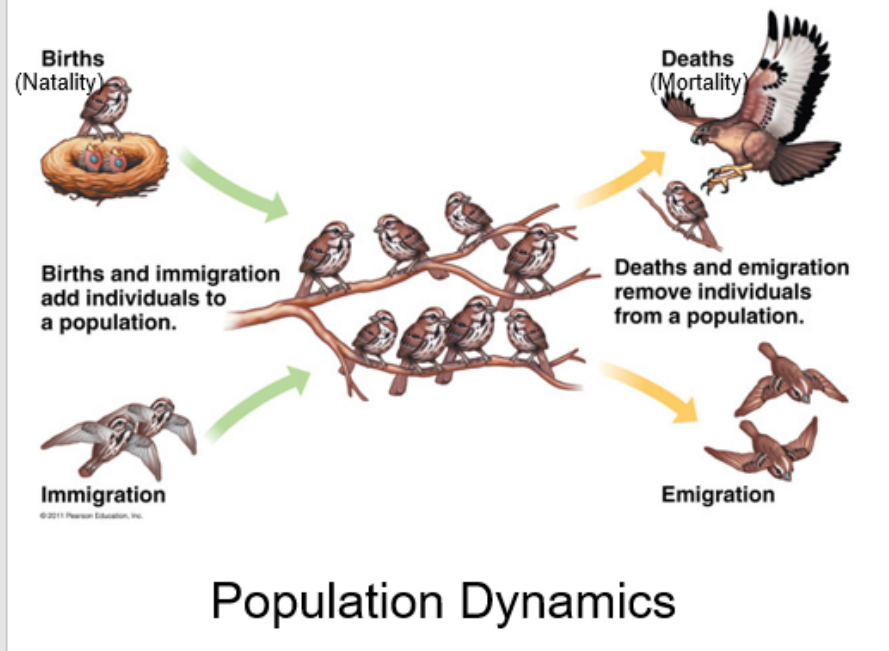


Wildlife Terminology

Wildlife Presentation contains notes with each slide. View using “Notes Page”



This constant ebb and flow in the number of individuals, and the age structure of the local community, is known by wildlife biologists as **population dynamics**.

Recruitment refers to juveniles who survive into adulthood and become permanent members of the population.

Immigration and emigration are essential for the long-term survival of a local population. It may mean better access to mates, less competition for resources, a decrease in predators, or a number of other things. What is important about immigration and emigration is that as individuals move between populations they increase gene flow. Gene flow is the transfer of genes from one population to another. As gene flow increases, so does the genetic diversity of the population, and genetically diverse populations are more capable of withstanding environmental change (drought, for example).

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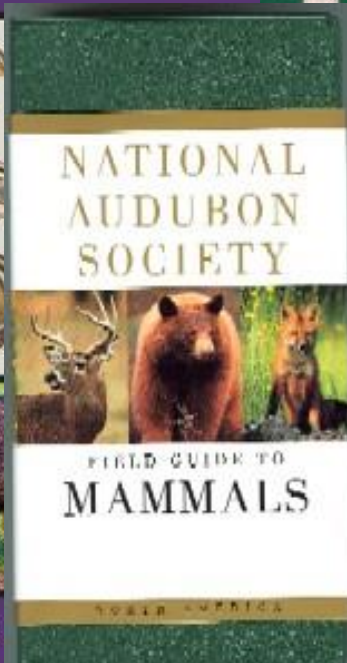
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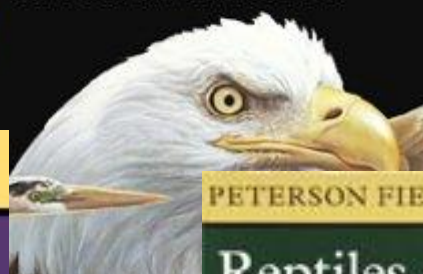


Fiona



NATIONAL GEOGRAPHIC

Field Guide to the
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A Field Guide Mammals Tracking

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James Halpenny
illustrations by Elizabeth Biesiot

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Animal Tracks



BUTTERFLY BOOK



STOKES

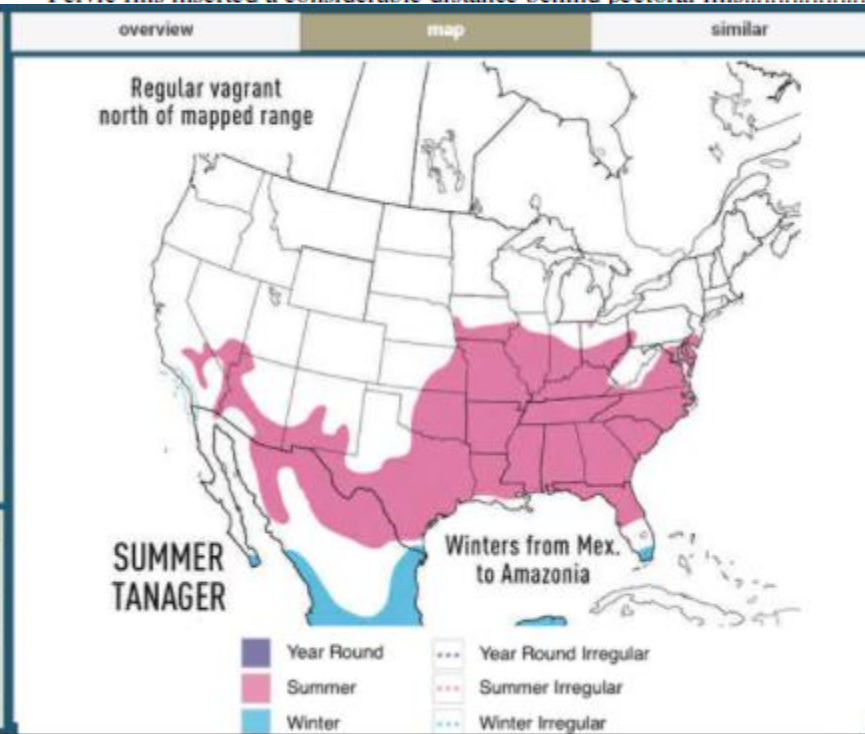
nals

Using Field Guide Keys



Key to the families of freshwater fishes of New Hampshire

- 1) Jaws absent, mouth a circular sucking disk.....Lamprey Family
Jaws present.....2
- 2) Body snakelike, pelvic fins absent.....Freshwater Eel Family
Body typically fish-shaped, pelvic fins present.....3
- 3) Pelvic fins inserted a considerable distance behind pectoral fins.....4
 -11
 -5
 -7
 -6
 -8
 -9
 -10
 -12



- 10) Mouth directed downward, adapted for sucking, with thick fleshy lips...Sucker Family
Mouth directed toward the front; lips thin.....Minnow Family
- 11) Anal fin with 1 or 2 spines.....Perch Family
Anal fin with 3 or more spines (the 1st spine is sometimes very short).....12
- 12) Opercle with a small, sharp spine, anal fin with only 3 spines..Temperate Bass Family
Opercle without a spine; anal fin with 3 or more spines.....Sunfish Family



Waterfowl ID (thru mounts or wings only)

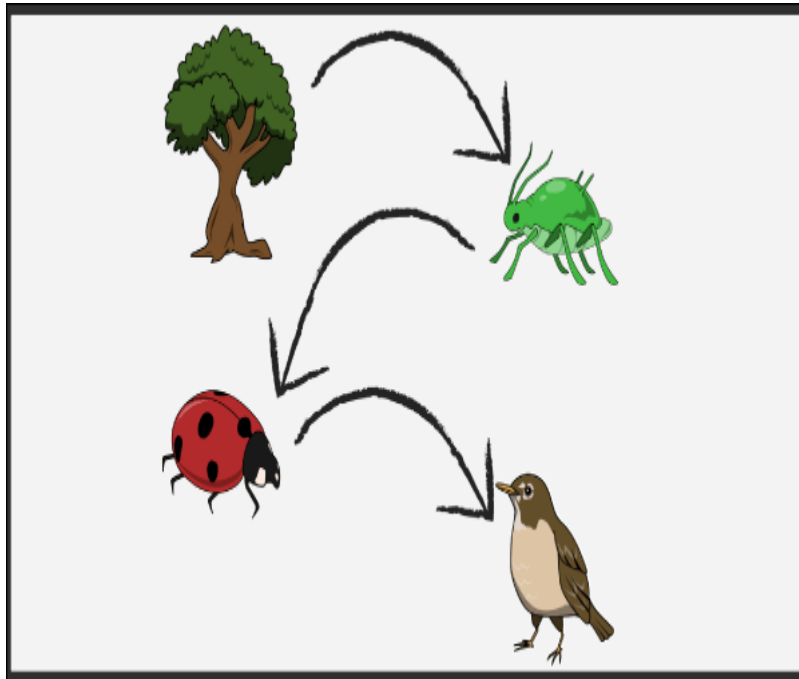
<https://medium.com/usfws/winging-it-learn-ducks-from-their-wings-43d91a19aa8a>



