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THE TREE-RING BULLETIN

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SPRUCE BORINGS FROM THE LOWER YUKON RIVER, ALASKA

WENDELL OSWALT

Spruce borings collected during the summer of 1948 along the Yukon River from Nulato to tree line below Marshall make up the first series of samples taken from the lower Yukon River.¹ The records in these speci-

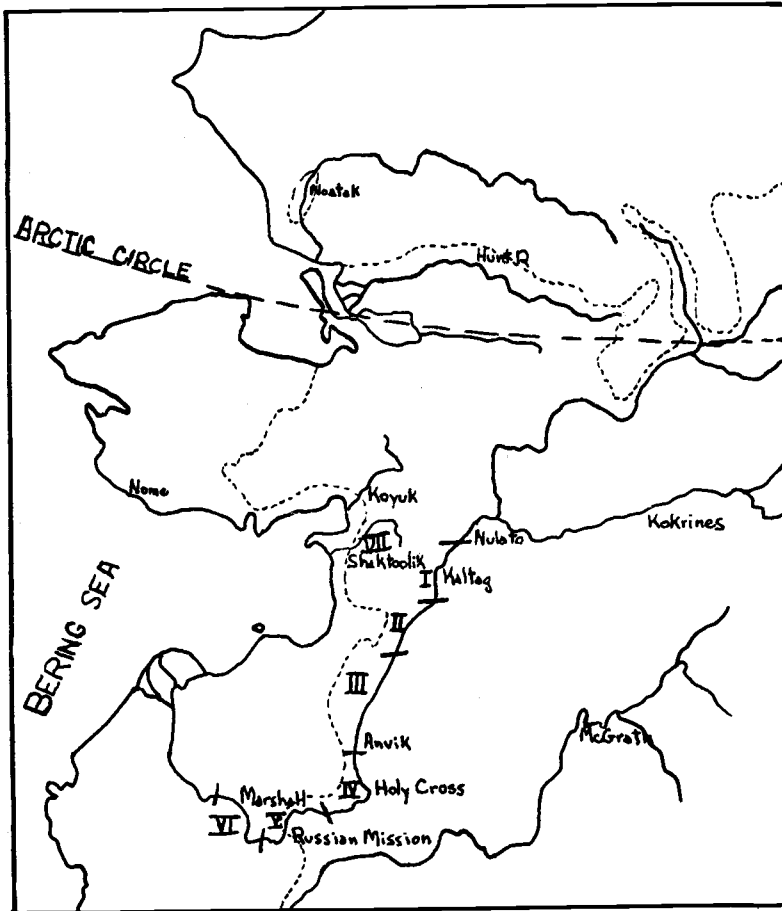


Fig. 1. Map of the lower Yukon and adjoining areas. Roman numerals locate groups; the tree limit is given by the broken line.

¹The trip was made in conjunction with a Bering Sea coast archaeological survey under the direction of Mr. J. L. Giddings, Jr., of the University of Alaska, and financed in part by the Arctic Institute of North America. The writer is indebted to Mr. Giddings for his advice on this report and to Mr. W. Arron for his aid in collecting the specimens.

mens have been analyzed to determine their position within the northern Alaskan chronologies and to serve as material for future archaeological and climatic studies.

Giddings' work has shown that there are two distinct and consistent chronologies in Northern Alaska. One has been designated "Series A Dating" and the other "Series B Dating." The former ring sequence is best defined at altitude tree line in the interior and at latitude tree line extending toward the Arctic Ocean and Bering Sea. The altitude tree line and latitude tree line records are essentially the same. The Series B sequence appears to be restricted to the Yukon Flats region of central Alaska; a zone of transition exists between the two series.² The lower Yukon wood is predominantly Series A Dating; however, the Nulato group is modified somewhat by transitional characteristics towards Series B.

The river bottom collection under consideration is important because the area is at latitude timberline and the greater part of the region follows the 55°F. July isotherm, which has been shown to be one of the regions of superior crossdating.³

The borings were taken on cutting river banks, from which the greater part of the drift in archaeological sites on the Bering Sea coast is thought to be originally derived. The boring stations are generally much alike. The stands are moderately thick, with little underbrush, located often in an area low enough to be flooded during the spring breakup of river ice. Whenever possible, trees with long, sensitive records without apparent age curve were selected. When later examined, however, many of these ring records proved to be too complacent or erratic to be of value.

