

WHAT ARCHAEOLOGY TELLS US ABOUT A TRADITIONAL FOODS DIET

Hank Gobin did help breathe life back into those bones and boxes of sand. He worked with the *Puget Sound Traditional Foods and Diabetes Project*—an archaeological project that compiled research on what foods were eaten by his ancestors before European contact. What the project uncovered was remarkable. According to Robert Kopperl, a member of the archaeological team:

The most dramatic result of this study is the sheer diversity of plant and animal species that were consumed by Native communities. Within just the 31 sites that underwent specialized study, the remains of 170 species of plants and animals were identified. Contrary to the popular portrayal of a traditional diet dependent solely on the salmon harvest, archaeological evidence shows a very broad diet that took advantage of seasonal abundances of a variety of mammals, birds, fish, shellfish, and plants. These archaeological sites and studies support accounts from oral tradition of a remarkable subsistence round that provided calories and nutrients from resources in habitats whose availability changed from season to season. Such a diverse diet has direct health benefits and compensated for seasonal or unpredictable shortages of fresh food from one particular source.

Although ancestors of today's Northwest Coastal Indian communities have lived here from time immemorial, it is only from the past 4-5,000 years that some archaeological sites consistently preserve the remains of their past meals. Spread across the landscape from tidewater up to the mountains, these sites reflect the seasonal round of hunting, fishing, and gathering. There are many different kinds of archaeological sites. Each reflects the functions it served when it was actively used. Winter villages, hunting or berry-picking camps, shellfish gathering locations, and fish-processing camps are just some examples of different site types.

What is left behind at an "archaeological site" depends on what it was used for and what happened to the landscape after the site was abandoned. Sites along the tidewater shoreline often have layers of shell associated with them, called shell middens. The shells remain intact for hundreds or thousands of years because of their chemistry. Because of that chemistry, bone and antler are often preserved in shell middens as well.

The first time I did an archaeological dig in Washington was at a shell midden site on the shore of Quartermaster Harbor on Vashon Island in 1996. It was a collaborative effort by the Puyallup Tribe, the Burke Museum of Natural History and Culture, King County and McMurray Middle School. The



site was quickly eroding from an embankment on the shore, and a tremendous amount of information contained in its animal bones, shell fragments and artifacts would be lost with the next winter's storms. Volunteers from the Tribe and the Vashon community assisted in excavation, screening, and sorting the material. In just 14 days, we learned about the site and what it was used for and several hundred people learned first-hand about archaeology and stewardship of these non-renewable resources.

After the dig, I was assigned to analyze the fish bones that we collected from the shell midden. I had never looked at fish bones before, aside from what was left on my plate after a meal. I spent the rest of that summer studying how to identify tiny, fragmented fish bones that were hundreds or thousands of years old under the expert guidance of

Virginia Butler, a professor at Portland State University. I wound up looking at about 9,000 tiny fish bones that came from the four one-meter square holes we dug at the site. I assumed that most of the fish bones would be of salmon. This is the Pacific Northwest, right? And salmon is tremendously important to past and present Native communities after all. I was surprised and fascinated that, along with hundreds of salmon bone fragments, there were also the bones of about 20 other kinds of fish. Salmon were not the majority. In fact, thousands of tiny little herring bones were in the majority. Along with herring, I found the bones of flounder, perch, cod, sculpin, skate, and many other kinds of fish. Here was a rich picture of traditional fishing over the past 1,000 years or so—all in the little fish bone fragments that today fill just several small boxes. These bones helped the Puyallup Tribe and the Burke museum interpret the site as a fish and shellfish processing camp where people once took advantage of the windy spot on Quartermaster Harbor to dry herring. That experience was the beginning of a career in archaeology for me that has often focused on what animal bones from archaeological sites tell us about traditional diet.

