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RAMP

RIVER

PEOPLE

RESOURCES

ENVIRONMENTAL MANAGEMENT

Regional Aquatics Monitoring Program

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Index of Codes used in Fish Assemblage Monitoring Program

1.1 Capture Methods

These capture method codes are applied across all fisheries components.

source: *RAMP Fish Inventory*

Code	Description
EF	Electrofisher - Boat
BP	Electrofisher - Backpack
GN	Gill Net
SN	Beach Seine
MT	Minnow Trap
FT	Fry Trap
PE	Post-Emergent Fry Drift Trap
DN	Drift Net
TU	Trap - Fish Moving Upstream
FU	Fish Fence – Fish Moving Upstream
TD	Trap - Fish Moving Downstream
FD	Fish Fence – Fish Moving Downstream
HN	Hoop Net
OT	Other (must be specified in comments field)

Blank fields denote that the capture method was not recorded.

Sampling methods for the Fish Assemblage Monitoring (FAM) program have been refined over time, as follows:

1.2 Study Methods

Code	Description
A	A FAM pilot study was initiated in 2009 by RAMP. The study included sampling at select tributaries of the Athabasca River tributaries. Fish sampling was carried out from the downstream end to the upstream end for a length equal to 40 times the average channel width with a minimum length of 150 m. All fish sampling was carried out by a two-person field crew using a backpack electrofishing unit or a portable boat electrofishing unit (where depths were greater than 1 m) and a standard dip net. The dip net was fitted with a fine mesh net (0.125 in) to ensure that fish of all sizes could be captured (RAMP 2009).
B	A continuation of the FAM pilot study occurred in 2010. Sampling methods w (see method A) were the same except each reach was divided into 10 sub-reaches to assess variability within a reach (RAMP 2010).
C	The FAM program was expanded to include a greater number of tributaries of the Athabasca, as well as a tributary of the Clearwater River, in 2011. Sampling methods (see method A) was the same except each reach was divided into five sub-reaches to assess variability within a reach (RAMP 2011).
D	The FAM program was expanded to include a greater number of tributaries of the Athabasca, as well as a tributary of the Clearwater River, in 2011. Sampling methods (see method A) was the same except each reach was divided into five sub-reaches to assess variability within a reach (RAMP 2011).
E	In 2012, FAM took place on Christina Lake as well as on tributaries to the Athabasca and Clearwater rivers. Sample locations were chosen randomly by placing a 100 m UTM grid overlay on a map of the lake. Given that Christina Lake is oriented east-west, random easting coordinates were generated to determine the easting and then a random shore (north or south) was chosen. The process was repeated for each of the three types of fishing methods: hoopnets, seine nets, and boat electrofishing. The final sampling design consisted of fifteen seine net locations, twelve hoop net locations, and eight electrofishing transects (RAMP 2012).
F	In 2012, the RAMP Fish Populations Technical Subgroup decided to expand the tributary FAM program to channels of the Athabasca River Delta. Fish and fish habitat assessments were conducted in four channels flowing into Lake Athabasca, including the Embarras River, Fletcher Channel, Big Point Channel, and Goose Island Channel. Fish sampling was conducted using a combination of hoop nets and fyke nets for large-bodied fish species and minnow traps and seine nets for small-bodied fish species, set from the boat (RAMP 2012).

G	In 2015, an expanded fish community study was conducted. Fish communities were monitored in a total of 10 sub-reaches using either boat or backpack electrofishing. Additional backpack electrofishing and other supplemental gear types (seine netting or minnow trapping) were used for a sub-set of the 10 sub-reaches to determine whether the ability to identify all species present could be improved.
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1.3 Sex Codes

These sex codes are applied across all fisheries components.

source: *RAMP Fish Inventory*

Code	Description
F	Female
M	Male
U	Unknown

Blank fields denote that the sex was not recorded.

1.4 Stage Codes

These stage codes are applied across all fisheries components.

source: *RAMP Fish Inventory*

Code	Description
F	Fry
J	Juvenile
A	Adult
U	Unknown

Blank fields denote that the stage code was not recorded.

1.5 Age Structure

These age structure codes are applied across all fisheries components.

source: *RAMP Fish Inventory*

Code	Description
FR	Fin Ray
SC	Scales
SF	Scales + Finray
OT	Other (must be specified in comments field)
FR/OP	Finray + operculum (lethal; 2 aging structures taken)
OF	Otolith + Finray
O	Otolith

Blank fields denote that the age structure was not recorded.