The lower Yukon series comprises over 200 borings from fourteen stations spaced at approximate 20-mile intervals. The records from the separate stations are combined in the map, Figure 1, according to location, to form six general groups. A seventh group, from the Shaktoolik River, obtained in 1949, is also included, since it falls within the region under consideration.

Six trees from each group were measured and then averaged to form the growth tables. The measures were weighted where the rings were obviously erratic; however, none of the material was standardized. The growth curves are plotted in Figure 2.

The average age of all groups is 187 years; the oldest group averaged 237, and the youngest, 160. These averages are not extremely long, perhaps because river boat crews have been cutting over the stands for cordwood during the last fifty years.

The 1783 "faint latewood" ring, that appears in the majority of timberline specimens,⁴ is present in twenty of twenty-three possible pieces.

The following is a list of the groups shown in Figure 2, cross compared with each other and with Giddings' Northern Alaskan samples.

²J. L. Giddings, Jr., *Univ. of Ariz. Bull.* 12: *Univ. of Alaska Publ.* 4, p. 29, pp. 62-3, 1941.

³*Idem.*, *Tree-Ring Bull.* 9: 32, 1943.

⁴Giddings, *Op. cit.*, 1941, p. 72; W. Oswald, *Tree-Ring Bull.* 16: 8, 1949.

<i>Group</i>	<i>Range, Years</i>	<i>Dating Series</i>	<i>Best Cross-Dating</i>	<i>Remarks</i>
I. Nulato	1597-1947	Series A Transitional into Series B	Giddings' Nulato, Kokrines	20-70 miles below Giddings' Nulato
II. Kaltag	1710-1947	Series A	Nulato, McGrath	
III. Anvik	1733-1947	Series A	Kaltag, McGrath, Koyuk	
IV. Holy Cross	1622-1947	Series A	Anvik Kaltag, McGrath	Rings pinch down from 1900-1913
V. Russian Mission	1737-1947	Series A	Holy Cross, McGrath	Most complacent group
VI. Marshall	1703-1947	Series A	Adjoining areas, McGrath	Extreme peak around 1866 diagnostic of group
VII. Shaktoolik	1700-1949	Series A	Lower Yukon, Koyuk, Noatak	Eight miles up Shaktoolik River

