

NPAFC  
Doc. 1843  
Rev.

## **Releases of Otolith Marked Salmon from Canada in 2018**

by

Jeff Till

Fisheries and Oceans Canada  
South Coast Stock Assessment  
Nanaimo, B.C., Canada V9T 1K3

Submitted to the

**NORTH PACIFIC ANADROMOUS FISH COMMISSION**

by

Canada

April 2019

**THIS PAPER MAY BE CITED IN THE FOLLOWING MANNER:**

Till, J. 2019. Releases of otolith marked salmon from Canada in 2018. NPAFC Doc. 1843. 4 pp. Fisheries and Oceans Canada, South Coast Stock Assessment (Available at <https://npafc.org>).

**Keywords:** otolith, thermal mark, salmon, Canada, 2018 releases

## **Abstract**

Thermal mass marking of salmon has, for a number of years, played an important role in stock, hatchery, and both fisheries and research management within Canada. This document follows up on previous documents outlining Canada's thermal marking proposals including those for brood year 2017 (Till 2018). It summarizes all thermally marked salmonids released from BC hatcheries in 2018 by species, hatch mark, facility, release location and release number.

## **Summary of Canadian Thermal Marking Programs**

Thermal marking in British Columbia is one tool that is helping us to answer a number of questions regarding the spatial and temporal migration, and magnitude of, hatchery raised salmonids and infer information about some natural (wild) populations.

Thermal marks are being used to assess hatchery contributions to escapement, to infer the success and contribution of natural (wild) spawners, and to assess hatchery straying. On the West Coast of Vancouver Island (WCVI) thermal marks are also being used along with CWT's and DNA to reconstruct Chinook terminal returns. Results such as migration timing and distribution patterns of different stocks will inform fishery management, improve forecasting terminal returns, and allow comparisons of different release strategies over time, including timing and location of releases, fast or slow growth strategies and naturalized rearing habitats.

Results from the thermal marking are also being compared with those using CWT to assess the relative biases in CWT.

Canadian facilities released a total of 36.2 million thermally marked salmon in 2018. Of these, 165 thousand were yearling Chinook and coho from the 2016 brood year. The remaining 36.0 million were sub yearling releases from the 2017 brood year. A total of 21.4 million Chinook were released with 35 different thermal marks at 34 different locations. 7 different marks were applied to 11.9 million chum and released at nine locations. Four different sockeye marks were applied in the Okanagan and Pitt River to a total of 2.1 million fish. Limited numbers of coho and pink were also released in 2018.

A further 4.3 million sockeye were marked in Alaskan facilities but released into Canadian waters. These consisted of four different marks raised at Snettisham hatchery and released to 3 Transboundary systems.

All release details have been entered into the NPAFC thermal marking database and are listed in Table 1 using the Uniform Hatch Code notation (Johnson et al. 2006).

## References

- Johnson, W.F., R.P. Josephson, T.R. Frawley, and D.S. Oxman. 2006. Revised web-based north pacific salmon otolith mark directory. NPAFC Doc. 971. 39 pp. (Available at <https://npafc.org>).
- Till, J. 2018. Releases of otolith marked salmon from Canada in 2017. NPAFC Doc. 1789. 4 pp. (Available at <https://npafc.org>).

