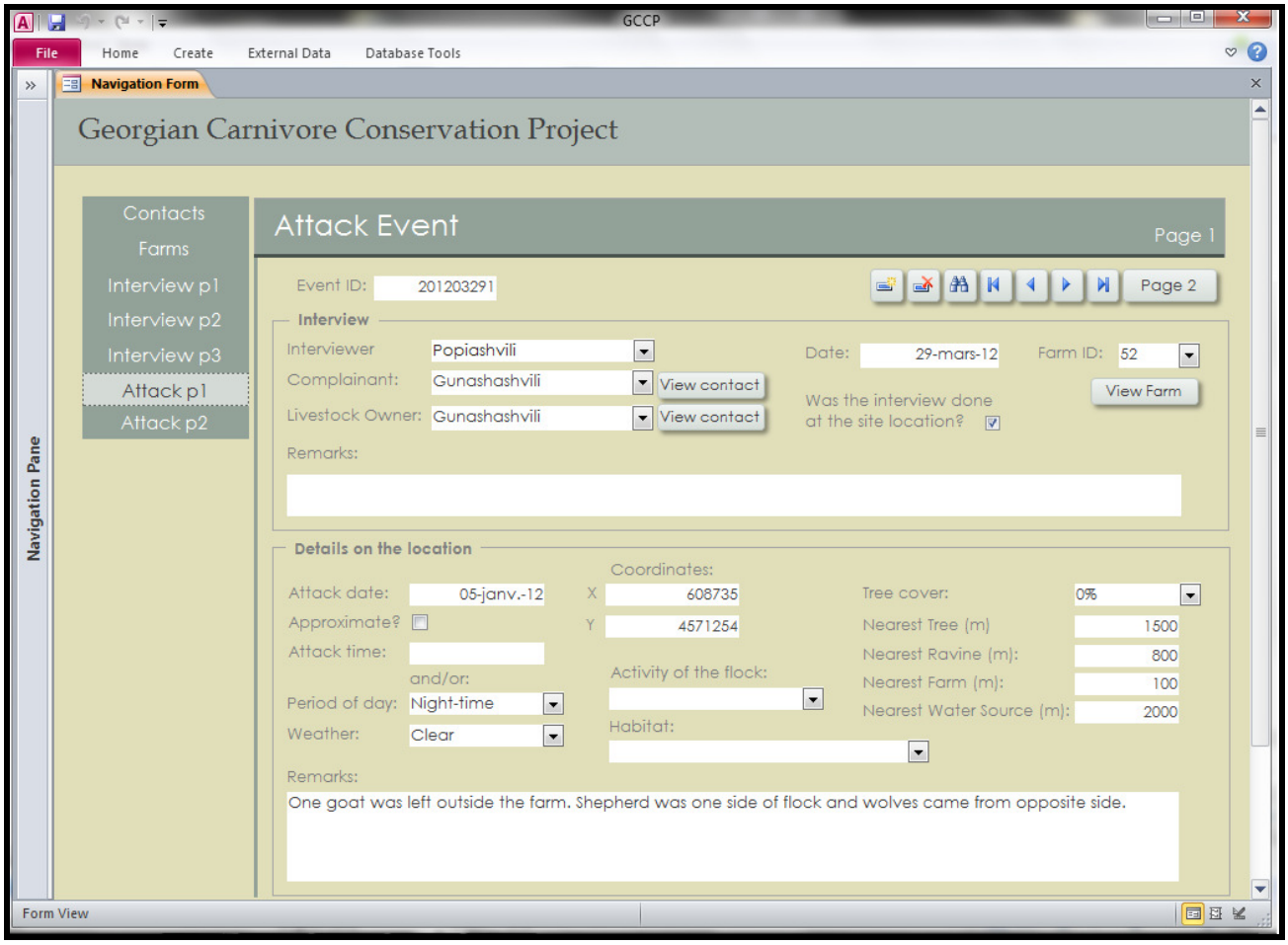
The Georgian Carnivore Conservation Project (GCCP)
Human-Carnivore Conflict (HCC) project Database:
Design and Delivery report



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NACRES

This project is supported by the EU

FAUNA & FLORA INTERNATIONAL

BACKGROUND

Following a comprehensive study of human-carnivore conflict (HCC) in Vashlovani, GCCP developed a strategy for its management. Central to that strategy was the formation of the HCC response team (HCCRT) and, crucial to its remit was the continuous collection of HCC data and monitoring of the conflict in Vashlovani. Added to this, the long-term plans of the project partners (FFI and NACRES) to replicate the strategy throughout Georgia and possibly the rest of the region, resulting datasets are likely to be large and complex with the potential to build up rapidly. It was decided then, that the project needed a specific storage structure that will allow easy access for analysis.

Microsoft Access was developed for the building of relational databases. Information is divided into logical pieces and each piece is placed in a separate table, making it easier to manage large and complex datasets. The different tables are then linked to each other using a common field. This organisation of the data also allows the user to avoid replicating information, thereby saving disk space and time. Data entry is also more accurate than other systems thanks to the use of data entry forms customised with drop-down lists. Finally Microsoft Access has the advantage, over other systems, of the end-user (the HCCRT) already being familiar with the Microsoft Office environment; the use of Microsoft Access will be more intuitive than having to rely on software that requires the user to acquire specialised skills, such as SQL programming.

It was, then, decided to develop a dedicated database in Microsoft Access 2010 and train the team in its' use. This initial investment should lead to a gain in time and effort in the future. Furthermore it is anticipated that similar models will be developed in other parts of the country as Georgia's response to HCC develops.

USER PROFILE

The main user for this database is the HCCRT leader, Temo Popiashvili. His responsibilities include the collection of data, as well as data entering in the database and some analysis. He is an experienced Excel user but he had no previous training or experience on database maintenance. He will be the main user of the HCC database but other GCC project members might need to access the data and should thus also be familiar with the database.

DEVELOPMENT

Initial development

The first step in the development of this database was the acquisition of the datasheets, designed at an earlier stage of the project, and the familiarisation with the data. Then an initial architecture was developed and presented to the team. The aim of this meeting was also to clarify some aspect of the data. After discussion it was decided to make a few adjustments to the datasheets; the format for the identification number of these datasheets was chosen and the database architecture was refined.

Following this initial meeting, the different tables and their relationships were created in Access. During the same period, the HCCRT leader went to the field to collect data for the end of the season.

First draft

A second meeting was organised when the HCCRT leader came back from the field, and this resulted in some changes to the database based on emerging conditions in the field. These changes

required further adjustments to the database fields, their relationships and the way the information was to be presented in the data entry form.

After finalisation of the database architecture and development of the data entry form, a first draft was presented to the team mid-April. In order to test the database, the HCCRT leader decided to enter real data, collected during the current year (2011/2012).

Second draft

Following the testing phase, a meeting was organised, at the beginning of May, to go through the team's review and comments. The HCCRT leader highlighted a few bugs in the operation of the database and suggested a list of changes to be applied to the data entry forms, which would allow optimal recording of the diverse data collected in the field.

The different issues were addressed and two weeks later, a second version of the database was sent to the team. After testing and some fine tuning, it was decided to adopt this version and to use it for the training of the GCCP team.

DATABASE OVERVIEW

Microsoft Access offers different objects, which all serve a specific function. The ones mentioned in this report are: tables, forms, queries and reports.

- tables are where the data are stored
- queries are used to find, sort and combine data
- forms are built for data input
- reports allow the user to produce outputs, summarise data and print information

Tables

The HCC database is comprised of 14 tables that can be grouped into three categories (see appendix 1):

1. data collected during the interview survey (six)
2. data collected during attack events (six) and
3. reference information on contacts (interviewers, interviewees, farm owners, livestock owners...) and farms