—ROBERT KOPPERL

*See page 151 for a list
of all foods found >*

Nutrition Analysis of Wild Foods

Wild foods are nutritionally far superior to our domesticated foods, especially those that are grown on depleted soils. A comparison analysis demonstrates this clearly: Numbers indicate milligrams per 100 grams (about 1 cup)

	RDA	Spinach	Kale	Nettle	Dandelion Root	Dandelion Leaves	Burdock Root	Chickweed
Calcium	800	102	206	2900	614	252-4223	212-733	1210
Magnesium	300	96.8	37.4	860	157	+	537	529
Iron	18	2.96	1.8	41.8	96	3-29	51-147	253
Potassium	1875-5225	518	244	1750	1200	397-2757	766-1680	1840
Vitamin A	4,000 IU	8,920 IU	9,130 IU	15,700 IU	14,000 IU	21,060-58,335 IU	7,500 IU	7,229-32,500 IU
Vitamin C	60	56	102	83	38	33-652	+	375
Thiamine	1	.116	.11	.54		.23-1.7	1.1	.02
Riboflavin	1.2	.22	.2	.43	.21	.29-1.8		.14
Niacin	13	.6	1.8	5.2	3.3	.8		.51
Chromium	.05-.20			3.9	.9		2	+
Cobalt				13.2	8		12	12.1
Phosphorus	800			447	362	59-526	247-437	448
Zinc	15	.618	.78	4.7	1.3		2.2	5.2
Copper	2-3			+				+
Manganese	2.5-5	96.8	37.4	860	157	+	537	529
Selenium	.05-.2			2.2			1.4	15.3
Sodium	1100-3300	98	47	4.9	113	79	127-152	
Protein	3.6%	5%	10.2%	16.5%	19-32%	10.6-12%	15-24%	18-26%

Compiled by Rose Barlow Based on USDA research "The Composition of Foods"; "Nutritional Herbology"

Archaeological Database

Here is a list of the foods that archaeologists from the University of Washington's Burke Museum identified as traditional foods utilized by Northwest Coastal tribes before European contact.

Species- Latin Common name

FISH		
Elasmobranchii		sharks and rays
	<i>Squalus acanthias</i>	spiny dogfish
	<i>Raja</i> sp.	skates
Chimaeriformes		chimaeras
	<i>Hydrolagus colliie</i>	spotted ratfish
Acipenseriformes		sturgeons
	<i>Acipenser</i> sp.	sturgeon
Clupeiformes		herrings
	Clupeidae	herring
	<i>Clupea harengus pallasi</i>	Pacific herring
	<i>Engraulis mordax</i>	northern anchovy
Salmoniformes		salmon and trout
	Salmonidae	salmon/ trout
	<i>Salmo salar</i>	Atlantic Salmon
	<i>Prosopium williamsoni</i>	mountain whitefish
	<i>Oncorhynchus</i> sp.	salmon
	<i>O. kisutch/O. tshawytscha</i>	coho or chinook
	<i>O. kisutch/O. nerka</i>	coho or sockeye
Osmeriformes		smelts
	Osmeridae	smelt
Cypriniformes		minnows and suckers
	Cyprinidae	minnows
	<i>Ptychocheilus oregonensis</i>	northern pike minnow
	<i>Mylocheilus caurinus</i>	peamouth
	Catostomidae	suckers
	<i>Catostomus</i> sp.	suckers
	<i>Catostomus macrocheilus</i>	largescale sucker

Species- Latin Common name

Gadiformes		
	Gadidae	codfishes
	<i>Gadus macrocephalus</i>	Pacific cod
	<i>Microgadus proximus</i>	Pacific tomcod
	<i>Theragra chalcogramma</i>	walleye pollock
	<i>Merluccius productus</i>	Pacific hake
Batrachoidiformes		
	<i>Porichthys notatus</i>	plainfin midshipman
Scorpaeniformes		
	Scorpaenidae	scorpionfishes and rockfishes
	<i>Sebastes</i> sp.	rockfish
	<i>Anoplopoma fimbria</i>	sablefish
	<i>Hexagrammos</i> sp.	greenling
	<i>Ophiodon elongatus</i>	lingcod
	Cottidae	sculpins
	<i>Enophrys bison</i>	buffalo sculpin
	<i>Leptocottus armatus</i>	Pacific staghorn sculpin
	<i>Chitonotus pugetensis</i>	roughback sculpin
	<i>Myoxocephalus polyacanthocephalus</i>	great sculpin
	<i>Scorpaenichthys marmoratus</i>	cabezon
	<i>Hemilepidotus hemilepidotus</i>	red Irish lord
	Agonidae	poachers
Perciformes		
	Embiotocidae	surfperch
	<i>Embiotoca lateralis</i>	striped seaperch
	<i>Taeniotoca lateralis</i>	blue seaperch
	<i>Rhacochilus vacca</i>	pile perch
	<i>Cymatogaster aggregata</i>	shiner perch
	<i>Anarrhichthys ocellatus</i>	wolf eel

