Unclassified

Land Information Ontario
Data Description

Species Observation, Locally Tracked

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LIO Class Description

Species Observation, Locally Tracked

Class Short Name: SPEOBSLT

Version Number: 4

Class Description:

MATERIALIZED VIEW: The observation of a species that is NOT provincially tracked, but is of local concern, or provincially invasive. NOTE: As of April 2016, the information in this layer is derived from Species Observation (SPEOBS) non-sensitive features.

Abstract Class Name: SPMNTUREGION

Abstract Class Description:

Spatial Multi-Non-Tessellating-Unconstrained Region: An object is represented by ONE or MORE polygons. Polygons MAY overlap WITHOUT any restrictions. HOLES within and GAPS between polygons ARE allowed. Example: Forest "Insect Damage Area". Mapped "Spruce Budworm" defoliated areas may overlap "Forest Tent Caterpillar" damaged areas. Likewise, mapped "Gypsy Moth" tree mortality areas may overlap mapped other "Gypsy Moth" defoliated areas from current and previous years.

Metadata URL:

Tables in LIO Class:

Species Observation, Locally Tracked

SPECIES_OBS_LOCAL_FT

OGF_ID	NUMBER(13,0)	Yes	OGF_ID

Ontario Geospatial Feature (OGF) Id. A unique numeric provincial identifier assigned to each object.

SPECIES_ELEMENT_ID	NUMBER(13,0)	Yes	ELEMENT_ID

A business value that uniquely identifies a specific species, or an assemblage of species such as vegetation communities and wildlife concentration areas according to a recognized standard within Natural Heritage Information Centre (NHIC) databases.

SCI_NAME	VARCHAR2(254)	Yes	SCI_NAME

The scientific name of the organism which identifies the genus and species.

COM_NAME_EN	VARCHAR2(400)	No	COM_NAME_E

The English common name assigned to a species, a group of species, or a community. The common name may describe category levels such as species, subspecies, hybrids, varieties, families, genus, and communities. Note: As the common name may be generically described, users should also refer to the Scientific Name to ensure that the proper master species list record is selected and / or associated to.

NHIC_TRACKED_IND	VARCHAR2(1)	No	NHIC_TRACK

A Yes/No indicator assigned by NHIC if the identified species is provincially tracked or not. The value is stored as a single character where: Y = Yes and N = No. NOTE: Species identified as being Provincially Tracked are assigned a Ministry Sensitivity Ranking of "Medium" to control data access and security associated with the precise-scale mapped locations of features e.g. Bald Eagle Nesting Site.

SUBNATIONAL_RANK_CODE	VARCHAR2(15)	No	SRANK

Ontario Sub-National rank maintained by the Natural Heritage Information Centre (NHIC). Provincial (or Sub-National) ranks are used by the Natural Heritage Information Centre to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario. By comparing the global and provincial ranks, the status, rarity, and the urgency of conservation, needs can be ascertained. The NHIC evaluates provincial ranks on a continual basis and produces updated lists at least annually. See user-guide for code definitions.

SARO_STATUS	VARCHAR2(15)	No	SARO_STAT

If a species is classified AT RISK by the Committee on the Status of Species at Risk in Ontario, they are added to the Species at Risk in Ontario (SARO) list in one of the following four categories, depending on the degree of risk: [EXP] = EXTIRPATED - a native species that no longer exists in the wild in Ontario, but still exists elsewhere (e.g. Greater Prairie Chicken). [END] = ENDANGERED - a native species facing extinction or extirpation (e.g. Cucumber Tree). [THR] = THREATENED - a native species at risk of becoming endangered in Ontario (e.g. Fowlers Toad). [SC] = SPECIAL CONCERN - a native species that is sensitive to human activities or natural events which may cause it to become endangered or threatened (e.g. Monarch Butterfly).

ORIGINAL_SCI_NAME	VARCHAR2(254)	No	ORIGINAL_S

The original scientific name of the species documented at the time of the original observation. This preserves the species initially identified by the observer that may in later instances be corrected or renamed. RULE: The LIO EDITOR should automatically populate this field when a user picks a species for a newly-created observation feature.

SPC_REC_CREATOR_GROUP	VARCHAR2(100)	Yes	CREATOR_GR

Identifies the group responsible for creating the species record using the Corporate Editor. Field Purpose: Permits the filtering of species data by their record creator origin. For example, finding records created by Parks Ontario, NHIC, Caribou Program, Guelph District etc.

OBSERVER_ORGANIZATION_TYPE	VARCHAR2(20)	No	OBS_ORG_T

The high-level classification that the Observer Organization belongs to, described as follows: 1] Academic: University or College. 2] NGO: Non-Governmental Organization. 3] Public: General public. 4] Private Sector: Privately-owned company e.g. Forest Industry. 5] Government: Federal, Provincial, Municipal agencies. 6] Other: used to identify an Organization Type that is not listed in the available values. Users should describe the Type in the Observer Organization Name field.

OBSERVER_ORGANIZATION_NAME	VARCHAR2(100)	No	OBS_ORG

When applicable, the name of the organization or agency that the observer is affiliated with. For example, "Toronto Field Naturalists".

