STRATEGIES FOR TRAWL FISHERIES BYCATCH MANAGEMENT (REBYC-II CTI; GCP /RAS/269/GFF)

REPORT ON

DEVELOP, UPDATE AND MANAGE A DATABASE FOR TRAWL FISHERY IN VIETNAM

Hà Nội, 2014

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1. Review existing databases for Vietnamese fisheries

1.1. Database development history

Since 1996 under the support project "Assessment of Living Marine Resources in Vietnam" funded by the Danish Government, the Research Institute for Marine Fisheries of Vietnam has established several databases for data entry of fisheries in general and for trawl fisheries in particular. These are the survey database, logbook database, observer database and enumerator database (**Figure 1**). These databases were developed in Microsoft Access 1995, 1997 and 2000 integrated with Mapinfo 6.0 for mapping.

Figure 1. Existing databases for fisheries in Vietnam

1.2. Database structure

1.2.1. Enumerator database and survey (VIETFISHBase)

The VIETFISHBase has initiatively been developed to store and process for both data from the comercial marine fisheries as well as from research surveys of Viet Nam in the frame of the project of "Assessment of the Living Marine Resources in Viet Nam" (ALMRV) funded by Danish and Vietnamese governments. The first version called VietFishBase was run on Microsoft Access 95 and was created by Per Johan Sparre, a project chief technical adviser.

Since August 1997, a database development team consisting of some Vietnamese technical staffs from different institutes has further developed the VIETFISHBase using Microsoft Access 97. The VIETFISHBase can be used to enter and store three data types including (1) from fishermen in landing sites and/or from processing plants collected by enumerators (interview data), (2) from research surveys and (3) from vessel registration systems registered by local authorities.

The VIETFISHBase was developed for use on personal computers (PC) with minimum requirements on technical specification of an AT 486 processor or later versions with 32-bit operating systems like Windows 95, Windows NT. The software for running VIETFISHBase is Microsoft Access 97 (a component of the Microsoft Office 97 package) to be installed in a computer with the minimum requirement of space on hard disk of 5 MB before using the database.

A general structure of the VIETFISHBase can be seen as inFigure 2. The VIETFISHBase consists of 81 tables including 58 "Look up" tables. “Look up” tables are to store ready filled-in data for the other tables. Generally, the “Look up” tables were fixed, but with VIETFISHBase, some forms were made available for users to fill in for some types of data such as vessels, fleets, and fishing gears, that had not been clearly identified previously.

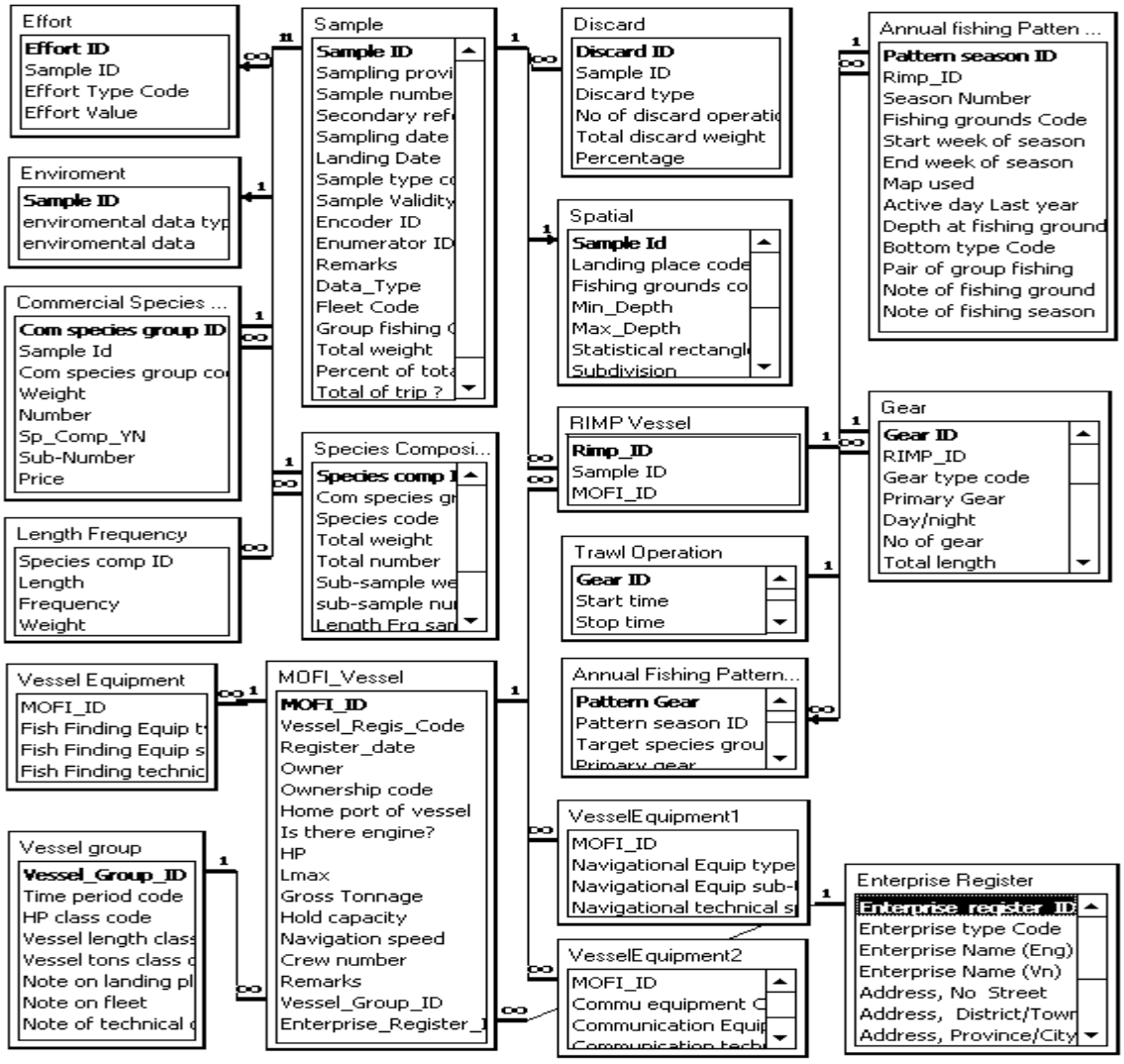


Figure 2. Relationships between tables in the VIETFISHBase

1.2.2. Logbook and observer databases

Similar to the VIETFISHBase, the logbook and observer databases were initiatively developed under the framework of the ALMRV project funded by Danish Government since 1995. However, after development of the databases, there were several updated versions to improve reporting and checking tools.

The logbook and observer databases were developed in Microsoft Access for the use of personal computers (PC) of using window operational system.

A general structure of tables in the logbook and observer databases can be seen inFigure 3. The first table "Program" includes code, name and province Then trip information was indicated in the "Trip" table including information fields such as name, gear, fishing cost, etc. Haul information is also included to indicate spatio-temporal scales of a fishing batch. Finally, detailed information on commercial groups in the haul was included. A detailed relationship between the various tables in the databases is indicated inFigure 4.

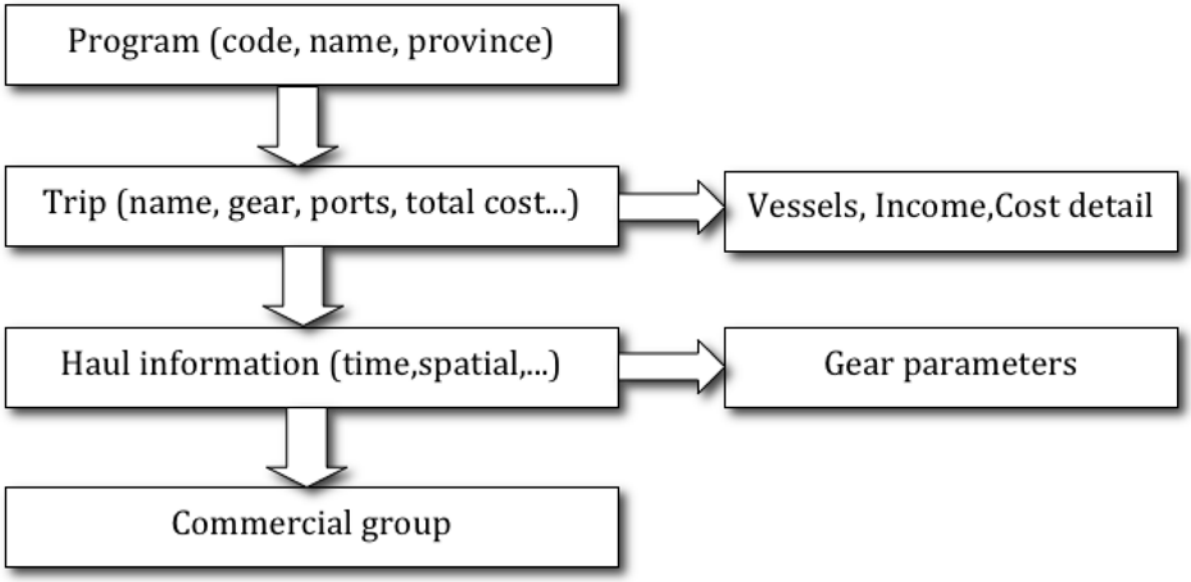


Figure 3. Overview of table in the logbook and observer database

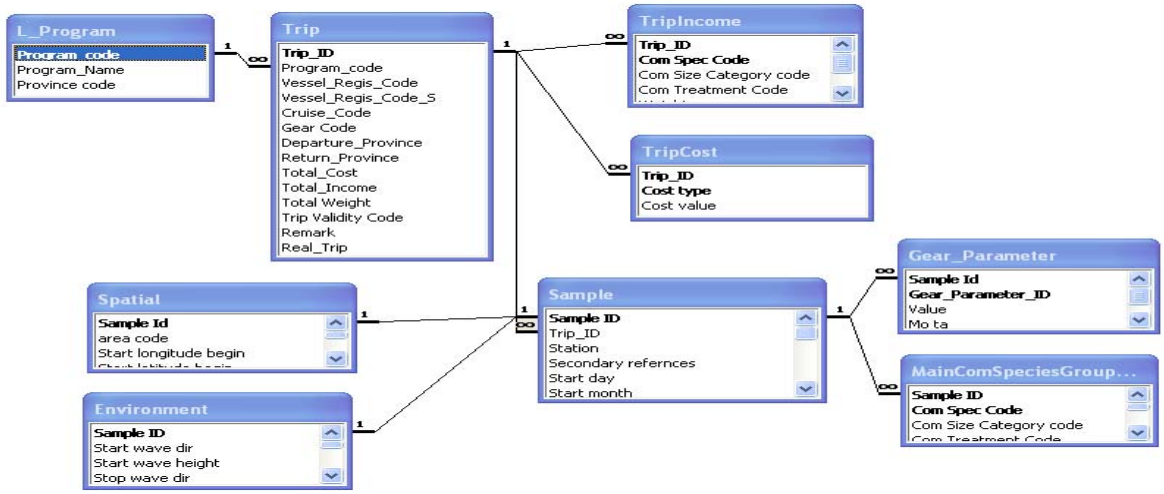


Figure 4. Relationships between tables in the logbook and observer databases

The logbook and observer databases were designed to have two separate sections 'back end' and 'interface' (Figure 5). This is to limit unnecessary access from users without authorized to change the database.

1. Back end database: This is to store all components and data entered in the database. However, the encoders cannot directly open to change the database. In order to change database, the encoders must be authorized as an administrator. The back-end database is usually installed in a server with high capacity.
2. The interface: This is a section to store database objects excluding the tables. This section is to install in the encoders' computers. By using this interface the encoders can design queries, form to analyze and process the entered data. Then the back-end and the interface was connected each other using the linking tables.

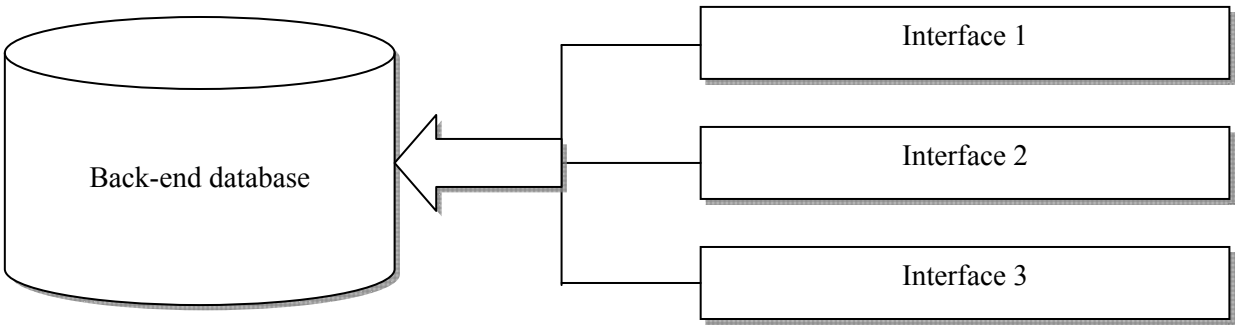


Figure 5. The back-end and interface database in the logbook and observer databases

1.2.3. Vnfishbase

Vnfishbase is a web database developed in 2000 to allow users to access the database through a website using the username and password to log in (Figure 6). The database therefore, is convenient for management and monitoring purposes. Another advantage of the VNfishbase is that it allows local authorities to enter fisheries data at local offices and then responsible staffs at the central level can synchronize and extract these data in their offices without requiring hard copies of the collected data. Management of vessel licensing, tasked at central level is also convenient for central fisheries management staff because they can know how many vessels have been licensed during monitoring periods. However, this database is currently inactive due to some conflicting problems. For instance, if there was the conflict in information between the registered vessels and sampled vessels. There have also been problems on technical compatibility from the central to local levels and Internet connections are not always available at local offices. In addition, because of complexity of its use, local staff have some problems on how to use the database if they have not been trained.

The database include interfaces to enter vessel information registered from vessel registration systems and to enter collected fisheries data such as information on catch, effort, trip, etc.

Figure 6. An interface to log in to the Vnfishbase by the HTML address.

1.3. Constraints of the existing databases

One of the biggest problems of the above mentioned databases is that they do not sufficiently have reporting tools that users can easily use to extract and analyze the data entered. Another problem is that they were separatelydeveloped form each other so that crosschecking and management processesof different data types is impossible. In addition, almost of these databases were developed in English and thus causing difficulties for users without knowledge of English. This is particularly problematic for local management staffs.Therefore, there is a strong need to develop a new integrated database for trawl fisheries that can resolve the above-mentioned problems for trawl fisheries data entry and management in Vietnam.