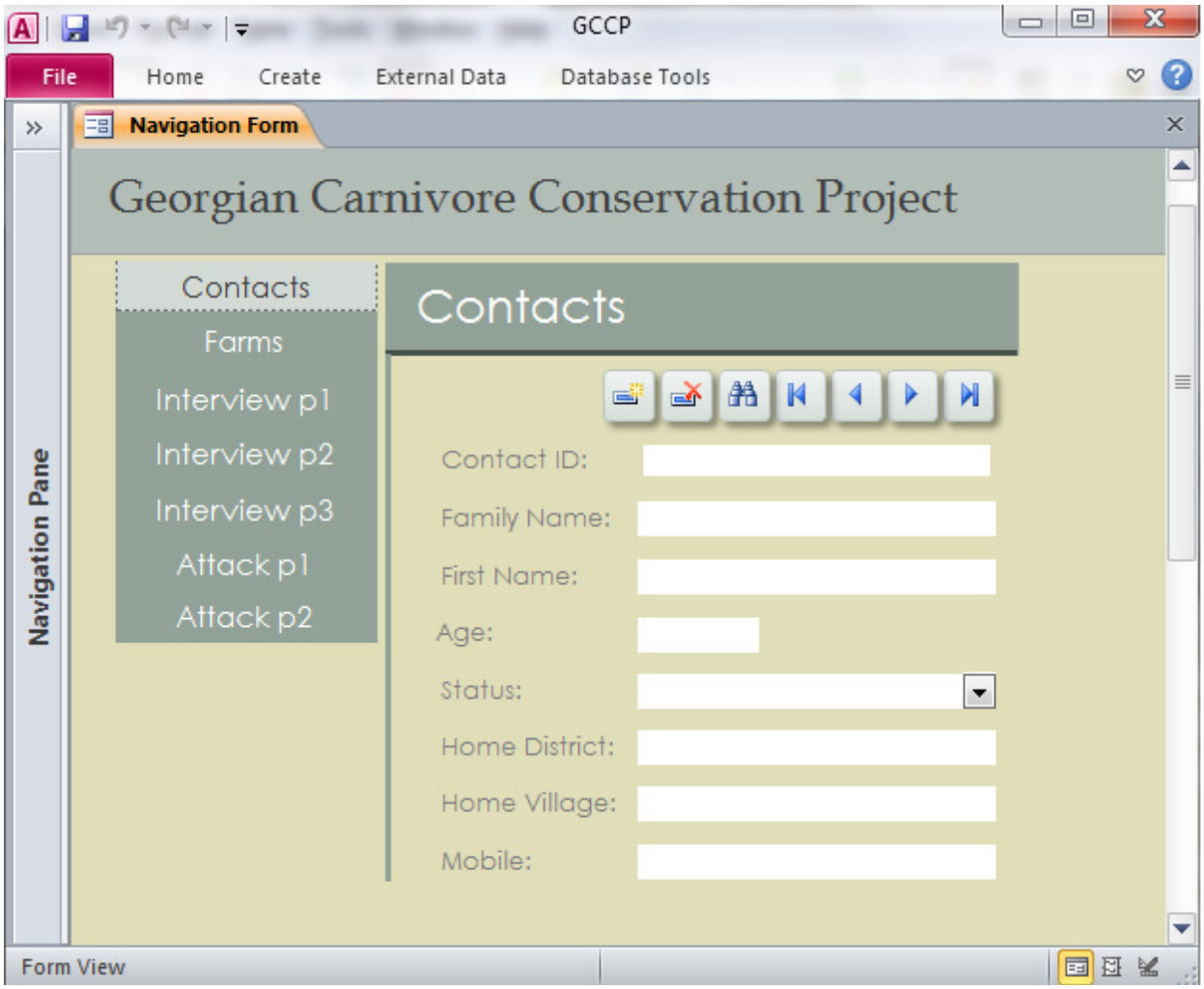
Relationships

The relationships between these tables are quite simple and straightforward; category 1 tables are connected using an interview ID number whilst category 2 tables use an attack event ID number. These numbers are assigned at the point of data collection. Additional links were then built-in to the database to connect these tables to category 3 tables using either a contact ID field or, for details on the farm, a farm ID field (see appendix 2).

Data Entry Forms

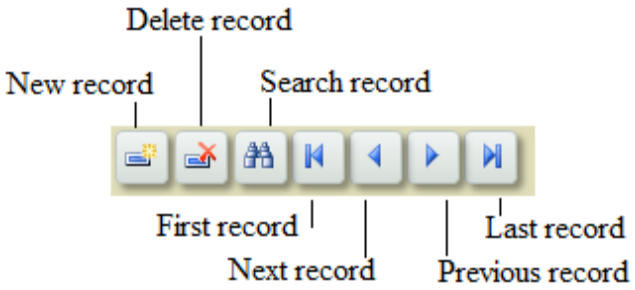
Microsoft Access 2010 offers a new navigation control, which allows the user to switch between the various forms within the database. This feature is similar to that typically encountered on webpages and is thus extremely user friendly. The HCC database opens on a navigation form, where the different data entry forms can be easily identified: contact, farm, interview survey and attack event (see figure 1). Additional screen shots of the database are available in appendix 3.

Figure 1: the HCC database homepage opens on a navigation form



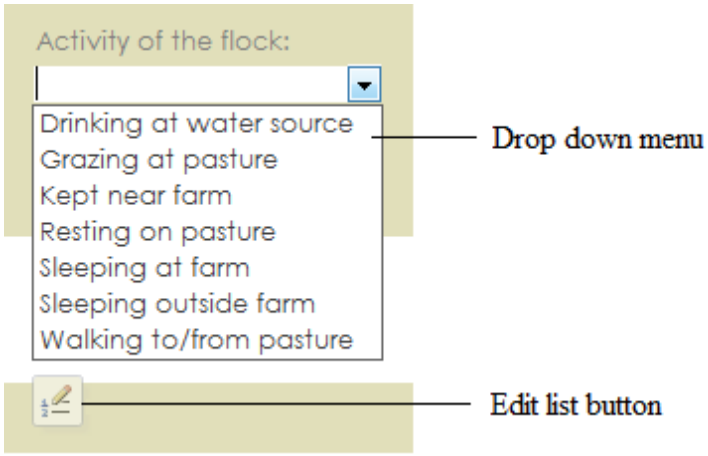
Each form presents navigation buttons, at the top of the page, allowing the user to move easily between records, as well as to perform basic function on the records (create new records, search and delete etc.) (see figure 2).

Figure 2: the navigation bar



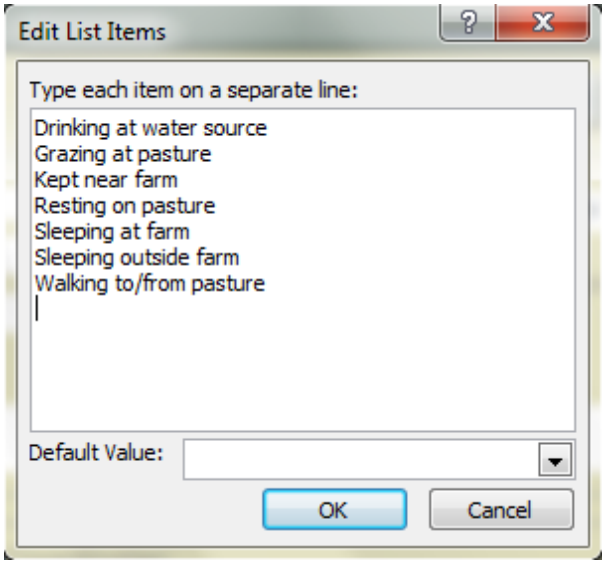
The forms use drop-down menus with predefined value lists, whenever possible. This feature allows the user to enter data more accurately by avoiding typing mistake (see figure 3). The value lists can be easily edited to give some flexibility to the database and include potential future fine tunings with data collected in the field.

Figure 3: an example of drop down menu and its "edit list" button.



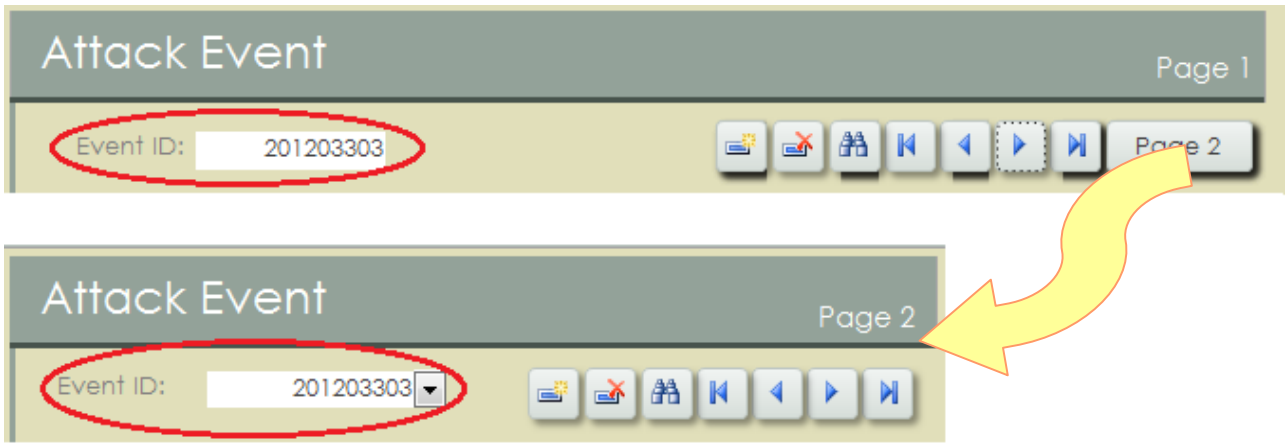
If the drop down menu relates to the "contact" or "farm" table, then clicking the "edit list" button will result in opening their related forms. In other cases, a new window opens, containing a list of values that can be edited (figure 4). Caution: when analysing data it is important to understand that editing the list (i.e. modifying the values in the list) will not update the values already entered for previous records.