**DUCKS
AT A
DISTANCE**

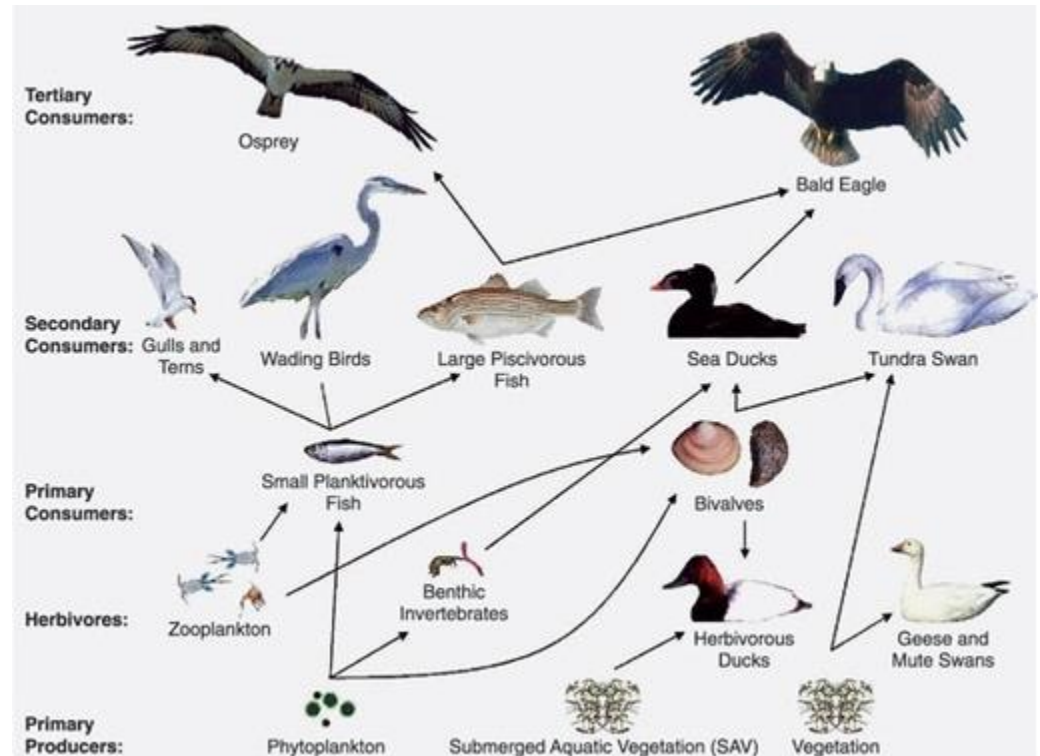
A WATERFOWL IDENTIFICATION
GUIDE

Food Chains



vs

Food Webs



Site specific examples and well labelled for best marks

Important Ecological Concepts

- **Trophic Level** - The position an organism occupies in a food chain. Food chains generally start with Primary Producers (plants, or other autotrophs), then progress to Primary Consumers (herbivores), Secondary Consumers (carnivores), and typically end with Top Predators. Most food chains are 4-5 links.



Wolf (2%)



Moose (7.7%)



As energy and nutrients move up the food chain, less energy is available at each successive trophic level.

Example: a moose only converts 7.7% of the total energy found at the Primary Producer trophic level. Similarly, a wolf that eats the moose only converts ~2% of the available energy. This is why there are typically only 4 or 5 trophic levels: the length is constrained by energy.

Food chains are over simplifications of communities. How many biological communities can you think of that are made up entirely of predator/prey interactions? Food webs include not only predator and prey relationships, but competitors and mutualisms. Food webs, however, can get complicated fast.

Habitat Requirements



+



+

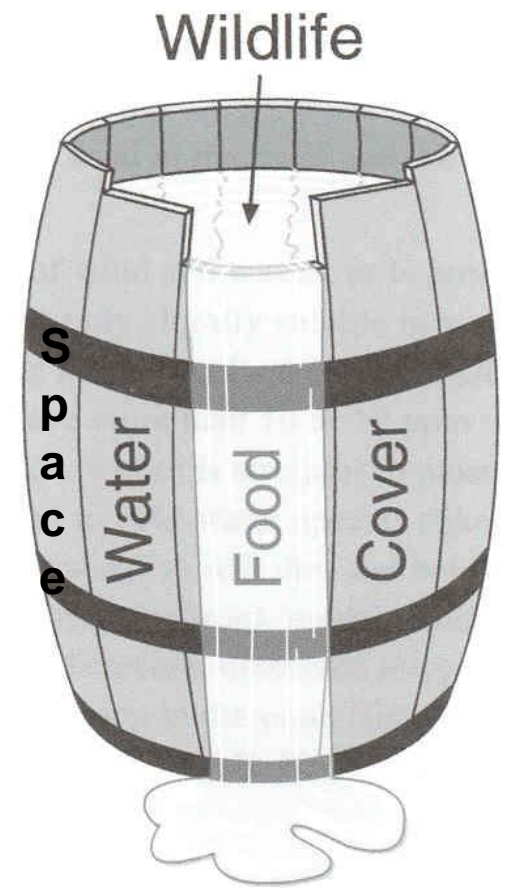


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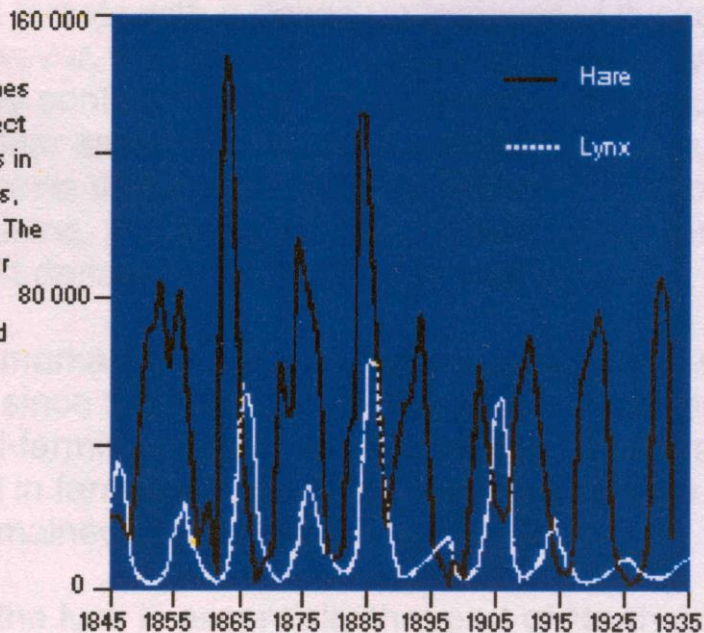


Carrying Capacity



Figure 1

Increases and declines in lynx numbers reflect the population trends in its main prey species, the snowshoe hare. The figure is based on fur trapping data from MacLulich (1937) and Elton and Nicholson (1942).



Carrying Capacity: # of animals a habitat can support over time. **Not** a constant over time.

Births
(Natality)



Births and immigration
add individuals to
a population.



Immigration

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Deaths
(Mortality)



Deaths and emigration
remove individuals
from a population.



Emigration

Population Dynamics

Habitat Generalists vs Specialists

Development Stage	Species and Region ¹	Forest Ecosystem																								Special-Value Habitats		Preferred Habitat Features			
		Aspen-Birch				Northern Hardwoods					Oak-Pine					Hemlock				Spruce-Fir				N. White Cedar		Riparian and Wetland	Vernal Pool	Extensive Forest	Snags, Cavity Trees, or Deadwood		
		R	S	I	M	R	S	I	M	L	R	S	I	M	L	I	M	L	R	S	I	M	L	I	M					L	
Early Succession	Snowshoe Hare	Mx	Mx	Mx	Mx	Mx	Mx	Mx	Mx	Mx	Mx	Mx	Mx	Mx	U	U	U				U	U	U	U	U	U	Mx, U	//	//	//	//
	Ruffed Grouse																											//	//	//	//
	Chestnut-sided Warbler																										//	//	//	//	//
	Eastern Towhee (S)	//	//	//	//	//	//	//	//	//	//	//	//	//	U	U	U	//	//	//	//	//	//	//	//	//	//	//	//	//	//
	Magnolia Warbler	//	//	//	//	Mx	Mx	Mx	Mx	Mx	//	//	//	//	//	U	U	U				U	U	U				//	//	//	//
Mature	Fisher (S)																											//	X	X	
	Marten (N)	//	//			//					//	//	//	//					//									//	X	X	
	White-tailed Deer (N)																											//	//	//	//
	Northern Goshawk																											//	X	//	
	Pileated Woodpecker	//	//	//		//	//				//								//	//								//	//		X
	Black-backed Woodpecker (N)	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//											//	?		X
	Barred Owl	//	//	//	//	//	//				//	//							//	//								//	X	X	
	Wood Thrush (S)	//				//					//								//	//	//	//	//	//	//			//	X	//	//
	Pine Warbler	//	//	//	//	//	//	//	//	//		WP	WP		//	//	//	//	//	//	//	//	//	//	//	//	WP	//	//	//	//
	Black-throated Blue Warbler	//	//	U	U	//	//	U	U	U	//	//	//	//	//	//	//	//	//	Mx	Mx	//	//	//	//			//	X	//	//
	Northern Redback Salamander	//				//					//																	//	//	//	//
LS	Late-successional Lichens	//	//			//	//	//			//	//	//	//	//	//	//	//										//	//	//	//
Riparian & Wetland	Beaver	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//			//	//	//	//
	Northern Waterthrush	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//			//	X	//	//
	Wood Turtle	//				//					//																	//	X	//	//
	Northern Dusky Salamander	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//			//	//	//	//
	Brook Trout	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//			//	//	//	//
VP	Wood Frog																												//	//	//
	Spotted Salamander	//	//			//	//				//	//							//	//								//	//	//	//