2. Description of the developed trawl fisheries database

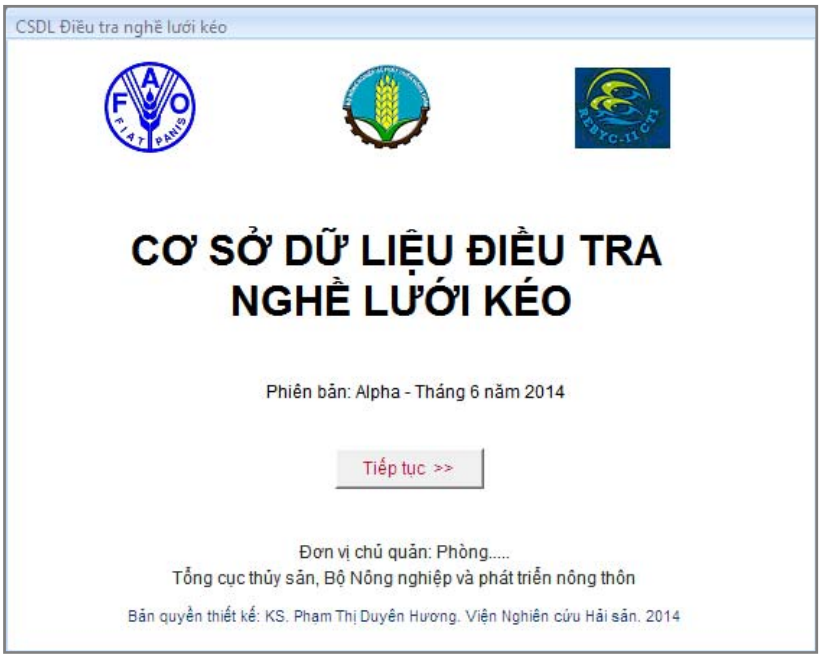
The source code of the database is developed in Access Microsoft version 2010 but it can be used in lower or higher version of Microsoft Access software. The database executable is available for only Windows platform. Language used in the database is Vietnamese so that local people who are not good in English can easily use it for entering and analyzing the collected fisheries data.

There are three main modules developed in the present database including “Data Entry”, “Data Look up” and “Data Processing”. The database allows analysing and processing entered data to directly extract into reports using reporting tools. The database allows users to enter several collected data types into one database. These data types include logbook data, landing data, effort data. Therefore, the database allowsusers to cross check each others entered trawl data.

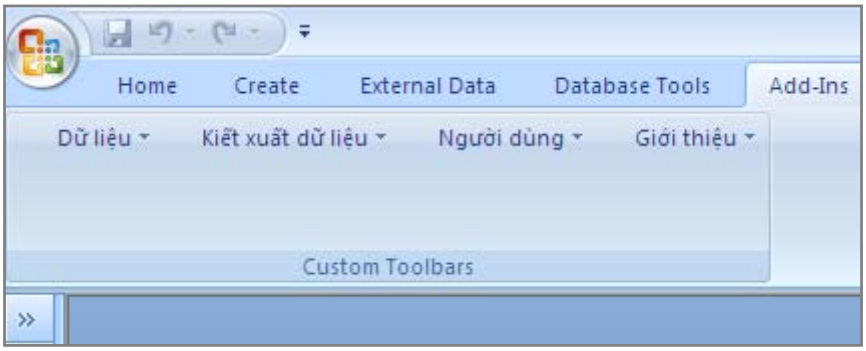
3. User manual on trawl fisheries database

3.1. Starting the database

When starting database, a startup window will appear as below to notify the user that the database has been opened:

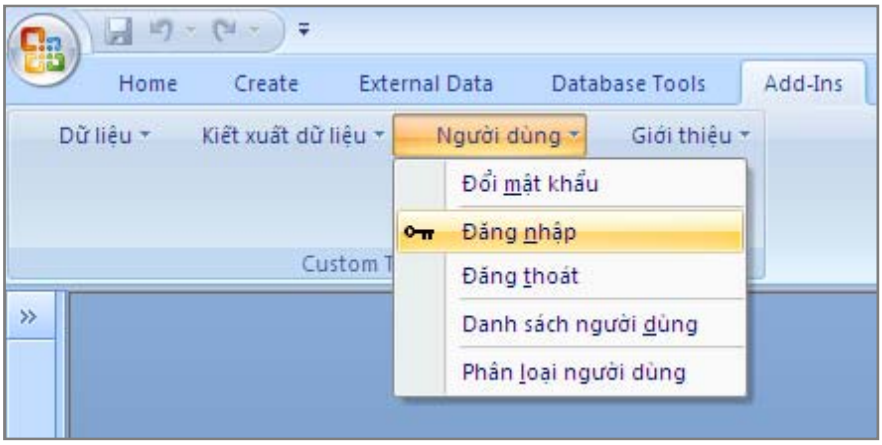


When the user enters “tiep tuc, continue” button, this window will automatically be shut down and a working window of the database will open. The user can use the top menu of the working window to start working on the database.

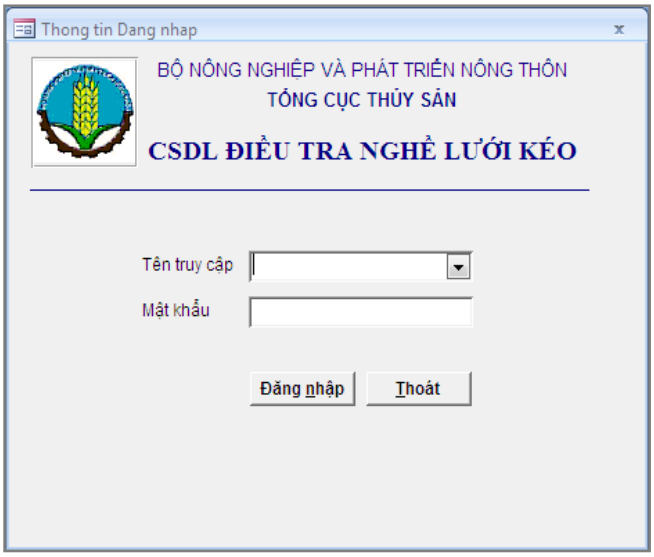


3.2. User login

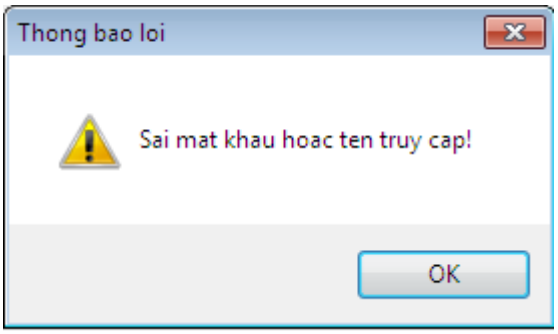
In order to log in, users have to click the user’s login button in the menu bar and select: Log in “Đăng nh□p”.



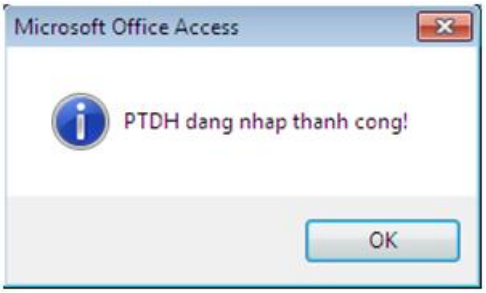
Then a log in window (indicated below) will appear so that user can enter the user's name and password in order to access the database for encoding or data extraction:



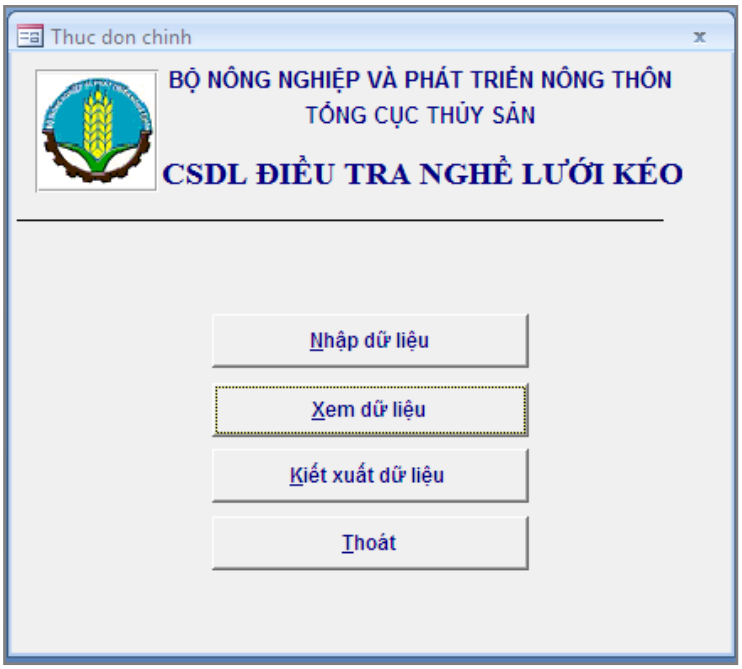
If the user's name and password is incorrectly entered, there will appear an error window as follows:



The user can press "OK" to re-enter. Once the user's name and password are correctly entered, the database will open a window to notify that user that they can use the database as indicated below:



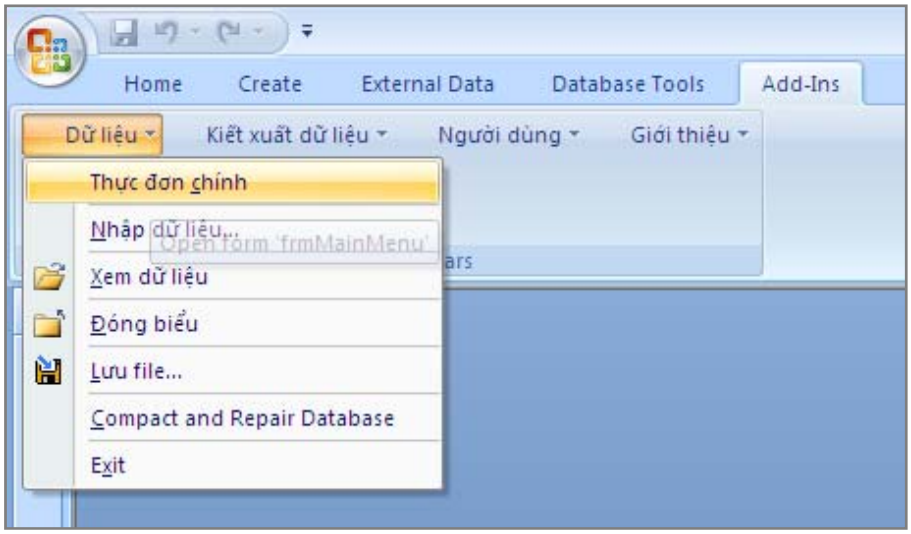
The User can then press “OK” to start working with the database. A main option window (including “data entry”, “data review”, “data integration” and “database exist” will appear so that the user can select which options they want. The main option window indicated is as follows:



3.3. Data entry

In the main option window, the user can select “Data entry” option to start entering data and then a data entry window will appear so that user can enter what kind of data they want to enter. Data types can be entered including “Logsheet data”, “Catch by trip”, “Boast active efficiency”.

In another way, to enter data, the user can use the main menu and select "**D li u/Th c đ n chính" "Data/Main menu"** to open the main menu and then start to work with this. The window will appear as follow:



If "**D li u/Th c đ n chính" "Data/Main menu"** is selected then a **D li u/Th c đ n chính" "Data/Main menu"** will appear.

If "**D li u/Nh p d li u" "Data/data entry"** is selected then a data entry window will appear for entering data.

This database is included three trawl fisheries data types:

- Logbook database
- Landing database
- Boat active efficiency database

Each type of database will have a different data entry interface depending on the selection of the data encoder. Once the user has successfully accessed the database, he/she can edit records (delete, edit, create new record) on each form entered by himself/herself but he/she will not be able to edit records entered by other users.

3.3.1. Logbook data interface

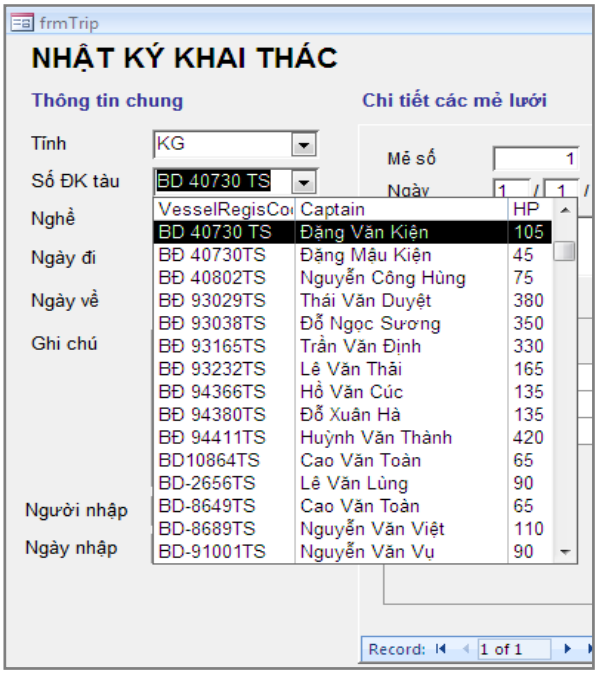
Once the user selects “logbook” option, a logbook data interface will open so that the user can enter logbook data. The interface appears as follows:

The logbook form is divided into two parts: “**General information**” and “**Haul detail**”. The Encoder will enter data in both these parts.

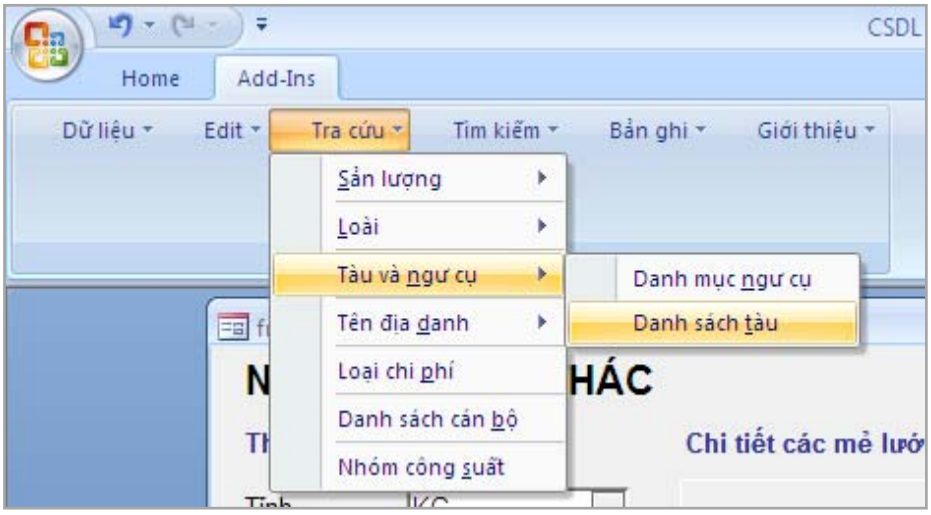
General information:

Once the window is opened, the cursor will automatically appear in the first field “**Provincename**”. The Encoder can use the ‘tab’ button to move the cursor to the next field. “**Province name**” is encoded by two capital letters as abbreviations.