Figure 4: The editing of a value list



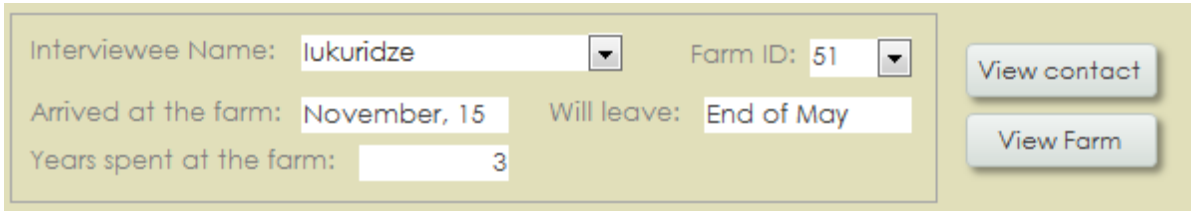
The data collected during the interview survey are separated over three pages to avoid saturating each form with information and, therefore, to increase clarity. Data collected on specific HCC "attack events" are, similarly, spread over two pages. The user can easily navigate from one page to the next, by using a dedicated button, whilst still keeping track of the interview ID or event ID the user was working on (see figure 4).

Figure 4: Navigating from one page to another



When selecting interviewees, the user has the possibility to edit the contact list. For example, if one of the interviewee has not yet been referenced, his details can be added at that time. The user can also quickly check information on an existing contact by clicking on a dedicated button (see figure 5).

Figure 5: Close look on the contact and farm combo boxes: the user selects the contact and the farm using a drop down menu. Information on the contact and the farm can be viewed using the dedicated button.



OUTPUTS

As the HCCRT is in its early stage of development, outputs were restricted to monthly and seasonal summaries of HCC events. These can be adapted by the team at a later date as needs become clearer. To this end, the HCCRT leader was trained in the use of queries and report-building in Access.

It is anticipated that the following queries will be used:

- to select a set of data before exporting to Excel or ArcGIS (ESRI) for analysis or
- to summarise information within Access (for example: number of attack event per month, number of sheep killed per month...)

A few examples of queries and reports were added to the database to help the HCCRT with the development of these objects. A reminder on how to build a query is provided in appendix 4.

TRAINING

A series of short informal trainings were provided to the HCCRT leader during the development phase of the database, which allowed the testing of the database and provided an idea of the tools' potential. By the time the database was completed, the HCCRT leader was proficient in entering data and already had a good grasp on the database structure and some knowledge of potential outputs.

A more formal training, to a larger GCCP group, was carried out on Tuesday 29th May. The aim of the training was to:

- give an introduction to databases and their use in conservation management,
- give an overview of Microsoft Access,
- present the HCC database,
- demonstrate data enter,
- demonstrate fine-tuning to allow for future development of the data being collected
- provide some examples of queries and outputs that can be generated.

A quick guide on how to build simple queries is provided in appendix 4.

Five participants attended the training:

- Teimuraz Popiashvili (HCCRT leader)
- Nino Markozashvili (Assistant project coordinator)
- Bejan Lortkipinadze (NACRES Senior Field Ecologist)
- Giorgi Gorgadze (NACRES Field Ecologist)
- Gareth Goldthorpe (FFI Project Field Coordinator)

RECOMMENDATIONS

Microsoft Access provides the potential to develop templates that allow for reports to be automatically created as the relevant data are added to the database. This can be a very useful and time saving tool for the team. It can be imagined, for example, that the team would want to organise regular management meetings, in which specific data could be presented to assess the work being carried out and provide support information for future decisions. In this way, the database becomes part of the regular project management cycle.

As detailed above, the main database users have not received any previous training on Microsoft Access beside that provided within the scope of this contract. Time constraints did not allow the team to practice building queries and designing reports. It is thus recommended that, once the team has carried out data analysis on the dataset and specifically identified indicators relevant to HCC, the HCCRT leader should spend some time exercising on this level, through either personal research or formal training.

APPENDIX 1

List of tables

(and their fields)

Contact

Contact_ID
Contact_Name
Contact_First
Contact_Status
Contact_Age
Contact_District
Contact_Village
Contact_Mobile
Country

Farm

Farm_ID
General_Area
Zone
Farm_X
Farm_Y
Habitat
Farm_Owner

Event_Details

Event_ID
Attack_Date
Attack_Date_Approx
Attack_Period
Attack_Time
Attack_X
Attack_Y
Livestock_Owner
Farm_ID
Pasture
Pasture_Size
Pasture_Owned
Flock_Activity
Attack_Weather
Attack_Habitat
Near_Tree
Near_Ravine
Near_Farm
Near_Water
Tree_Cover
Attack_Remarks

Event_Livestock

Livestock_ID
Event_ID
Sheep_Killed
Sheep_Injured
Sheep_Flock
Lambs_Killed
Lambs_Injued
Lambs_Flock
Cattle_Killed
Cattle_Injured
Cattle_Herd
Calve_Killed
Calve_Injured
Calve_Herd
Other_Killed
Other_Injured
Other_Number

Event_Predator

Predator_ID

Event_ID
Bear
Bear_N
Jackal
Jackal_N
Lynx
Lynx_N
Wolf
Wolf_N

Event_Reaction

Reaction_ID
Event_ID
Dogs_Present
Dogs_N
Dogs_Behaviour
Herder_Present
Herder_N
Herder_Behaviour

Event_Remains

Remains_ID
Event_ID
Disposal
Carcass_Assessment
Carcass_Conclusion

Event_Report

Report_ID
Event_ID
Report_Date
Report_Location
Report_Interviewer
Report_Complainant
Report_Remarks

Interview_BegSe

Interview_ID
Farm_ID
Interview_BegSe_Date
Interview_EndSe_Date
Interviewer_Name
Interviewee_Name
Interviewee_Arrived
Interviewee__Leave
Interviewee__Years
Interview_Remarks

Interview_Attack

Interview_Attack_ID
Interview_ID
Interview_End_Date
Problems
Sheep_Killed
Sheep_Injured
Cattle_Killed
Cattle_Injured
Other
Other_Killed
Other_Injured
Usual
Income_Loss
Killed_Animal