ORGANIZATION_LOCAL_IDENT	VARCHAR2(50)	No	ORG_IDENT

For reference purposes only. The internal and local ID of the organization providing species observation information in order to link back to their source data.

OBSERVER_NAME	VARCHAR2(100)	No	OBSERVER

Where it is known, the name of the observer who reported or has knowledge of the observation.

OBSERVATION_SOURCE	VARCHAR2(300)	No	OBS_SOURCE

Describes the source of the observation. For example: "Found during site visit by Red Lake District Office staff".

SEARCH_RESULT_IND	VARCHAR2(3)	No	SEARCH_RES

A Yes or No indicator if the species being searched for was found during this visit. Where the value is: 1] Yes - The species or evidence of the species was found, resulting in a positive species observation. 2] No - No sign of the species was found, resulting in a negative observation. An example of a valid negative observation would be returning to a site where the species had been seen regularly in the past, but no sign of it was found during the current visit.

OBSERVATION_DATE_FLG	VARCHAR2(15)	No	DATE_FLG

Flag indicating if the observation date is Actual, Approximate or Not Available. DEFAULT: Actual

OBSERVATION_DATE	VARCHAR2(20)	Yes	OBS_DATE

The date that the species was observed. Refer to user guide for recommended best practices regarding the date format for values stored in this field.

OBSERVATION_START_TIME	VARCHAR2(8)	No	START_TIME

The time of day the observation began. The value is stored using the Long Time format: hh:mm:ss (24-hour clock). For example: 17:20:23.

OBSERVATION_END_TIME	VARCHAR2(8)	No	END_TIME

The time of day the observation ended. The value is stored using the Long Time format: hh:mm:ss (24-hour clock). For example: 17:20:23.

UNCERTAINTY_DISTANCE	NUMBER(13,0)	No	UNCERTAINT

The confidence level attributed to the mapped location of an observation measured as a distance on the ground.

RA_VALUE	VARCHAR2(20)	No	RA_VALUE

Representation Accuracy (RA) varies on the basis of area observed to be occupied by the species relative to the area contained within the footprint of the mapped observation. Differences in these two values result from incorporation of additional area within the observation boundary to incorporate associated locational uncertainty. Please refer to user-guide for details. Note: a (null) value in this field indicates that the RA was not assessed.

RA_COMMENT	VARCHAR2(500)	No	RA_COMMENT

Comments related to the value entered in the Representation Accuracy Value.

BIOLOGICAL_DETAILS_NOTES	VARCHAR2(2000)	No	BIOL_DET

Data collected on the biology of this Observation, including the number of individuals, vigor, habitat, soils, associated species, peculiar characteristics, etc. NHIC database field name:

EO_DATA

LOCATION_NAME	VARCHAR2(300)	No	LOCATION
A generally accepted name for the location where the feature occurs.			
DIRECTIONS	VARCHAR2(1000)	No	DIRECTIONS
Instructions on how to get to the site including the method (canoe, helicopter etc.), time of year and site accessibility.			
HABITAT_USE_CLASS	VARCHAR2(75)	No	HAB_CLASS
The life process and subcategory associated with a particular site. NOTE: The permissible values for this field were defined by the Natural Heritage Information Centre (NHIC) and Species at Risk (SAR).			
HABITAT_DESCR	VARCHAR2(2000)	No	HAB_DESCR
Freeform text describing the surrounding habitat.			
LAND_TYPE	VARCHAR2(30)	No	LAND_TYPE
A general land description that is used as a search key for wildlife management purposes.			
FOREST_AGE	VARCHAR2(30)	No	FOREST_AGE
A search key used in wildlife management work which describes the age of the forest in the area where data is being collected. Standard list: 1] Less than 10 Years: e.g. cutover or burn. 2] 11-40 Years: often referred to as a YOUNG forest. 3] 41-100 Years: often referred to as a MATURE forest. 4] 101+ Years: often referred to as an OLD forest.			
FOREST_TYPE	VARCHAR2(30)	No	FOREST_TYP
The type of forest in the area where a species observation occurs. Permissible values and context are as follows: 1] Dense: (>= 60% cover). 2] Open: (25-59% cover). 3] Sparse: (10-24% cover).			
FOREST_COVER	VARCHAR2(10)	No	FOREST_COV
A general description of the dominating forest cover type where the species observation took place - Conifer, Hardwood or Mixed (both Hardwood and Softwood).			
FOREST_DOM_SPC_CODE	VARCHAR2(2)	No	FOREST_DOM
The two-character code for a dominant forest species in the area where an observation was recorded. A standard list of permissible values include: 1] Bf (Balsam Fir). 2] Bw (White Birch). 3] CE (Eastern White Cedar). 4] Pj (Jack Pine). 5] Po (Poplar). 6] Sb (Black Spruce). 7] Sw (White Spruce).			
SEARCH_TYPE_FLG	VARCHAR2(11)	No	SRCH_TYPE
A flag to indicate whether the species observation was intentional or incidental in origin within the following context: 1] Intentional: The observation record is the result of a deliberate effort to find the subject species. 2] Incidental: The observation record is the result of an unplanned or incidental encounter with the subject species.			
SEARCH_EFFORT	VARCHAR2(250)	No	SEARCH_EFF
The search effort expended for a given species observation. May include qualitative comments or a quantitative assessment (e.g. number of person-hours).			
IDENTIFICATION_PROBLEM_IND	VARCHAR2(3)	No	ID_PROBLEM
A Yes or No indicator if there was a problem identifying the species. The problem can be described in the verbose descriptions table in the Identification Problem Description field.			
IDENTIFICATION_PROBLEM_DESCR	VARCHAR2(2000)	No	ID_PROB_D
Free form text providing details about an identification problem in the field.			
MONITORED_SUBJ_SETUP_IND	VARCHAR2(3)	No	MON_SETUP
A Yes or No indicator whether an animal in this observation has been captured and will be monitored by a device. RULE: If Yes, then animal and monitoring device details should be			

documented in the SPECIES MONITORED SUBJECT table.