	Species- Latin	Common name
Pleuronectiformes		flatfish/ flounders
	Paralichthyidae	lefteye flounder
	<i>Citharichthys sordidus</i>	Pacific sanddab
	cf. <i>Citharichthys sordidus</i>	Pacific sanddab
	Pleuronectidae	righteye flounder
	<i>Lepidopsetta bilineata</i>	rock sole
	<i>Microstomus pacificus</i>	Dover sole
	<i>Parophrys vetulus</i>	English sole
	<i>Platichthys</i>	flounder
	<i>Platichthys stellatus</i>	starry flounder
	cf. <i>Platichthys stellatus</i>	starry flounder
	<i>Pleuronichthys decurrens</i>	curlfin sole
	<i>Pleuronichthys coenosus</i>	C-O Sole
	<i>Hippoglossus stenolepis</i>	Pacific halibut
SHELLS		
ANNELIDA		
Serpulidae		
	<i>Serpula vermicularis</i>	serpulid worm
MOLLUSCA		
Bivalvia		unidentified bivalves
Mytilidae		mussel
	<i>Mytilus</i> sp.	mussel
	<i>Mytilus californianus</i>	California mussel
	<i>Mytilus edulis</i>	blue mussel
Ostreidae		oyster
	<i>Crassostrea gigas</i>	Japanese oyster (I)
	<i>Crassostrea virginica</i>	Atlantic oyster (I)
	<i>Ostrea lurida</i>	Olympia oyster
Pectinidae		
	<i>Patinopecten caurinus</i>	giant pacific scallop
	<i>Hinnites multirugosus</i>	rock scallop
	<i>Chlamys rubida</i>	Hind's or pink scallop

	Species- Latin	Common name
Anomiidae		
	<i>Pododesmus macrochisma</i>	Alaska jingle
Cardiidae		cockles
	<i>Clinocardium</i> sp.	cockles
	<i>Clinocardium nuttalli</i>	basket cockle
Veneridae		Venus clams
	<i>Protothaca staminea</i>	native littleneck clam
	<i>Tapes japonica</i>	Japanese littleneck clam (I)
	<i>Saxidomus</i> sp.	butterclam
	<i>Saxidomus gigantea</i>	Washington butterclam
	<i>Saxidomus nutalli</i>	California butterclam
Mactridae		
	<i>Tresus</i> spp.	horse and gaper clams
	<i>Tresus</i> (= <i>Schizothaerus</i>) <i>capax</i>	horse clam
Tellinidae		
	<i>Macoma</i> sp.	
	<i>Macoma nasuta</i>	bent-nose clam
	<i>Macoma inconspicua</i>	inconspicuous clam
	<i>Macoma secta</i>	sand clam
Myidae		
	<i>Mya arenaria</i>	softshell clam
Hiatellidae		
	<i>Panope generosa</i>	geoduck
Glycymerididae		
	<i>Glycymeris subobsoleta</i>	Pacific Coast glycymeris
Unionidae		
	<i>Unio margaritifera</i>	freshwater clam
Margaritiferidae		
	<i>Margaritifera margaritifera</i>	freshwater mussel
Gastropoda		unidentified gastropods
Trochidae		
	<i>Margarites</i> sp.	snails
Acmaeidae		limpets
	<i>Acmea</i> spp.	limpets