Interview_Farm_Details

Farm_Details_ID
Interview_ID
Farm_Facilities
Pasture_Size
Pasture_Status
Details

Interview_Livestock

Livestock_ID

Interview_ID

Livestock_Owner

N_Livestock_Owner

N_Herder

N_Sheep_Goat

N_Cattle

N_Horse

N_Donkey

Interview_Losses

Losses_ID

Interview_ID

Predator_Problem

Season

Disease_Rank

Predation_Rank

Theft_Rank

Other_Cause

Other_Cause_Rank

Bear_Rank

Jackal_Rank

Lynx_Rank

Wolf_Rank

Other_Predator

Other_Predator_Rank

Month_Losses

Losses_Remarks

Interview_Prevention

Prevenion_ID

Intervention_ID

Measures

Adult_LGD

Juvenile_LGD

Bredd_LGD

LGD_Caucasian

LGD_Georgian

LGD_Mixed

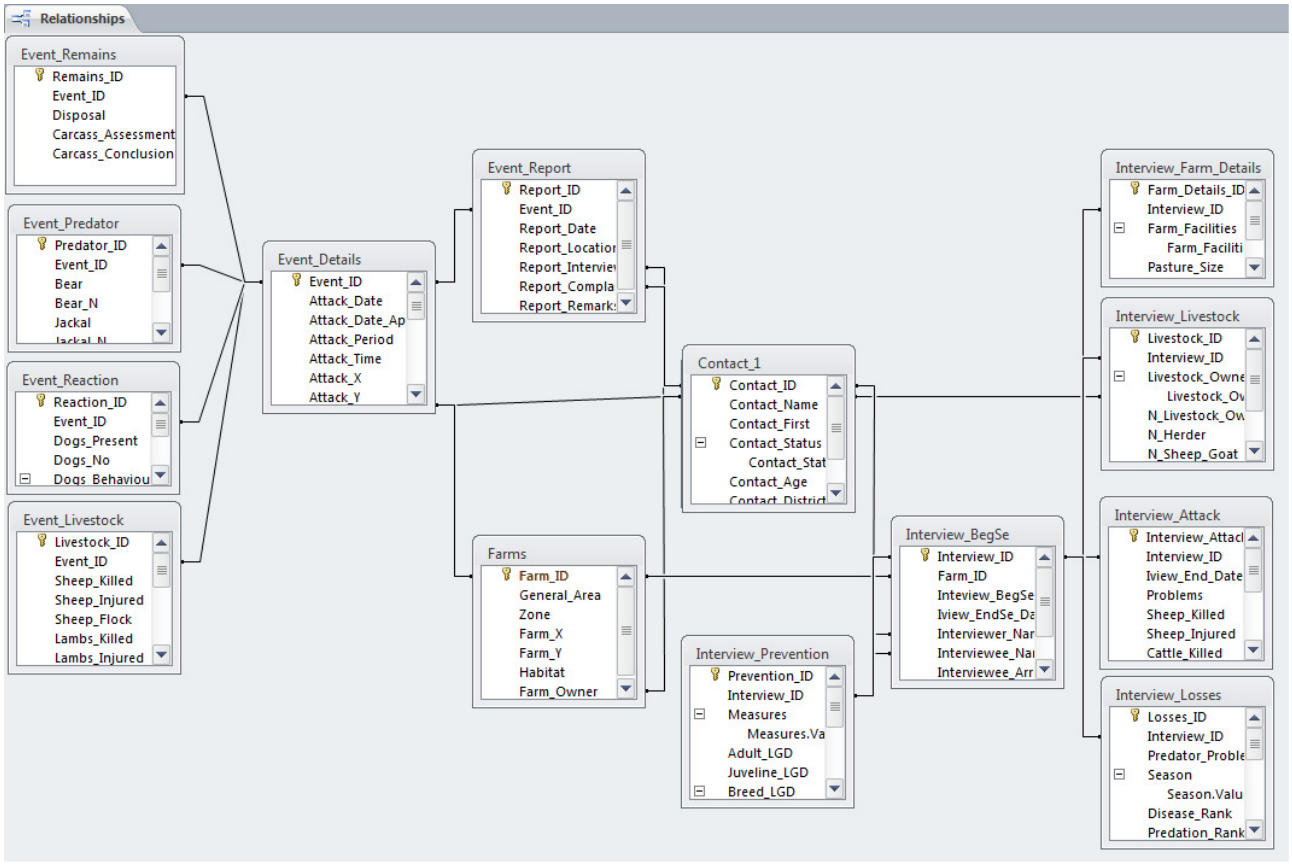
Good_Dogs

Dogs_Remarks

Dogs_Raise

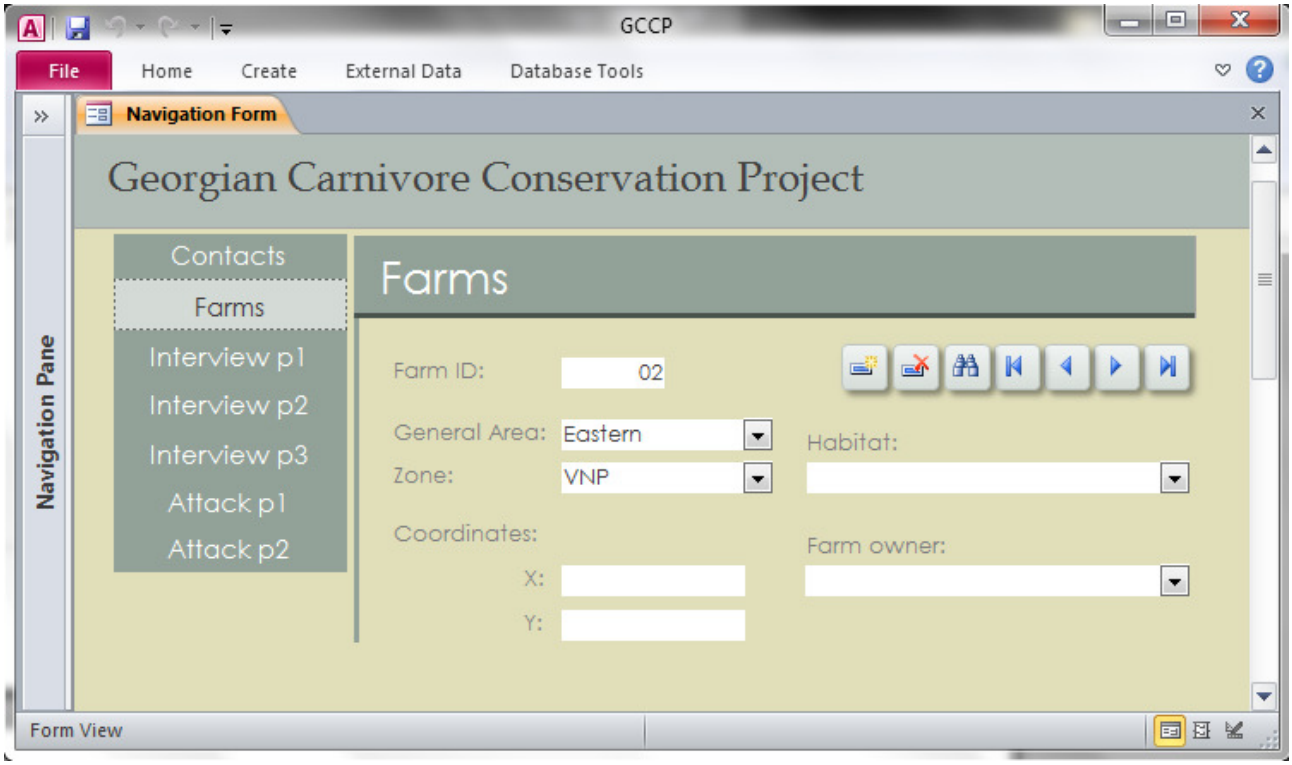
Prevention_Remarks

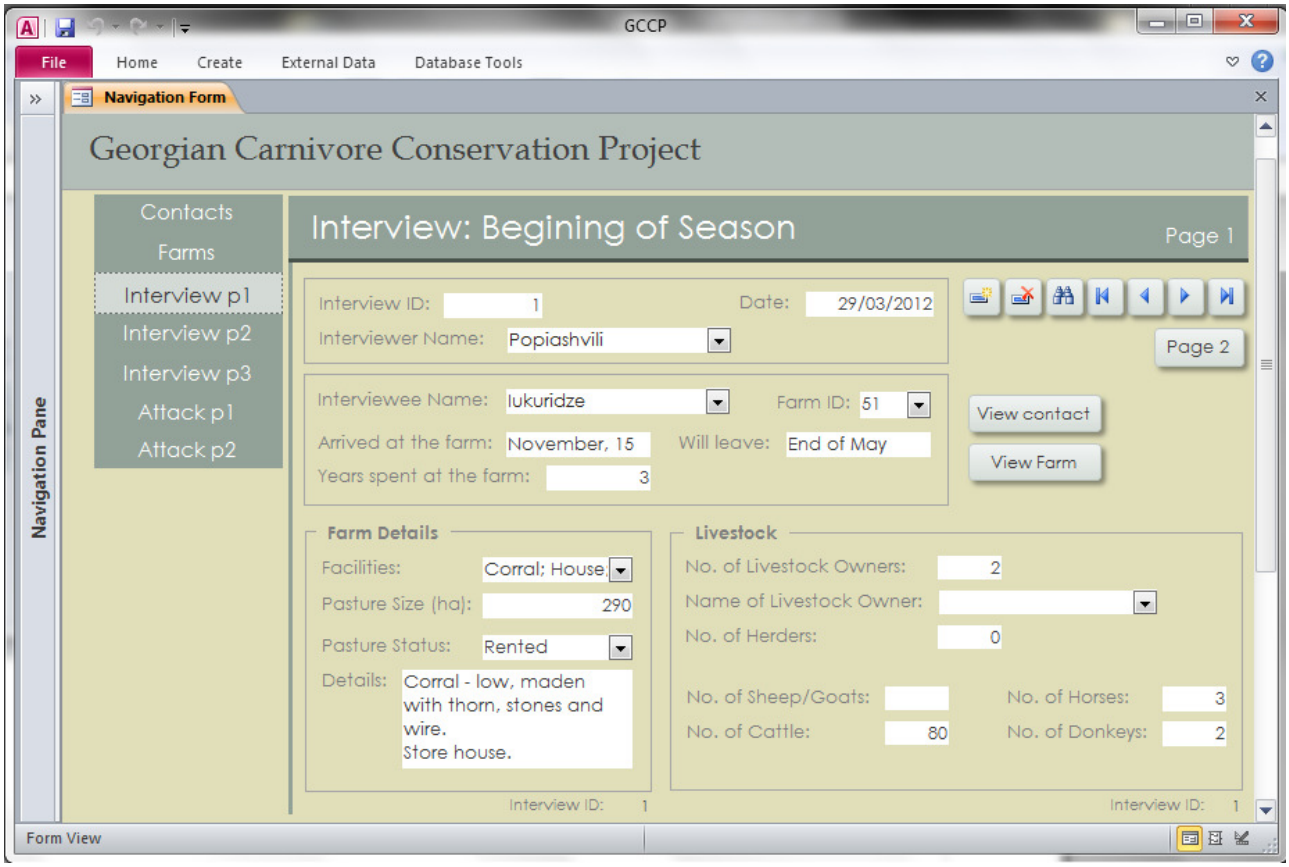
APPENDIX 2: RELATIONSHIPS BETWEEN TABLES