ADDITIONAL_MATERIAL_IND	VARCHAR2(3)	No	ADDIT_MAT

A Yes or No indicator if additional material about the observation was supplied to NHIC. RULE: When Yes, one or more document reference records should be created in the Document Reference table.

PHOTO_IND	VARCHAR2(3)	No	PHOTO_IND

A Yes or No indicator if a photograph was taken of the specimen observed. RULE: When Yes one or more document reference records should be created in the Document Reference table. The Document Type should = Photograph.

OBSERVATION_MAPPABLE_IND	VARCHAR2(3)	No	MAPPABLE

A Yes/No indicator if the observation should be displayed on map products. Intended to exclude the display of historical observations that are too general in their spatial co-ordinates or multiples of observations displaying at the same co-ordinates.

THREATS	VARCHAR2(2000)	No	THREATS

Free form text about possible sources of danger to the existence of the species at the site.

LAND_USE_COMMENTS	VARCHAR2(2000)	No	L_USE_COMM

Free form text about current land use practices around and on the site.

MANAGEMENT_COMMENTS	VARCHAR2(2000)	No	MGMT_COMM

Comments about the management of the feature at this location.

SPECIMEN_TAKEN_IND	VARCHAR2(3)	No	SPECIMEN

A Yes or No indicator whether one or more specimens were collected during the observation. RULE: If Yes, users should create a record in the SPECIES OBS SPECIMEN table. DEFAULT = No.

SPECIMEN_DETERMINED_BY	VARCHAR2(200)	No	DETERMINED

The person who provided the scientific identification of the specimen (if different than the observer). The name and position of the individual should be documented in this field. For example, "Steve Asquith, Biologist - Shepperton Labs". NOTE: As this task is being performed in a professional capacity, identifying the person is compliant to the Freedom of Information and Protection of Privacy Act (FIPPA), and is not considered to be personal information.

SPECIES_SIGHTING_FLG	VARCHAR2(25)	No	SIGHTING

Flag indicator if a species was sighted during the observation. The purpose of this field is to prompt the user to provide a count of the individual(s) seen during the observation. Refer to user-guide for business rules governing how and when this field should be populated. DEFAULT = No.

TOTAL_COUNT_ACC_FLG	VARCHAR2(8)	No	COUNT_ACC

For Plants and Animals: Flag indicating whether the total number of individuals documented for a species is actual or estimated true observation count.

TOTAL_COUNT_INDIVIDUALS	NUMBER(7,0)	No	TOT_COUNT

For Plants and Animals: Where applicable, the estimated or observed total number of individuals documented for the observation.

COUNT_OF_ADULTS_UNKNOWN_SEX	NUMBER(4,0)	No	UNK_SEX

This field is only to be populated when the observed species is an animal. Number of adults of unknown sex in the animal sighting.

COUNT_OF_ADULT_MALES	NUMBER(4,0)	No	AD_MALES

This field is only to be populated when the observed species is an animal. Number of adult males in the animal sighting.

COUNT_OF_ADULT_FEMALES	NUMBER(4,0)	No	AD_FEMALES

This field is only to be populated when the observed species is an animal. Number of adult females in the animal sighting.