The next field is “**Vessel registration number**” and the name of sampled vessel. The Encoder can enter the vessel registration number or select from the list. Note: when entering the vessel registration number, it is necessary to cross check if there is consistency between the vessel registration number and the capacity of the vessel, in the database.



In case, the vessel is not in the list in the database, then the encoder must create new vessel data on the database. In this case on the menu bar of the database, the user has to select: **Search/Vessel and gear/List of vessel** to open a window for entering a new record of the vessel. This procedure can be described below:



Then window to enter vessel information is as follows:

The User can press the sign to open a new record to enter vessel information:

- **Vessel registration number/S Đăng ký tàu** is used to enter the vessel registration number. The vessel registration number normally includes a province code where the vessel is registered and a number. The vessel registration number is unique and must be the same as on the vessel list of the local authorities. In case the vessel registration number overlaps with other vessels (the other vessels are defined as vessels with the same registration number but different capacities) and which is already in the list of the database, then the encoder must enter the vessel registration number recorded in the data collection form together with a capital A, B, C….at the end of the vessel registration number to make sure this vessel is unique in the database.

- The next field is **name of captain/Thuyn trng**for entering the name of the vessel captain.

- The next field is **Engine**? **/G□n máy?** to click on if the vessel installed with an engine (i.e. capacity higher than 0). This field is automatically ticked as a default. In the case of a vessel without engine, the encoder can unclick this field.

-The next field is **Capacity/Mã l□c (CV)** to entervessel capacity

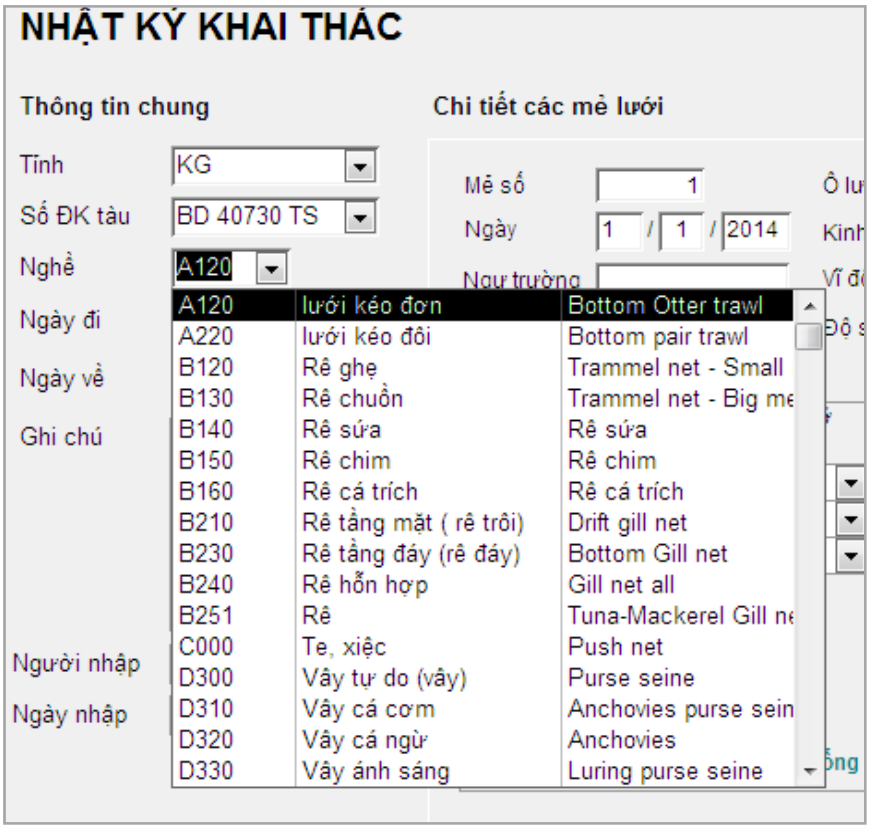
-The next field is **Length/Chi□u dài (m)** to enter length of the vessel

- Thenext field is **Note/Ghi chú** to enter some notes on the vessel

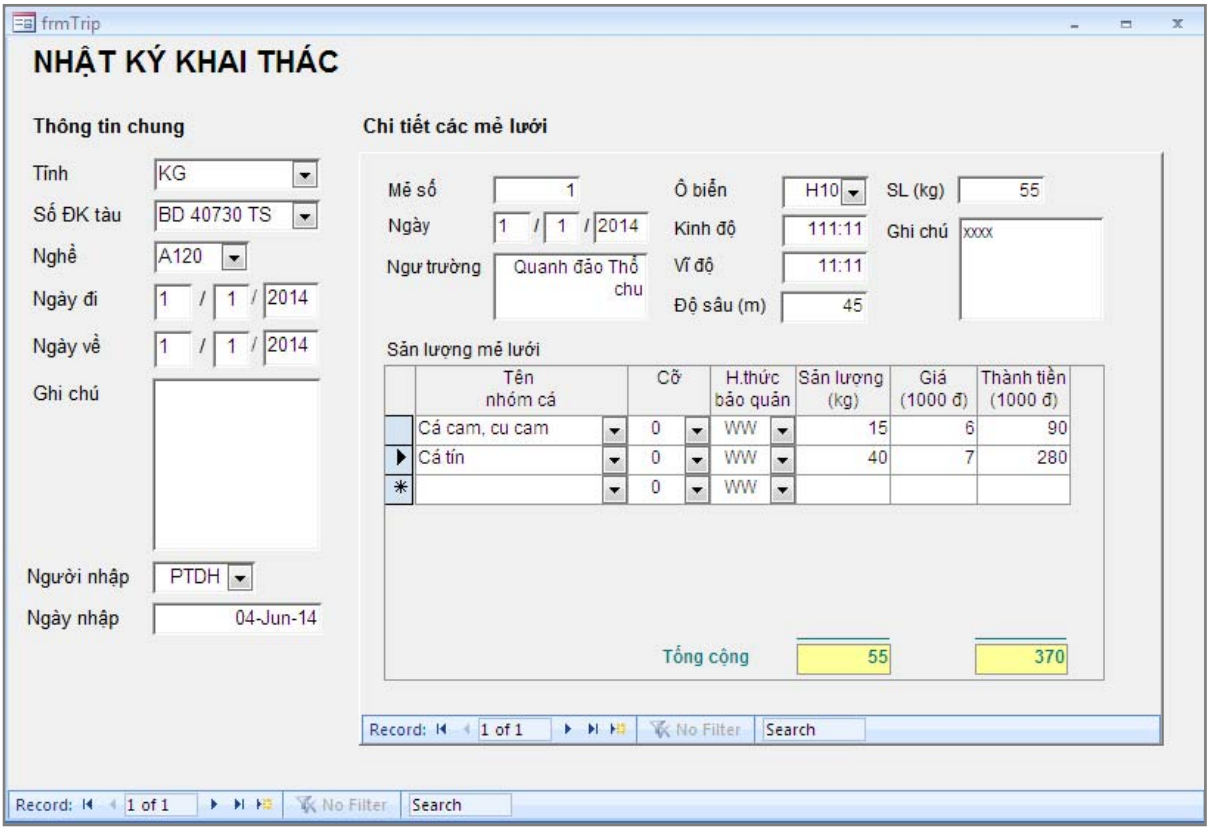
- Press **Close/Đóng bi□u** to close the **Vessel General Information** and return to haul detail information.

- Then encoder can select a vessel from the list or enter the name of the vessel into the field of **Vessel registration number/S□ ĐK tàu**.

- Gear/Ngh□ is used to enter fishing gear of the sampled vessel. Similarly the encoder can select from the list or enter directly a code for the corresponding gears, in this field.



- Next, the encoder enters data on **Departure date/Ngày đi** and **Arrival date/Ngày v□** forthe fishing trip. This field is formatted as a date field -day/month/year.



The next field is **Note/Ghi chú**, used to enter any notes of the sampled trip.

The **Encoders name/Ng□□i nh□p**, **Entered date/Ngày nh□p** are set up as default fields corresponding to the login user in the database and data entry date.

This is end of General Information and the encoder can move to Detail Haul Information.

Detail Haul Information/Chi ti□t các m□ l□□i:

Detail Haul Information field describes haul information and the catch from the haul.

Haul No./M□ s□ is used to enter the order of the haul in the trip

Date/Ngày tháng is used to enter day-month-year of the haul into corresponding fields as indicated in the below figure.

Fishing ground/Ng□ tr□□ng is used to enter general fishing location of the trip.

Fishing area/Ô bi□n indicates the grid where the catch was taken. This area is defaulted.

Longitude, latitude/Kinh đ□, V□ đ□ is used to enter exact location by longitude and latitude where the catch came from.

Depth/Đ□ sâu (m) is used to enter fishing depth.

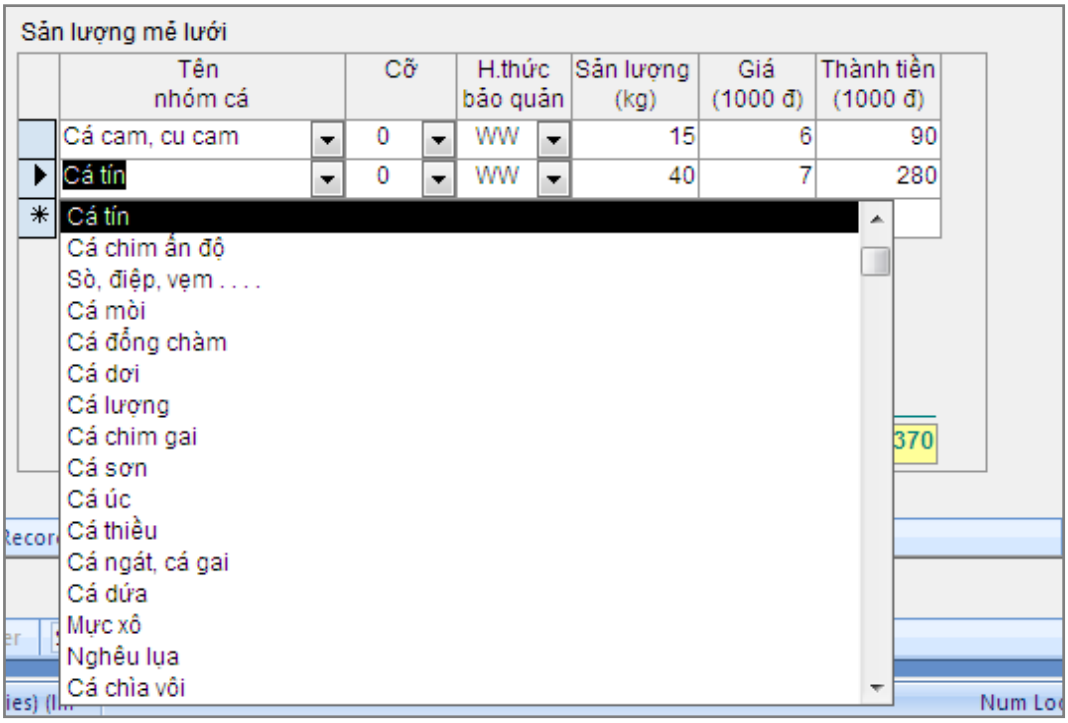
Catch/Ô SL (Kg) is used to enter the total catch of a haul.

Note/Ghi chú is used to enter specific notes on the haul.

Catch by haul:

Catch by haul is shown in a form in a data table consisting of rows and columns. Each line shows information about a catch group. The Encoder will enter line by line, starting with the first column, second column and to the last column and then move to the second line to continue entering.

Species name/Tên nhóm cá: is used to enter species name of catch. The Encoder can directly type or select by the list.



Size/C□: is sued to enter size of individual in the catch.

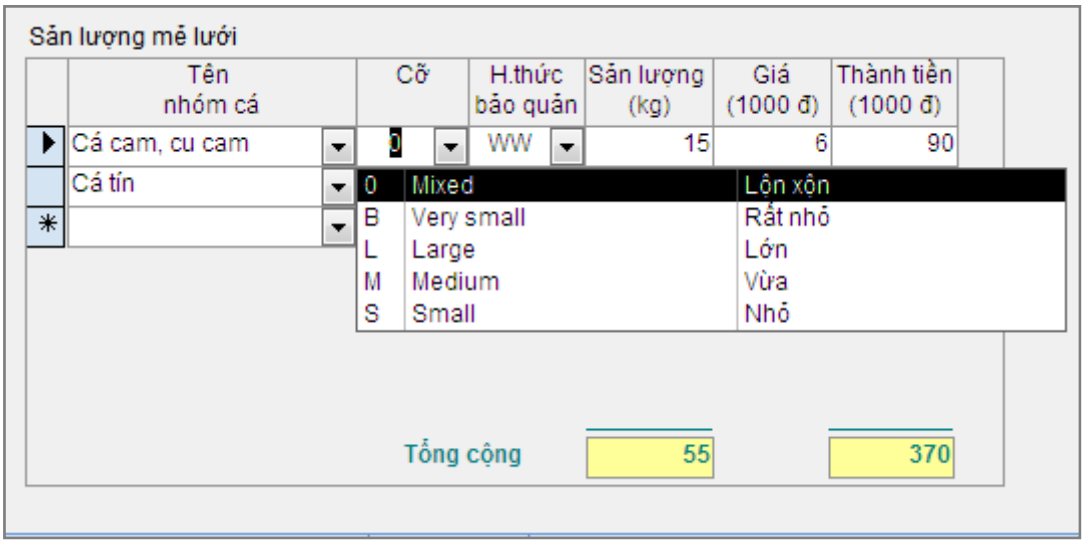
Normally fishers sort catches by quality and size. The encoder can enter a code for size from the list. For groups such as mixed fish groups or mixed squid groups or unidentified size groups, **Size** will be entered as 0 in the database.