Development Stage

R Regeneration
S Saplings and Small Poles
I Intermediate-aged Forest
M Mature
L Late Successional

Habitat Modifiers

Mx Mixed deciduous-conifer
WP White pine required
U Understory present
? More research needed

Habitat Use and Region

 Focus species for this habitat type
 Utilizes these habitats
 Low frequency use or absent from this habitat

Habitat Management



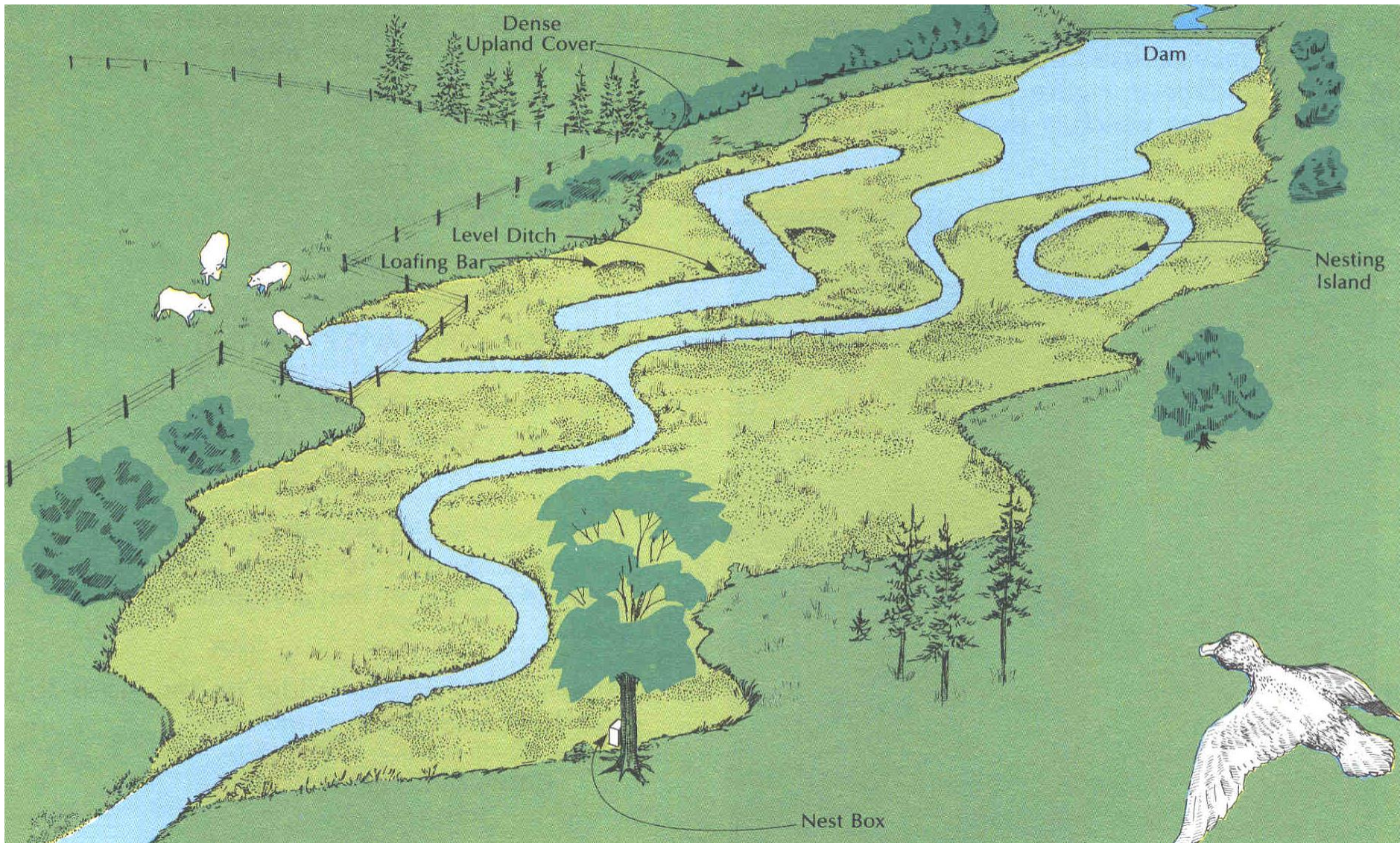
Water Mgmt



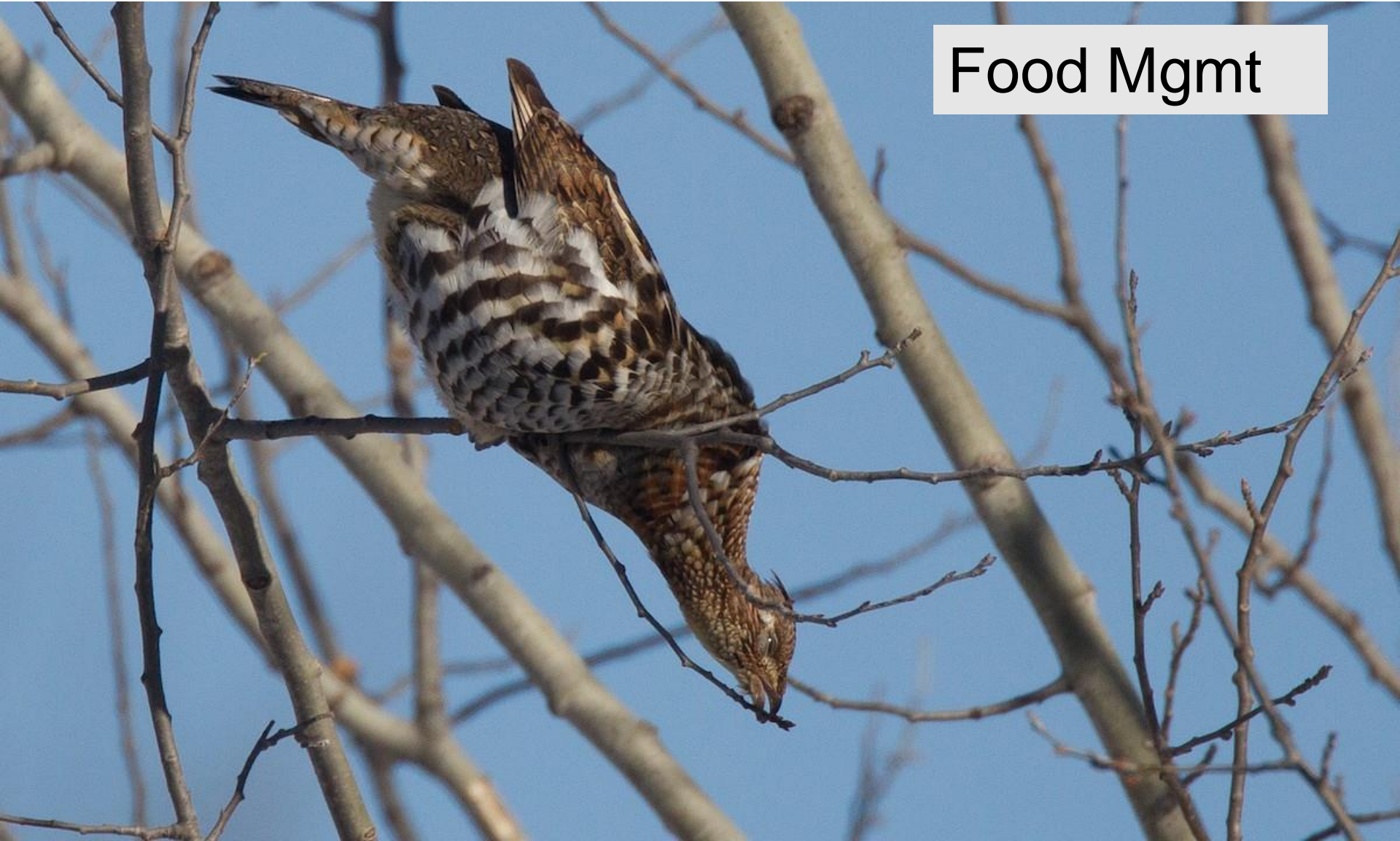
Cover Mgmt



Habitat Management - Waterfowl