COUNT_OF_YOUNG	NUMBER(4,0)	No	YOUNG
This field is only to be populated when the observed species is an animal. Number of young in the animal sighting.			
COUNT_UNKNOWN_AGE_OR_SEX	NUMBER(4,0)	No	UNK_AGE_SX
This field is only to be populated when the observed species is an animal. Number of animals of unknown age or sex in an animal sighting.			
LIFE_STAGE_SEX_AND_COUNT_CMT	VARCHAR2(254)	No	LIFE_STAGE
For Plants and Animals: Comments about the sex (where applicable), life stage(s) and counts observed during the species sighting. Example (Plants): "Of the 50 Trilliums observed, 45 were in a flowering stage". Example (Animals): "Mature female Snapping Turtle laid approximately 10 eggs". NOTE: This field can also be used to describe plants where individual counts are subjective or difficult to determine e.g. 1] Small Dense Clumps, 2] Small Patches or Cushions, 3] Small Colonies or Carpets, 4] Large, almost pure stands.			
ORIG_COORDS_SOURCE	VARCHAR2(25)	Yes	ORIG_COORD
Identifies the original source used to capture the coordinates required to map this feature. NOTE: If OTHER is selected, it should be described in the Original Coordinates Comment field.			
DATUM	VARCHAR2(10)	No	DATUM
Identifies the datum reference system used to define the coordinates. There are three common horizontal datum systems used in Ontario: NAD83, NAD27, NAD27 with 1974 adjustment. In addition, WGS84 is a common datum used by G.P.S. devices where elevation (vertical z-scale) is also captured.			
UTM_ZONE	NUMBER(2,0)	No	UTM_ZONE
A geographic reference zone within the province. Ontario is divided into 4 Universal Transverse Mercator (UTM) zones (15 to 18).			
UTM_EAST	NUMBER(9,3)	No	UTM_EAST
The distance, in metres, from the central meridian of the zone. The central meridian receives a false easting of 500,000 metres.			
UTM_NORTH	NUMBER(10,3)	No	UTM_NORTH
The distance, in metres, from the equator.			
LATITUDE	NUMBER(10,5)	No	LATITUDE
The latitude of the feature in decimal degrees. For example: 79.12345.			
LONGITUDE	NUMBER(10,5)	No	LONGITUDE
The longitude of the centroid of the polygon in decimal degrees. For example: -80.12345. Note: In Ontario, the longitude shall always be stored as a negative value as seen in the example above.			
ORIG_COORDS_COMMENT	VARCHAR2(200)	No	COORDS_COM
Comments about the coordinates and/or source including additional details when the Original Coordinates Source field value is OTHER and/or device details e.g. GPS Model, unit accuracy.			
OBSERVATION_COMMENTS	VARCHAR2(2000)	No	OBS_COMM
Any additional general comments about the observation.			
SPECIES_SEARCH_AREA_ID	NUMBER(13,0)	No	AREA_ID
Foreign key (FK) OGF_ID reference to the parent SPECIES SEARCH AREA feature record.			
SPECIES_DATA_CAPTURE_EVENT_ID	NUMBER(13,0)	No	EVENT_ID
Foreign Key (FK) OGF_ID reference to the parent SPECIES DATA CAPTURE EVENT table record.			
GEOMETRY_UPDATE_DATETIME	DATE	No	GEO_UPT_DT
Date/time the geometry was created or last modified in the source database.			
EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE

Date/time that the record was created in the database.

SHAPE	SDO_GEOMETRY	No	SHAPE

ESRI geometry feature system field.

SPECIES_DOCUMENT_REFERENCE

NON-SPATIAL EDITABLE TABLE: Stores details about a document referenced by a feature e.g. Title, Author, Publication Year, Location etc. This can include standards, procedures, protocols, maps etc.

Column Name	Column Type	Mandatory	Short Name	Valid Values
OGF_ID	NUMBER (13,0)	Yes	OGF_ID	
Ontario Geospatial Feature (OGF) system identifier uniquely generated at the application level.				
DOCUMENT_TYPE	VARCHAR2 (25)	Yes	DOC_TYPE	'Miscellaneous', 'Project Management', 'Report', 'Standards and Methods', 'Protocol', 'Map-OBM', 'Map-NTS', 'Map-Other', 'Photograph', 'Project Portfolio','Audio','Data Collection Form','Field Notes','Video'
Identifies the document type that is being referenced such as a report, standards and methods, protocols and miscellaneous documentation such as maps. NOTE: Choose PROJECT PORTFOLIO where several document types are bundled together for a project.				
TITLE	VARCHAR2 (254)	Yes	TITLE	
The title of the document or publication. It can be abbreviated if the original title is very long. Example for MRD001: Black River Matheson (BRIM) Data, 1989. NOTE: For maps, the tile or map reference identifier can be documented in this field e.g. NTS KIRKLAND LAKE 42 A/1.				
AUTHOR	VARCHAR2 (80)	No	AUTHOR	
The name of the organization or individual who authored the document or publication.				
PUBLICATION_YEAR	NUMBER (4,0)	No	PUB_YEAR	
The year when the reference was published or otherwise released, example: 1992.				
PUBLISHING_INFORMATION	VARCHAR2 (150)	No	PUB_INFO	
The name of the journal, publisher, technical report series and page numbers if applicable.				
MAP_SCALE	VARCHAR2 (15)	No	MAP_SCALE	
Where applicable, the scale of the reference map e.g. 1:50,000.				
DOCUMENT_LOCATION	VARCHAR2 (254)	No	DOC_LOC	
Identifies the physical location of the referenced document. If the document is digital and is available online, the URL to the document or its location can be stored in this field.				
PACKAGED_PRODUCT_IND	VARCHAR2 (3)	No	PACK_PROD	'Yes', 'No'
A Yes or No indicator whether the document is stored and available in the Land Information Ontario Warehouse as a packaged product.				

GENERAL_COMMENTS	VARCHAR2 (2000)	No	GNL_CMT	
General comments about the reference document.				
EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE	
For subscription: Date/time that the record was created in the LIO database. For publication: Date/time the record was created in the source database.				

SPECIES_EVIDENCE_TYPE_LIST

A lookup table listing Evidence types and descriptions for applicable species.