For groups with unidentified sizes in the form but categorized by quality then the form should be filled out as follows:

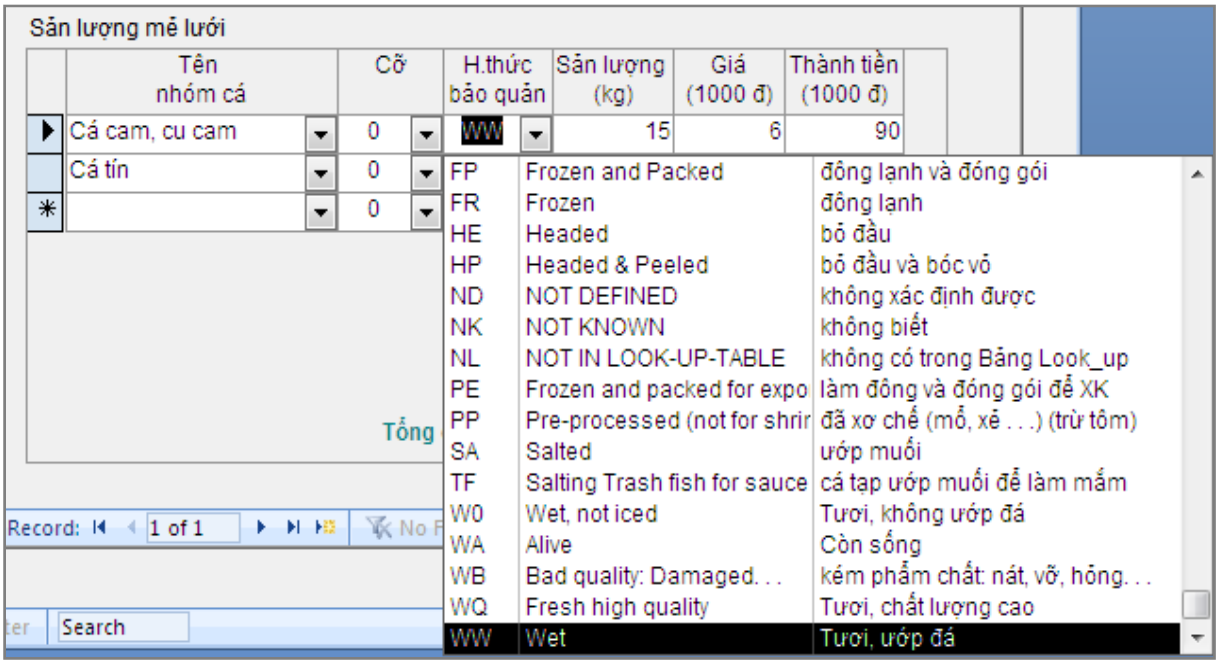
Catch type I: enter as L (large)

Catch type II: enter as M (medium)

Catch type III: enter as S (small)



Preservation mean/H.th□c b□o qu□n: to indicate how fishes are preserved.



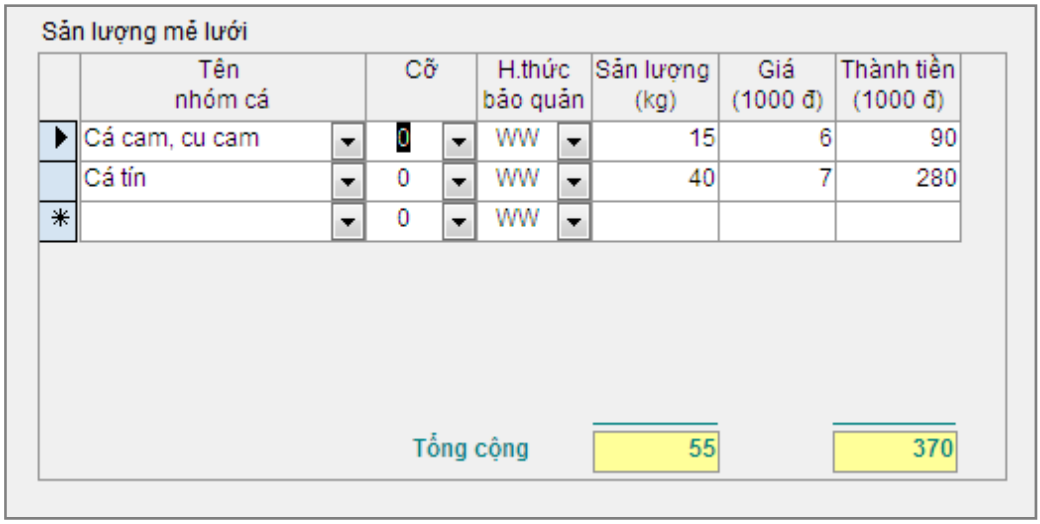
If a means of preservation is not indicated in the collected form then the database will default as WW (Wet weight).

Price/Giá (1000 VND): is used to enter data on prices of the catch group with units of 1,000 VND.

Amount/Thành ti□n (1000 VND): is used to enter data by value for the catch group with a unit of 1,000 VND. This field is automatically updated according to a following formula:

Amount (1000VND) = Catch (kg) x Price (1000VND/kg)

The total catch data and the total catch value is automatically updated in two yellow data boxes on the lower right screen, as indicated below:

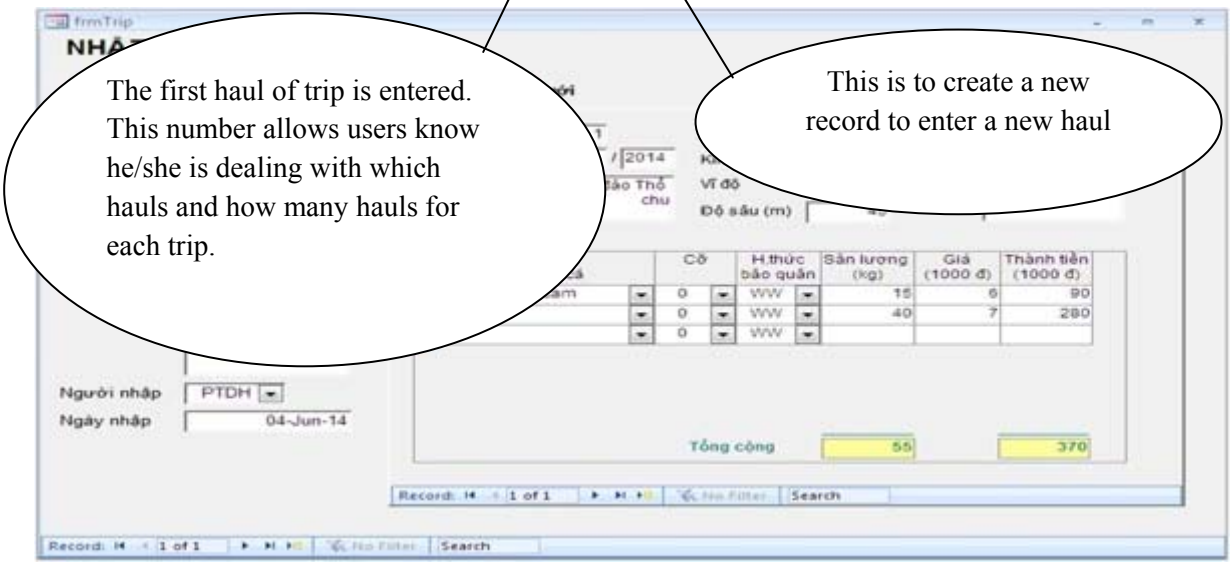


Information is entered to the last catch by each haul and then moved to another haul.

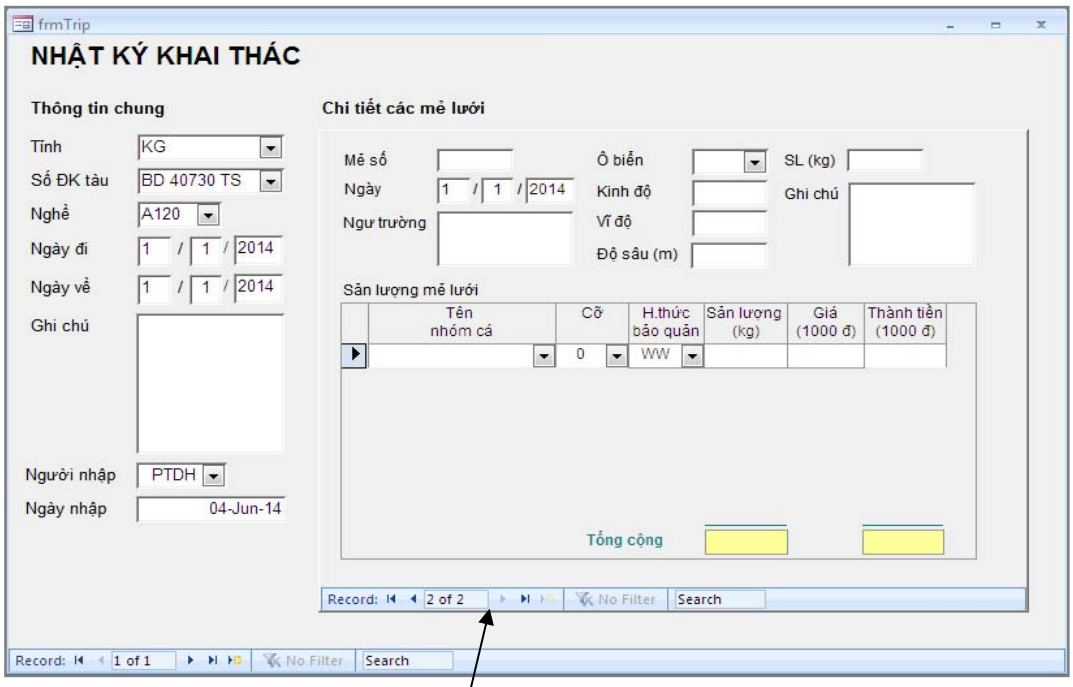
Note:

To avoid information omissions, the encoder should note to cross check total catches for each haul in the yellow box, with the total catch of the haul recorded in the data collection form so that they are the same, before going to the new haul.

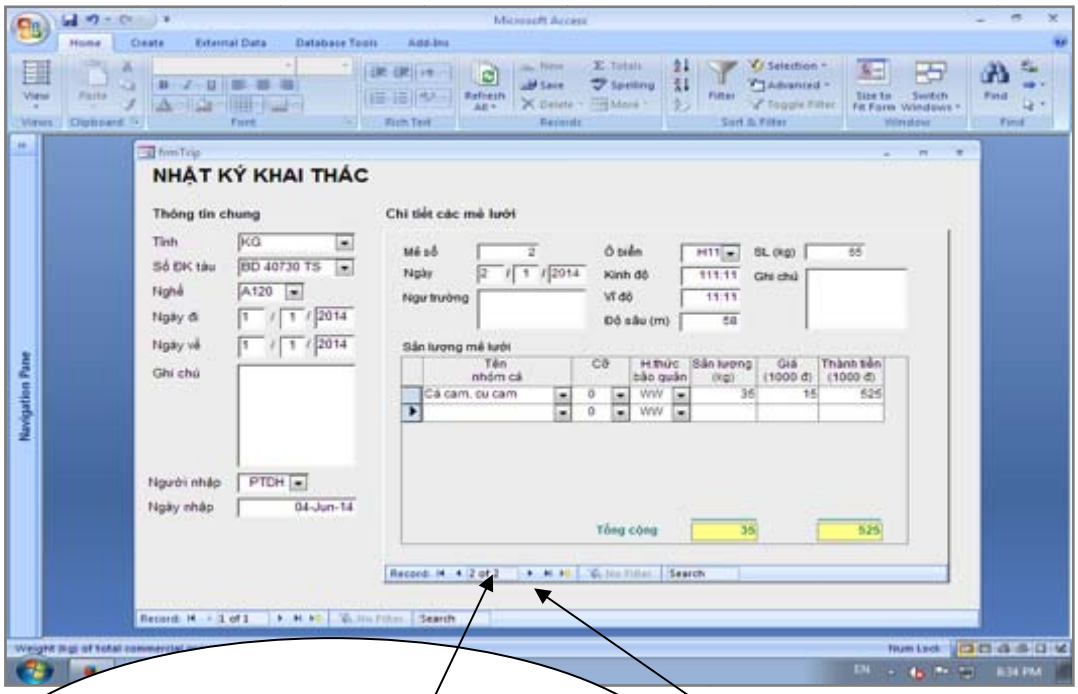
To move to the next haul, the encoder presses the buttonin the lowest line of database to create a new record as indicated in the below figure:

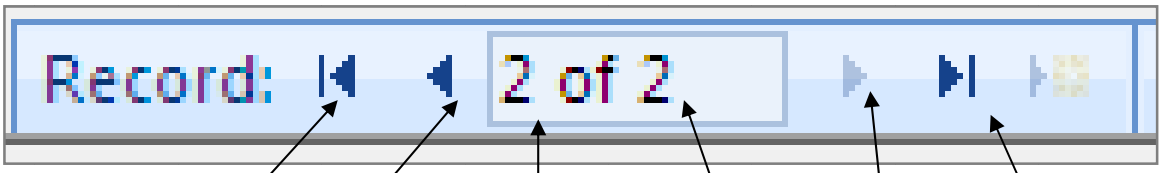


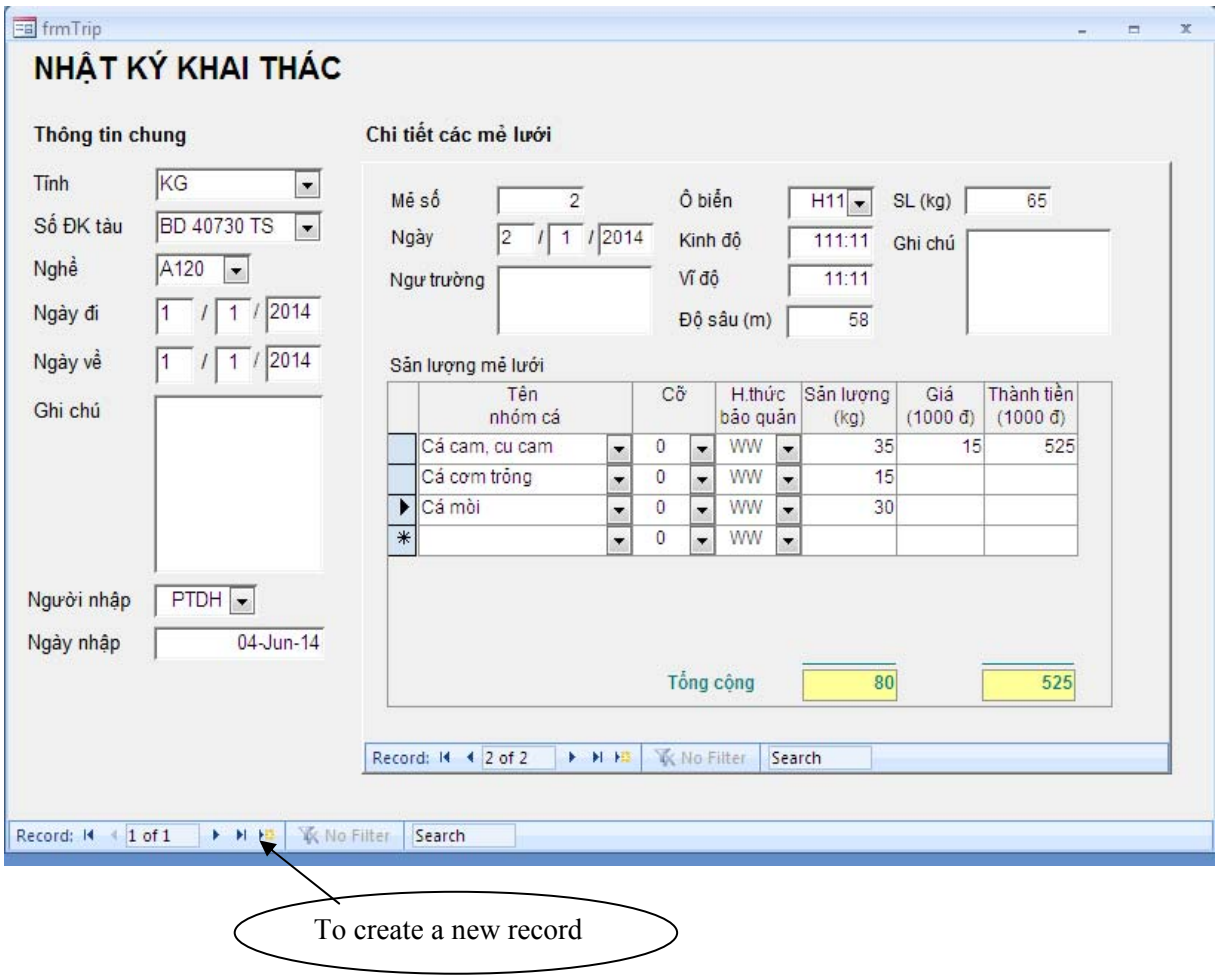
Once the encoder has pressed a new record will appear to enter information for the next haulas indicated below and entry procedures are repeated as above.