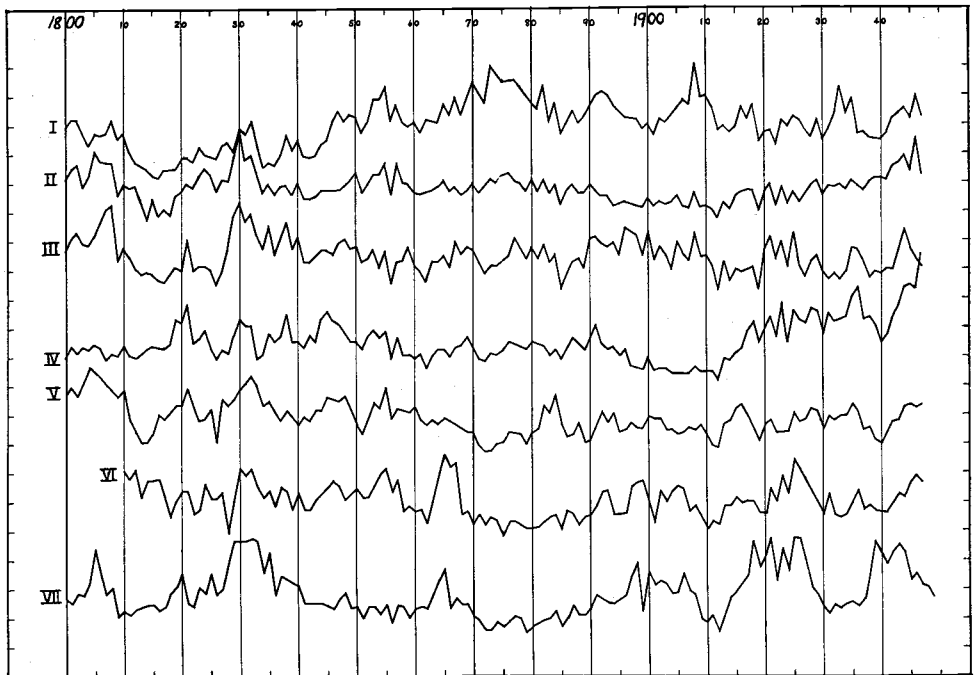


Fig. 2. Group mean growth curves, lower Yukon River. Each group represents six trees.

Scale, ninetieths of an inch.

MEAN GROWTH, UNSTANDARDIZED, OF LOWER YUKON GROUPS.
Six Trees in Each Group.

I. NULATO

	0	1	2	3	4	5	6	7	8	9
1800	42	45	45	38	34	39	38	39	45	37
1810	39	31	27	25	24	21	20	23	23	23
1820	28	28	27	33	30	29	28	34	35	31
1830	41	38	44	34	24	26	25	30	38	32
1840	36	29	28	29	34	36	44	48	44	47
1850	46	39	43	53	53	59	44	51	43	42
1860	43	39	45	44	43	52	47	54	47	54
1870	61	56	52	68	64	61	62	62	59	55
1880	52	49	59	43	52	38	44	48	43	46
1890	51	55	57	55	51	48	46	45	45	41
1900	42	38	45	43	47	49	53	51	68	54
1910	55	50	40	42	39	42	50	45	51	35
1920	39	40	33	44	42	46	44	40	37	44
1930	36	40	46	58	47	53	38	39	37	36
1940	36	38	45	47	49	45	54	46	....	....

II. KALTAG

	0	1	2	3	4	5	6	7	8	9
1800	37	42	43	33	38	49	45	44	44	30
1810	35	33	34	28	19	28	21	24	23	30
1820	32	35	33	38	42	38	33	37	36	48
1830	58	45	47	39	31	35	30	33	34	30
1840	35	28	28	29	32	32	32	32	34	36
1850	40	31	34	38	38	43	30	44	35	34
1860	31	30	31	32	33	36	32	33	30	32
1870	35	31	33	37	35	38	39	36	35	32
1880	37	32	37	31	34	26	32	34	31	31
1890	34	32	29	29	25	26	27	26	25	24
1900	28	25	27	26	27	29	25	24	31	24
1910	25	23	20	27	24	29	31	32	32	23
1920	32	34	25	33	26	31	27	30	34	36
1930	30	33	33	34	32	36	33	32	35	37
1940	37	36	42	43	47	40	54	38	....	....

III. ANVIK

	0	1	2	3	4	5	6	7	8	9
1800	43	48	51	47	46	50	56	63	63	39
1810	45	41	36	33	34	33	31	30	33	37
1820	35	48	35	37	37	35	28	34	45	58
1830	64	56	59	51	44	54	42	49	56	44
1840	49	38	38	41	43	43	42	47	48	44
1850	45	38	40	43	36	43	29	38	39	45
1860	38	34	30	38	38	41	36	47	42	45
1870	43	38	33	37	37	39	41	48	44	40
1880	45	40	46	38	42	27	33	38	40	36
1890	48	49	47	45	45	41	53	52	50	41
1900	52	39	45	41	35	47	42	39	51	41
1910	41	37	26	38	30	35	34	35	36	27
1920	43	48	39	47	36	51	37	32	38	41
1930	34	31	33	31	34	44	43	38	32	34
1940	33	35	35	43	52	44	40	37	....	....

IV. HOLY CROSS

	0	1	2	3	4	5	6	7	8	9
1800	25	30	27	30	28	31	29	24	27	26
1810	31	26	25	27	29	30	29	29	31	42
1820	40	48	31	33	37	29	24	28	27	34
1830	42	38	38	24	26	35	32	34	43	32
1840	32	29	34	32	42	45	41	39	36	32
1850	32	28	34	37	33	36	24	33	26	26
1860	24	26	20	25	28	28	25	29	30	33
1870	29	24	23	27	26	28	32	31	30	28
1880	32	31	30	26	28	24	29	33	31	28
1890	33	39	31	28	29	26	28	21	20	20
1900	25	19	20	20	16	16	16	16	21	18
1910	18	19	15	24	23	27	28	36	39	31
1920	37	42	33	48	31	45	41	39	46	44
1930	34	43	40	41	42	51	54	41	42	38
1940	31	34	42	47	55	56	54	69	....	....