Column Name	Column Type	Mandatory	Short Name	Valid Values
SPECIES_EVIDENCE_TYPE	VARCHAR2 (60)	Yes	EVID_TYPE	
Describes the supporting evidence for the observation that a species was/is in the area. For example, a direct sighting, tracks, remains, historical information, scats etc.				
EVIDENCE_TYPE_DESCR	VARCHAR2 (254)	Yes	TYPE_DESCR	
Context description of the Species Evidence Type.				
EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE	
For subscription: Date/time that the record was created in the LIO database. For publication: Date/time the record was created in the source database.				
EXPIRY_DATETIME	DATE	No	EXP_DATE	
Date the record is no longer part of the database, or no longer valid. This is only populated in the history tables otherwise it will be null except for code tables.				

SPECIES_MONITORED_SUBJ_SETUP

NON_SPATIAL EDITABLE TABLE: This table stores information about a species subject being monitored, along with details of up to four monitoring devices that can be attached to the subject at one time.

Column Name	Column Type	Mandatory	Short Name	Valid Values
OGF_ID	NUMBER (13,0)	Yes	OGF_ID	
Ontario Geospatial Feature (OGF) Id. A unique numeric provincial identifier assigned to each object.				
SPECIES_OBSERVATION_ID	NUMBER (13,0)	No	OBS_ID	
Foreign Key (FK) OGF_ID reference to parent SPECIES_OBSERVATION_FT table record.				
IDENT	VARCHAR2 (20)	Yes	IDENT	
A unique identifier assigned to a monitored animal for the duration of the study i.e. "6533-2", "34968". This identifier is assigned as the same animal may be fitted with different tracking devices over the course of the study (e.g. to replace a malfunctioning collar).				
SEX	VARCHAR2 (12)	Yes	SEX	'Male', 'Female', 'Undetermined'
The sex of the subject species.				
LIFE_STAGE	VARCHAR2 (15)	Yes	LIFE_STAGE	'Adult', 'Egg', 'Young', 'Undetermined'

Identifies the life stage of the subject that is being set up for monitoring. NOTE: the age of the individual subject can be documented in the Subject Age field.

AGE	VARCHAR2 (15)	No	AGE

Free text field identifying the age of the subject (e.g. the number of years since birth) at the time of the monitoring setup. The age may be actual or estimated. Examples: 5 years, GT 2 years, LT 1 year.

HEALTH_DESCR	VARCHAR2 (1000)	No	HEALTH_D

Free-form text about the health of the monitored species subject.

EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE

For subscription: Date/time that the record was created in the LIO database. For publication: Date/time the record was created in the source database.

SPECIES_MONITORING_ACTIVITY

Additional non-spatial information is collected using hardware on the collar that is separate from the GPSArgos hardware, and therefore are not directly linked to individual GPSArgos locations. This includes Temperature and Activity. Activity is collected independently from the GPSArgos fixes. Temperature however, depending on the collar manufacturer, is sometimes collected at the same time as the GPS feed, and is collected at different times under other circumstances. For this reason it is best to store temperature in a separate table along with activity.

Column Name	Column Type	Mandatory	Short Name	Valid Values
SPECIES_MON_SUBJ_SETUP_ID	NUMBER (13,0)	Yes	SETUP_ID	

Foreign key (FK) OGF_ID reference to SPECIES MONITORED SUBJ SETUP table record.

ACTIVITY_DATETIME	DATE	Yes	DATETIME

Date and time of the activity and/or temperature value.

X_COORD	NUMBER (38,0)	Yes	X_COORD

Horizontal activity value hardware collected using accelerometer hardware. X would be the default field as a collar type does not specify whether it is an X, Y or Z value. For example, Telonics uses the term ActivityCount but Lotek specifies X, Y and Z. In this case the Telonics ActivityCount value would be stored in this Acitivity X field.

Y_COORD	NUMBER (38,0)	Yes	Y_COORD

Forward movement activity value collected using accelerometer hardware.

Z_COORD	NUMBER (38,0)	No	Z_COORD

Vertical activity (Z) value measured using accelerometer hardware.

TEMPERATURE	NUMBER (4,2)	No	TEMPERATUR

Air Temperature at this location and time measured in degrees Celcius to two decimal places.

EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE

For subscription: Date/time that the record was created in the LIO database. For publication: Date/time the record was created in the source database.

SPECIES_MONITORING_DEVICE

Identifies the kind of instrument(s) or device(s) affixed to a species subject in order to monitor or

identify it, such as ear bands, ear tags, VHF or GPS collar. The unique device identifier assigned by the business area or manufacturer is also documented in this table, along with dates associated with the monitoring period. RULE: Up to 4 different devices may be affixed to a species subject.