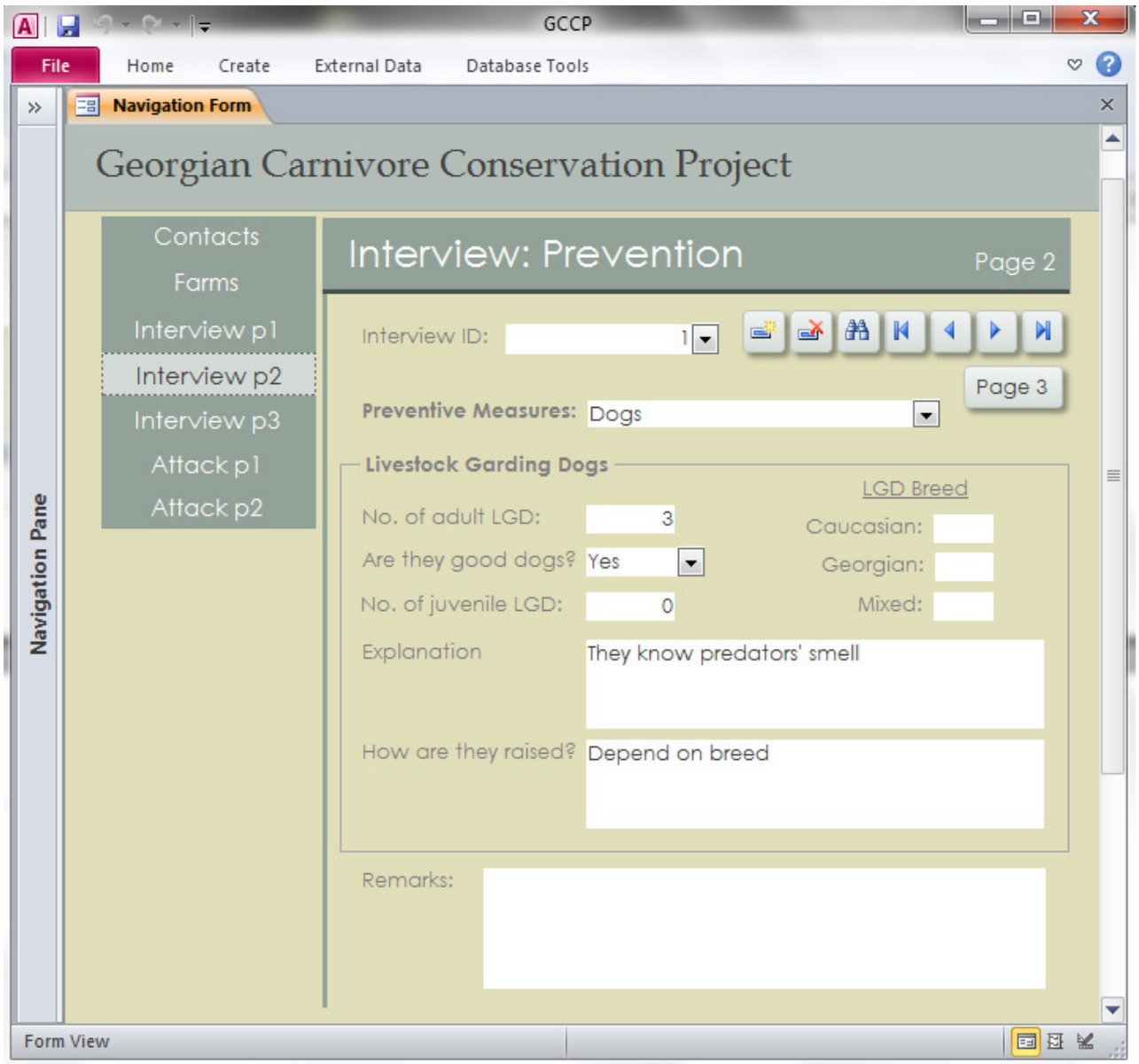


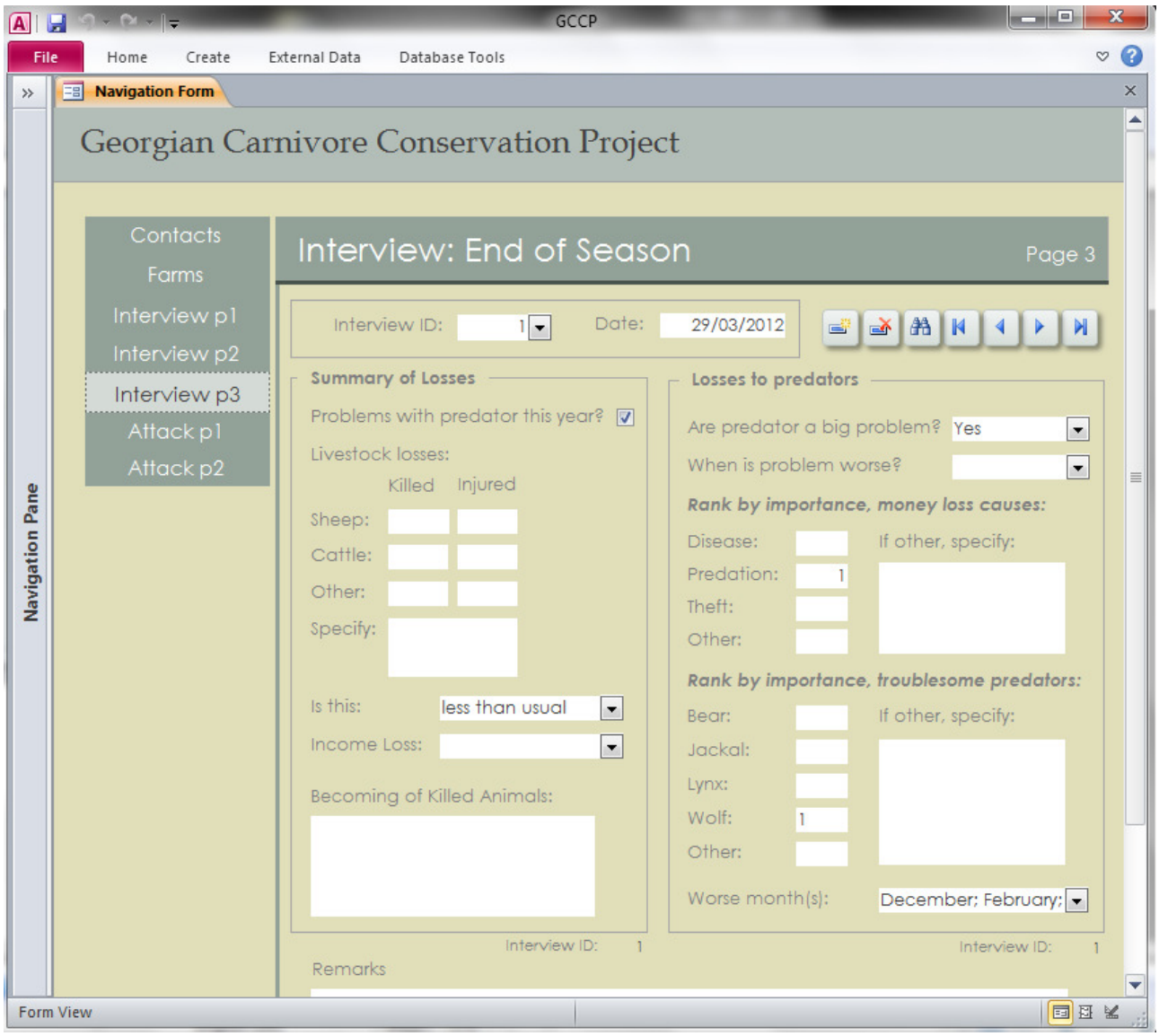
APPENDIX 3

Screenshots






GCCP
File
Home
Create
External Data
Database Tools
Navigation Form
Navigation Pane
Georgian Carnivore Conservation Project
Contacts
Farms
Interview p1
Interview p2
Interview p3
Attack p1
Attack p2
Interview: Prevention
Page 2
Interview ID:
1
Page 3
Preventive Measures:
Dogs
Livestock Garding Dogs
LGD Breed
No. of adult LGD:
3
Caucasian:
Are they good dogs?
Yes
Georgian:
No. of juvenile LGD:
0
Mixed:
Explanation
They know predators' smell
How are they raised?
Depend on breed
Remarks:
Form View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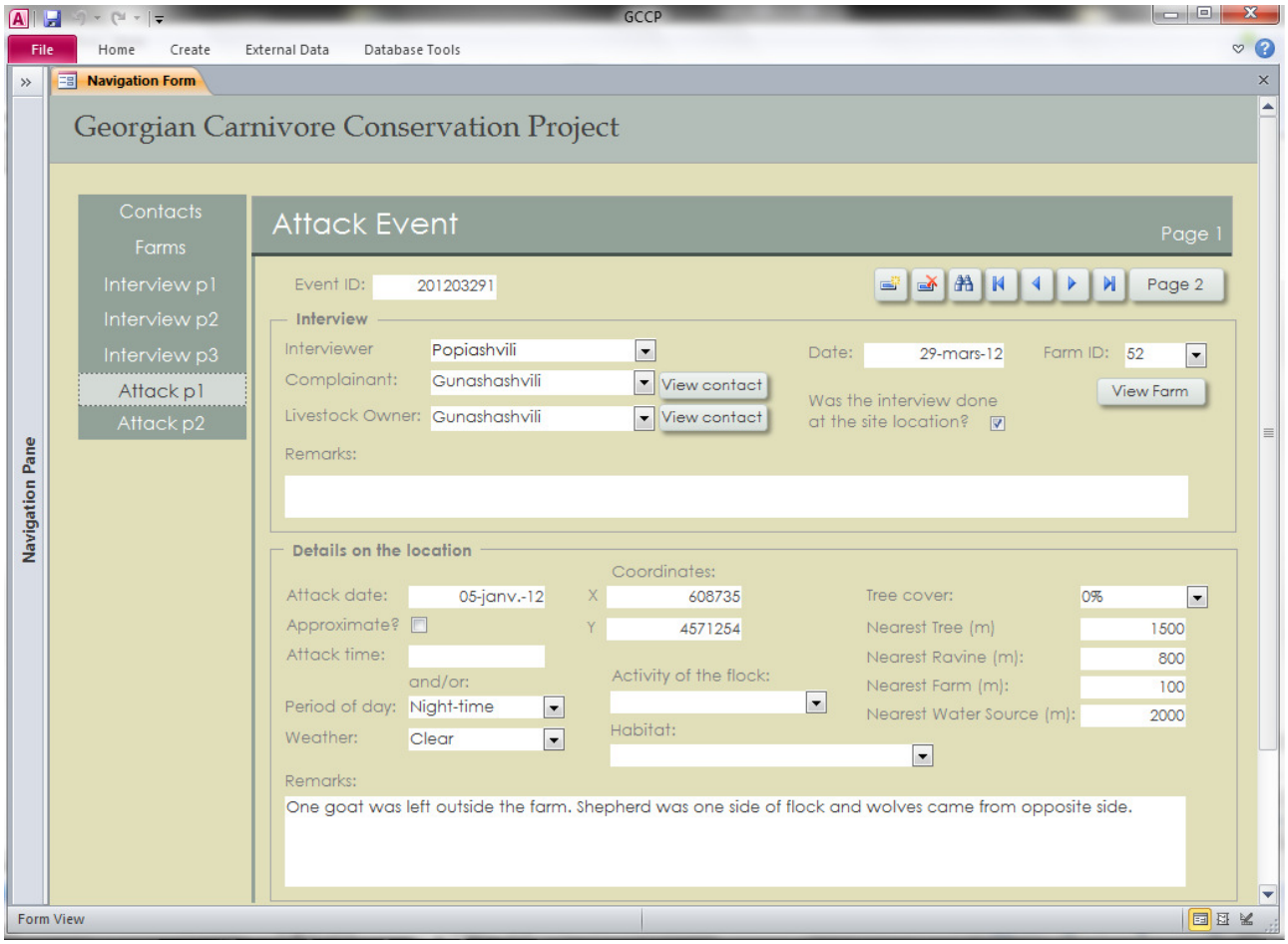
Navigation Form
Georgian Carnivore Conservation Project
Navigation Pane
Contacts
Farms
Interview p1
Interview p2
Interview p3
Attack p1
Attack p2
Interview: End of Season
Page 3
Interview ID: 1
Date: 29/03/2012
Summary of Losses
Problems with predator this year?
Livestock losses:
Killed
Injured
Sheep:
Cattle:
Other:
Specify:
Is this: less than usual
Income Loss:
Becoming of Killed Animals:
Interview ID: 1
Losses to predators
Are predator a big problem? Yes
When is problem worse?
Rank by importance, money loss causes:
Disease:
Predation: 1
Theft:
Other:
If other, specify:
Rank by importance, troublesome predators:
Bear:
Jackal:
Lynx:
Wolf: 1
Other:
If other, specify:
Worse month(s): December; February;
Interview ID: 1
Remarks
Form View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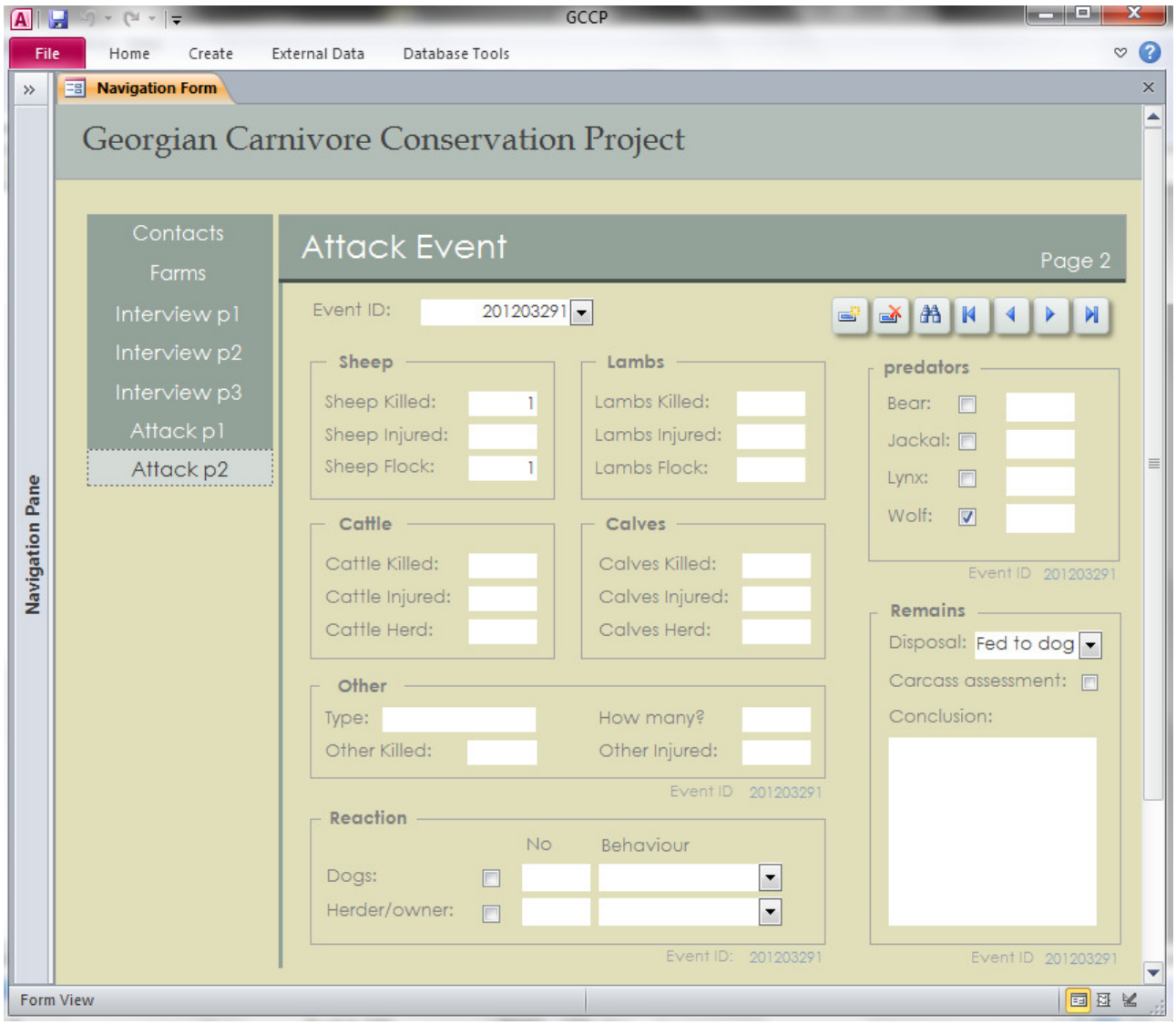