**Table 1.** Releases of otolith marked salmon from Canada in 2018.

NPAFC ID	BROOD YEAR	SPECIES	STATE	REGION	FACILITY	RELEASE SITE	DATE RELEASED	MARK TYPE	LOCAL MARK NAME	HATCH CODE	STAGE	NUMBER RELEASED
CA17-42	2017	CHINOOK	BRITISH COLUMBIA	LWFR	H-CHILLIWACK RIVER H	R-ALOUETTE R S, R-CHAPMAN CR, R-CHILLIWACK	28-Jun-18	Thermal	CHRH2017CHINOOKH7	H7	SMOLT	1,231,252
CA17-30	2017	CHINOOK	BRITISH COLUMBIA	NWM	H-CONUMAR RIVER H	R-MUCHALAT LK	25-May-18	Thermal	CORH2017CHINOOKH24	H2,4	SMOLT	218,279
CA17-31	2017	CHINOOK	BRITISH COLUMBIA	NWM	H-CONUMAR RIVER H	R-BURMAN EST	22-May-18	Thermal	CORH2017CHINOOKH42	H4,2	SMOLT	310,769
CA17-32	2017	CHINOOK	BRITISH COLUMBIA	NWM	H-CONUMAR RIVER H	R-CONUMA EST	10-May-18	Thermal	CORH2017CHINOOKH52	H5-2	SMOLT	1,183,707
CA17-33	2017	CHINOOK	BRITISH COLUMBIA	NWM	H-CONUMAR RIVER H	R-CONUMA EST	4-Jun-18	Thermal	CORH2017CHINOOKH53	H5-3	SMOLT	1,178,864
CA17-34	2017	CHINOOK	BRITISH COLUMBIA	NWM	H-CONUMAR RIVER H	R-CONUMAR	25-May-18	Thermal	CORH2017CHINOOKH54	H5-4	SMOLT	462,856
CA17-22	2017	CHINOOK	BRITISH COLUMBIA	NWM	H-CONUMAR RIVER H	R-TAHSIS IN	5-Jun-18	Thermal	CONH2017CHINOOKH9	H9	SMOLT	112,403
CA17-49	2017	CHINOOK	BRITISH COLUMBIA	GSI	H-COWICHAN RIVER H	R-COWICHAN R	25-May-18	Thermal	COWH2017CHINOOK41H	4-1H	SMOLT	618,297
CA17-29	2017	CHINOOK	BRITISH COLUMBIA	JNST	H-GWANI H	R-NIMPKISH R UP, R-WOSS LK	17-May-18	Thermal	GWAH2017CHINOOK33NH	3,3nH	SMOLT	135,238
CA17-27	2017	CHINOOK	BRITISH COLUMBIA	NWM	H-MARBLE RIVER H	R-MARBLE R	1-Jun-18	Thermal	MBRH2017CHINOOK322H	3,2,2H	SMOLT	733,824
CA17-25	2017	CHINOOK	BRITISH COLUMBIA	NWM	H-MARBLE RIVER H	R-MARBLE R	12-Jun-18	Thermal	MBRH2017CHINOOK323H	3,2,3H	SMOLT	79,744
CA17-24	2017	CHINOOK	BRITISH COLUMBIA	GSI	H-NANAIMO RIVER H	R-NANAIMO R	16-May-18	Thermal	NANH2017CHINOOKH23	H2-3	SMOLT	307,656
CA17-23	2017	CHINOOK	BRITISH COLUMBIA	GSI	H-NANAIMO RIVER H	R-FIRST LK/GSM	19-May-18	Thermal	NANH2017CHINOOKH5	H5	SMOLT	195,020
CA16-59	2016	CHINOOK	BRITISH COLUMBIA	SWM	H-NIT INAT RIVER H	R-NIT INAT LK	3-May-18	Thermal	NITH2016CHINOOKYRLINGH232	H2,3,2,3	YEARLING	12,907
CA17-11	2017	CHINOOK	BRITISH COLUMBIA	SWM	H-NIT INAT RIVER H	R-SOOKE HB	1-Jun-18	Thermal	NITH2017CHINOOK14H	1,4H	SMOLT	591,745
CA17-43	2017	CHINOOK	BRITISH COLUMBIA	SWM	H-NIT INAT RIVER H	R-SOOKE R	26-May-18	Thermal	NITH2017CHINOOK4H	4,1H	SMOLT	188,000
CA17-07	2017	CHINOOK	BRITISH COLUMBIA	SWM	H-NIT INAT RIVER H	R-NIT INAT LK	25-May-18	Thermal	NITH2017CNH232	H2,3,2	SMOLT	635,951