Food Mgmt







Space Mgmt

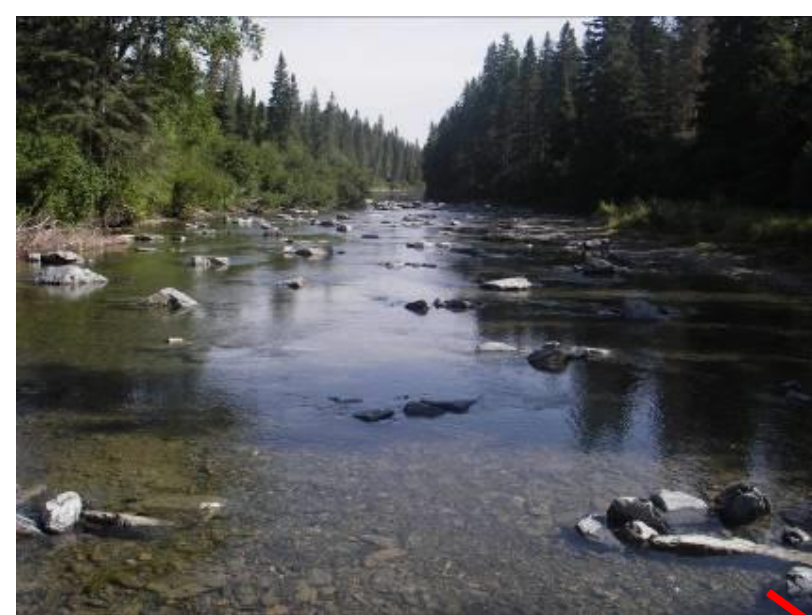
Before

Construction of boulder cluster habitat enhancement structures at the McIntosh Brook site, Little Main Restigouche River



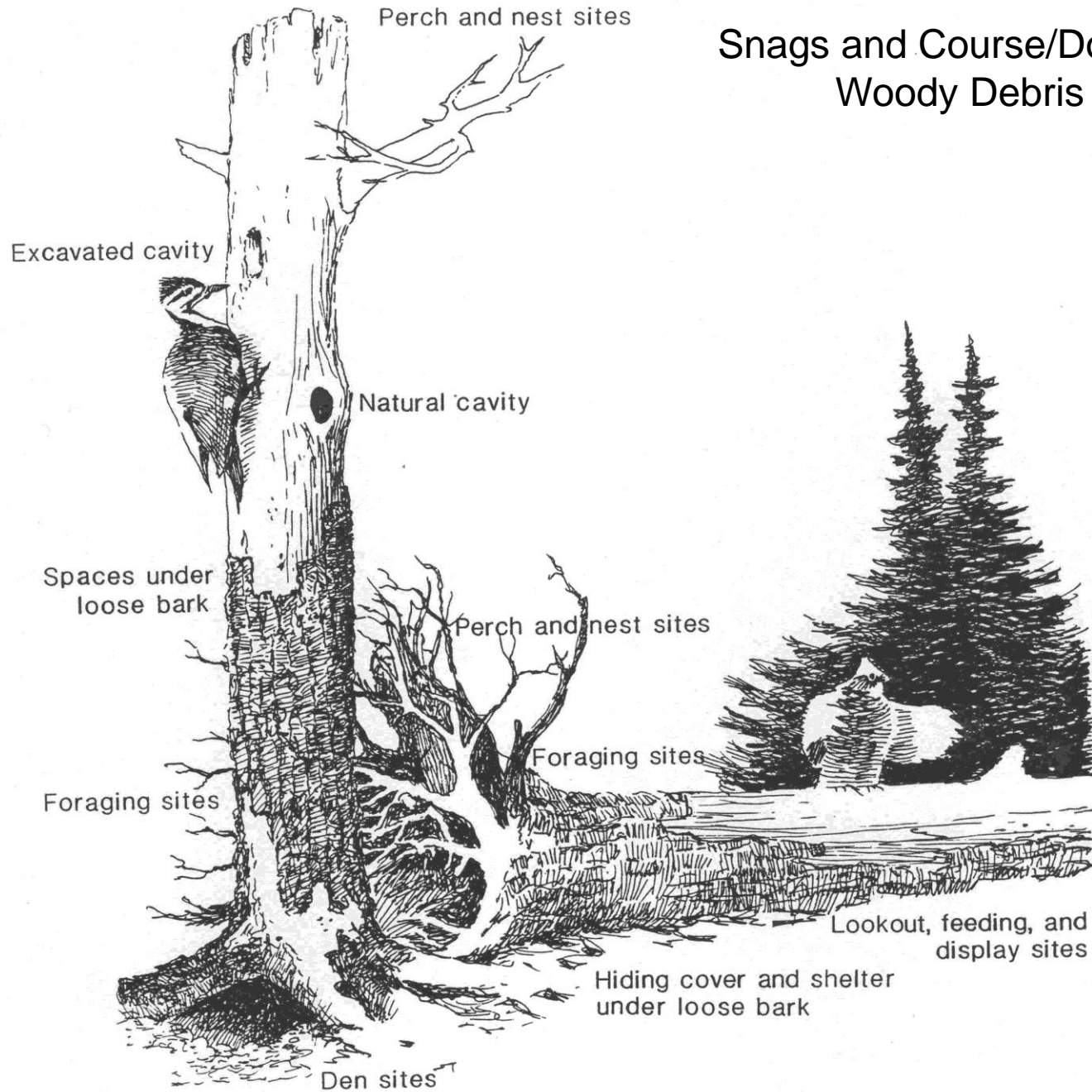
After

Construction of boulder cluster habitat enhancement structures at the McIntosh Brook site, Little Main Restigouche River



Post enhancement habitat
shown using LiDAR

Snags and Course/Downed Woody Debris





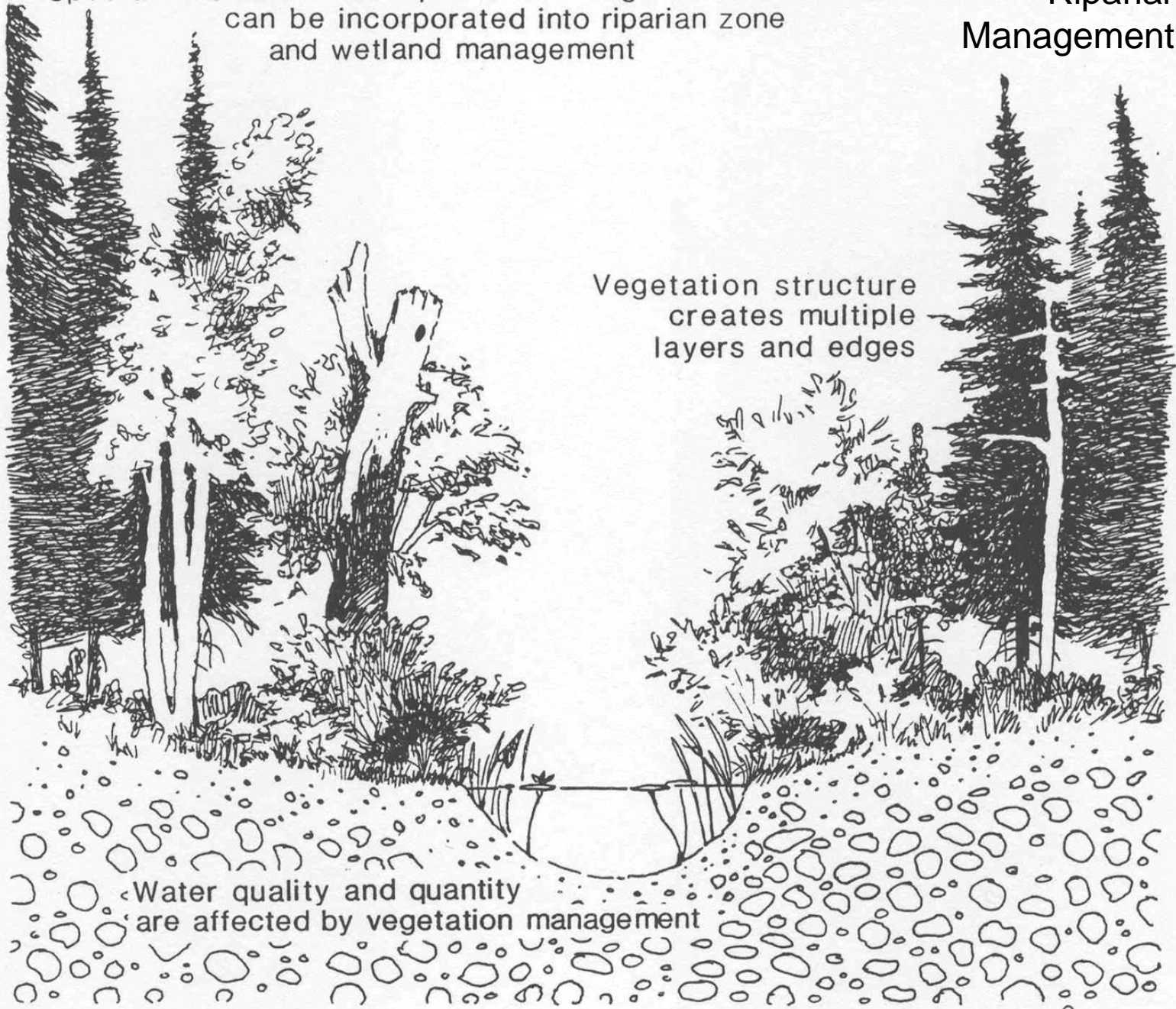
Establishing or Maintaining Vernal Pools