Column Name	Column Type	Mandatory	Short Name	Valid Values
SPECIES_MON_SUBJ_SETUP_ID	NUMBER (13,0)	Yes	SETUP_ID	
Foreign Key (FK) OGF_ID reference to parent SPECIES MONITORED SUBJ SETUP table record.				
MONITORING_DEVICE_TYPE	VARCHAR2 (30)	Yes	DEVICE_T	'ARGOS Satellite Collar', 'Band', 'Ear Tags', 'GPS Collar: GSM Technology', 'GPS Collar: Other', 'GPS Collar: Store on Board', ... (See SPECIES_MON_DEVICE_TYPE_LIST table)
The kind of instrument that is affixed to the subject species in order to monitor or identify it. For example: Band, Ear Tags, VHF Collar, GPS Collar etc. Values chosen from SPECIES MON DEVICE LIST.				
MONITORING_DEVICE_IDENT	VARCHAR2 (30)	Yes	DEVICE_ID	
The identifier that is assigned to a device by the manufacture or business area. It is used to positively identify the subject species for monitoring purposes. The identifier can be a number or a combination of alphanumeric characters. Examples: [1] "65341", "3-475465" (collars). [2] "5REDLEFT 5BLUERIGHT" (ear tags). NOTE: Coloured devices (i.e. ear tags) are often used as a quick method of identifying the sex of a monitored animal from a distance. For example, yellow ear tags are used to identify female wolverines, while red ear tags are reserved for males.				
MONITORING_DEVICE_PLATFORM_ID	VARCHAR2 (30)	No	PLATFORMID	
This is another monitoring device identification number. This identifier differs from the ARGOS_ID used to email data with CLS America.				
MONITORING_DEVICE_VHF	NUMBER (7,4)	No	DEVICE_VHF	
Every collar contains a single VHF number. VHF is a radio frequency that stands for Very High Frequency. Biologists use the VHF on the collar to retrieve collars in the field using a receiver and antenna. Measured in Megahertz (e.g. 150.548).				
MONITORING_START_DATE	DATE	Yes	START_DATE	
The date when a monitoring device was activated on a species subject. Example: 2006/03/24 (year/month/day)				
MONITORING_END_DATE	DATE	No	END_DATE	
The date when a monitoring device on a species subject was deactivated or ceased to function. Example: 2006/03/24 (year/month/day).				
MONITORING_END_REASON	VARCHAR2 (60)	No	END_REASON	
A short description explaining why the monitoring ended. Examples: "Animal died", "Device removed", "Device inoperable", "End of Project".				
EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE	
For subscription: Date/time that the record was created in the LIO database. For publication: Date/time the record was created in the source database.				

SPECIES_MON_DEVICE_TYPE_LIST

Listing of valid monitoring device types that can be affixed to a subject species.

Column Name	Column Type	Mandatory	Short Name	Valid Values
MONITORING_DEVICE_TYPE	VARCHAR2	Yes	DEVICE_T	

	(30)			

The kind of instrument that is affixed to the subject species in order to monitor or identify it. For example: Band, Ear Tags, VHF Collar, GPS Collar etc.

MONITORING_DEVICE_DESCR	VARCHAR2 (254)	Yes	DEVICE_D	

A short description of the monitoring device type.

EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE	

Date/time the record was created or last modified in the source database.

EXPIRY_DATETIME	DATE	No	EXP_DATE	

Date/time that the record was expired from use.

SPECIES_OBS_DOCUMENT_REFERENCE

Intersect table between SPECIES_OBSERVATION_FT and SPECIES_DOCUMENT_REFERENCE which allows multiple referencing of Species Observations to documents such as standards, protocols, maps, photos taken during observations etc.

Column Name	Column Type	Mandatory	Short Name	Valid Values
SPECIES_OBSERVATION_ID	NUMBER (13,0)	Yes	OBS_ID	

Foreign Key (FK) OGF_ID reference to parent SPECIES_OBSERVATION_FT table record.

SPECIES_DOCUMENT_REFERENCE_ID	NUMBER (13,0)	Yes	DOC_REF_ID	

Foreign Key (FK) OGF_ID reference to parent SPECIES DOCUMENT REFERENCE record.

EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE	

For subscription: Date/time that the record was created in the LIO database. For publication: Date/time that the record was created in the source database.

SPECIES_OBS_EVIDENCE

Documents the evidence of a species seen or found during the observation. RULE: A separate record should be created for each evidence type encountered during the observation.

Column Name	Column Type	Mandatory	Short Name	Valid Values
SPECIES_OBSERVATION_ID	NUMBER (13,0)	Yes	OBS_ID	

Foreign Key (FK) OGF_ID reference to parent SPECIES_OBSERVATION_FT table record.

SPECIES_EVIDENCE_TYPE	VARCHAR2 (60)	Yes	EVID_TYPE	'Antlers', 'Beds', 'Birthing', 'Blood', 'Call or Sound', 'Calving', ... (See SPECIES_EVIDENCE_TYPE_LIST table)

Describes the supporting evidence for the observation that a species was/is in the area. For example, a direct sighting, tracks, remains, historical information, scats etc.

EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE	

For subscription: Date/time that the record was created in the LIO database. For publication: Date/time the record was created in the source database.

SPECIES_OBS_SPECIMEN

Documents the specimen collected for later positive identification or study during the species

observation. For example, a collected tooth specimen can be analyzed to pinpoint the age of an animal. RULE: A separate record should be created for each specimen set collected.