There is currently opening a second record to enter a second haul of trip.


NHẬT KÝ KHAI THÁC
Thông tin chung
Chi tiết các mẻ lưới
Currently, user is entering in a second haul of trip. This box allow user to know total of hauls entered of 2
This allow to move to next records

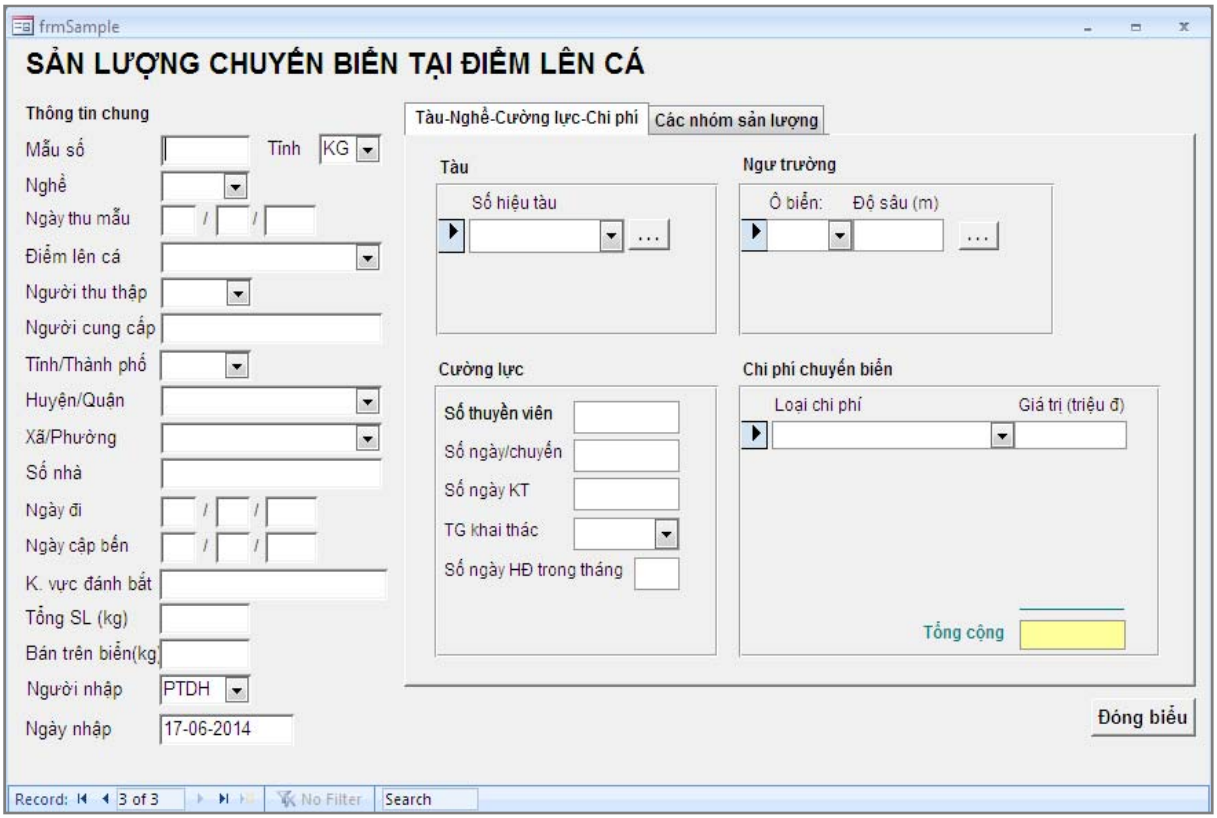

Record:
2 of 2
Move to the first record
Move to previous record
The second record opening
There are currently 2 records entered
Move to the next record
Move to the end record



3.3.2. Landing data interface

Once the user presses**Landing data/S□n l□□ng chuy□n bi□n** it means that he/she has chosen to enter landing data by trip of fishery.

The landing data interface will be opened so that user can start to enter data:



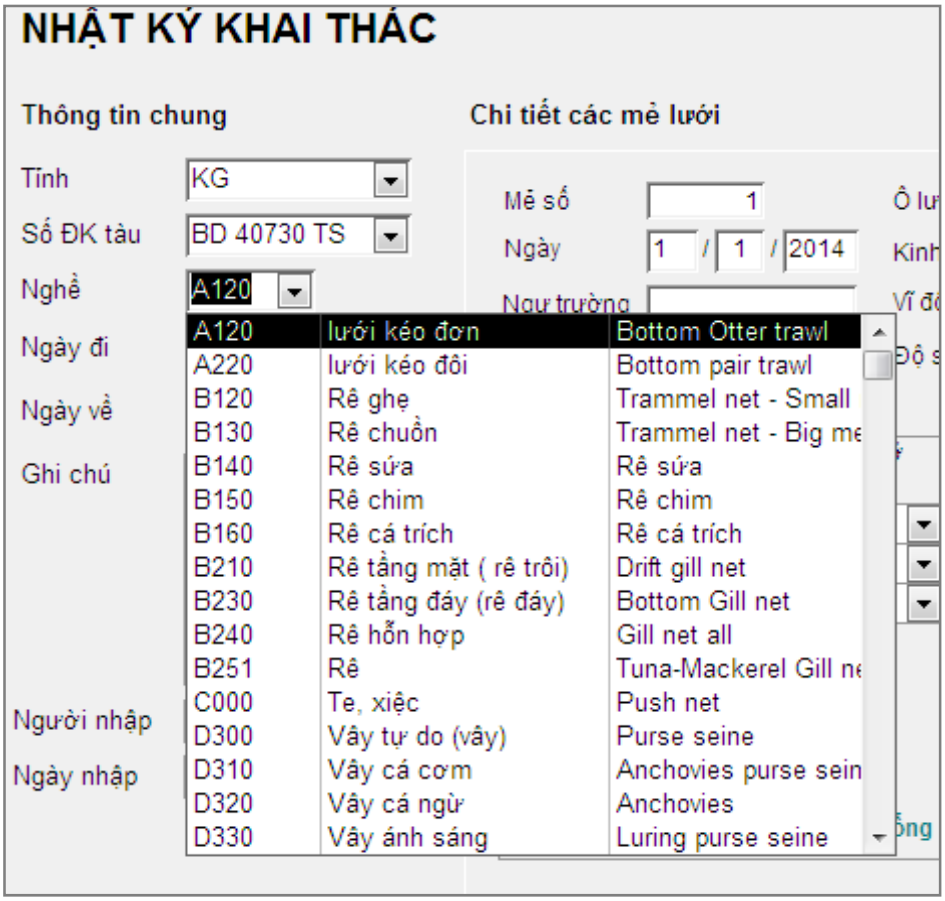
The landing data interface is divided into three parts: **General information/Thông tin chung**,; **Vessel-Gear-Effort-Cost/Tàu-Nghề-Cường lực-Chi phí**; and **Catch by groups/Các nhóm sản lượng**. The encoder will enter data for each part step-by-step from general information to catch by group.

The encoder can use the tab button to move the cursor through the information field.

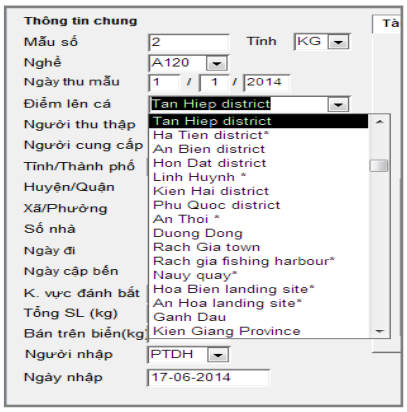
*** <u>General information/Thông tin chung</u>:**

Once the landing data interface opened, the cursor will be placed in the first cell of Sample No. as indicated in the data collection form.

In the **Province/Tinh** the encoder can code the name of province or select the province code by a list as shown below. In this database, the box is set as the defaulted code KG (Kien Giang).



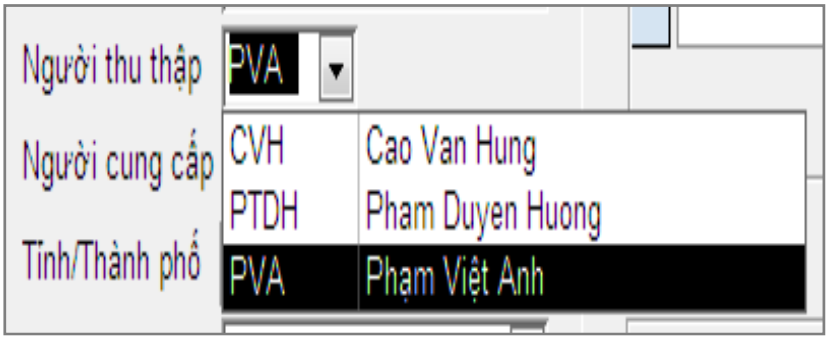
Then the usercan continue to input data into the**sample collection date** for the fishing trip. This is the date type data and the user enters the information of date/ month/ year into the corresponding box.

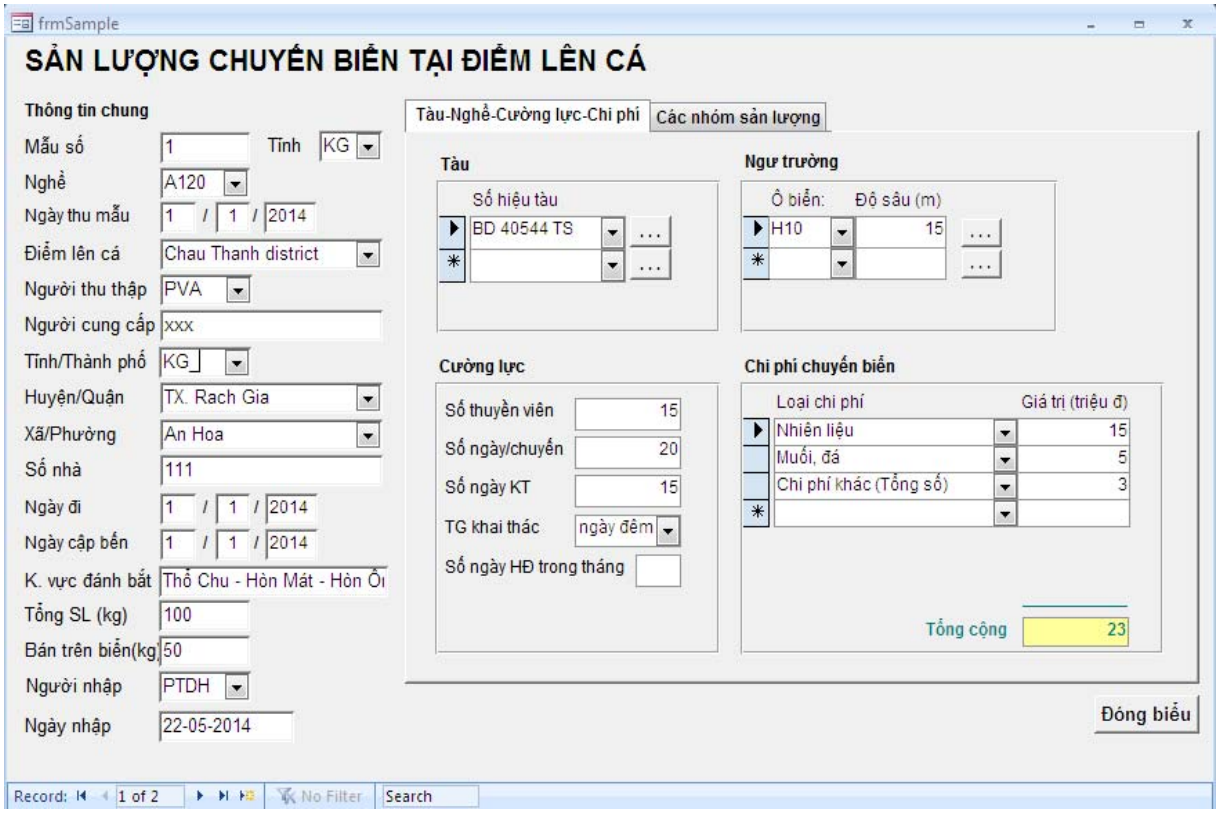


Next is the field **Landing site**is where the catch of the fishing trip was landed. The user can select a name from the list or type the code of the Landing site. A list of landing sites is displayed by province code i.e. if the province code is KG (Kien Giang province), the list would show landing sites of Kien Giang province, as shown in the graphic.

The box**Collector** is used to enter the code of the collector who collected data being inputed.