Species- Latin	Common name
MESOGASTROPODA	snails
Littorinidae	periwinkles
<i>Littorina</i> sp.	periwinkles
<i>Littorina scutulata</i>	checkered periwinkle
<i>Littorina sitkana</i>	Sitka periwinkle
Vitrinellidae	
<i>Episcynia</i> spp.	vitrinella
Calypttraeidae	slipper shells
<i>Crepidula adunca</i>	hooked slipper-shell
<i>Crepidula lingulata</i>	wrinkled slipper shell
Naticidae	
<i>Polinices lewisii</i>	moon snail
Muricidae/ Thaididae	
<i>Ocenebra</i> sp.	oyster drill
<i>Nucella</i> sp. (= <i>Thais</i> sp.)	rock snail/ dog whelk
<i>Nucella</i> (= <i>Thais</i>) <i>canaliculata</i>	channeled dogwinkle; purple whelk
<i>Nucella</i> (= <i>Thais</i>) <i>emarginata</i>	emarginate dogwinkle; short-spined purple whelk
<i>Nucella</i> (= <i>Thais</i>) <i>lamellosa</i>	frilled dogwinkle; wrinkled purple whelk
Buccinidae	
<i>Searlesia dira</i>	dire whelk
Columbellidae	
<i>Amphissa</i> sp.	amphissa
Polyplacophora	chitons
<i>Cryptochiton stelleri</i>	gumboot chiton
ARTHROPODA	
<i>Balanus</i> spp.	acorn barnacles
<i>Balanus crenatus</i>	barnacle
<i>Semibalanus cariosus</i>	thatched barnacle
<i>Cancer</i> spp.	crabs
DECAPODA	
Decapoda	shrimp

Species- Latin	Common name
ECHINODERMATA	
<i>Dendraster</i> spp.	sand dollars
<i>Dendraster excentricus</i>	sand dollar
<i>Strongylocentrotus</i> spp.	sea urchins
MAMMALS	
Insectivora	
<i>Scapanus orarius</i>	coast mole
Leporidae	hares and rabbits
<i>Lepus</i> cf. <i>americana</i>	snowshoe hare
<i>Sylvilagus</i> cf. <i>floridanus</i>	Eastern cottontail (I)
Rodentia	unidentified rodents
Aplodontiidae	mountain beavers
<i>Aplodontia rufa</i>	mountain beaver
Sciuridae	squirrels
<i>Tamias townsendii</i>	Townsend chipmunk
<i>Sciurus</i> or <i>Tamiasciurus</i>	squirrel
Geomyidae	pocket gophers
<i>Thomomys</i> sp.	pocket gophers
Castoridae	beaver
<i>Castor canadensis</i>	American beaver
Muridae	rats and mice
<i>Rattus</i> sp.	rat (I)
Sigmodontinae	New World rats and mice
<i>Peromyscus</i> sp.	deer mice
Arvicolinae	mice, voles, muskrat
<i>Clethrionomys gapperi</i>	Southern red-backed vole
<i>Microtus</i> sp.	meadow vole
<i>Ondatra zibethica</i>	muskrat
Cetacea	whales, porpoises, dolphins
Cetacea	whale
delphinidae	dolphin
<i>Phocoena</i> or <i>Phocoenoides</i>	porpoise
<i>Phocoenoides dalli</i>	Dall porpoise
Carnivora	unidentified carnivores

Species- Latin	Common name
Canidae	foxes, wolves, coyotes, dogs
<i>Canis sp.</i>	wolf, coyote, dog
<i>Canis lupus</i>	Wolf
<i>Canis cf. familiaris</i>	domestic dog
<i>cf. Vulpes vulpes</i>	fox
Ursidae	bears
<i>Ursus sp.</i>	bear
<i>Ursus americanus</i>	black bear
Procyonidae	racoons
<i>Procyon lotor</i>	raccoon
Mustelidae	weasels, otters
<i>Martes pennanti</i>	fisher
<i>Mustela sp.</i>	weasel or mink
<i>Mustela frenata</i>	weasel
<i>Mephitis mephitis</i>	striped skunk
<i>Lontra canadensis</i>	northern river otter
Felidae	Cats
<i>Felis conдор</i>	cougar
<i>Felis cf. canadensis</i>	Canadian lynx
<i>Felis domesticus</i>	domestic cat (1)
<i>Lynx rufus</i>	bobcat
<i>Lynx sp.</i>	bocat or lynx
Otariidae	eared seals and sea lions
<i>Eumetopias jubata</i>	Steller sea lion
Phocidae	hair seals
<i>Phoca vitulina</i>	harbor seal
Perissodactyla	horses, burrows, zebras
<i>Equus caballus</i>	domestic horse (1)
Artiodactyla	even-toed hoofed mammals
<i>Sus scrofa</i>	domestic pig (1)
Cervidae	elk, moose, caribou, deer
<i>Cervus elaphus</i>	elk/ wapiti
<i>Odocoileus sp.</i>	deer
Bovidae	cattle, sheep, goats

