

CHAPTER 21

MANAGEMENT ACTIVITIES: FISH STOCKINGS

Fisheries and Oceans Canada began stocking fish in provincial waters during the late 1800's. The New Brunswick Department of Natural Resources & Energy more recently became involved in 1978 with the construction of its first fish hatchery. While Fisheries and Oceans hatcheries primarily raise sea-run Atlantic salmon and some brook trout, Natural Resources and Energy focuses on landlocked Atlantic salmon, brook trout, lake trout and a hybrid species, splake (brook trout x lake trout). Within each species, there may be various strains depending on the origin of the broodstock.

Since the mid-1980's, various organizations have participated in stocking programs called satellite rearing, in cooperation with Fisheries and Oceans hatcheries. Broodstock fish are collected from a stream in the fall and spawned at a hatchery where their progeny are raised until the following spring. The first feeding fry are then transported back to the stream of origin and are maintained in a tank at streamside until fall when they are released into the stream.

Stocking records note the species, strain, length, weight, and any tags or markings of fish stocked. Stocking locations are not maintained by the New Brunswick Department of Natural Resources and Energy, so its stockings are associated with a lake or stream and not to a specific location.

Translocations occur when broodstock are collected and transferred to a location with few juveniles but good production potential.

DATA SOURCES

The primary source of fish stocking data is the New Brunswick Department of Natural Resources & Energy (1987 and later). Some satellite rearing data from J.D. Irving Limited, Bowater Pulp and Paper Canada Inc. and several conservation groups has been incorporated. In a few cases, there may be records of earlier stockings which were obtained from lake survey files.

Fisheries and Oceans stocking data will be incorporated within the Data Warehouse in the near future, along with DNRE's pre-1987 data..

POSITIONAL ACCURACY

Stocking information from Department of Natural Resources & Energy is attached to lakes and streams, not specific locations. The positional accuracy of the hydrographic spatial data is $\pm 1.5\text{m}$ to $\pm 2.5\text{m}$. Please refer to **SNB's Land and Water Standards Manual** for further details.

DATA FILES

Tabular Data

There are four data tables within fish stocking, two pertaining to stocking and two pertaining to the satellite rearing program. The first maintains general information on the stocking sites, and the second table maintains the list of fish species/strains which are stocked. Stockings may be linked to a particular lake or stream within the province or to a particular site.

- , **Fish Stocking Sites** - Maintains general information on each site, including the locational data for referencing within GIS.
- , **Fish Stocking** - Contains dates of stockings, strain, species, numbers, marks and measurements of fish stocked.
- , **Satellite Rearing Tank Sites** - Maintains a list of satellite rearing tank sites.
- , **Satellite Rearing** - Contains data related to satellite rearing of juvenile salmonids, including numbers of fingerlings raised and released.
- , **Translocation Sites** - Maintains the sites where fish have been translocated.
- , **Translocations** - Contains data on translocated fish, such as species, strain, number, length, weight, and tags or markings.

Spatial Data

Some fish stockings are linked to the Route System files through the water body ID to highlight a stocked lake or stream when the exact site is not known (e.g. Department of Natural Resources & Energy data). For other stockings where the site location is known, an ArcView shape file was created. An ArcView shape file was also created for satellite rearing tank sites and fish translocation sites.

**TABULAR
DATA
FILES**

FISH STOCKING SITES

The *Fish Stocking Sites* table (stcksite.dbf) maintains data on the sites where fish have been stocked when the locations are known . Each site has been assigned a unique ID in addition to the site ID number used by the agency.

Field of Information	Description	Dbase Field Name	Field Type (Length . Decimals)	Comments
Stocking Site ID	Unique number representing an individual stocking site. Assigned by the Data Warehouse	Stksite_ID	Numeric (6)	
Water Body ID	Unique identifier of the stocked lake or stream	Water_ID	Numeric (8)	
Water Body Name	Name of the lake or stream	Water_Name	Character (40)	
Drainage Codes	Drainage system codes indicating the drainage unit of the lake or stream	Drainge_Cd	Character (17)	Appendix A
Agency Code	Code for agency or group stocking fish	Agency_Cd	Character (4)	Code Table 6
Second Agency Code	Code for second agency or group stocking fish, if applicable	Agency2_Cd	Character (4)	Code Table 6
Agency's Site No.	Site identifier used by the agency	Ag_Site_ID	Character (10)	
Second Agency's Site No.	Site identifier used by the second agency, if applicable	Ag2Site_ID	Character (10)	
Site Description	Description of location of where fish were stocked	Site_Des	Character (150)	
		Habtat_Des	Character (30)	
Year Started	First year fish were stocked at the site	Start_Yr	Character (4)	
Year Ended	Last year fish were stocked at the site	End_Yr	Character (4)	