The box**Provider**: is used for entering the name of the person providing the information.





The box **Province/City**: is used for entering province/city code of the address of the person who providing information.

The box**District/county**: is used for entering district/county code of the address of the person who providing information.

The box**Commune/Precint:**is used for entering commune/precint code of the address of the person who providing information.

The box**House No.**: is used for entering house number of the address of the person who providing information.

The boxes**Departure date**, **Arrival Date:**are used for entering data of starting and landing dates of the fishing trip. This is the date type data and user enters the information of date/ month/ year into the corresponding box.

The box**Fishing Ground**: is used to enter the information about main fishing ground of the fishing trip where its catch was collected.

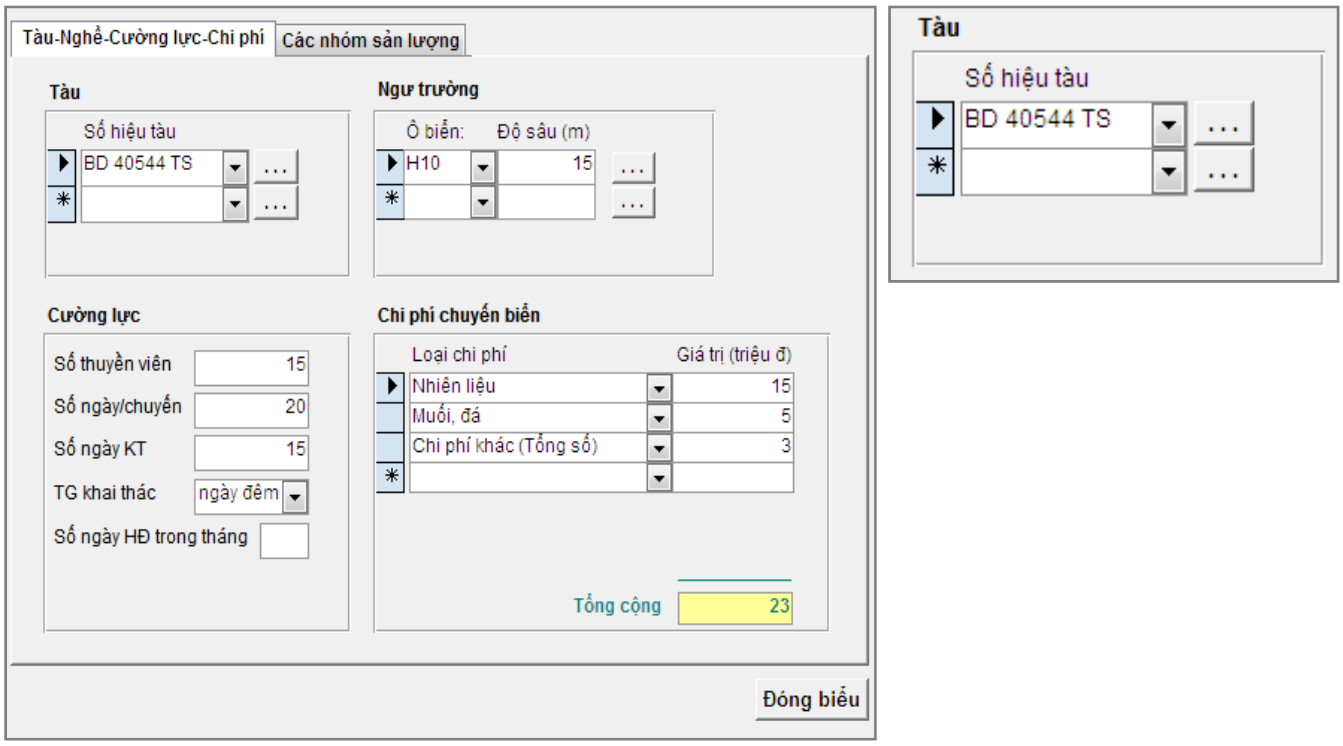
The box **Total Catch (Kg)**: is used to enter data of the catch of the fishing trip.

The box**Seliing at the sea (Kg)**: is used to enter data of the weight of the part of the catch sold at the sea before landing.

The box**User**, **InputDate** are defaulton the datewhen data was entered and user logs in to the Database.

After finising entering data into General Information, the user starts to enter data of **Vessel-Gear-Effort-Cost**.

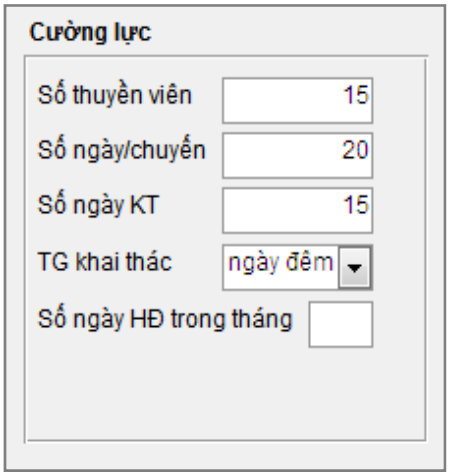
* **Vessel-Gear-Effort-Cost**:



In the box**Vessel Number**, as in above instruction, the user can either type in the registration number indicated on the sampling form or select directly from the list of vessels.

If the vessel is not included in the list, the user can click on the command button ... to open a new form for entering information ona new vessel into the Database. Data input procedure is as instructed earlier.

Under **Effort**: the box**Number of skippers**: is used to enter the number of skippers on board during the fishing trip.



The box**Number of days/trip**: is used to enter the total number of days of the fishing trip.

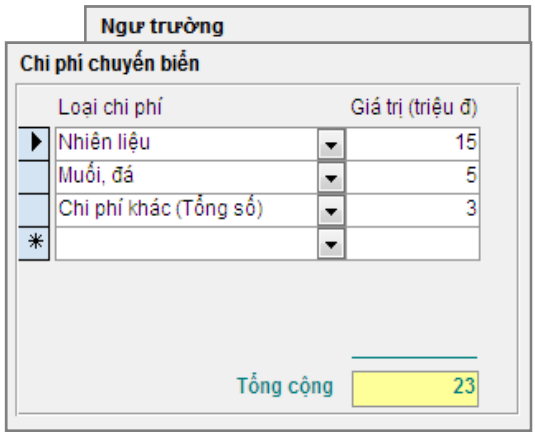
The box**Number of fishing days**: is used to enter the number of fishing days among total days of the fishing trip.

The box**Fishing time**: is used to enter the time fishing operations were taking place (daytime/night time/all day and night).

The box**Number of operation days per month**: is used to enter total number of fishing days during sampling month

Under**Fishing ground**: the box**Sea area**: is used to enter the code for the fishing zone where the catch was collected

The box**Depth (m)**: is used to enter the average depth where the catch was collected



Under**Cost** the box**Type of cost**: is used to enter

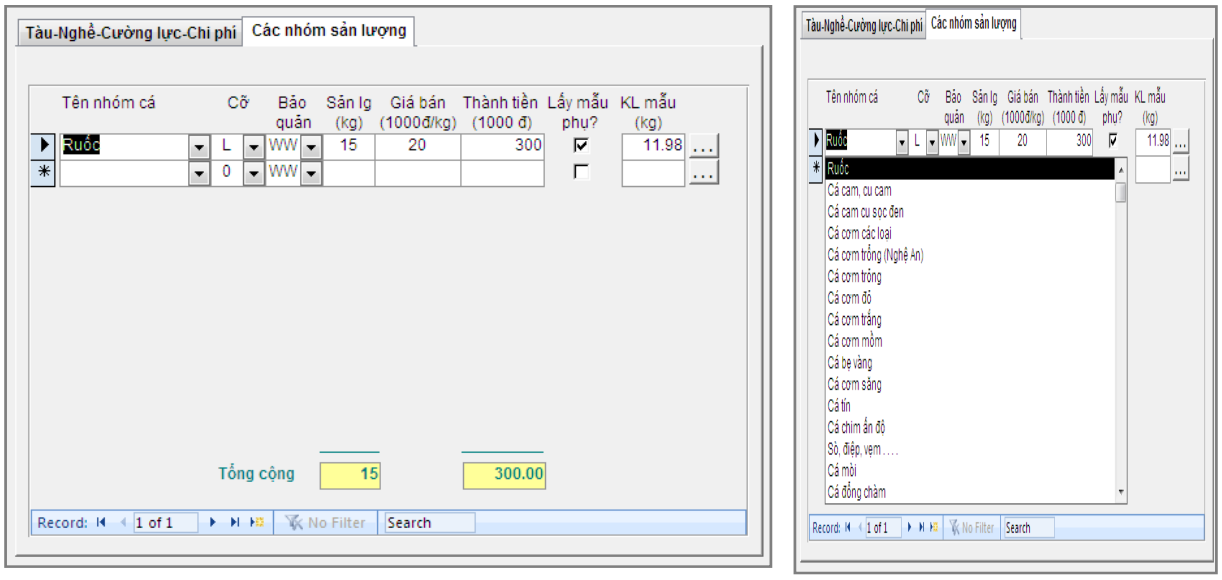
the type of the costs for the fishing trip or being selected from the list

The box**Value (million VND)**: is used to enter the expense of respective type of costs (unit: million VND).

Catch categories:

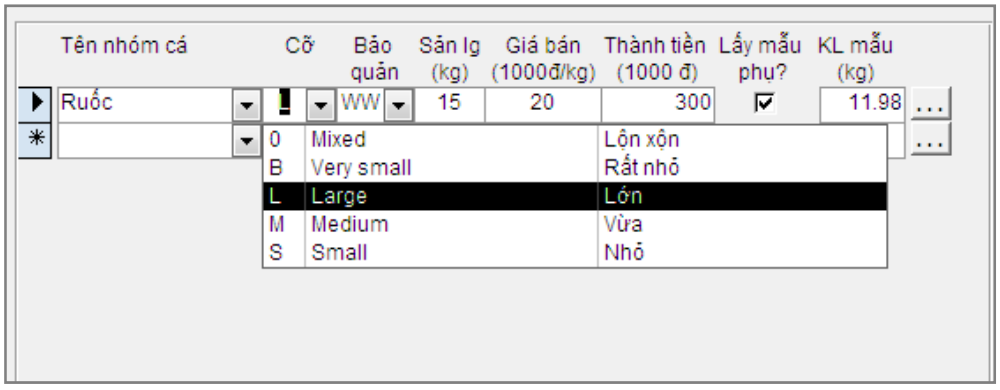
Data of the catch is displayed in a form in the data table including columns and rows. Each row shows information about a catch category. The User will enter the data into each row from first to second and the last column before moving to the next row.

The column**Name of fish group**: is used to enter the name of the catch category. The User can type the name of the catch category or selecta category from the list.



The column**Size**: is used to enter the size of catch category.

Fishermen often categorise the catch according to quality and size of the fish. The user will type the code for fish sizes or select from the list.



For catch groups such as trash fish, trash squid... or unavailable size information, the default code of the Database is 0.

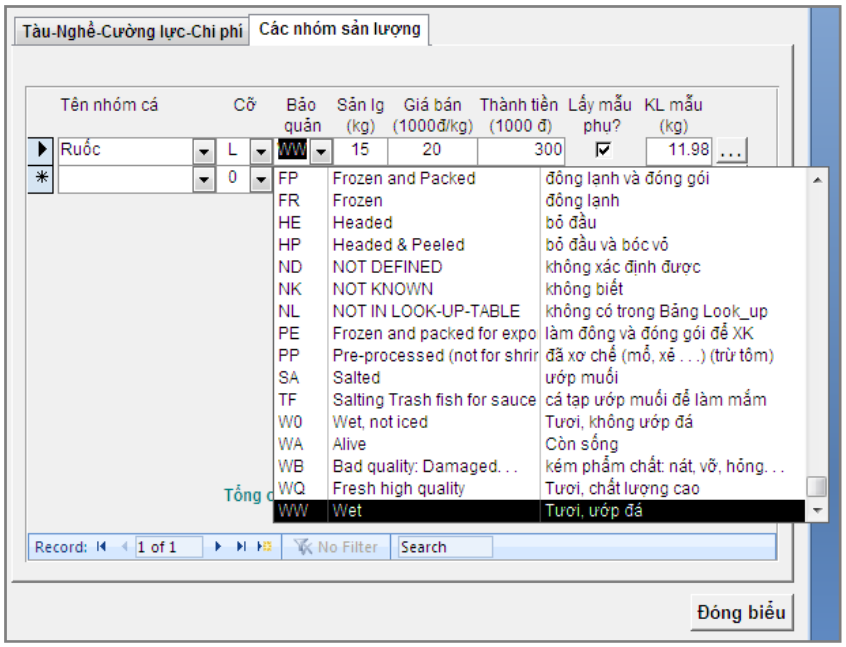
For catch groups where sizes were not indicated in the sampling form but are graded, such as Grade 1, Grade 2... data input will be as follows:

Catch Grade I will be input as size L (large)

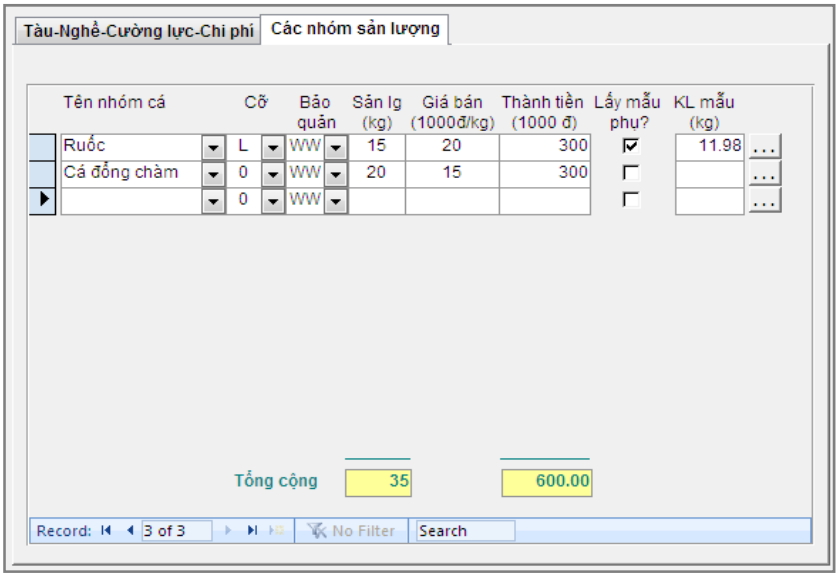
Catch Grade II will be input as size M (medium)

Catch Grade III will be input as size S (small)

The box**Preservation**: is used to enter the data on methods fishshermen employed to preserve the catch group. The user types the codes of the preservation methods for the catch group or selects it directly from the list.



