

# WRST Caribou Monitoring Database Application

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## About

The WRST Caribou Monitoring Database Application provides a user friendly interface for entering, importing and summarizing data about the Mentasta and Chisana caribou herds. The back end database uses a Microsoft SQL Server and the front end application is built in Microsoft Visual Basic .NET.

Biologists collect information about the herds during aerial composition count, population estimate and radiotracking surveys. Data from the surveys is then entered into the database directly or assembled into spreadsheets and then imported. Both the database and the application perform some automated quality control checks. Other checks must be done by a trained biologist. Once quality of the data is as high as possible and all defects are documented the WRST biologist certifies the dataset and it can then be analyzed.

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## Data entry

### Process

Data entry consists of three main tasks:

1. Enter details about a survey flight
2. Enter or import caribou group waypoint and group composition data
3. Link any GPS collared animals detected in the groups to the Alaska Region's Animal Movement GPS collar database

### Enter details about a survey flight

1. Start the application
2. Enter flight details into the Flights grid (See [Appendix A: Data definitions](#) for details about each field).

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Save edits | Reload dataset | Results

Flight: 2009-06-22 9:00:00 AM Mentasta CC N1234 HDP

Year	Herd	Survey Type	Crew Number	Pilot	Observer1
2009	Mentasta	Composition count	1	BBB	HDP
		Composition count			
		Population estimate			
		Radiotracking			

- 3.
4. Ensure all required data is entered.
5. Save the record

### Enter or import caribou group waypoint and group composition data

Caribou groups are spatial points recorded during survey flights where caribou groups were spotted. To enter caribou groups you must first select the flight from which the group was observed, or enter a new flight to serve as the parent record.

#### Manual data entry

1. Start the application
2. Enter a new flight record or select an existing flight record. The group(s) you enter must be associated with a

flight.

3. Enter the group data in the Caribou Groups grid (See [Appendix A: Data definitions](#) for details about each field).

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Save edits | Reload dataset | Results

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**Flight: 2009-06-22 9:00:00 AM Mentasta CC N1234 HDP**

Year	Herd	Survey Type	Crew Number	Pilot	Observer1	Observer2	Aircraft Type	Tail No
2009	Mentasta	Composition count	1	BBB	HDP		PA18	N1234

1. Select a flight or enter a new flight record

Record: 1 Of 1

2. Enter data about each caribou group seen during the selected flight

Import survey data from file... Auto-match frequencies to AnimalIDs Change orientation

**Caribou groups**

Group Number	Sighting Date	Frequencies In Group	Num. Fr...	Num. AnimalIDs	Small Bull	Medium Bull	Large Bull	Bull	Cow	Calf
1	2009-06-22 0...	164.357	1	0	2	1			3	7

- 4.

## Importing data

## Link any GPS collared animals detected in the groups to the Alaska Region's Animal Movement GPS collar database

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## Appendix A: Data definitions

Table	Column	ColumnDescription
dbo.Captures	AdditionalDrugs	Additional drugs
dbo.Captures	Anesthetic	Immobilizing anesthetic. Carfentanil, Thiafentanil
dbo.Captures	AnestheticConcentration_mg_ml	Concentration of anesthetic (mg/ml)
dbo.Captures	AnestheticDosage_mg	mg of anesthetic (per dart)
dbo.Captures	AnestheticDosage_ml	ml of anesthetic (per dart)
dbo.Captures	AnestheticReversal	Drug used to reverse effects of anesthetic
dbo.Captures	AnestheticReversalConcentration_mg_ml	Concentration of anesthetic reversal in mg/ml
dbo.Captures	AnestheticReversalDosage_mg	mg of anesthetic reversal
dbo.Captures	AnestheticReversalDosage_ml	ml of anesthetic reversal given
dbo.Captures	AnestheticReversalRoute	Route of anesthetic reversal dose (IV, SQ, IM)
dbo.Captures	AnestheticReversalTime	Time (24hr) anesthetic reversal administered
dbo.Captures	AnimalID	Foreign key to the Caribou table
dbo.Captures	BloodSampleGreen	Plasma
dbo.Captures	BloodSamplePurple	Whole blood
dbo.Captures	BloodSampleRed	Serum
dbo.Captures	BodyCondition	Fat, Good, Poor, Emaciated
dbo.Captures	BodyLength	Body length in centimeters
dbo.Captures	CaptureDate	Date the caribou was captured
dbo.Captures	CaptureID	Primary key
dbo.Captures	CaptureLatitude	Latitude where the caribou was captured (Degrees)
dbo.Captures	CaptureLongitude	Longitude where the caribou was captured (Degrees)
dbo.Captures	CertificationDate	Date the entirety of the data collected during capture
dbo.Captures	CertificationLevel	Certification process level. Raw, Provisional, Approved
dbo.Captures	CertifiedBy	Person certifying the data
dbo.Captures	ChestGirth	Chest girth in centimeters

