with short to medium bills, short wings. Their flight is strong but not sustained. Tanagers do not have outstanding voices, and only a few have well-developed songs--mostly a short warble. The female builds the nest, the male sometimes helps, and may feed the female on the nest. Both feed the young. Species found in the N.W.T.: Western Tanager.

41. **GROSBEAKS, FINCHES, SPARROWS AND BUNTINGS** *(Fringillidae) (See final note about this family designation)*

The most notable feature of members of this family is the short, stout seed-cracking bill. The three types of bills Fringillids have are the extremely large, thick bill of the grosbeaks, the smaller canary-like bill of the finches, sparrows and buntings and the crossed mandibles of the crossbills. Fringillids have simple "chip" call notes and, usually, well developed songs. They are typically monogamous (having one mate), with females or both sexes incubating and both adults caring for the young. The primary food is seeds, and some insects and small fruits. Species found in the N.W.T.: Rose-breasted Grosbeak, Evening Grosbeak, Purple Finch, Pine Grosbeak, Hoary Redpoll, Common Redpoll, Pine Siskin, Red Crossbill, White-winged Crossbill, Savannah Sparrow, LeConte's Sparrow, Sharp-tailed Sparrow, Vesper Sparrow, Dark-eyed Junco, Tree Sparrow, Chipping Sparrow, Clay-colored Sparrow, Harris' Sparrow, White-crowned Sparrow, White-throated Sparrow, Fox Sparrow, Lincoln's Sparrow, Swamp Sparrow, Song Sparrow, Lapland Longspur, Smith's Longspur, Snow Bunting.

Note also that the family Emberizidae contains the subfamily Parulinae (the wood-warblers; the subfamily Thraupinae (the tanagers; the subfamily Cardinalinae (cardinals, grosbeaks and allies); the subfamily Emberizinae, (buntings, sparrows and allies; and also the subfamily Icterinae (blackbirds, orioles, and allies). "Fringillidae" itself is perhaps misleading as a simple catch-all for this final family grouping.

Module F Unit 1 Lesson 11

SKILL: **BIRD KNOWLEDGE**

OBJECTIVE: Learning how to use the field guide

ITEMS REQUIRED: 1 class set of The Audubon Society Field Guide to North American Birds

METHOD: Display and Discussion

The Audubon Field Guide uses a visual cue system rather than a system based on family organization.

Birds are categorized according to shape and color (See p. 16 following for use descriptions).

Use of field marks, relative size, and behavior help to identify the bird.

The silhouette (see page 19) is used to locate the group designation, while color is used to differentiate song bird types. (See page 31 for a complete description of how to use the guide).

Practice using the Field Guide on some observable birds.

The participants will be responsible for identifying up to 30 local birds during the field portion of the course.

CONCLUSION: The guide must be comfortable in using his manual to identify local birds.

Module F Unit 1 Lesson 12

SKILL: **BIRD KNOWLEDGE**

OBJECTIVE: Bird Sightings and Record

ITEMS REQUIRED:

Set of Field Glasses
Audubon Field Guide
-"Birds of the Northwest Territories: A preliminary checklist of 280 species" (Canadian Wildlife Service)
-"Common breeding Birds of the N.W.T., (Renewable Resources)

also suggested:

-Inuktitut names for Different Wildlife Species" - Renewable Resources
"Birds of the Big River Country" - B.R.T.A.
"Birds of Yellowknife" - R. G. Bromley and D. L. Trauger
"List of Birds": Wood Buffalo Park
"Birds and Mammals observed at Bathurst Inlet"

METHOD: Lecture, demonstration and discussion

Birdwatching during the field portion can be accomplished in several fashions. Hiking to various areas will result in sightings; however, these may not occur at close enough range for the client who wishes to photograph the bird.

In this case, the guide may have to resort to building a blind in a suitable location, and waiting for the bird to approach a pre-determined position. Remind the guides that an over-zealous client may cause harm to the birds by approaching too closely, specifically in a nesting situation.

Using both methods, and armed with the field guide, and binoculars if possible, attempt to secure positive sightings of approximately 20 - 30 local species. Each guide will be responsible for filling out his information sheet on observed birds and beginning a bird checklist.