Catches are usually preserved with ice. If it was not indicated as salted or dried in the sampling form, the default value WW (wet ice will be selected.



The box**Price (1000 VND)**: is used to enter data on prices of catch groups, unit: 1000VND.

The box**Total amount (1000 đ)**: is used to enter data on the amount of money of catch group value, unit: 1000 VND. This box is automatically updated by the formula:

Total amount (1000 VND) = catch (kg) x price (1000 VND/kg)

Data on Total catch and Total value is automatically updated in two yellow boxes at the bottom of the screen.

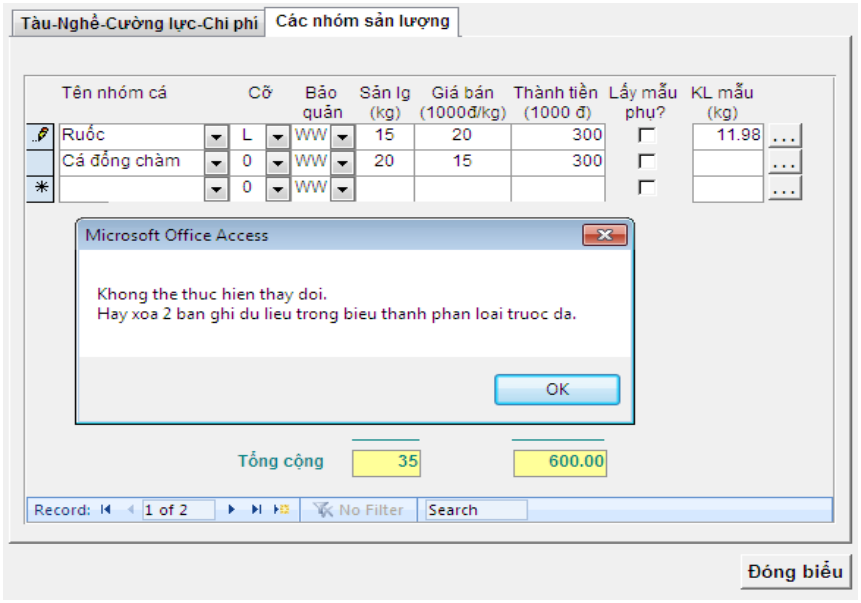
The box**Sub-sampling?**: is used if the catch group is subjected to sub-sampling for further analysis, this box will be ticked.

The box**Sample weight (kg):** is used to enter the weight of sub-sample taken from catch group for analysing species and species group composition.

The command button [...]: is the command to open the form for entering data on species composition of sub-samples.

The User should notice that only when the box **Sub-sampling?** is checked,the box **Sample weight (kg)**and the command to open the form for entering data on species composition of sub-samples [...] are usable.

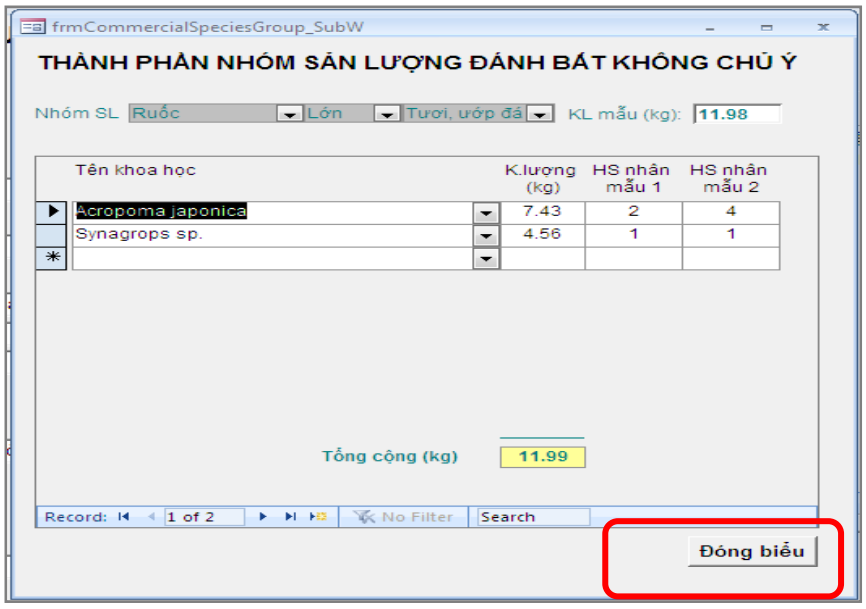
If the user unchecks the box and information of subsample still exists, an error notification will be displayed as in the graphic.



This means that when user wants to remove the tick mark, it is necessary to open the previous species composition form of catch group and delete all the data recorded previously and the sample weight (kg). If this is done then removal of the tick mark is possible.

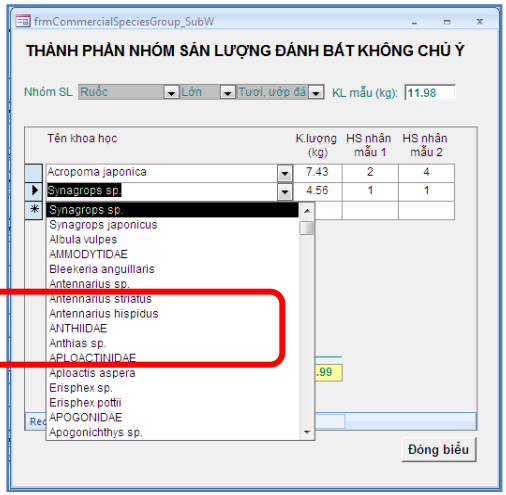
At this point theuser must be very careful that the data entered should be verified with the original information from the sampling form before the decision is made to remove the tick mark.

When the user clicks the command button [...], the data input form for species composition of sub-samples will open, The form will open as in the right graphic.



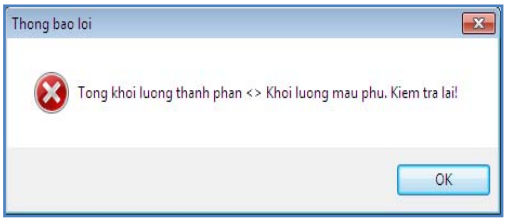
Data on component catch groups form the fishing trip is displayed in the form of a data table consisting of columns and rows. Each row shows information about a catch group. The user will enter data in each row starting from the first column to the second and the last column and then move to the next row.

The box **Scientific name** is used to enter the scientific name of fish species or groups of fish individuals. The user can either enter or select the name from the list of species names, as shown in the right graphic.



The box**Weight (kg):**is used to enter the weight of a fish species/ group of species.

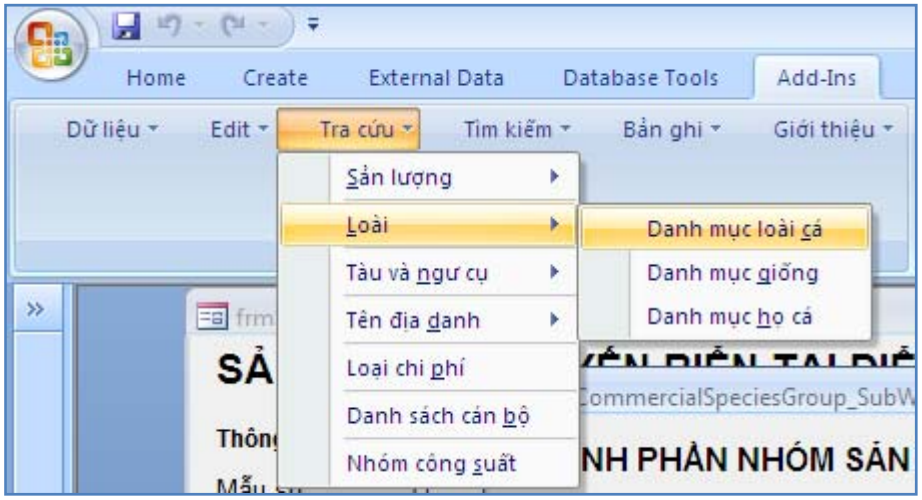
The total weight of component species is updated automatically in the yellow box. The user should check that the data in the yellow box and in the green box, **Sample weight (kg)** in the top right corner of the form, to ensure that they are not different until the two digits after the decimal point. Otherwise, the Database will display an error and user will not be able to close the form.



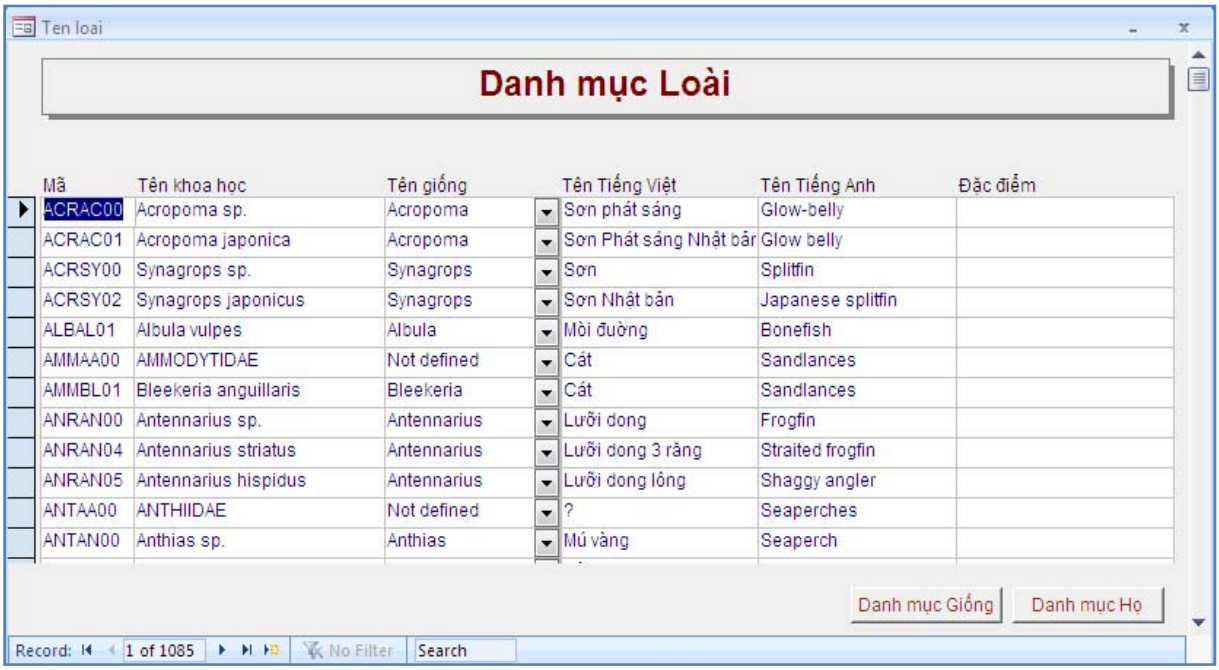
The box**Sample multiplication coefficient 1:**is used to enter the sample multiplication coefficient 1

The box**Sample multiplication coefficient 2:** is used to enter the sample multiplication coefficient 2

The user should notice that if the scientific name of the fish is not found in the default list, the form for scientific name should be opened to update for a new species. From the menu bar of the Database, **Lookup/Species/List of species** should be chosen as shown in the graphic below:



The List of fish species will be displayed as in the below graphic:



The user should click on the command button at the bottom of the form to move to a new record and enter a new species as instructed below:

The box**Code**: is used to enter the code of the fish species. The Database employs fish species codes from the NANSYS CODE system with the length of 7 characters, (with a HHHGGLL structure), i.e. the 3 first characters are an abbreviation of the fish Family, the next 2 characters are an abbreviation of Genus and the last 2 characters are a number regulated for the fish species.

The box**Scientific name**: is used to enter the scientific name (Latin name) of the fish species

The box**Genus name**: is used to enter the scientific name name (Latin name) of the fish genus or selected from the built-in list

The box**Vietnamese name**: is used to enter the popular name of fish species (as in taxonomical research documents)

The box**English name**: used to enter the popular English name of fish species (as in prestige taxonomical research documents).

The box**Characteristics**: used to enter characteristics or remarks for fish species (if available).

The user should click on the command button 'X' at the top right corner of the form to close the form.

The user should notice that when adding a new species, it is necessary to check its genus to specify an appropriate code because respective genus will have codes for name and family. This leaves a number to be assigned to the species.

If the genus name is not found in the list, the user should click on the command button **List of**

genusin the bottom right corner of the form, or open the list from the menu bar following the path: **Lookup/Species/List of genus**which is similar to the opening of the list of fish species.

When the form of **list of genus** is opened, the user should click on the command button at the bottom of the formto move to a new recordand enter the name of the new genus.

Data input instruction is as follows:

The box**Code**: is used to enter the code of genus as a number

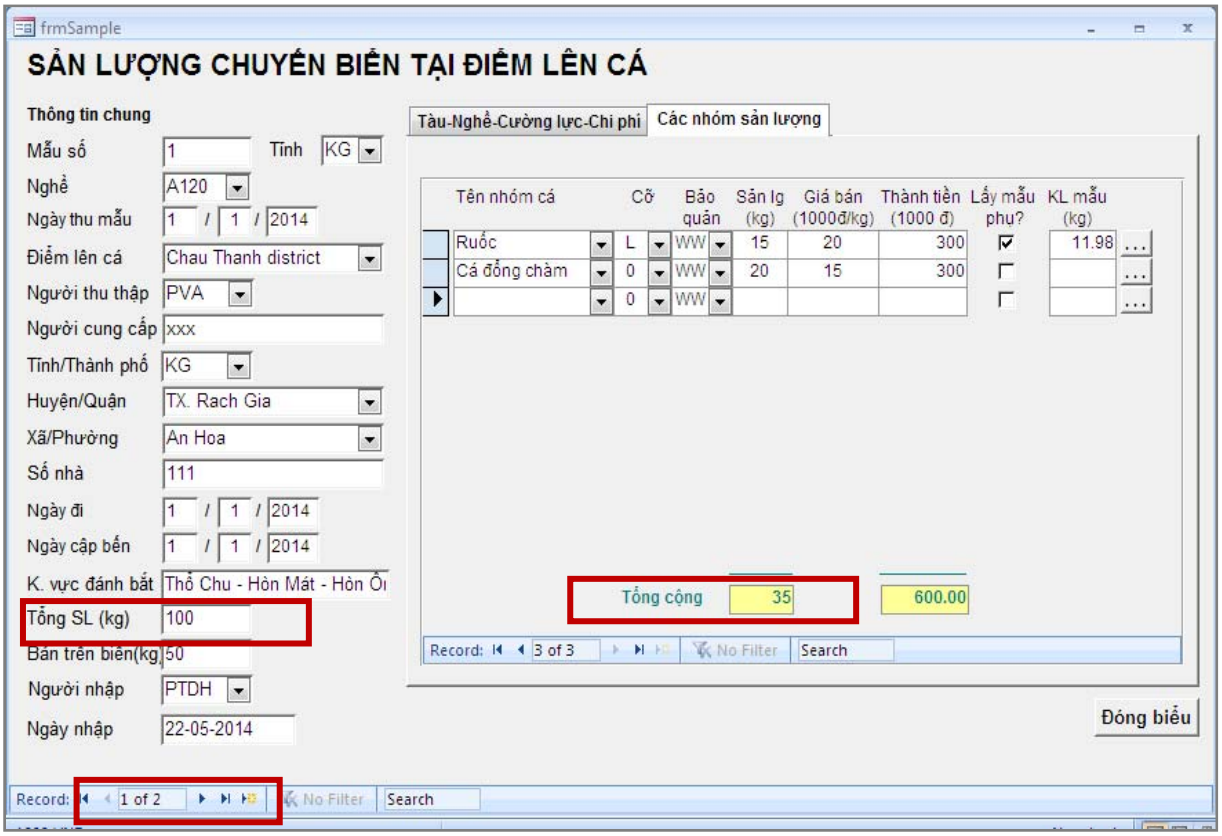
The box**Scientific name**: is used to enter the scientific name (Latin name) of the fish genus.