dbo.Captures	Comments	Comments
dbo.Captures	Crew	Names of crew members
dbo.Captures	DartLocation	Description of where the dart hit
dbo.Captures	DrugEffect	1-5 (Light --> Heavy
dbo.Captures	EstimatedAge	Estimated age based on tooth wear
dbo.Captures	FinalBodyTemperature	Final body temperature (Centigrade)
dbo.Captures	FinalBodyTemperatureTime	Final body temperature time (24hr)
dbo.Captures	Frequency	Collar frequency
dbo.Captures	GeneralLocation	General location
dbo.Captures	HindfootLength	Hindfoot measurement in centimeters.
dbo.Captures	InitialBodyTemp	Initial body temperature (Centigrade)
dbo.Captures	InitialBodyTempTime	Initial body temperature time (24hr)
dbo.Captures	Jaw	Jaw length in centimeters.
dbo.Captures	Lactating	Was the caribou lactating? True/False
dbo.Captures	MetatarsusLength	Metatarsus measurement in centimeters
dbo.Captures	NeckCircumference	Neck circumference in centimeters
dbo.Captures	NumHits	Number of dart hits
dbo.Captures	NumMisses	Number of dart misses
dbo.Captures	OldFrequency	Former frequency
dbo.Captures	OldVisualCollar	Former visual collar code
dbo.Captures	ProjectID	ProjectID associated with the caribou in the A
dbo.Captures	ProtocolIRMAReference	IRMA Data Store reference code for the proto
dbo.Captures	ProtocolVersion	Version of the monitoring protocol used for th
dbo.Captures	RecordInsertedBy	Username of person who inserted the record
dbo.Captures	RecordInsertedDate	Datetime the record was inserted
dbo.Captures	Sedative	Sedative given during immobilization
dbo.Captures	SedativeConcentration_mg_ml	Concentration of sedative (mg/ml)
dbo.Captures	SedativeDosage_mg	Mg of sedative (per dart)
dbo.Captures	SedativeDosage_ml	ml of sedative (per dart)
dbo.Captures	SedativeReversal	Drug used to reverse effects of sedative
dbo.Captures	SedativeReversalConcentration_mg_ml	Concentration of sedative reversal in mg/ml
dbo.Captures	SedativeReversalDosage_mg	mg of sedative reversal
dbo.Captures	SedativeReversalDosage_ml	ml of sedative reversal given
dbo.Captures	SedativeReversalRoute	Route of sedative reversal dose (IV, SQ, IM)
dbo.Captures	SedativeReversalTime	Time (24hr) sedative reversal given
dbo.Captures	SerialNumber	Serial number of radiocollar
dbo.Captures	Sex	Sex. M/F
dbo.Captures	Shooter	Name of the person who shot the caribou.
dbo.Captures	SOPNumber	Standard Operating Procedure that guided th
dbo.Captures	SOPVersion	Version of the Standard Operating Procedure
dbo.Captures	TimeAnimalDown	Time animal subdued (24hr time format).
dbo.Captures	TimeFirstHitBounce	Time of the first hit/bounce (24hr time forma
dbo.Captures	TimeMobile	Time (24hr) caribou became mobile
dbo.Captures	TimeSecordHitBounce	Time of the second hit/bounce (24hr time for
dbo.Captures	TimeStanding	Time (24hr) caribou stood up.
dbo.Captures	TimeStartChase	Start of the chase (24hr time format).
dbo.Captures	TimeThirdHitBounce	Time of the third hit/bounce (24hr time forma
dbo.Captures	TimeVisibleEffect	Time of first visible effect (24hr time format).
dbo.Captures	TS	Timestamp. Access front-end needs this to a
dbo.Captures	VisualCollar	Visual collar color and number.
dbo.Captures	Weight_Kg	Weight in kilograms
dbo.Captures	WithCalf	Was the caribou with a calf? True/False.