CA17-09	2017	CHINOOK	BRITISH COLUMBIA	SWM	H-NIT INAT RIVER H	R-NIT INAT LK	25-May-18	Thermal	NITH2017CHINOOKH2322	H2,3,2,2	SMOLT	666,635
CA17-08	2017	CHINOOK	BRITISH COLUMBIA	SWM	H-NIT INAT RIVER H	R-NIT INAT LK	25-May-18	Thermal	NITH2017CHINOOK2323	H2,3,2,3	SMOLT	670,794
CA17-17	2017	CHINOOK	BRITISH COLUMBIA	SWM	H-NIT INAT RIVER H	R-SARITA R	23-May-18	Thermal	NITH2017CHINOOKH313	H3,1,4	FED FRY	265,453
CA17-10	2017	CHINOOK	BRITISH COLUMBIA	SWM	H-NIT INAT RIVER H	R-SARITA R	22-May-18	Thermal	NITH2017CHINOOKH323	H3,2,3	SMOLT	245,006
CA17-26	2017	CHINOOK	BRITISH COLUMBIA	SWM	H-NIT INAT RIVER H	R-NIT INAT LK	25-May-18	Thermal	NITH2017CHINOOKH3232	H3,2,3,2	SMOLT	634,926
CA17-41	2017	CHINOOK	BRITISH COLUMBIA	GSI	H-PUNTLEDGE RIVER H	R-PUNTLEDGE R	5-Jun-18	Thermal	PUNH2017CHINOOKH6	H6	FED FRY	264,330
CA17-35	2017	CHINOOK	BRITISH COLUMBIA	JNST	H-QUINSAM RIVER H	R-QUINSAM R UP	1-Jan-18	Thermal	QUNH2017CHINOOK24H	2-4H	EYED EGG	156,664
CA17-36	2017	CHINOOK	BRITISH COLUMBIA	JNST	H-QUINSAM RIVER H	R-ELK FALLS CH #3, R-SECOND IS SL	4-Apr-18	Thermal	QUNH2017CHINOOKH34	3-4H	EMERGENT FRY	887,457
CA17-37	2017	CHINOOK	BRITISH COLUMBIA	JNST	H-QUINSAM RIVER H	R-DISCOVERY PASS	1-May-18	Thermal	QUNH2017CHINOOKH22	H2/2	SMOLT	592,361
CA17-38	2017	CHINOOK	BRITISH COLUMBIA	JNST	H-QUINSAM RIVER H	R-QUINSAM R	9-May-18	Thermal	QUNH2017CHINOOKH222	H2/2/2	SMOLT	2,044,282
CA17-40	2017	CHINOOK	BRITISH COLUMBIA	JNST	H-QUINSAM RIVER H	R-SALMON R UP/JNST	1-May-18	Thermal	QUNH2017CHINOOKH2222	H2/2/2/2	SMOLT	122,186
CA17-39	2017	CHINOOK	BRITISH COLUMBIA	JNST	H-QUINSAM RIVER H	R-QUINSAM LK	8-May-18	Thermal	QUNH2017CHINOOKH224	H2/2/4	FED FRY	215,952
CA17-18	2017	CHINOOK	BRITISH COLUMBIA	SWM	H-ROBERTSON CREEK H	R-ALBERNI IN, R-ROBERTSON CR	30-May-18	Thermal	ROBH2017CHINOOK3H	3H	SMOLT	5,970,011
CA17-20	2017	CHINOOK	BRITISH COLUMBIA	SWM	H-ROBERTSON CREEK H	R-ROBERTSON CR	7-May-18	Thermal	ROBH2017CHINOOK3H32	3H3/2	SMOLT	94,058
CA17-19	2017	CHINOOK	BRITISH COLUMBIA	SWM	H-ROBERTSON CREEK H	R-ALBERNI IN	28-May-18	Thermal	ROBH2017CHINOOK3H4	3H4	SMOLT	83,565
CA16-41	2016	CHINOOK	BRITISH COLUMBIA	TOMF	H-SPIUS CREEK H	R-CHEHALIS R	30-Apr-18	Thermal	SPIU2016CHINOOKH54	H5/4	YEARLING	104,950
CA17-52	2017	CHINOOK	BRITISH COLUMBIA	TOMF	H-SPIUS CREEK H	R-SALMON R/TOMF	22-Jun-18	Thermal	SPIU2017CHINOOKH442	H4/4,2	FED FRY	46,212
CA17-21	2017	CHINOOK	BRITISH COLUMBIA	NWM	H-TAHSIS RIVER H	R-TAHSIS IN	5-Jun-18	Thermal	TAHH2017CHINOOKH73	H7,3	SMOLT	174,599