1.6 Species

These species codes are applied across all fisheries components.

sources: *Fish Ageing Methods for Alberta Table 1 Mackay et al. (1990)*; *RAMP 2002 Report Appendix XIII Table XIII.1*; *RAMP 2005 Technical Report Appendix G.1 Table G.1-1*; *RAMP Fish Inventory Data Sheet from Oct 31, 2006*.

Species Abbreviation	Common Name	Scientific Name
ARGR	Arctic grayling	Thymallus arcticus
ARLM	Arctic lamprey	Lampetra japonica
BKTR	Brook trout	Salvelinus fontinalis
BRMN	Brassy minnow	Hybognathus hankinsoni
BRST	Brook stickleback	Culaea inconstans
BLTR	Bull trout	Salvelinus confluentus
BURB	Burbot	Lota lota
CISC	Cisco	Coregonus artedii
EMSH	Emerald shiner	Notropis atherinoides
FLCH	Flathead chub	Platygobio gracilis
FNDC	Finescale dace	Phoxinus neogaeus
FTMN	Fathead minnow	Pimephales promelas

GOLD	Goldeye	Hiodon alosoides
LKCH	Lake chub	Couesius plumbeus
LKTR	Lake trout	Salvelinus namaycush
LKWH	Lake whitefish	Coregonus clupeaformis
LNDC	Longnose dace	Rhinichthys cataractae
LNSC	Longnose sucker	Catostomus catostomus
MNWH	Mountain whitefish	Prosopium williamsoni
NRPK	Northern pike	Esox lucius
NNST	Ninespik stickleback	Pungitius pungitius
NRDC	Northern redbelly dace	Phoxinus eos
PRDC	Pearl dace	Semotilus margarita
SLSC	Slimy sculpin	Cottus cognatus
SPSH	Spottail shiner	Notropis hudsonius
SPSC	Spoonhead sculpin	Cottus ricei
RVSH	River shiner	Notropis blennius
RNTR	Rainbow trout	Oncorhynchus mykiss
TRPR	Trout-perch	Percopsis omiscomaycus
WALL	Walleye	Sander vitreus
WHSC	White sucker	Catostomus commersoni
YLPR	Yellow perch	Perca flavescens
IWDR	Iowa darter	Etheostoma exile
UNK	Unknown species	-

1.7 Capture Location

source: RAMP Fish Inventory

Code	Description
BER-F2	Upper Beaver River
DUR-F1	Dunkirk River
ELR-F1	Lower Ells River
ELR-F2	Upper Ells River
ELR-F2A	Upper Ells River
FOC-F1	Fort Creek
HOR-F1	Horse River
HHR-F1	High Hills River
JAC-F1	Lower Jackpine Creek
JAC-F2	Upper Jackpine Creek
MAR-F1	Lower MacKay River
MAR-F2	Mid MacKay River
MAR-F3	Upper MacKay River
MUR-F1	Lower Muskeg River
MUR-F2	Mid Muskeg River
MUR-F3	Upper Muskeg River
POC-F1	Poplar Creek
STR-F1	Lower Steepbank River
STR-F2	Upstream Steepbank River
TAR-F1	Lower Tar River
TAR-F2	Upper Tar River
FLC-F1	Athabasca Delta - Fletcher Channel
BPC-F1	Athabasca Delta - Big Point Channel
GIC-F1	Athabasca Delta - Goose Island Channel
CHR-F1	Lower Christina River
CHR-F2	upstream of Janvier
JAR-F1	Lower Jackfish River
SUC-F1	Sunday Creek
SAC-F1	Sawbones Creek
CAR-F1	Lower Calumet River
CAR-F2	Upper Calumet River
CHL-1	Christina Lake
SUC-F2	Sunday Creek
BRC-F1	Birch Creek
UNC-F2	Unnamed Creek east of Christina Lake

UNC-F3	Unnamed Creek south of Christina Lake
ELR-F3	upper Ells River
CHR-F3	Christina River upstream of Jackfish River
CHR-F4	upper Christina River
EYC-F1	Eymundson Creek
RCC-F1	Red Clay Creek
PIR-F1	Pierre River
BIC-F1	Big Creek
FIR-F1	lower Firebag River
FIR-F2	upper Firebag River
EMR-F2	in the Athabasca Delta
GRR-F1	Gregoire River near the mouth

1.8 Maturity

source: RAMP Fish Inventory

Code	Description
IM	Immature
MA	Maturing
SD	Seasonally Developing
PR	Pre-spawning
RP	Ripe
SP	Spent
RS	Resting
RB	Reabsorbing
UN	Unknown

Blank maturity values are not allowed.