Species- Latin	Common name
<i>Bos taurus</i>	domestic cattle (1)
<i>Ovis aries</i>	domestic sheep (1)
Reptile	
Emydidae	
<i>Clemmys marmorata</i>	western pond turtle
BIRDS	
Anseriformes, waterfowl	
Anatidae	swans, geese, ducks
Anserini	goose
<i>Branta canadensis</i>	Canada Goose
Anatinae	duck
<i>Anas sp.</i>	dabbling duck
<i>Anas platyrhynchos</i>	Mallard
<i>Anas acuta</i>	Northern Pintail
<i>Anas americana</i>	American Wigeon
<i>cf. Anas americana</i>	American Wigeon (=Baldplate)
<i>Aythya sp.</i>	diving duck
<i>Aythya valisineria</i>	Canvasback
<i>Aythya affinis</i>	Lesser Scaup
<i>Melanitta sp.</i>	scoter
<i>Melanitta perscillata</i>	Surf Scoter
<i>Melanitta nigra</i>	Black Scoter
<i>Melanitta fusca</i>	White-winged Scoter
<i>Bucephala albeola</i>	Bufflehead
<i>Bucephala islandica</i>	Barrow's Goldeneye
<i>Bucephala clangula</i>	Common Goldeneye
<i>Mergus sp.</i>	merganser
<i>Mergus merganser</i>	Common Merganser
<i>Mergus serrator</i>	Red-breasted Merganser
<i>Oxyura jamaicensis</i>	Ruddy Duck

Species- Latin	Common name
Galliformes	Grouse, turkeys, quail
<i>Bonasa umbellus</i>	Ruffed Grouse
<i>Dendragapus obscurus</i>	Blue Grouse
<i>Gallus gallus</i>	Domestic Chicken (I)
<i>Meleagris gallopavo</i>	Turkey (I)
<i>Callipepla californica</i>	California Quail (I?)
Gaviiformes	loons
<i>Gavia immer</i>	Common Loon
<i>Gavia stellata</i>	Red-throated Loon
<i>Gavia cf. adamsii</i>	Yellow-billed Loon
Podicipediformes	grebes
<i>Podilymbus podiceps</i>	Pie-billed Grebe
<i>Podiceps</i> sp.	grebe
<i>Podiceps auritus</i>	Horned Grebe
<i>Podiceps nigricollis</i>	Eared Grebe
<i>Aechmophorus occidentalis</i>	Western Grebe
Procellariiformes	albatross, shearwaters
Pelecaniformes	pelicans, cormorants
<i>Phalacrocorax</i> sp.	cormorant
Ciconiiformes	herons, vultures
<i>Ardea cinerea</i>	Great Blue Heron
Falconiformes	eagles, hawks
Accipitridae	hawks, kits, harriers, eagles
<i>Haliaeetus leucocephalus</i>	Bald Eagle
Gruiformes	rails, coots
<i>Fulica americana</i>	American Coot
Charadriiformes	gulls, alcids, sandpipers
<i>Larus</i> sp.	gulls
Alcidae	alcids
<i>Uria aalge</i>	Common Murre
<i>Brachyramphus marmoratus</i>	Marbled Murrelet
<i>Fratercula cirrhata</i>	Tufted Puffin
Columbiformes	pigeons, doves