FISH STOCKINGS

The *Fish Stockings* table (stocking.dbf) maintains a record of each group of fish stocked. In addition to the date of stocking, the species, strain, number, length, weight and tag or marking are recorded.

Field of Information	Description	Dbase Field Name	Field Type (Length . Decimals)	Comments
Stocking Site ID	Unique number representing an individual stocking site. Assigned by the Data Warehouse	Stksite_ID	Numeric (4)	
Water Body ID	Stream or lake identifier where fish are stocked	Water_ID	Numeric (8)	
Water Body Name	Name of stream or lake	Water_Name	Character (40)	
Drainage Codes	Drainage system codes indicating the drainage unit of the surveyed stream	Drainage_Cd	Character (17)	Appendix A
Agency Code	Code representing the agency or group performing the stocking	Agency_Cd	Character (4)	Code Table 6
Second Agency Code	Code for second agency or group stocking fish, if applicable	Agency2_Cd	Character (4)	Code Table 6
Agency's Site No.	Site identifier used by the agency	Ag_Site_ID	Character (10)	
Second Agency's Site No.	Site identifier used by the second agency, if applicable	Ag2Site_ID	Character (10)	
Stocking Date	Date of stocking - Format YYYY.MM.DD	Stock_Date	Character (10)	
DNRE Region	Department of Natural Resources & Energy Region where stocking occurred	Region	Character (2)	Code Table 13
Species Code	Species code of fish being stocked	Species_Cd	Character (2)	Code Table 17
Species	Name of fish species	Species	Character (30)	
Strain Code	Strain code of fish being stocked	Strain_Cd	Character (2)	Code Table 18
Strain	Name of fish strain. Usually the origin of the fish, such as a specific lake	Strain	Character (30)	
Age	Actual age of fish	Age	Character (5)	
Age Class	Age class of fish stocked (e.g., egg, fry, parr, adult)	Age_Class	Character (15)	
No. Fish Stocked	Number of fish stocked	No_Fish	Numeric (6)	
Fish Length (cm)	Average fish length measured in centimetres	Length_cm	Numeric (4.1)	
Fish Weight (gm)	Average fish weight measured in grams	Weight_gm	Numeric (10.1)	

Field of Information	Description	Dbase Field Name	Field Type (Length . Decimals)	Comments
Fish Tag or Mark Code	Code indicating the type off tag or mark used to identify stocked fish	Mark_Cd	Character (6)	Code Table 19
Fish Tag or Mark	Description of the mark or tag	Mark	Character (24)	
Fish Source	Source of origin for stocked fish (e.g., satellite rearing, hatchery)	Source	Character (30)	
Tank Number	Rearing tank number where stocked fish originated	Tank	Character (6)	

SATELLITE REARING TANK SITES

The *Satellite Rearing Tank Sites* table (tanksite.dbf) maintains data on the sites where tanks have been maintained for stream-side raising of Atlantic salmon fingerlings. Each site has been assigned a unique ID in addition to the site ID number used by the agency.

Field of Information	Description	Dbase Field Name	Field Type (Length . Decimals)	Comments
Satellite Rearing Tank Site ID	Unique number representing an individual tank site. Assigned by the Data Warehouse	Satsite_ID	Numeric (6)	
Water Body ID	Unique identifier of stream	Water_ID	Numeric (8)	
Water Body Name	Name of stream	Water_Name	Character (40)	
Drainage Codes	Drainage system codes indicating the drainage unit of stream	Drainge_Cd	Character (17)	Appendix A
Agency Code	Code for agency or group performing the satellite rearing	Agency_Cd	Character (4)	Code Table 6
Agency's Site No.	Site identifier used by the agency	Ag_Site_ID	Character (6)	
Site Description	Description of where the satellite rearing tank site is located	Site_Des	Character (150)	
Habitat Unit No.	Unique number representing an individual habitat unit based on stream habitat survey. Assigned by the Data Warehouse	HabUnit_ID	Numeric (10)	
Year Started	First year satellite rearing tank located at the site	Start_Yr	Character (4)	
Year Ended	Last year satellite rearing tank located at the site	End_Yr	Character (4)	

SATELLITE REARING

The *Satellite Rearing* table (sat-rear.dbf) contains data obtained during satellite rearing of fingerling Atlantic salmon, including counts of fingerlings received and stocked.