Special habitat features, such as snags and nest trees,
can be incorporated into riparian zone
and wetland management

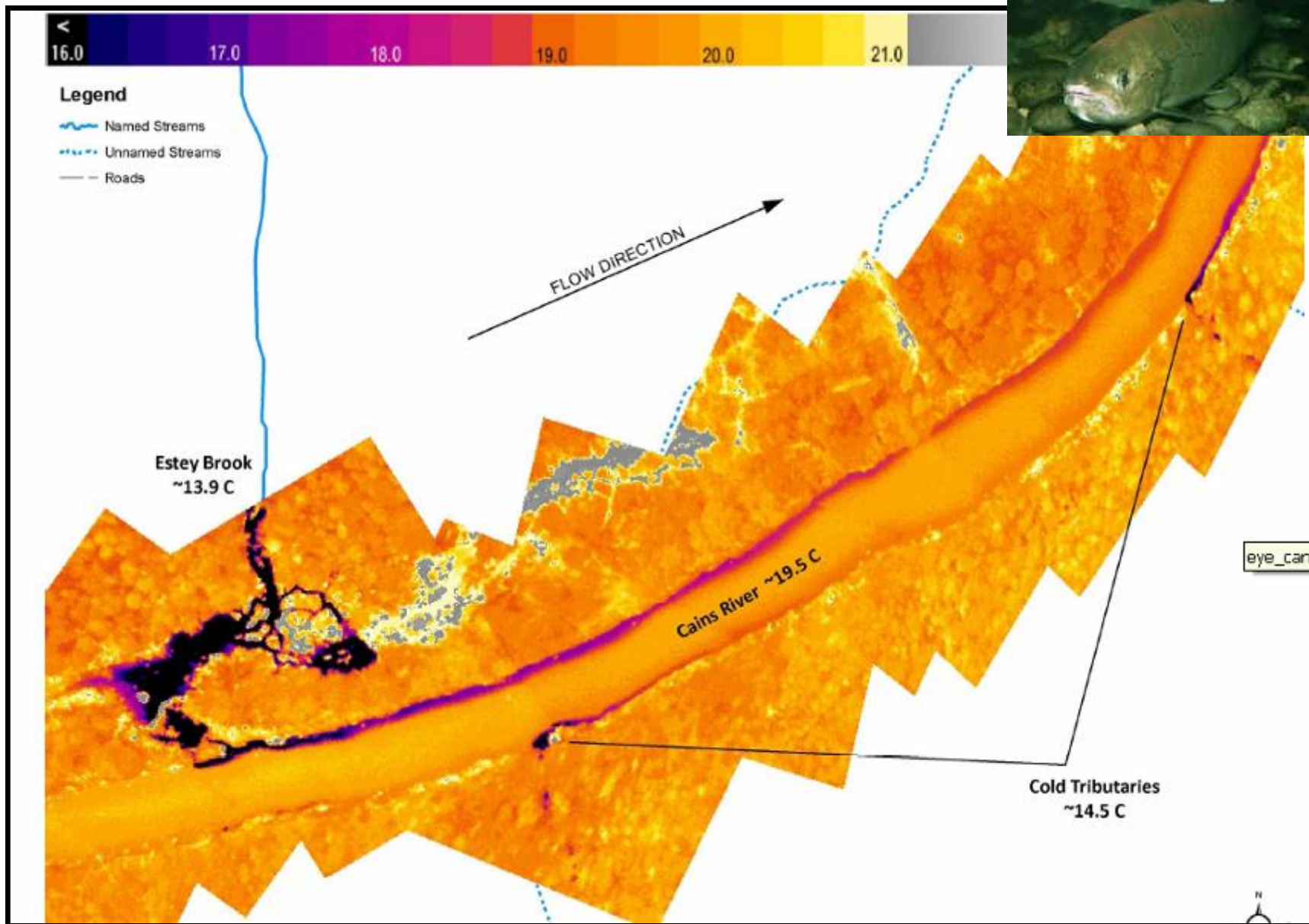
Riparian Management Zone

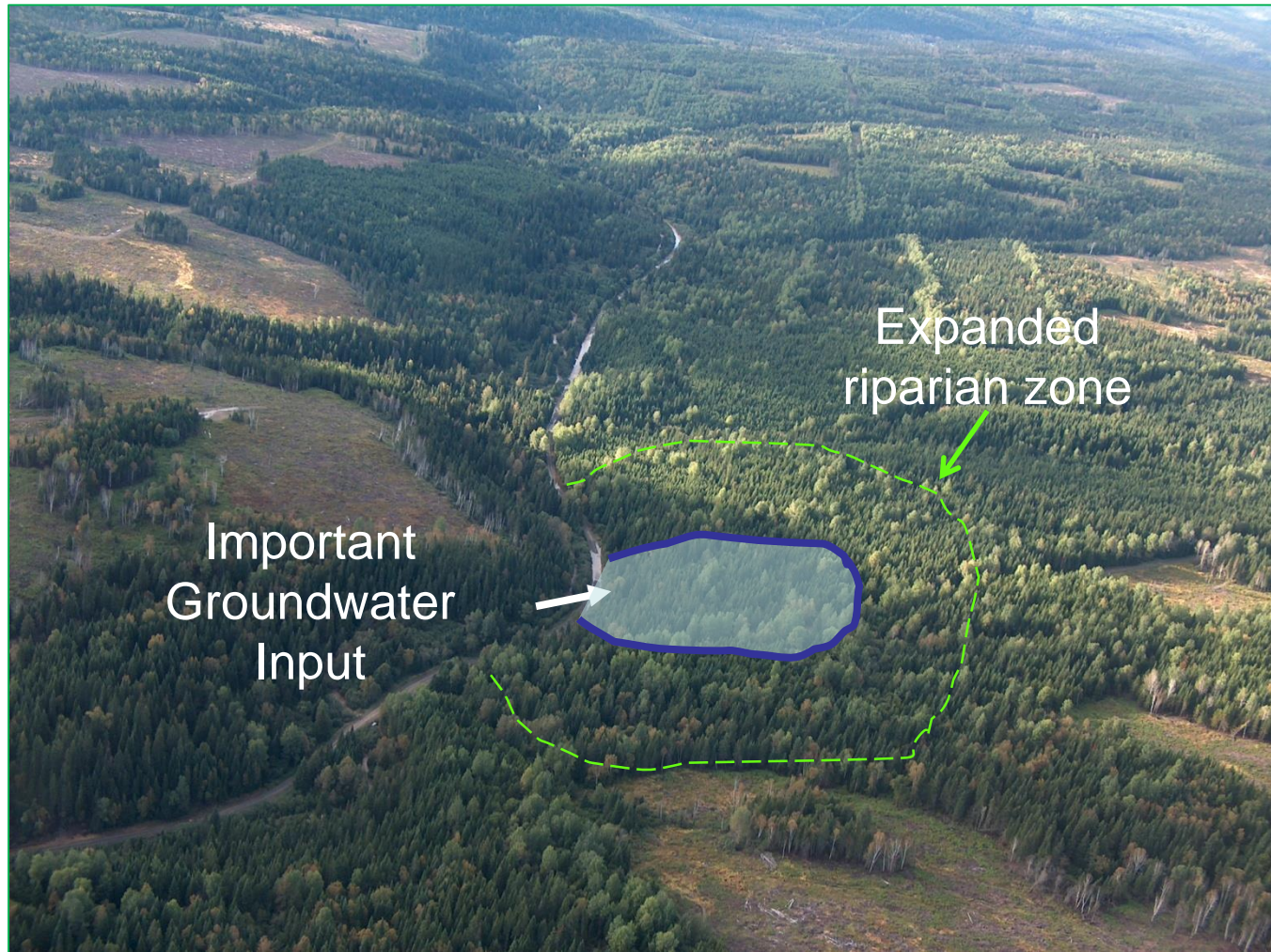
Vegetation structure
creates multiple
layers and edges