Navigation Pane
Contacts
Farms
Interview p1
Interview p2
Interview p3
Attack p1
Attack p2
Attack Event
Page 1
Event ID: 201203291
Page 2
Interview
Interviewer Popiashvili
Complainant: Gunashashvili
View contact
Livestock Owner: Gunashashvili
View contact
Date: 29-mars-12
Farm ID: 52
View Farm
Was the interview done at the site location?
Remarks:
Details on the location
Attack date: 05-janv.-12
Approximate?
Attack time:
and/or:
Period of day: Night-time
Weather: Clear
Coordinates:
X 608735
Y 4571254
Activity of the flock:
Habitat:
Tree cover: 0%
Nearest Tree (m) 1500
Nearest Ravine (m): 800
Nearest Farm (m): 100
Nearest Water Source (m): 2000
Remarks:
One goat was left outside the farm. Shepherd was one side of flock and wolves came from opposite side.
Form View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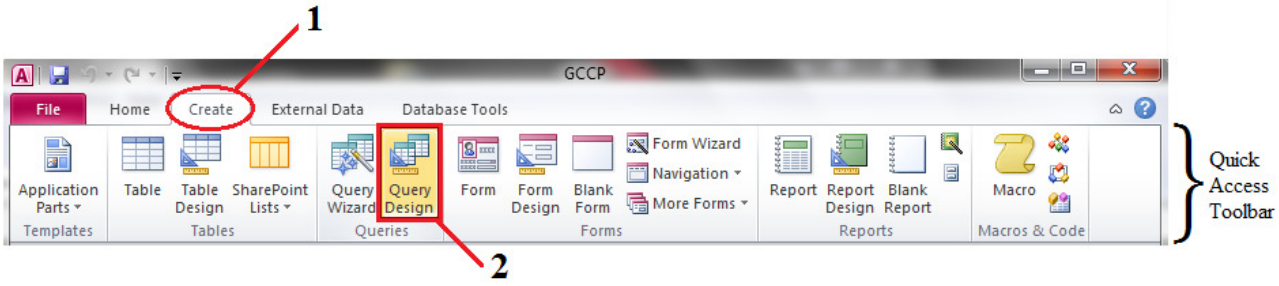
Navigation Form
Georgian Carnivore Conservation Project
Navigation Pane
Contacts
Farms
Interview p1
Interview p2
Interview p3
Attack p1
Attack p2
Attack Event
Page 2
Event ID: 201203291
Sheep
Sheep Killed: 1
Sheep Injured:
Sheep Flock: 1
Lambs
Lambs Killed:
Lambs Injured:
Lambs Flock:
predators
Bear:
Jackal:
Lynx:
Wolf:
Event ID 201203291
Cattle
Cattle Killed:
Cattle Injured:
Cattle Herd:
Calves
Calves Killed:
Calves Injured:
Calves Herd:
Remains
Disposal: Fed to dog
Carcass assessment:
Conclusion:
Other
Type:
How many?
Other Killed:
Other Injured:
Event ID 201203291
Reaction
No
Behaviour
Dogs:
Herder/owner:
Event ID: 201203291
Event ID 201203291
Form View