1.9 External Pathology - Eyes

source: RAMP 2005 Technical Report Appendix G.2 Table G.2-1

Pathology Code	Pathology Index Value	Variable Condition
N	0	No aberrations; good `clear` eye
B	30	Blind; an opaque eye (one or both)
E	30	Swollen, protruding eye (one or both)
H	30	Hemorrhaging or bleeding in the eye (one or both)
M	30	Missing one or both eyes
OT	30	Other; any condition not covered above

Blank fields are interpreted as N - no aberrations or that no value was recorded.

1.10 External Pathology - Parasites

source: RAMP 2005 Technical Report Appendix G.2 Table G.2-1

Pathology Code	Pathology Index Value	Variable Condition
0	0	No observed parasites
1	10	Few observed parasites
2	20	Moderate parasite infestation
3	30	Numerous parasites

Blank fields are interpreted as 0 - no observed parasites or that no value was recorded.

1.11 External Pathology - Gills

source: RAMP 2005 Technical Report Appendix G.2 Table G.2-1

Pathology Code	Pathology Index Value	Variable Condition
N	0	Normal; no apparent aberrations
F	30	Frayed; erosion of tips of gill lamellae resulting in `ragged` gills
C	30	Clubbed; swelling of the tips of gill lamellae
M	30	Marginate; gills with light, discoloured margin along tips the lamellae
P	30	Pale; very light in colour

OT	30	Other; any condition not covered above
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Blank fields are interpreted as N - normal or that no value was recorded.

1.12 External Pathology - Fins

source: RAMP 2005 Technical Report Appendix G.2 Table G.2-1

Pathology Code	Pathology Index Value	Variable Condition
0	0	No active erosion
1	10	Light active erosion
2	20	Moderate active erosion with some hemorrhaging
3	30	Severe active erosion with hemorrhaging

Blank fields are interpreted as 0 - no active erosion or that no value was recorded.

1.13 External Pathology - Opercles

source: RAMP 2005 Technical Report Appendix G.2 Table G.2-1

Pathology Code	Pathology Index Value	Variable Condition
0	0	No shortening
1	30	Mild shortening
2	30	Severe shortening

Blank fields are interpreted as 0 - no shortening or that no value was recorded.

1.14 External Pathology - Pseudobranchs

source: RAMP 2005 Technical Report Appendix G.2 Table G.2-1

Pathology Code	Pathology Index Value	Variable Condition
N	0	Normal; flat, containing no aberrations
S	30	Swollen; convex in aspect
L	30	Lithic; mineral deposits, white, somewhat amorphous spots
I	30	Inflamed; redness, hemorrhage, or other
OT	30	Other; any condition not covered above

Blank fields are interpreted as N - normal or that no value was recorded.

1.15 External Pathology - Body

source: RAMP 2005 Technical Report Appendix G.2 Table G.2-1

Pathology Code	Pathology Index Value	Variable Condition
0	0	No deformities
1	30	Any deformity (provide details)

Blank fields are interpreted as 0 - no deformities or that no value was recorded.

1.15 External Pathology - Skin

source: RAMP 2005 Technical Report Appendix G.2 Table G.2-1

Pathology Code	Pathology Index Value	Variable Condition
0	0	Normal; no skin aberrations
1	10	Mild skin aberrations
2	20	Moderate skin aberrations
3	30	Severe skin aberrations

Blank fields are interpreted as 0 - normal or that no value was recorded.

1.16 External Pathology - Thymus

source: RAMP 2005 Technical Report Appendix G.2 Table G.2-1

Pathology Code	Pathology Index Value	Variable Condition
0	0	No hemorrhage

1	10	Mild hemorrhage
2	20	Moderate hemorrhage
3	30	Severe hemorrhage

Blank fields are interpreted as 0 - no hemorrhage or that no value was recorded.

1.17 External Pathology - Hindgut

source: RAMP 2005 Technical Report Appendix G.2 Table G.2-1

Pathology Code	Pathology Index Value	Variable Condition
0	0	Normal; no inflammation or reddening
1	10	Slight inflammation or reddening
2	20	Moderate inflammation or reddening
3	30	Severe inflammation or reddening

Blank fields are interpreted as 0 - normal or that no value was recorded.

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