Water quality and quantity
are affected by vegetation management



Using thermal imaging cameras to detect salmon and trout cold water refugia





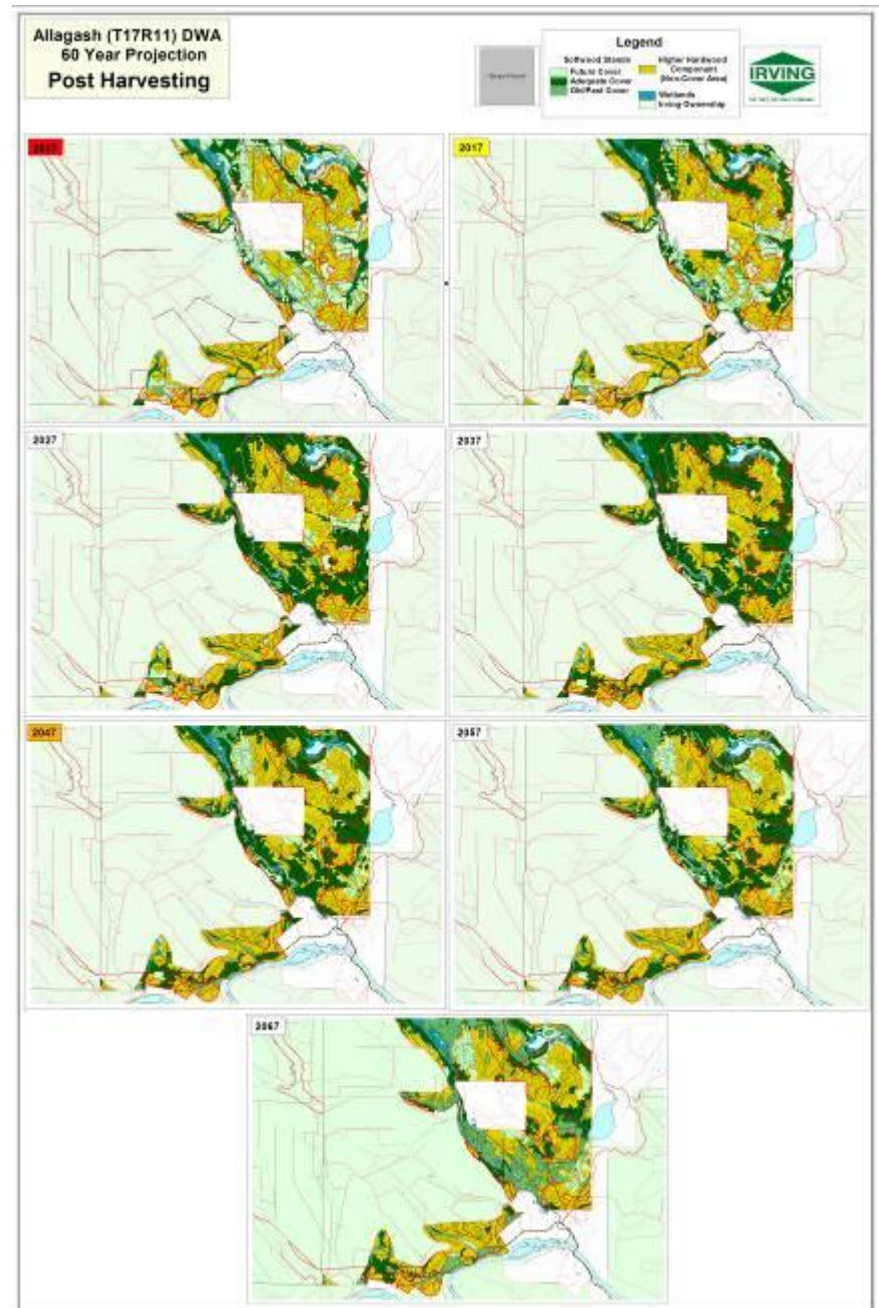
Identified cold, groundwater sources can be protected with expanded riparian zones.

Deer Wintering Areas (DWA's)

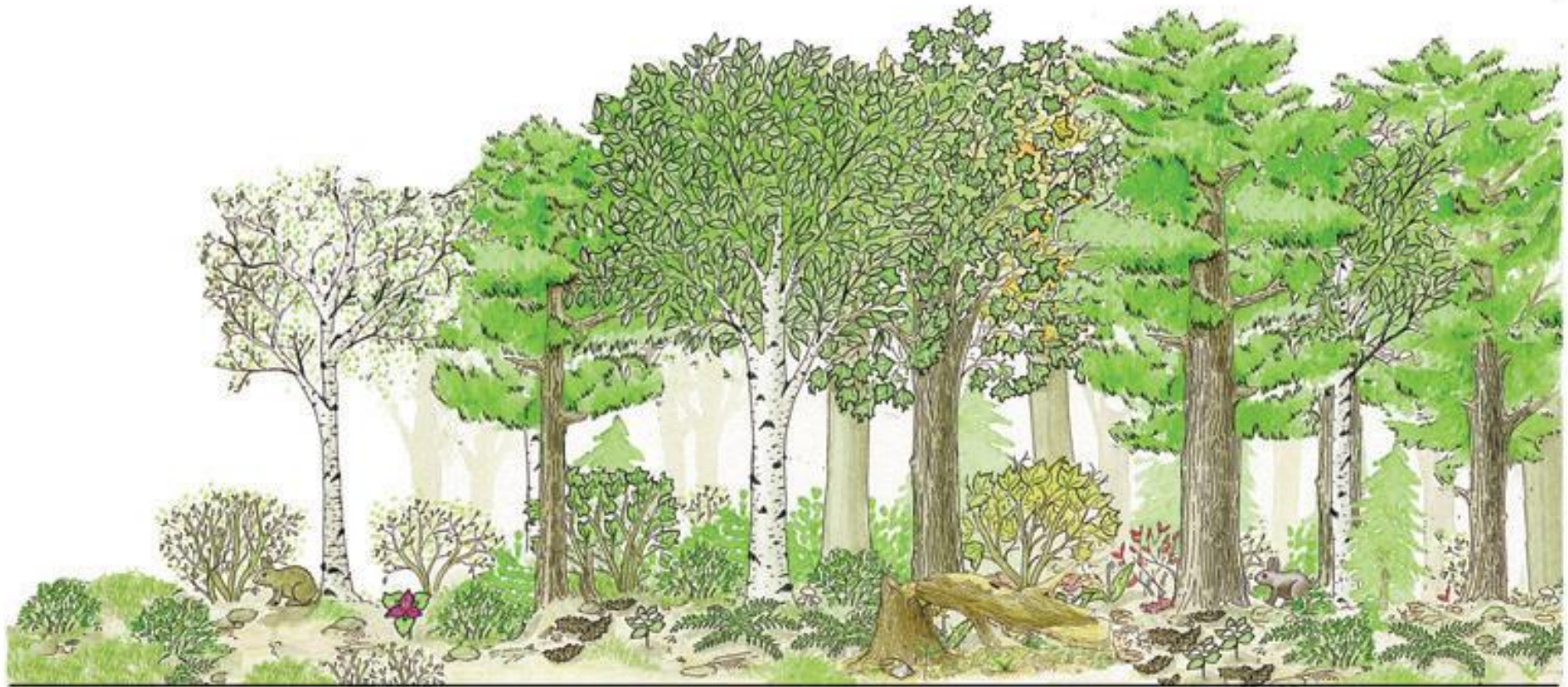


DWA:

- Sp/bF mix with some eC and hardwood browse (15+cm trees , 11+m tall
- Min of 50-70% crown closure