Field of Information	Description	Dbase Field Name	Field Type (Length . Decimals)	Comments
Satellite Rearing Site ID	Unique number representing an individual satellite rearing site. Assigned by the Data Warehouse	Satsite_ID	Numeric (6)	
Water Body ID	Unique identifier of stream	Water_ID	Numeric (8)	
Water Body Name	Name of stream	Water_Name	Character (40)	
Drainage Codes	Drainage system codes indicating the watershed of stream	Drainge_Cd	Character (17)	Appendix A
Agency Code	Code for agency or group performing the satellite rearing	Agency_Cd	Character (4)	Code Table 6
Agency's Site No.	Site identifier used by the agency	Ag_Site_ID	Character (6)	
Number of Tanks	Number of tanks used	No_Tanks	Numeric (4)	
Year of Rearing	Year of satellite rearing program	Rear_Year	Numeric (4)	
Fingerlings Received	Number of Atlantic salmon fry received from the hatchery and placed in satellite rearing tanks in spring/summer	No_Receive	Numeric (7)	
Date Stocked	Date of stocking - YYYY.MM.DD	Stock_Date	Character (10)	
Fingerlings Released	Number of Atlantic salmon fingerlings released from satellite rearing tanks to streams in fall	No_Stocked	Numeric (7)	

FISH TRANSLOCATION SITES

The *Fish Translocation Sites* table (transloc-site.dbf) maintains data on the sites where fish have been translocated. Each site has been assigned a unique ID in addition to the site ID number assigned by the agency.

Field of Information	Description	Dbase Field Name	Field Type (Length . Decimals)	Comments
Translocation Site ID	Unique number representing an individual translocation site. Assigned by the Data Warehouse	Trlsite_ID	Numeric (6)	
Water Body ID	Unique identifier of stream	Water_ID	Numeric (8)	
Water Body Name	Name of stream	Water_Name	Character (40)	
Drainage Codes	Drainage system codes indicating the drainage unit of stream	Drainge_Cd	Character (17)	Appendix A
Agency Code	Code for agency or group translocating fish	Agency_Cd	Character (4)	Code Table 6
Agency's Site No.	Site identifier used by the agency	Ag_Site_ID	Character (10)	
Site Description	Description of location of where fish were translocated to	Site_Des	Character (150)	
Habitat Unit No.	Unique number representing an individual habitat unit based on stream habitat survey. Assigned by the Data Warehouse	HabUnit_ID	Numeric (10)	
Year Started	First year fish were translocated at the site	Start_Yr	Character (4)	
Year Ended	Last year fish were translocated at the site	End_Yr	Character (4)	

FISH TRANSLOCATIONS

The *Fish Translocations* table (translocations.dbf) maintains records of translocated fish. In addition to the date of translocation, the species, strain, number, length, weight, tag or marking, and the source of the fish are recorded.