	V. RUSSIAN MISSION									
	0	1	2	3	4	5	6	7	8	9
1800	46	49	46	51	58	56	54	51	48	45
1810	48	36	30	26	26	29	38	36	38	42
1820	42	49	41	35	36	40	26	44	42	44
1830	48	51	54	50	42	43	38	35	39	37
1840	33	37	35	39	39	45	44	43	46	40
1850	33	29	36	43	40	49	36	40	39	38
1860	41	36	33	35	33	36	35	33	32	30
1870	30	24	22	22	25	26	30	30	29	25
1880	30	32	42	38	47	34	28	29	34	26
1890	27	32	39	34	38	30	31	34	32	32
1900	37	36	36	31	31	29	30	32	31	33
1910	29	24	23	33	34	40	42	37	32	26
1920	33	35	30	30	30	38	34	35	40	39
1930	31	37	35	37	37	42	38	31	32	27
1940	25	30	34	35	41	42	41	42	....	....
	VI. MARSHALL									
	0	1	2	3	4	5	6	7	8	9
1810	48	45	49	37	44	44	45	38	28	36
1820	40	40	30	32	43	37	37	39	22	37
1830	49	47	49	42	37	40	33	42	40	33
1840	39	32	32	36	38	41	44	42	36	38
1850	41	37	37	42	47	49	39	44	31	33
1860	31	32	26	35	46	54	50	52	29	31
1870	25	29	25	28	27	20	27	27	25	23
1880	23	24	27	28	29	23	31	30	25	28
1890	29	33	39	40	29	29	30	42	43	44
1900	35	26	40	35	39	42	41	31	33	29
1910	23	27	25	33	33	37	34	35	35	30
1920	30	41	35	46	38	53	49	45	40	35
1930	29	38	29	28	29	34	40	31	33	31
1940	30	30	34	38	37	43	46	43	....	....
	VII. SHAKTOOLIK									
	0	1	2	3	4	5	6	7	8	9
1800	29	27	31	30	35	50	38	31	33	21
1810	23	22	24	25	26	26	23	25	31	34
1820	39	27	25	33	31	39	31	33	45	53
1830	53	53	54	53	40	48	30	38	37	35
1840	34	27	27	27	27	26	24	28	31	24
1850	25	20	25	25	22	26	16	26	25	20
1860	24	25	24	30	37	41	24	28	26	26
1870	21	19	15	15	18	17	19	21	20	14
1880	17	18	19	20	23	17	20	26	22	22
1890	24	30	28	27	27	28	30	38	44	23
1900	40	34	36	35	31	31	39	32	30	20
1910	18	21	13	21	29	31	35	38	53	42
1920	47	54	36	50	40	54	54	45	33	30
1930	25	22	26	24	26	27	25	28	39	53
1940	48	43	48	52	48	37	39	34	33	29

Summary. The diagnostic rings for all groups are: 1783 (faint latewood), 1809, 1816, 1822, 1826, 1836, 1851, 1856, 1866, 1879, 1885, 1899, 1912, 1922, and 1930.

A curve composed of Giddings' Hunt River, Nulato, and McGrath groups, chosen because they show river bottom Series A Dating and represent widely separated western stations, agrees in detail and trend with the lower Yukon and Shaktoolik groups.

Giddings noted that long range crossdating is best in a north-south direction but that it constantly changes in an east-west line.³

This holds true for these samples in the three north-south groups, Nulato, Kaltag, and Anvik; the latter two, particularly, agree closely in ring record. Below Anvik, where the river swings to the west, the record changes considerably, bearing out Giddings' observation.

Although there are local variations at stations along the lower Yukon, the ring records are essentially those of Series A Dating.