Species- Latin	Common name
Strigiformes	owls
Coraciiformes	kingfishers
<i>Ceryle alcyon</i>	Belted Kingfisher
Piciformes	woodpeckers
<i>Dryocopus pileatus</i>	Pileated Woodpecker
Passeriformes	perching or song birds
<i>Corvus brachyrhynchos</i>	American Crow
BOTANICAL	
Nuts	
<i>Corylus cornuta</i>	hazelnut
<i>Quercus garryana</i>	acorn
Fruits/ Berries	
Plant edible tissue, fruity	berries
Plant edible tissue, fruity (Ericaceae)	likely salal or blueberry
<i>Gaultheria shallon</i>	salal
<i>Vaccinium</i> sp.	blueberry or huckleberry
<i>Arctostaphylos uva-ursi</i>	kinnikinnick (bearberry)
<i>Sambucus racemosa</i>	elderberry
<i>Osmaronia cerasiformis</i>	Indian plum
<i>Rosa</i> sp.	wild rose
cf. <i>Rosa</i> sp.	wild rose
<i>Rubus</i> sp.	blackberry or raspberry
<i>Malus fusca</i>	crabapple
<i>Prunus</i> sp.	cherry or plum
<i>Prunus cf. virginiana</i>	chokecherry
<i>Prunus emarginata</i>	bitter cherry
<i>Prunus cf. domestica</i>	domesticated/ Italian Plum (I)
<i>Cornus</i> sp.	dogwood
<i>Cornus stolonifera</i>	dogwood
<i>Sorbus sitchensis</i>	mountain ash
<i>Fragaria cf. vesca</i>	wild strawberry
<i>vitis</i> sp.	grape (I)

Species- Latin

Common name

Roots	
Plant edible tissue, starchy	likely wapato (<i>Sagittaria latifolia</i>)
<i>Allium</i> sp.	wild onion
<i>Lomatium</i> sp.	biscuit root/ wild carrot
<i>Camas</i> and/or <i>Lilium</i>	lily family roots
<i>Scirpus</i> sp.	bulrush/ tule
Other (Edible)	
Plant edible tissue, other	"glassy" (hardened sugary sap??)
Legumes	legume
<i>Trifolium</i> sp.	clover
<i>Chenopodium</i> sp.	Goosefoot/ Lamb's Quarters
Cruciferae (=Brassicaceae)	mustard
<i>Plantago</i> sp.	plantain
<i>Polygonum</i> cf. <i>erectum</i> (=P. <i>aviculare</i>)	knotweed
<i>Vicia</i> sp.	vetch
Other (Not edible??)	
<i>Stellaria</i> cf. <i>graminea</i>	chickweed
<i>Galium</i> sp.	bedstraw
<i>Suaeda maritima</i>	Seablite
<i>Solanum</i>	nightshade
<i>Celtis</i> sp.	hackberry

References and Photo Credits

Chapter 1

Traditional Foods of Puget Sound Project community roundtable discussions. (2009)

April 8th, Northwest Indian College Campus, Lummi Reservation, Bellingham, WA.

April 21st, Squaxin Island Museum, Kamilche, WA.

Boyd, R. (1990). Demographic History, 1774-1874.

In W. Suttles (Ed.) *Handbook of North American Indians* (Vol 7). Smithsonian Institute.

Jennings, K. (Director). (2006). *Teachings of the Tree People*. [Motion Picture]. Islandwood Productions.

Puget Sound Traditional Food Project. (n.d.) Retrieved December 10, 2009 from <http://faculty.washington.edu/plape/tradfoods/tradfood.htm>

Turner, N. (2005). *The Earth's Blanket*. University of Washington Press.

Chapter 2

Traditional Foods of Puget Sound Project community roundtable discussions. (2009)

April 8th, Northwest Indian College Campus, Lummi Reservation, Bellingham, WA.

April 21st, Squaxin Island Museum, Kamilche, WA.

American Indian Issues, An Extracurricular Guide for Educators. (n.d.) Retrieved January 6, 2007, from <http://sorrel.humboldt.edu/~go1/kellogg/NativeRelationship.html>

Burgeson, T., Ash, M., Hurtado, D. (1988). *Indians of Washington State*. Washington: The Office of Superintendent of Public Instruction

Boyd, R. (1990). Demographic History, 1774-1874.

In W. Suttles (Ed.) *Handbook of North American Indians* (Vol 7). Smithsonian Institute.

Keohane, S. (2005). *The Reservation Boarding School System in the United States: 1870-1928*.

Retrieved December 30, 2006 from

<http://www.twofrog.com/rezsch.html>.

Revitalizing Northwest Coastal Indian Food Culture



by ELISE KROHN & VALERIE SEGREST

Illustrations by Roger Fernandes

FIRST EDITION 2010