Column Name	Column Type	Mandatory	Short Name	Valid Values
OGF_ID	NUMBER (13,0)	Yes	OGF_ID	
Ontario Geospatial Feature (OGF) Id. A unique numeric provincial identifier assigned to each object.				
SPECIES_OBSERVATION_ID	NUMBER (13,0)	Yes	OBS_ID	
Foreign Key (FK) OGF_ID reference to parent SPECIES_OBSERVATION_FT table record.				
SPECIMEN_TYPE	VARCHAR2 (60)	Yes	SPECIMEN_T	'Antler', 'Blood', 'Bone', 'Cartilage', 'Entire Organism', 'Fin', ... (See SPECIES_SPECIMEN_TYPE_LIST table)
Describes the type of specimen collected from the species evidence, for example, track cast, bone, skull, stomach / intestinal contents, parasite etc. Note: If type OTHER is chosen, it should be described in the Specimen Details field.				
LOCAL_COLLECTION_NUMBER	VARCHAR2 (50)	No	LOCAL_COLL	
Personal or local collection identifier used by the collector to catalogue the specimen.				
SPECIMEN_ACCESSION_NUMBER	VARCHAR2 (50)	No	ACCESS_NUM	
A reference to a voucher specimen stored in a museum, herbarium, etc.				
SPECIMEN_REPOSITORY	VARCHAR2 (50)	No	REPOSITORY	
Short free-text description identifying the physical location where the collected specimen is stored or can be found. Examples: 1] Royal Ontario Museum Herbarium, 2] Trent University, 3] Red Lake District Office, 4] No longer stored - Specimens disposed of.				
SPECIMEN_DETAILS	VARCHAR2 (254)	No	DETAILS	
Details about the collected specimen.				
EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE	
For subscription: Date/time that the record was created in the LIO database. For publication: Date/time the record was created in the source database.				

SPECIES_SPECIMEN_TYPE_LIST

Master lookup table of permissible specimen types.

Column Name	Column Type	Mandatory	Short Name	Valid Values
SPECIMEN_TYPE	VARCHAR2 (60)	Yes	SPECIMEN_T	
Describes the type of specimen(s) collected from the evidence, for example, track cast, bone, skull, stomach / intestinal contents, parasite etc.				
SPECIMEN_DESCR	VARCHAR2 (254)	Yes	SPECIMEN_D	
Context description of the Specimen Type.				
EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE	

For subscription: Date/time that the record was created in the LIO database. For publication: Date/time the record was created in the source database.			
EXPIRY_DATETIME	DATE	No	EXP_DATE
Date the record is no longer part of the database, or no longer valid. This is only populated in the history tables otherwise it will be null except for code tables.			

LIO Lookup Table Values:

SPECIES_EVIDENCE_TYPE_LIST

SPECIES EVIDENCE TYPE	EVIDENCE TYPE DESCR	EXPIRY DATETIME
Antlers	Antlers found at the observation site.	
Beds	Evidence indicating that the species subject rested the observation site.	
Birthing	Evidence that the species subject had given birth (e.g. bear)	
Blood	The blood of the species subject was found at the observation site.	
Call or Sound	Call, cry, song, or sound (e.g. woodpecker rapping on tree)	
Calving	Evidence of the subject animal giving birth to a calf (e.g. elk, caribou)	
Collar	Tracking collar belonging to the species subject found at the observation site.	
Cratering	Locations on land where caribou have dug down through the snow to locate lichen, leaving behind what resembles a crater.	
Den	Subject species den	
Egg(s)	Insects/Amphibians/Reptiles/Birds/Fish: Egg(s) found at the observation site.	
Feather(s)	Birds: One or more feathers found at the observation site.	
Foliage	Foliage evidence of a plant subject species	
Frass	Insect excrement	
Grazing	Evidence that the subject species was feeding on vegetation.	
Hair	Species subject hair or fur found at the observation site e.g. in a hair snare	
Historic Record	Species subject referenced in a historic record	
Markings	Identifiable subject species bite/claw/antler marks on an object (e.g. tree)	
Nest	Insect or bird nest	
Pellets - Calf	Excrement from a calf (e.g. caribou)	
Pellets / Scat	Excrement	
Remains - Aboriginal Kill	Subject species killed by a First Nations community member as per treaty rights.	

Remains - Calf	Calf remains found at the observation site.	
Remains - Illegal Hunting	Subject species killed by a poacher.	
Remains - Other	Subject species remains type not in the current list.	
Remains - Predation	Subject species killed by a predator	
Remains - Rail Collision	Subject species killed by a train	
Remains - Road Collision	Subject species killed by a road vehicle.	
Scales	e.g. reptile scales	
Shell	e.g. turtle or crustacean shell	
Sighting	Species subject seen during observation e.g. from a distance, live-trap, remote camera, video.	
Skin	e.g. moulted snake skin	
Slushing	Locations on frozen water bodies where caribou have dug down through the snow to drink the water from the slush located under the snow.	
Tracks - Calf	Calf (e.g. Caribou) identified by tracks	
Tracks	Species subject identified by tracks	
Trapline Harvest	Species subject caught in trapline	

LIO Lookup Table Values:

SPECIES_MON_DEVICE_TYPE_LIST

MONITORING DEVICE TYPE	MONITORING DEVICE DESCR	EXPIRY DATETIME
ARGOS Satellite Collar	A collar that uses the Advanced Research and Global Observation Satellite (ARGOS) data collection system to collect positional data.	
Band	A band with some form of identification affixed to a subject species, e.g. on the leg of a bird.	
Ear Tags	Tags with some form of identification affixed to one or both ears of a species subject.	
GPS Collar: GSM Technology	Global Positioning System (GPS) collar with remote download via the Global System for Mobile Communication (GSM). The GSM system is used to transmit fix data positions of the collar (estimated by the GPS engine inside the collar) to a device.	
GPS Collar: Other	Global Positioning System (GPS) collar that utilize Argos, UHF, GSM and/or Iridium technology to access the data remotely while the collar is operational.	
GPS Collar: Store on Board	Global Positioning System (GPS) collar which allow for the storage of GPS locations in a memory on board the collar. The collars must be physically recovered to download the data.	
GPS Collar: Uplink via ARGOS	Global Positioning System (GPS) collar which allow for data transmission of GPS locations through the Advanced Research and Global Observation Satellite (ARGOS) data collection system	
Microchip Implant	Microchip technology-based device implanted or affixed to a species subject in order to track or monitor	
PIT Tag Reader	Device used to read count of PIT tags within sensor range. Often used to count bats equipped with PIT Tags entering or exiting a cave or mine shaft.	
PIT Tag	Passive Integrated Transponder (PIT) tag. A permanently-implanted coded marker that serves to reliably identify an individual from a subject species.	
Patagial Tag	A patagial tag is a permanent tag held onto the wing of a bird by a rivet punched through the patagium	
Static Collar	Collar not equipped with electronics. For example, colour-coded collars are used to be able to individually identify animals by sight alone.	
VHF Collar	Allow for manually tracking and recording; Collars that use Very High Frequency (VHF) frequencies to transmit radio signals, requiring the use of VHF frequency radio receivers.	

LIO Lookup Table Values:

SPECIES_SPECIMEN_TYPE_LIST

SPECIMEN TYPE	SPECIMEN DESCR	EXPIRY DATETIME
Antler	Antler e.g. from a moose, deer or elk collected.	
Blood	Blood was extracted from the species subject.	
Bone	Bone was collected from the species subject, usually from remains.	
Cartilage	Cartilage (e.g. from fish) was collected from the species subject, usually from remains.	
Entire Organism	e.g. invasive ? zebra mussels, sea lamprey, plants	
Fin	One or more fins (from fish) were collected from the species subject, usually from remains.	
Frass	Insect excrement collected.	
Hair	Hair was collected from the species subject	
Other	Specimen type other than what is available in this list. Users should describe the specimen type in the Specimen Details field.	
Parasite	An internal or external parasite was collected from the species subject.	
Pellets / Scat	Excrement collected from the species subject.	
Skull	The skull from the species subject was collected as a specimen, usually from remains.	
Stomach / Intestinal Contents	The stomach contents (meal) was collected from the species subject.	
Teeth	One or more teeth were collected from the species subject.	
Tissue	Tissue (e.g. skin, flesh) was collected from the species subject.	
Track Cast	A plaster or resin cast was made of an animal track.	

LIO Table Relationships for Class:

Species Observation, Locally Tracked

SPECIES_OBS_LOCAL_FT	SPECIES_MONITORED_SUBJ_SETUP.SPECIES_OBSERVATION_ID = SPECIES_OBS_LOCAL_FT.OGF_ID	SPECIES_MONITORED_SUBJ_SETUP	SPECIES_MONITORED_SUBJ_SETUP.OGF_ID = SPECIES_MONITORING_ACTIVITY.SPECIES_MON_SUBJ_SETUP_ID	SPECIES_MONITORING_ACTIVITY		
			SPECIES_MONITORED_SUBJ_SETUP.OGF_ID = SPECIES_MONITORING_DEVICE.SPECIES_MON_SUBJ_SETUP_ID	SPECIES_MONITORING_DEVICE	SPECIES_MONITORING_DEVICE.MONITORING_DEVICE_TYPE = SPECIES_MON_DEVICE_TYPE_LIST.MONITORING_DEVICE_TYPE	SPECIES_MON_DEVICE_TYPE_LIST
	SPECIES_OBS_DOCUMENT_REFERENCE.SPECIES_OBSERVATION_ID = SPECIES_OBS_LOCAL_FT.OGF_ID	SPECIES_OBS_DOCUMENT_REFERENCE	SPECIES_OBS_DOCUMENT_REFERENCE.SPECIES_DOCUMENT_REFERENCE_ID = SPECIES_DOCUMENT_REFERENCE.OGF_ID	SPECIES_DOCUMENT_REFERENCE		
	SPECIES_OBS_EVIDENCE.SPECIES_OBSERVATION_ID = SPECIES_OBS_LOCAL_FT.OGF_ID	SPECIES_OBS_EVIDENCE	SPECIES_OBS_EVIDENCE.SPECIES_EVIDENCE_TYPE = SPECIES_EVIDENCE_TYPE_LIST.SPECIES_EVIDENCE_TYPE	SPECIES_EVIDENCE_TYPE_LIST		
	SPECIES_OBS_SPECIMEN.SPECIES_OBSERVATION_ID = SPECIES_OBS_LOCAL_FT.OGF_ID	SPECIES_OBS_SPECIMEN	SPECIES_OBS_SPECIMEN.SPECIMEN_TYPE = SPECIES_SPECIMEN_TYPE_LIST.SPECIMEN_TYPE	SPECIES_SPECIMEN_TYPE_LIST		