Forest Succession



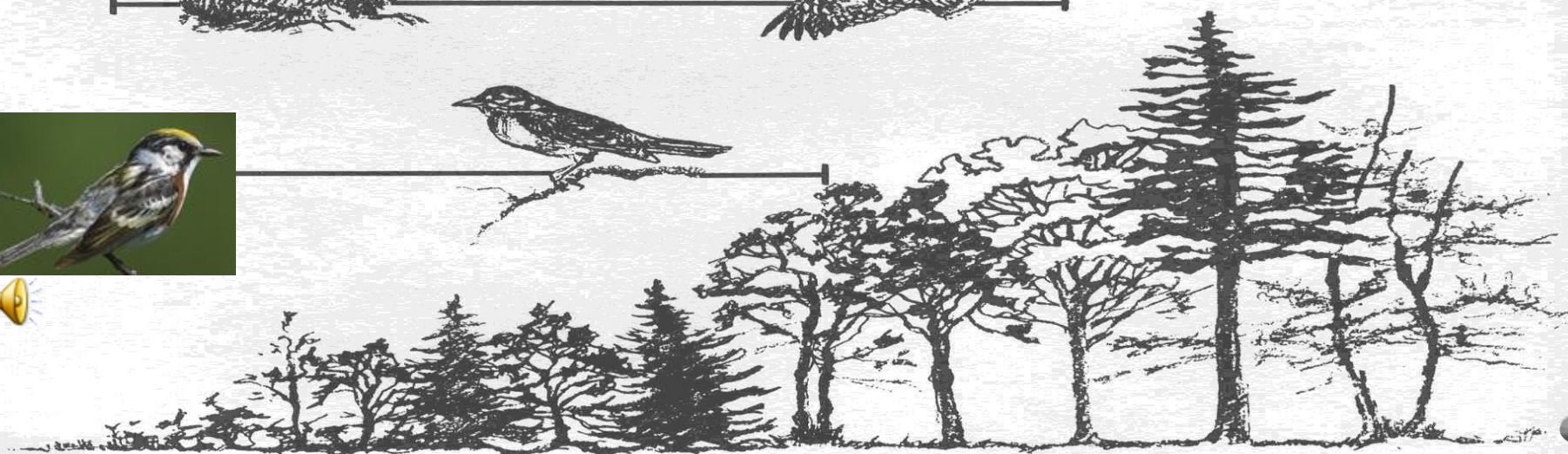
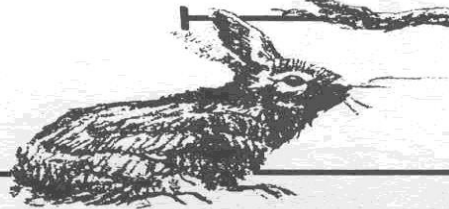
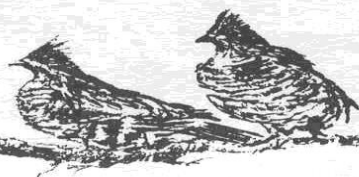
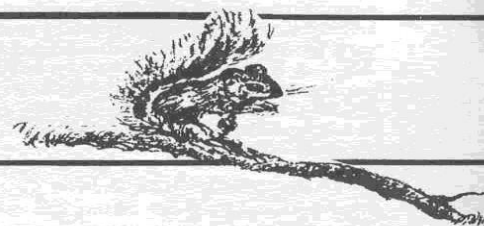
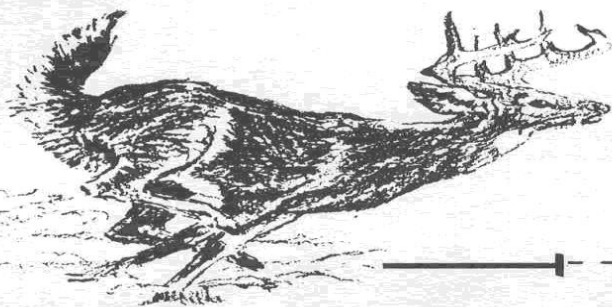
Plants Stage
First 5 years

Shrub Stage
6-25 years

Young Forest
26 - 50 years

Mature Forest
51 - 150 years

Climax Forest
150 - 300 years



Forest Openings

Shrub - Sapling

Pole

Mature

Old Growth

Examples of “hard mast”



More Terms:

Crepuscular – appearing or becoming active at twilight or dawn. Typically they sleep at night and lay low during the day (examples- WT deer, snowshoe hare, skunks, moose, woodcock)

Nocturnal – most active at night (examples – deer mice, coyote, barred owl, little brown bat, raccoon, red fox, porcupine)

Diurnal – most active during the day (examples – red squirrels, grey squirrels, most songbirds and hawks, wood turtle, snapping turtle, beaver)

Guard Hairs – long, coarse hairs that forms a protective coating over and animals under fur

Neotropical migrant – a species that breeds in North America but migrates to central and South America for the non-breeding season (swallows, thrushes, warblers, shorebirds, flycatchers, hummingbirds)

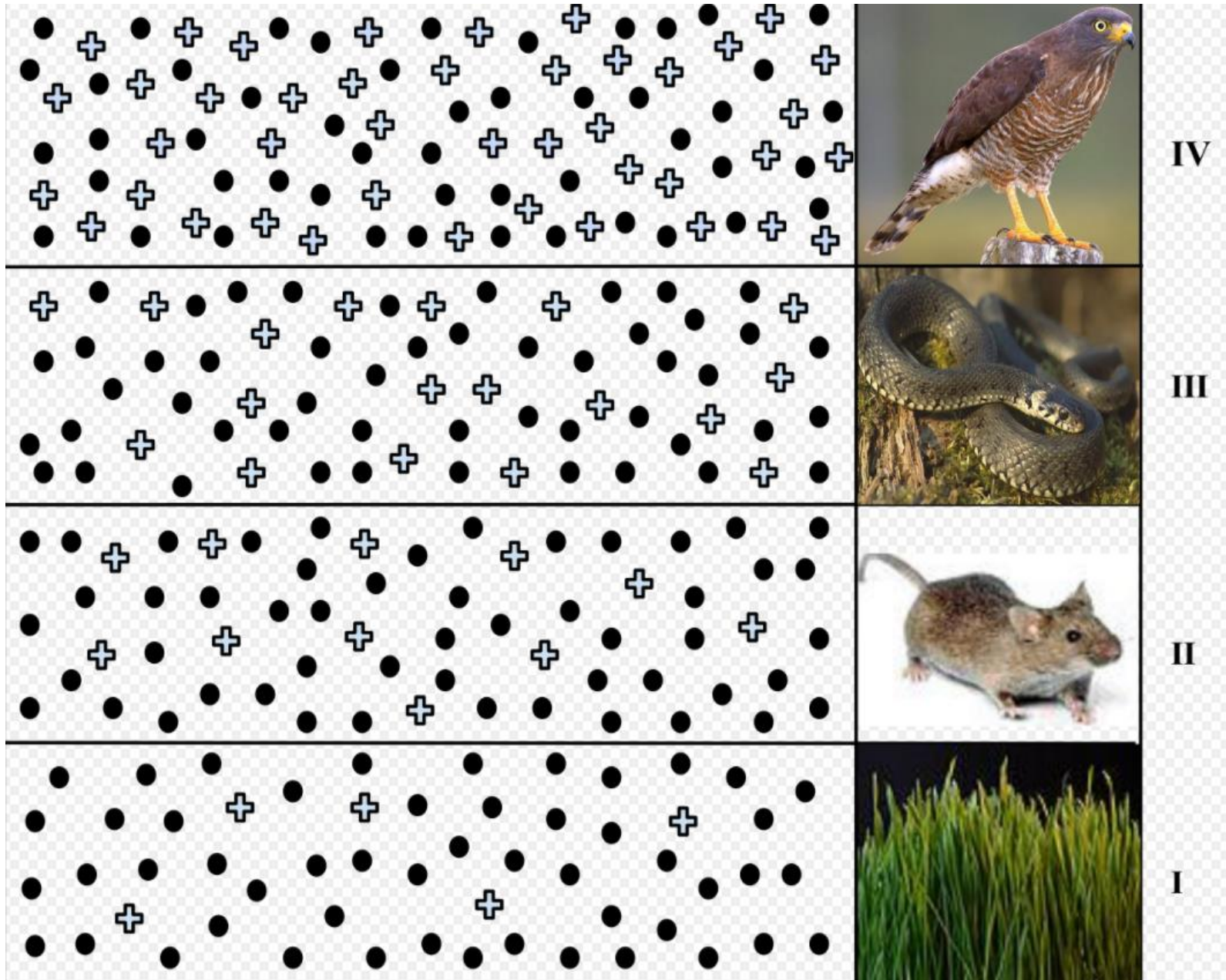
COSEWIC – **C**ommittee **o**n the **S**tatus of **E**ndangered **W**ildlife in **C**anada - The Committee on the Status of Endangered Wildlife in Canada is an independent committee of wildlife experts and scientists who recommend to the federal government which species are at risk in Canada.