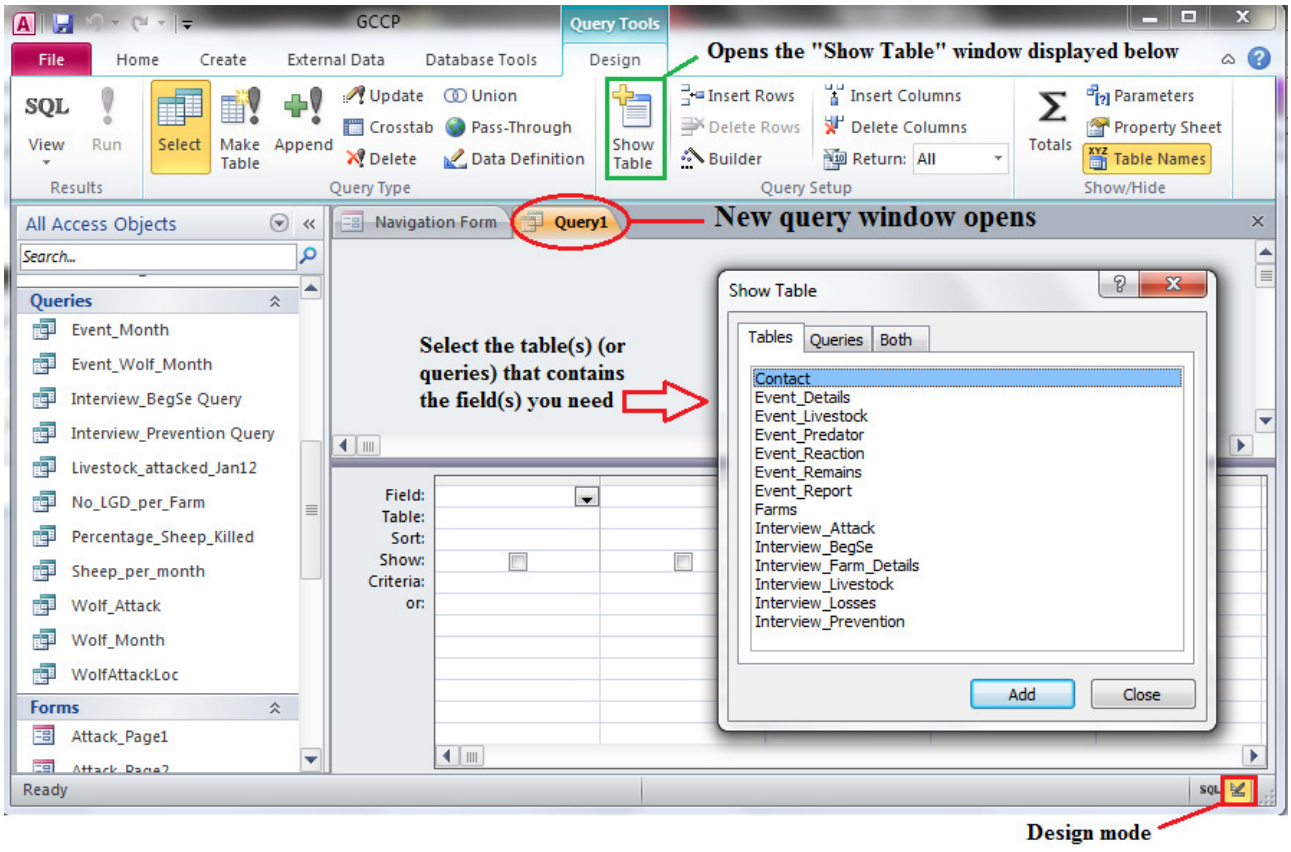
APPENDIX 4

Creating a query in Access to select specific data

In the Quick Access Toolbar, click on **Create**, then on **Query Design**.

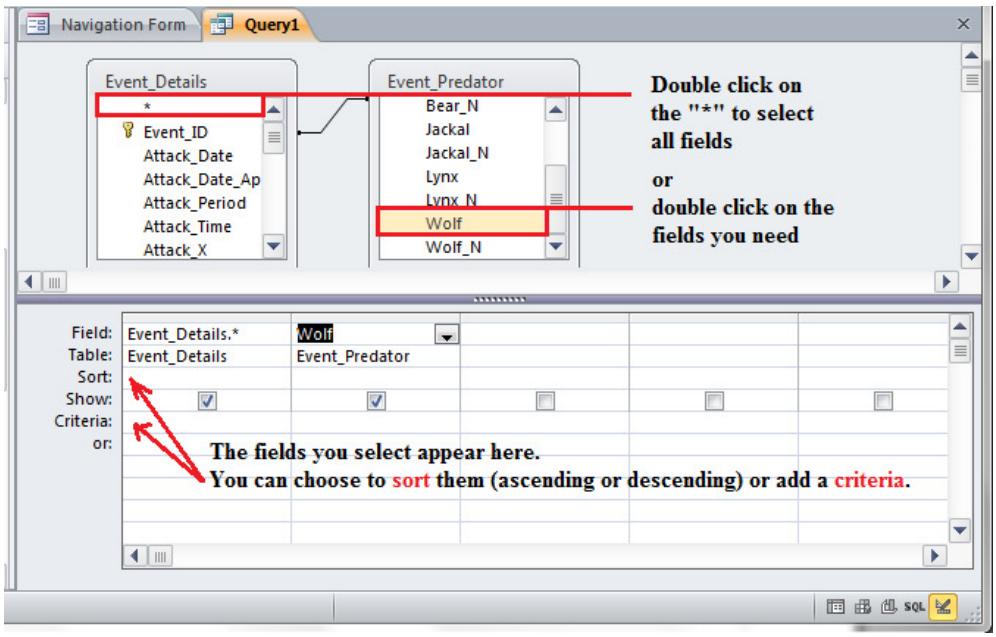


A new tab opens (here Query 1) as well as a window that allows you to select the table(s) (or queries) that contain the field(s) you need. Double click on each object you want to select.

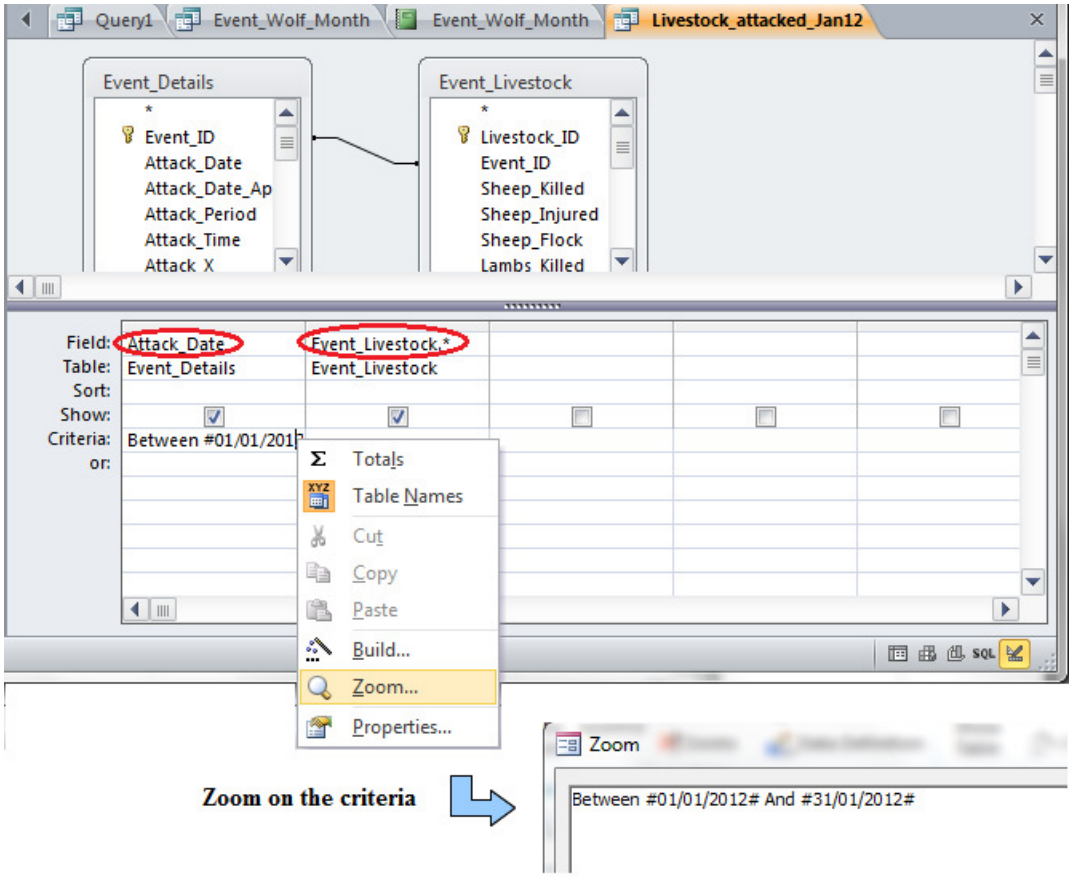


Once the selection has been done, close the “Show Table” window. It can easily be re-open by clicking the “Show Table” button.