The major checklists and sample of the participant's information sheet follow this lesson.

CONCLUSION: The guide will become proficient at identifying local birds and relating relevant connecting information.

INTERPRETIVE GUIDE'S BIRD INFORMATION SHEET

COMMON NAME _____ SCIENTIFIC NAME _____ LOCAL NAME _____

DESCRIPTION:

HABITAT:

NESTING:

RANGE:

REMARKS:

BIRDS OBSERVED AT BATHURST INLET

Common Loon	Yellow-billed Loon
Arctic Loon	Red-throated Loon
Whisting Swan	Canada Goose
Brant	White-fronted Goose
Snow Goose	Common Pintail
American Widgeon	Green-winged teal
Greater Scaup	Lesser Scaup
Oldsquaw	Common Eider
King Eider	Red-breasted merganser
White-winged Scoter	Scoter
Surf Scoter	Rough-legged Hawk
Red-tailed Hawk	Golden Eagle
Gyrfalcon	Peregrine Falcon
Rock Ptarmigan	Willow Ptarmigan
Sandhill Crane	Semipalmated Plover
American Golden Plover	Black-bellied Plover
Ruddy-Turnstone	Cliff Swallow
Bank Swallow	Common Snipe
Pectoral Sandpiper	White-rumped Sandpiper
Baird's Sandpiper	Lesser Yellowlegs
Least Sandpiper	Semipalmated Sandpiper
Stilt Sandpiper	Spotted Sandpiper
Sanderling	Northern Phalarope
Pomarine Jaeger	Parasitic Jaeger
Long-tailed Jaeger	Glaucous Gull
Herring Gull	Sabine's Gull
Thayer's Gull	Arctic Tern
Snowy Owl	Short-eared Owl
Eastern Kingbird	Western Kingbird
Horned Lark	Tree Swallow
Common Raven	American Robin
Gray-cheeked Thrush	Brown Thrasher
Mockingbird	Water Pipit
Arctic Redpoll	Hoary Redpoll
Common Redpoll	Savannah Sparrow
Tree Sparrow	Harris' Sparrow
White-crowned Sparrow	Lapland Longspur
Yellow Warbler	Snow Bunting

COMMON BREEDING BIRDS OF THE NORTHWEST TERRITORIES

(Over half the breeding range of these birds is in the N.W.T.)

Yellow-billed Loon
Arctic Loon
Red-throated Loon
Whistling Swan
Canada Goose
Brant
White-fronted Goose
Snow Goose
Pintail
Oldsquaw
King Eider
Rough-legged Hawk
Gyrfalcon
Peregine Falcon
Willow Ptarmigan
Rock Ptarmigan
Sandhill Crane
Whooping Crane
Semipalmated Plover
American golden Plover
Black-bellied Plover
Ruddy Turnstone
Eskimo Curlew
Knot
Purple Sandpiper
White-rumped Sandpiper
Baird's Sandpiper
Dunlin
Long-billed Dowitcher
Stilt Sandpiper
Semipalmated Sandpiper
Buff-breasted Sandpiper
Sanderling
Red phalarope
Northern Phalarope
Pomarine Jaeger
Parasitic Jaeger
Long-tailed Jaeger
Glaucous Gull
Iceland Gull
Thayer's Gull
Sabine's Gull
Arctic Tern
Snowy Owl
Horned Lark
Common Raven
Water Pipit
Hoary Redpoll
Jarris's Sparrow
Lapland Longspur
Snow Bunting

Inuktitut Names for Different Wildlife Species - Kitikmeot Region (compiled by the Department of Renewable Resources)