dbo.CollaredAnimalsInGroups	AnimalID	AnimalID from Animal_Movements database
dbo.CollaredAnimalsInGroups	Comment	Comment
dbo.CollaredAnimalsInGroups	EID	Caribou group identifier. Foreign key to the SurveyGroups table
dbo.CollaredAnimalsInGroups	RecordInsertedBy	Username of person who inserted the record
dbo.CollaredAnimalsInGroups	RecordInsertedDate	Datetime the record was inserted
dbo.SurveyFlights	AircraftType	Aircraft type
dbo.SurveyFlights	CrewNumber	Crew number
dbo.SurveyFlights	FlightID	Primary key. User defined unique key.
dbo.SurveyFlights	Herd	Chisana or Mentasta
dbo.SurveyFlights	IsFollowUpFlight	True if the flight was post-survey to find caribou
dbo.SurveyFlights	Notes	Notes
dbo.SurveyFlights	Observer1	Name of the observer
dbo.SurveyFlights	Observer2	Second (backseat) observer
dbo.SurveyFlights	Pilot	Name of the pilot
dbo.SurveyFlights	RecordInsertedBy	Username of person who inserted the record
dbo.SurveyFlights	RecordInsertedDate	Datetime the record was inserted
dbo.SurveyFlights	SnowConditions	Snow conditions
dbo.SurveyFlights	SOPNumber	Standard Operating Procedure that guided the flight
dbo.SurveyFlights	SOPVersion	Version of the Standard Operating Procedure
dbo.SurveyFlights	SpotterPlanePilot	Name of the spotter plane pilot
dbo.SurveyFlights	SpotterPlaneTailNo	Tail number of spotter plane
dbo.SurveyFlights	SpotterPlaneType	Type of spotter plane used
dbo.SurveyFlights	SurveyType	Survey type. PE=Population Estimate, CC=Countdown
dbo.SurveyFlights	TailNo	Aircraft tail number
dbo.SurveyFlights	TimeDepart	Date and time the flight departed
dbo.SurveyFlights	TimeReturn	Date and time the flight returned
dbo.SurveyFlights	TS	Timestamp. Access front-end needs this to access record
dbo.SurveyFlights	WeatherConditions	Weather conditions encountered during the survey
dbo.SurveyFlights	Year	Year
dbo.Surveys	Accuracy	NULL
dbo.Surveys	Adult	Older studies sometimes only counted adults
dbo.Surveys	Bull	Mentasta herd. Number of obvious bulls.
dbo.Surveys	Calf	Number of calves
dbo.Surveys	CalvesAtHeel	Calves at heel. Yes/No (1/0)
dbo.Surveys	CertificationDate	Date the entirety of the data collected during the survey
dbo.Surveys	CertificationLevel	Certification process level. Raw, Provisional, Approved
dbo.Surveys	CertifiedBy	Person certifying the data
dbo.Surveys	Comment	Comment
dbo.Surveys	Cow	Number of cows
dbo.Surveys	DistendedUdders	Distended udders. Yes/No (1/0)
dbo.Surveys	EID	Primary key
dbo.Surveys	FlightID	Flight identifier. Foreign key to PopulationSurveyFlights
dbo.Surveys	FrequenciesInGroup	Comma separated list of frequencies detected
dbo.Surveys	GroupNumber	Group number
dbo.Surveys	LargeBull	Chisana herd. Number of large bulls
dbo.Surveys	Lat	Latitude. WGS1984 GCS
dbo.Surveys	Lon	Longitude. WGS1984 GCS
dbo.Surveys	Marked	Marked. 1=True, 0=False
dbo.Surveys	MediumBull	Chisana herd. Number of medium bulls
dbo.Surveys	Mode	NULL
dbo.Surveys	Out	In survey area? I = In, O = Out. All animals are in
dbo.Surveys	RecordInsertedBy	Username of person who inserted the record

dbo.Surveys	RecordInsertedDate	Datetime the record was inserted
dbo.Surveys	RetainedAntler	Retained antler(s). Yes/No (1/0)
dbo.Surveys	SearchArea	Alaska, Yukon
dbo.Surveys	Seen	Was the group seen?
dbo.Surveys	SightingDate	Date of sighting
dbo.Surveys	SmallBull	Chisana herd. Number of small bulls
dbo.Surveys	SourceFilename	Filename of the source data if imported rather than collected
dbo.Surveys	TS	Timestamp. Access front-end needs this to access data
dbo.Surveys	WaypointName	Name of the GPS waypoint
dbo.sysdiagrams	definition	NULL
dbo.sysdiagrams	diagram_id	NULL
dbo.sysdiagrams	name	NULL
dbo.sysdiagrams	principal_id	NULL
dbo.sysdiagrams	version	NULL