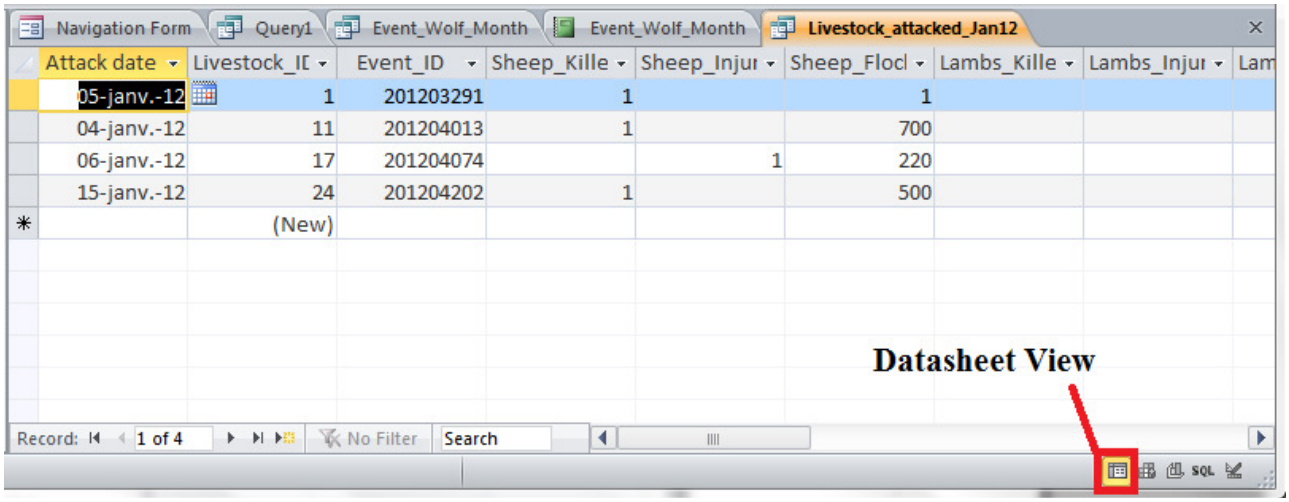
Then double click on the fields you need. The field selected will display below. If you want to select all fields, double click on the “*”. Once the field are select, you can decide to sort the data or add a criteria to select only specific data. For example events that happened in January 2010, or attacks made by wolves. Note that you can not use sorting or criteria when you selected all field using “*”.



In the example below, the field “Attack_Date” was selected from the table “Event_Details” and all the fields from the table “Event_Livestock” were added (recognisable by the “*” symbol after the table name). Note the condition put in the criteria box of the “Attack_Date” field: here only attacks which happened in January will be displayed. We can zoom on this box and see the full content by right clicking with the mouse and selecting the “Zoom” option. Note that dates are put between the “#” symbol.



Click on “Datasheet View” (right bottom) to see the results.



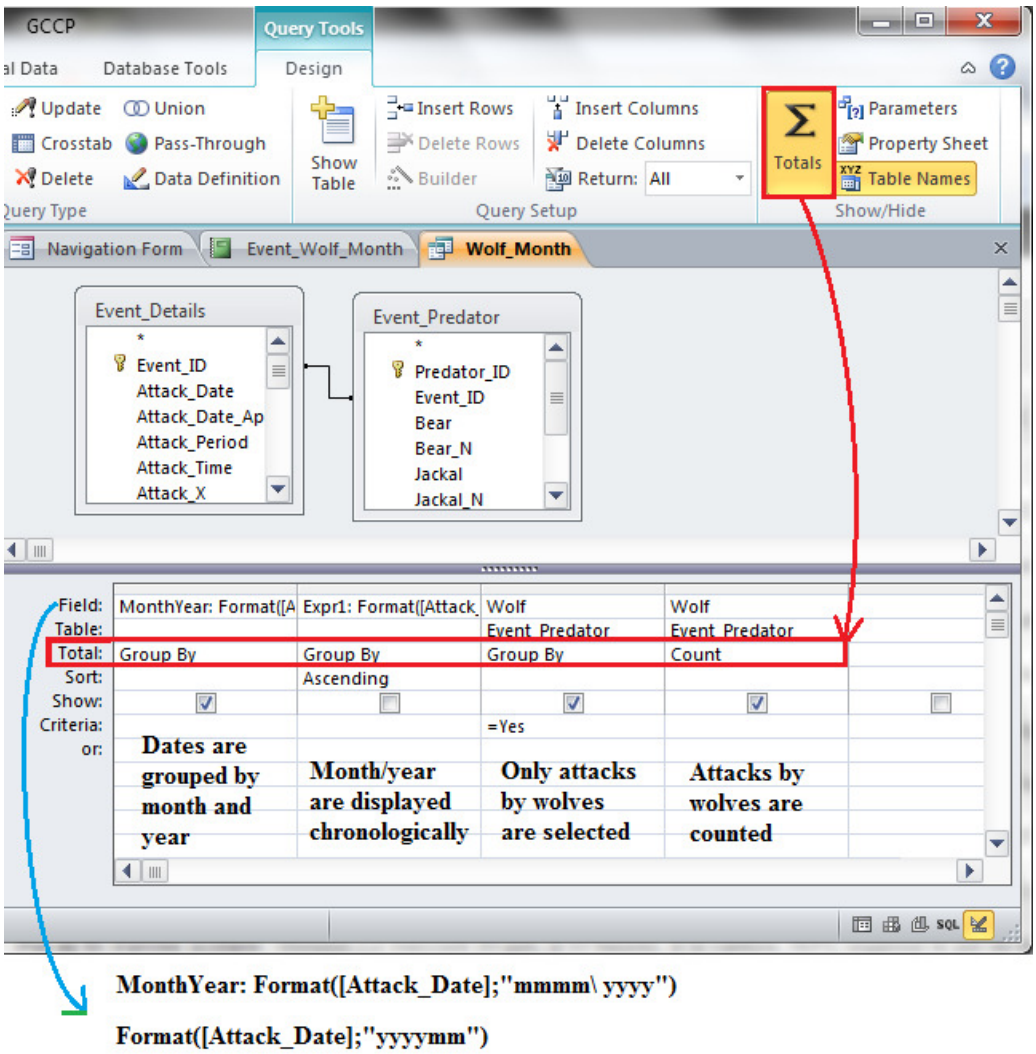
In the next example, the field “Attack_Date” of the “Event_Details” tables was used to group the records per month. The expression entered in the Field box is:

MonthYear: Format([Attack_Date];"mmmm\ yyyy"), in which MonthYear is the name given to the calculated field and Attack_Date, the name of the source field. The following field is used to order the dates in chronological order (default would be alphabetical). Note that this field does not need to be displayed ; the “show” box is unticked.

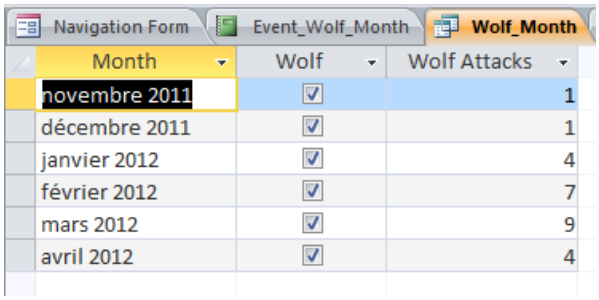
Then the field “Wolf”, which indicates whether wolves were recorded as predators during the attack and hence contains Yes/No entries, was used to select only attacks made by wolves and (third field, criteria = Yes) and summarise the number of these attacks by month (fourth field, Total = Count).

Note: the “Total” line is not displayed by default, to show it, the user can click on the “∑” symbol in the Quick Access Toolbar or right click on a field and select the option “∑ Totals”.

Note as well, that the option for all fields were a count was not performed, is set to “Group By”, by default. It should be left like this.



Here again the results are displayed by switching to the datasheet view (see below). We could also choose to hide the “Wolf” field by unticking the “show” box in the design view.



Once a query is designed, the output can be formatted in a report before printing and /or sharing. See example below:

Navigation Form | Event_Wolf_Month

Number of attack by wolf per Month

samedi 23 juin 2012
18:26:08

Month	No. Events	Wolf Attacks
novembre 2011	1	1
décembre 2011	3	1
janvier 2012	4	4
février 2012	8	7
mars 2012	12	9
avril 2012	5	4