SPECIES	EAST	CENTRAL	WEST
Ringed Seal	Natshik	Nattik	Nattik
Bearded Seal	Ugruk, Ugyuk	Ugyuk	Ugyuk
Walrus	Aivik	Aivik	Aivik
Narwhal	Aglangvak Kinaluguk	Kilalugak Toggaalik	Togaalik
Beluga	Kakoktuk Kinaluguk	?	Kilalugak
Bowhead Whale	Akvik	Akvik	Akvik
Polar Bear	Nanook	Nanook	Nanook
Grizzly Bear	Akhla	Aklak	Akhak
Weasel (Shorttail)	Tiriak	Tiriak	Tiriak
Wolverine	Qavik	Kadvik	Kalvik
Wolf	Amarook	Amarok	Amagok
Red fox	Kayoktok	Kayoktok	Kayoktok
Cross Fox	Kiahigotilik	Kiahigotilik	Kiahigotilik
Ground Squirrel	Sik-sik	Hik-hik	Hik-hik
Collared Lemming	Avingak	Avingak	Avingak
Brown Lemming	Avingak	Ulamikak	Ulamikak
Tundra Vole	?	?	Ugyoknak
Arctic Hare	Ukalik	Ukalik	Okalik
Moose	Tuktuvuk	Tuktuvak	Tuktuvak
Caribou	Tuktu	Tuktu	Tuktu
Male	Pagnak	Pagnak (big male)	Anguhalok
Female	Nuralik	Kilavuk (with calf)	Angnalok (any fema
Calf	Nurak	Nurulak	Nugak
Muskox	Oomingmak	Oomingmak	Umingmak
Muskrat	?	Kivigaluk	Kivialuk
FISHES			
Lake trout	Ilurayuk	Ihouk	Ihouk, Ihoak
Cod Fish	Ograk	Oorak	Oorak
Char, silver	Ikalokpik	Ikalokpik	Ikalokpik
red	Ivitarok	Ivitarok	Evitarok
Any Fish	Ekalok	Ekalok	Ikalok
BIRDS			
Yellow-billed loon	Toodlik	Toodlik	Toodlik
Arctic Loon	Kaglulik	Kaglulik	Kaglulik
Any Loon	?	Malarek	Malerok
Whistling Swan	Kogiuk	Kogyuk	Kugiuk
Canada Goose	Olaudlik	Oodloon	Uluarulik
Brant	Neklernak	Neklernak	Nedlernak
White-fronted Goose	Neklervik	Nedlervik	Nedlervik
Snow Goose	Kangok	Kangok	Kangok
Pintail	?	Kerkak	?
Mallard	?	?	Kekak
Oldsquaw	Agiak	Ahanguk	Ahangik
Common Eider			
Male	?	Amaulik	Amaulik
Female	?	Horluktuk	Horluktuk
Rough-legged Hawk	Kivak	Kalaak	Kalaak

Golden Eagle	Kopanuakpak	Kopanuakpak	Kopanuakpak
Gyrfalcon	Kigavik	Kiligavik	Kiligavikpak
Peregrine Falcon	Kigaviariuk	Kiligavik	Kiligavik
Willow Ptarmigan	Ahigiak	Akilgavik	Akilgavik
Rock Ptarmigan	Ahigiak	Nikaktok	Nikaktok
Sandhill Crane	Tatigiak	Tatidlegak	Tatilgak
Sandpiper	Higyariak	Higyariak	Higyariak
Phalarope	Havrak	Haurak	Havrak
Jaeger	Ihungak	Ihungak	Ihungak
Glaucous Gull	Nauriak	Nauavik	Nauyavik
Ivory Gull	Nauyavak	Nauyavak	?
Arctic Tern	Emikotailuk	Imitkotailak	Imitkotailak
Snow Owl	Ookpik	Ookpik	Ookpik
Short-eared Owl	?	?	Nipaingaktak
Horned Lark	Kopanoak	Kopanokpariuk	Kopanokpariak
Raven	Tulugak	Tulugak	Tulugakyoak
Lapland Longspur	Kopanoak	Nahaorlik	Nahaolik
Snow Bunting	Kakuktak	Amauligak	Amauligak
"Anything that flies and that you can eat"	Tingmiak	Tingmiak	Tingmiak

East (Spence, Pelly, Gjoa), Central (Cambridge, Bathurst Inlet) West (Coppermine, Holman).

NOTE: The spelling of most names is only approximate, particularly for the eastern section--however, it is probably close enough to make sense.