SARA - ***Species at Risk Act*** is a federal law that is designed to endangered or threatened organisms and their habitats. It also manages species which are not yet threatened, but whose existence or habitat is in jeopardy (ie Special Concern)

Molt – the process of shedding or replacing feathers. There are four general types of molting in a bird's life cycle:

- Juvenile to Adult: Young birds have down feathers or subadult plumages that must be shed as the birds reach maturity and develop their adult colouration. In larger species, such as gulls and raptors, there may be several molt cycles to reach adult plumage.
- Breeding to Non-Breeding: Many birds with bright breeding plumage molt into more camouflaged colours after the breeding season ends, and non-breeding plumage may also feature more feathers for better insulation during the winter.
- Non-Breeding to Breeding: After a winter in dull plumage, fresh, brightly coloured feathers are part of many birds' preparation for attracting a mate. Studies have shown that many birds with brighter plumage have better breeding success.
- General Feather Replacement: Even if feathers do not change colour for breeding and non-breeding plumages, general replacement of worn feathers is an essential molt that birds must undergo to maintain healthy plumage.

Biomagnification



Aging Techniques



Cusp: a point or projection on a tooth

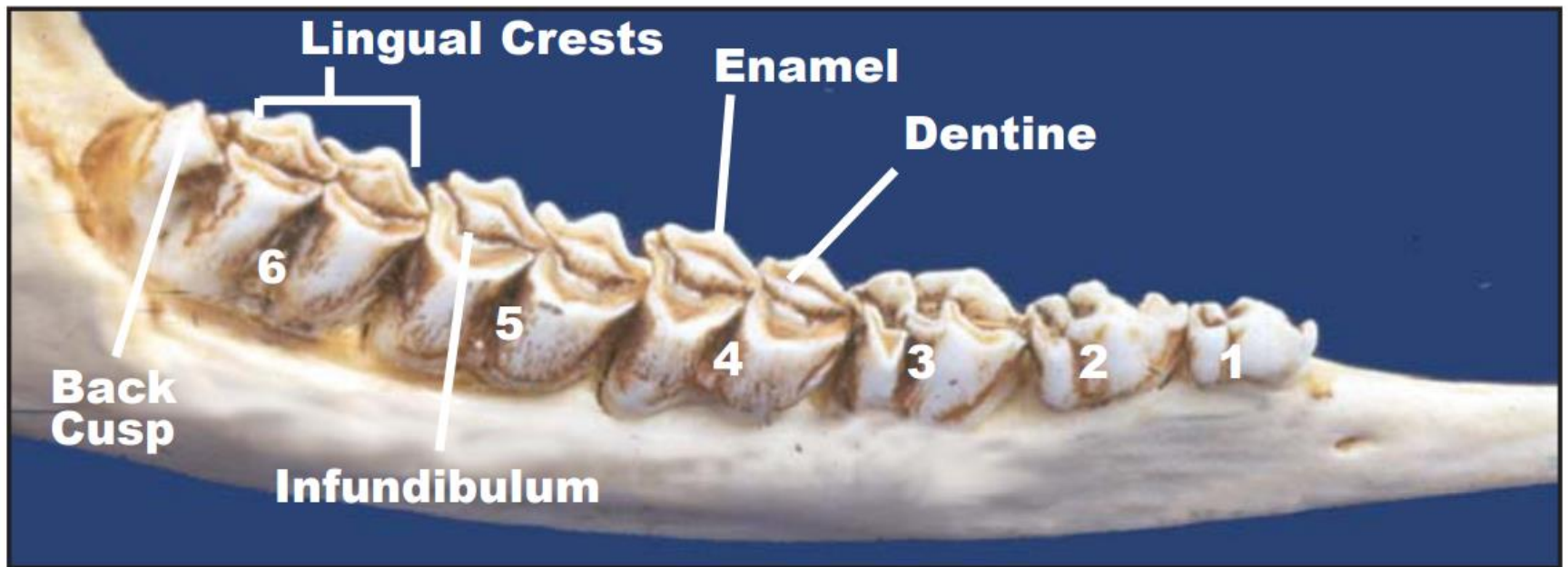
Back Cusp: very last cusp on tooth 6 on cheek-side of the jaw

Lingual Crest: tooth ridge adjacent to the tongue

Enamel: hard, white, outer coating of a tooth

Dentine: soft inner core of a tooth, dark brown color

Infundibulum: crescent-shaped depression in the central crown of a tooth between the enamel ridge or crest



Field Guide to Aging White-Tailed Deer

Indiana Department of Natural Resources

Depending on exact age, 1.5 year olds may look like any one of these three 1.5 year old examples.

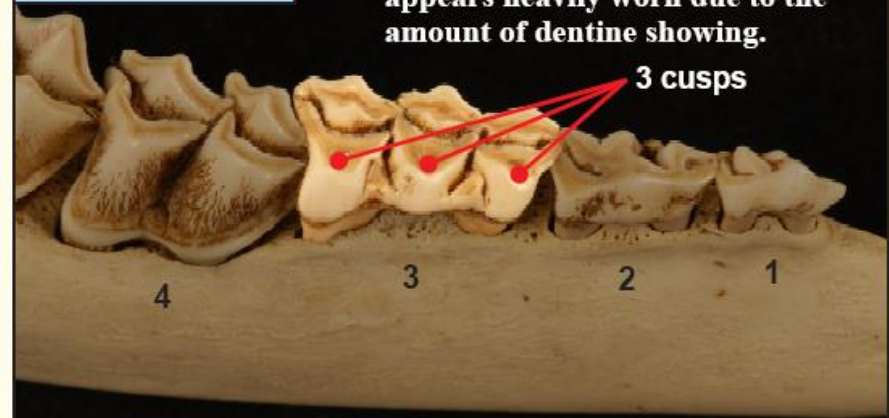
0.5 year old

Any deer with less than 6 cheek teeth is a fawn.



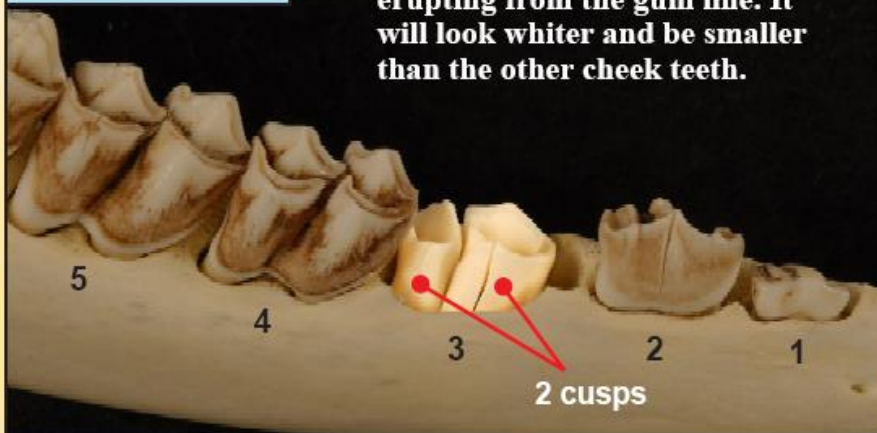
1.5 year old

This tricuspid third tooth often appears heavily worn due to the amount of dentine showing.



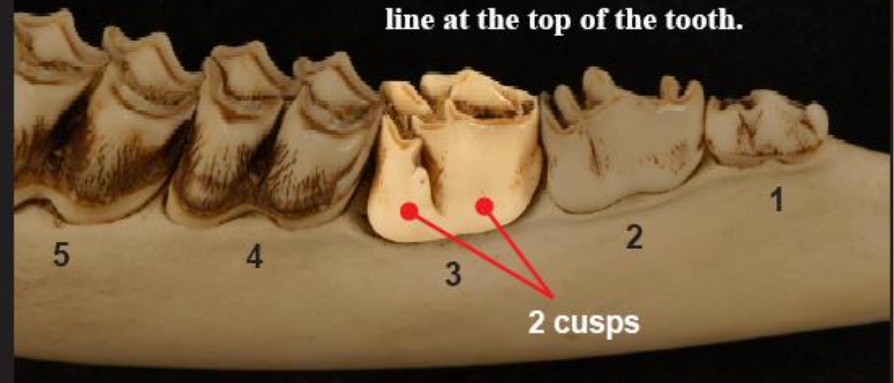
1.5 year old

A bicuspid third tooth will be erupting from the gum line. It will look whiter and be smaller than the other cheek teeth.



1.5 year old

A bicuspid third tooth is white (not covered with tartar) and will also have a much thinner dentine line at the top of the tooth.



Field Guide to Aging White-Tailed Deer

Indiana Department of Natural Resources

2.5 year old

The bicuspid third tooth is now stained, while the fourth tooth has thinner dentine than enamel, while the ridges remain sharp.



3.5 year old

Dentine is wider than enamel on the fourth tooth, but on the fifth tooth, the dentine is thinner than the enamel.



4.5 year old

Dentine is now wider than enamel on the fifth tooth, but thinner than the enamel on the last tooth.



5.5 + year old

Ridges are heavily worn on third, fourth and fifth teeth. Dentine is now wider than enamel on the last three teeth.