**Table 1** (continued). Releases of otolith marked salmon from Canada in 2018.

NPAFC ID	BROOD YEAR	SPECIES	STATE	REGION	FACILITY	RELEASE SITE	DATE RELEASED	MARK TYPE	LOCAL MARK NAME	HATCH CODE	STAGE	NUMBER RELEASED
CA17-48	2017	CHUM	BRITISH COLUMBIA	NWM	H-CONUMAR RIVER H	R-CANTON CR	2-May-18	Thermal	CORH2017CHUMH22	H2,2	FED FRY	203,990
CA17-45	2017	CHUM	BRITISH COLUMBIA	NWM	H-CONUMAR RIVER H	R-SUCWOAR, R-TLUPANAR	3-May-18	Thermal	CORH2017CHUMH23	H2,3	FED FRY	793,699
CA17-46	2017	CHUM	BRITISH COLUMBIA	NWM	H-CONUMAR RIVER H	R-CONUMAEST	24-Apr-18	Thermal	CORH2017CHUMH5	H5	FED FRY	1,624,825
CA17-47	2017	CHUM	BRITISH COLUMBIA	NWM	H-CONUMAR RIVER H	R-CONUMAR	9-May-18	Thermal	CORH2017CHUMH7	H7	FED FRY	471,129
CA17-28	2017	CHUM	BRITISH COLUMBIA	JNST	H-GWANI H	R-ALDER BAY, R-NIMPKISH R LOW	7-Jun-18	Thermal	GWAH2017CHUMH32	H3,2	FED FRY	14,056
CA17-12	2017	CHUM	BRITISH COLUMBIA	NCST	H-KITIMAT RIVER H	R-KITIMAT R	10-Apr-18	Thermal	KITH2017CHUMH14	H1,4	FED FRY	882,536
CA17-13	2017	CHUM	BRITISH COLUMBIA	SWM	H-NITINAT RIVER H	R-NITINAT LK	23-Apr-18	Thermal	NITH2017CHUM31H	3,1H	FED FRY	7,894,803
CA16-14	2016	COHO	BRITISH COLUMBIA	SWM	H-NITINAT RIVER H	R-NITINAT R	11-May-18	Thermal	NITH2016COHOH2	H2	YEARLING	15,586
CA16-13	2016	COHO	BRITISH COLUMBIA	SWM	H-NITINAT RIVER H	R-NITINAT R	11-May-18	Thermal	NITH2016COHOH23	H2,3	YEARLING	15,006
CA16-15	2016	COHO	BRITISH COLUMBIA	SWM	H-NITINAT RIVER H	R-NITINAT R	11-May-18	Thermal	NITH2016COHOH4	H4	YEARLING	15,973
CA17-50	2017	PINK	BRITISH COLUMBIA	GSM	H-NANAIMO RIVER H	R-BRANDON IS, R-GALLOWS POINT, R-NEWCASTL	24-Apr-18	Thermal	NANH2017PINKH4	H4	FED FRY	758,658
CA17-44	2017	SOCKEYE	BRITISH COLUMBIA	LWFR	H-INCH CREEK H	R-APAT T ERSON CH, R-SLOUGH CR	7-Jun-18	Thermal	INCH2017SOCKEYEH42	H4,2	FED FRY	859,559
CA17-14	2017	SOCKEYE	BRITISH COLUMBIA	TOMF	H-KL CP' ELK' ST IM' H	R-OKANAGAN R	29-Mar-18	Thermal	KLCH2017SOCKEYEH33	H3,3	FED FRY	371,142
CA17-15	2017	SOCKEYE	BRITISH COLUMBIA	TOMF	H-KL CP' ELK' ST IM' H	R-OKANAGAN R	3-May-18	Thermal	KLCH2017SOCKEYEH333	H3,3,3	FED FRY	355,065
CA17-16	2017	SOCKEYE	BRITISH COLUMBIA	TOMF	H-KL CP' ELK' ST IM' H	R-OKANAGAN R	19-Apr-18	Thermal	KLCH2017SOCKEYEH432	H4,3,2	FED FRY	491,964
AK17-18	2017	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	R-TAHLTAN LK	5-Jun-18	Thermal	TAHLTAN17	3n,2n,2H	EMERGENT FRY	2,634,200
AK17-10	2017	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	R-TAT SAMENIE LK	31-May-18	Thermal	TAT SAMENIE17	3n,5H	EMERGENT FRY	1,263,500
AK17-11	2017	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	R-TRAPPER LK	29-May-18	Thermal	TRAPPER17	4,2,3H	EMERGENT FRY	187,700
AK17-20	2017	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	R-TAT SAMENIE LK	30-May-18	Thermal	TAT SAMENIE17ER	6,2H	FED FRY	214,300