Field of Information	Description	Dbase Field Name	Field Type (Length . Decimals)	Comments
Translocation Site ID	Unique number representing an individual translocation site. Assigned by the Data Warehouse	Trlsite_ID	Numeric (6)	
Water Body ID	Stream identifier where fish are translocated	Water_ID	Numeric (8)	
Water Body Name	Name of stream	Water_Name	Character (40)	
Drainage Codes	Drainage system codes indicating the drainage unit of the stream	Drainge_Cd	Character (17)	Appendix A
Agency Code	Code representing the agency or group performing the translocation	Agency_Cd	Character (4)	Code Table 6
Agency's Site No.	Site identifier used by the agency	Ag_Site_ID	Character (6)	
Translocation Date	Date of translocation - Format is YYYY.MM.DD	Trans_Date	Character (10)	
Species Code	Species code of fish being translocated	Species_Cd	Character (2)	Code Table 17
Species	Name of fish species	Species	Character (30)	
Strain Code	Strain code of fish being translocated	Strain_Cd	Character (2)	Code Table 18
Strain	Name of fish strain. Usually the origin of the fish, such as a specific stream	Strain	Character (30)	
Age Class	Age or age class of fish being translocated (e.g., 3+, smolt, adult, 1SW, MSW)	Age_Class	Character (6)	
No. Fish Translocated	Number of fish translocated	No_Fish	Numeric (6)	
Fish Length (cm)	Average fish length measured in centimetres	Length_cm	Numeric (4.1)	
Fish Weight (gm)	Average fish weight measured in grams	Weight_gm	Numeric (10.1)	
Fish Tag or Mark Code	Code indicating the type of tag or mark used to identify translocated fish	Mark_Cd	Character (6)	Code Table 19
Fish Tag or Mark	Description of the mark or tag	Mark	Character (24)	
Fish Source	Source of origin for translocated fish (e.g., specific pool or site)	Source	Character (50)	

**SPATIAL
DATA
FILES**

FISH STOCKING POINTS

The *Fish Stocking Points* spatial file (stocking-sites.shp) is a point coverage representing fish stocking locations.

Field of Information	Description	Dbase Field Name	Field Type (Length . Decimals)	Comments
Internal ID	Internal ID generated by GIS to uniquely identify each point	ID	Numeric (8)	
Fish Stocking Site ID	Unique number representing a fish stocking site. Assigned by the Data Warehouse	StkSite_ID	Numeric (4)	
Agency Code	Code for agency who collected the data	Agency_Cd	Character (4)	
Agency 2 Code	Code for second agency involved in the stocking	Agency2_Cd	Character (4)	
Agency's Site No.	Site identifier used by the agency	Ag_Site_ID	Character (10)	
Second Agency's Site No.	Site identifier used by the second agency, if applicable	Ag2Site_ID	Character (10)	
Water Body ID	Unique number of the stocked lake or stream	Water_ID	Numeric (8)	
Water Name	Name of stocked lake or stream	Water_Name	Character (40)	
Drainage Codes	Drainage system codes representing the drainage unit of the stocked lake or stream.	Drainage_Cd	Character (17)	
	Internal code used the Data Warehouse	OrigSiteID	Character (10)	

SATELLITE REARING POINTS

The *Satellite Rearing Points* spatial file (sat-rear-sites.shp) is a point coverage representing satellite rearing tank locations.

Field of Information	Description	Dbase Field Name	Field Type (Length . Decimals)	Comments
Internal ID	Internal ID generated by GIS to uniquely identify each point	ID	Numeric (8)	
Satellite Rearing Tank Site ID	Unique number representing a satellite rearing tank site. Assigned by the Data Warehouse	SatSite_ID	Numeric (4)	
Agency Code	Code for agency who collected the data	Agency_Cd	Character (4)	
Agency's Site No.	Site identifier used by the agency	Ag_Site_ID	Character (6)	
Water Body ID	Unique number of the stream with satellite rearing tank	Water_ID	Numeric (8)	
Water Name	Name of the stream with satellite rearing tank	Water_Name	Character (40)	
Drainage Codes	Drainage system codes representing the drainage unit of the stream with satellite rearing tank	Drainge_Cd	Character (17)	Appendix A

FISH TRANSLOCATION POINTS

The *Fish Translocation Points* spatial file (translocation-sites.shp) is a point coverage representing fish translocation sites.

Field of Information	Description	Dbase Field Name	Field Type (Length . Decimals)	Comments
Internal ID	Internal ID generated by GIS to uniquely identify each point	ID	Numeric (8)	
Translocation Site ID	Unique number representing a fish translocation site. Assigned by the Data Warehouse	TrlSite_ID	Numeric (4)	
Agency Code	Code for agency who collected the data	Agency_Cd	Character (4)	
Agency's Site No.	Site identifier used by the agency	Ag_Site_ID	Character (6)	
Water Body ID	Unique number of the stream	Water_ID	Numeric (8)	
Water Name	Name of stream	Water_Name	Character (40)	
Drainage Codes	Drainage system codes representing the drainage unit of the stream.	Drainge_Cd	Character (17)	Appendix A