The box **Vietnamese name**: is used to enter the popular name of fish genus (as in taxonomical research documents)

The box**Fish genus**: is used to enter scientific name (Latin name) of the fish genus or it can be selected from the list.

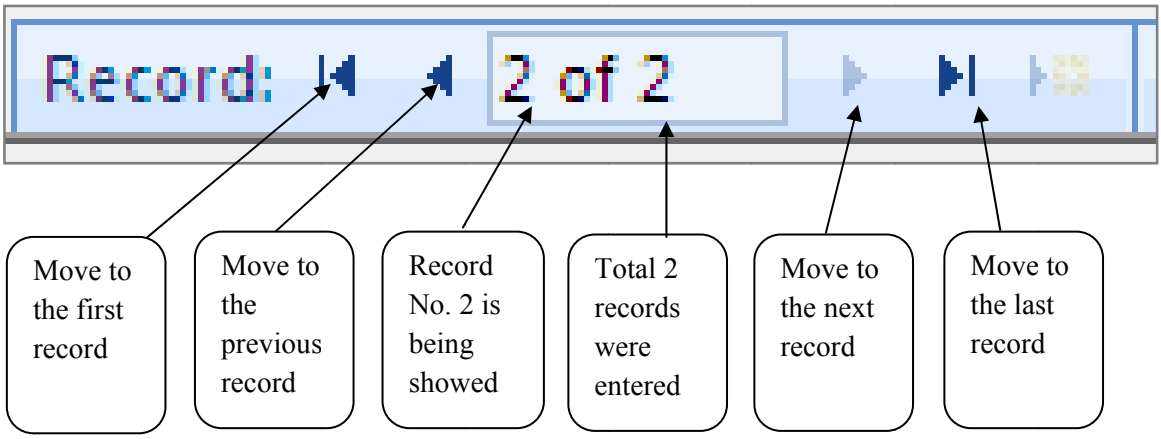
After completing the data input, the form should be closed by clicking the 'X' command button at the top right corner to return to the catch from the fishing trip.

In order to avoid lost catch information, it is necessary to check the total catch of the batch in the yellow box with the number recorded in the sampling form and with the box**Total catch (kg)**before moving to a new fishing trip.



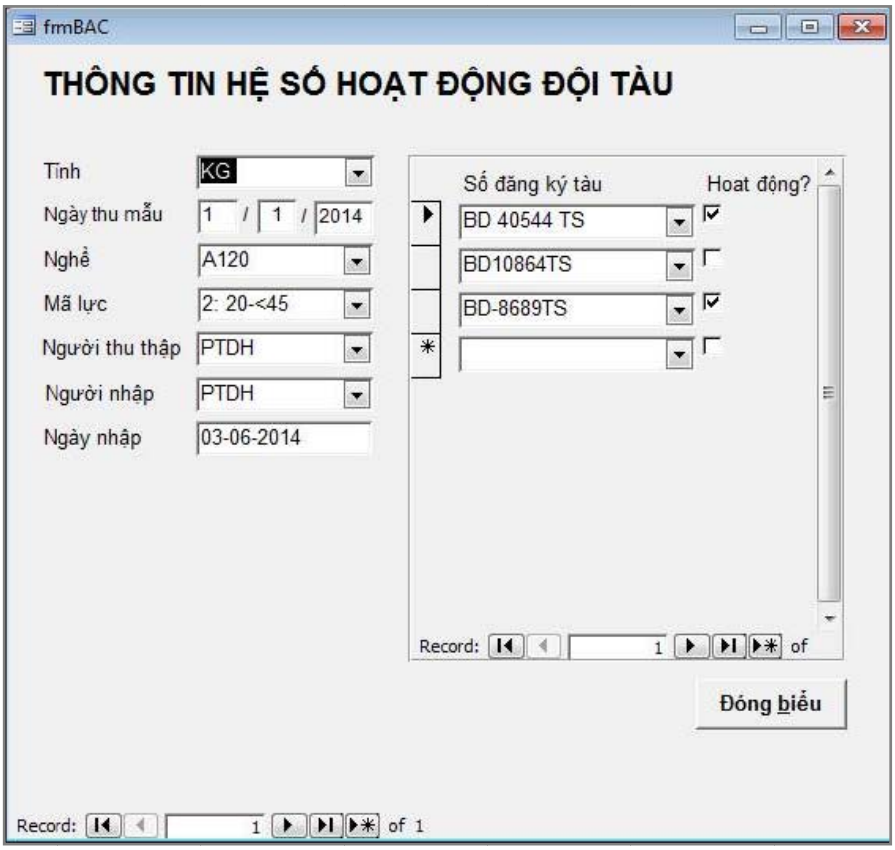
To move to new fishing trip batch the user should click on the command button at the bottom of the the form, to create a new record.

Instructions for using the toolbar to move over different records is in the graphic below:



3.3.3. Data input for Fleet operation parameters

From the data source menu, the user should click on the command **Fleet**to enter data of the fleet operational parameters. The screen below shows the form for data input as follows:



The form is devided into 2 parts: **General Information** and **Fleet operation information**. The user should enter data from item General information to Fleet operation information.

The user should use the Tab button to move easily between the data boxes.

General Information:

When the form is opened, the cursor will appear in the first data box which is the box: **Province,** to enter the code of the province where the sampling took place.

In the box **Province**, the user can either type the province code or select an appropriate code from the list, as shown in the below graphic. In the Database, the box **Province**is setup with the default code of KG (Kiên Giang).

The box**Sampling date:**consists of small boxes to enter data of sampling date. This isdate type data and the user enters the information of date/ month/ year into the corresponding box.

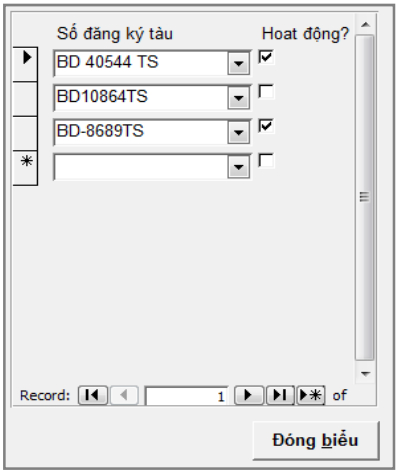
The box**Gear:** is used to enter the names of fishing gears that the vessel carried on board for catching the catch during the fishing trip. The user can either enter the code of fishing gears or select from the list.

The box**Power:** is used to enter the power groups of the fishing fleet.The user can either enter the power group of the fishing fleet or select from the list.

The box**Collector:**is used to enter the code of the collector who is entering the data from the sampling form.

The box**InputDate, Input Person**is defaulted on the date of entering data and the user code of the person who logged into the Database.

Fleet operation parameters:



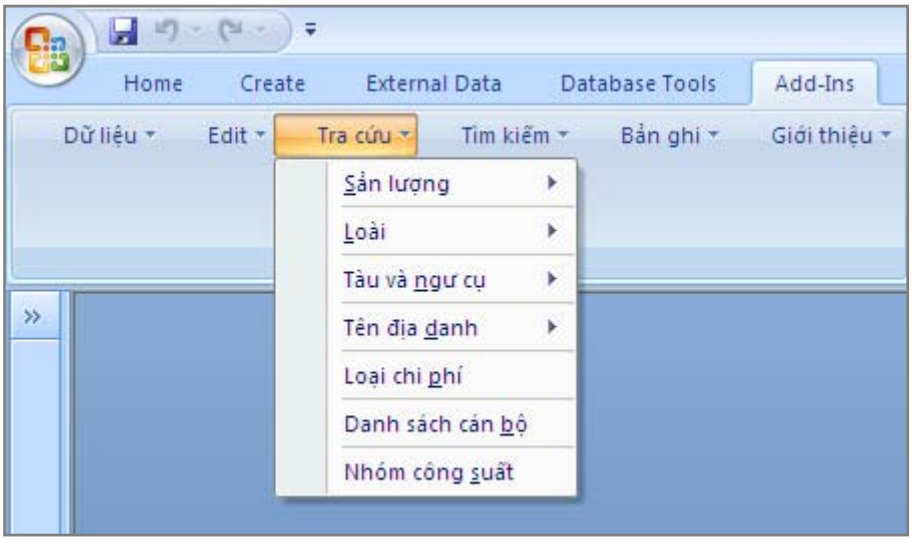
The box**Vessel Number:** The user can type the vessel registration number recorded in the sampling form or select from the list of vessels as instructed above.

If the vessel is not included in the built-in list, the user can click on the command button to open a form for entering a new vessel record into the Database. Data input is carried out similarly to the above instruction.

In the box**Operation,** the user should check this box to indicate that the vessels are in operation or leave it blank as recorded in the sampling form.

3.4. Input lookup data

A lookup on menu bar of the Database is used to access the lookup lists in the Database.

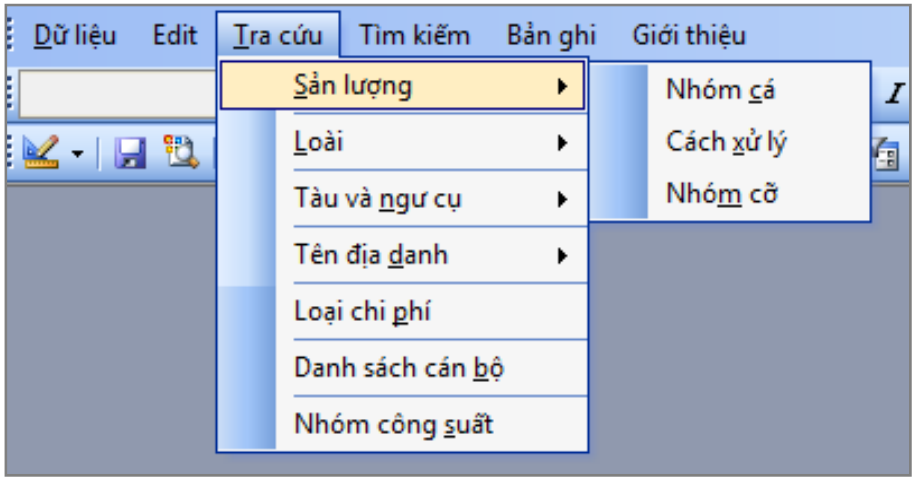


The lookup lists of the Database comprise of seven main information groups as in below graphic Instruction for handling each group is as followings.

3.4.1. Catch

This group is divided into 3 main lookup data components: Fish group, Processing, Size group.

From the menubar user choose **Lookup/Species**and the screen will appear as in the graphic below:



3.4.1.1. Fish group

The Fish group is the list of catchesthat fishermen graded on board immediately afterthe fish were caught from the sea and before being preserved. The list is in table format with column and rows.

The box**Code**: is used to enter the code of the **Catch Group**, which comprises of 5 characters derived from the English name of fish group. If an English name is not available, Latin or Vietnamese names can be used.

The box**Vietnamese name**: can be used for the catch group.

The box**English name**: can also be used for the catch group.

Mã	Tên Tiếng Việt	Tên Tiếng Anh	Chú thích (Tên địa phương)
TIGTH	Cá căng	Tiger fish	Therapon sp. (Cá ong=Cá căng giải vân)
TLF__	Cá hồng đào	Tile fish	Branchiostegus spp.
TLFRE	Cá đống quéo	Red tilefish	Cá quéo, cá đầu vuông: Branchiostegus japonicus = Latilus j.
TNG__	Cá bơn cát, bơn lưỡi	Tongue soles	Cá bơn cát, cá bơn lưỡi: Cynoglosus spp.
TRE__	Cá khế	Carangids	Cá quyt, cá ét: CARANGIDAE
TRECL	Cá bao áo	Cleftbelly trevally	Atropus atropos
TREFA	Cá vạng mỡ	False trevally	Lactarius lactarius
TRG__	Cá bò da	Triggerfishes	BALISTIDAE
TRTAA	Cá rô	Atlantic tripletail	Lobotes surinamensis
TUN__	Cá ngừ	Tuna	
TUNEL	Cá ngừ chấm	Eastern little tuna	Cá ngừ bông, ngừ hoa: Euthynnus affinis
TUNLT	Cá ngừ bò	Longtail tuna	Thunnus tonggol
TUNSB	Cá ngừ sọc mớp	Striped bonito	Cá sọc mớp (K. Hoà): Sarda orientalis
TUNSK	Cá ngừ sọc dưa	Skipjack tuna	Cá ngừ vằn, cá dưa gang
TUNTH	Cá ngừ chù	Thynoid tuna	Auxis rochei
TUNYL	Cá ngừ vây vàng	Yellowfin tuna	Cá bò gù, cá ngừ đại dơng: Thunnus albacares
TURBO	Cá bơn ngộ	Turbots	Cá ngộ, cá bơn chó: Psettodes spp.
WHTBU	Cá chàm (1 loài)	Butterfly whiptail	Pentapodus setosus
WRS__	Cá mó, bàn chài	Wrasses (Hog-and Razorfis	Cá mặt trăng: LABRIDAE
WWHER	Cá rựa	Whitefin wolf- herring	Cá rựa, cá dao, cá lanh: Chirocentrus spp.
YESTR	Cá chỉ vàng	Yellow Striped travelly	Cá chỉ, cá chỉ cồn, cá ngân chỉ

The box**Remarks**: is used for remarks relating to the catch group characteristics and can include local names of the catch group.

The user should notice that a catch may have many different names in different localities. This list was composed fromdata fromthe commercial fishery sampling of Research Institute

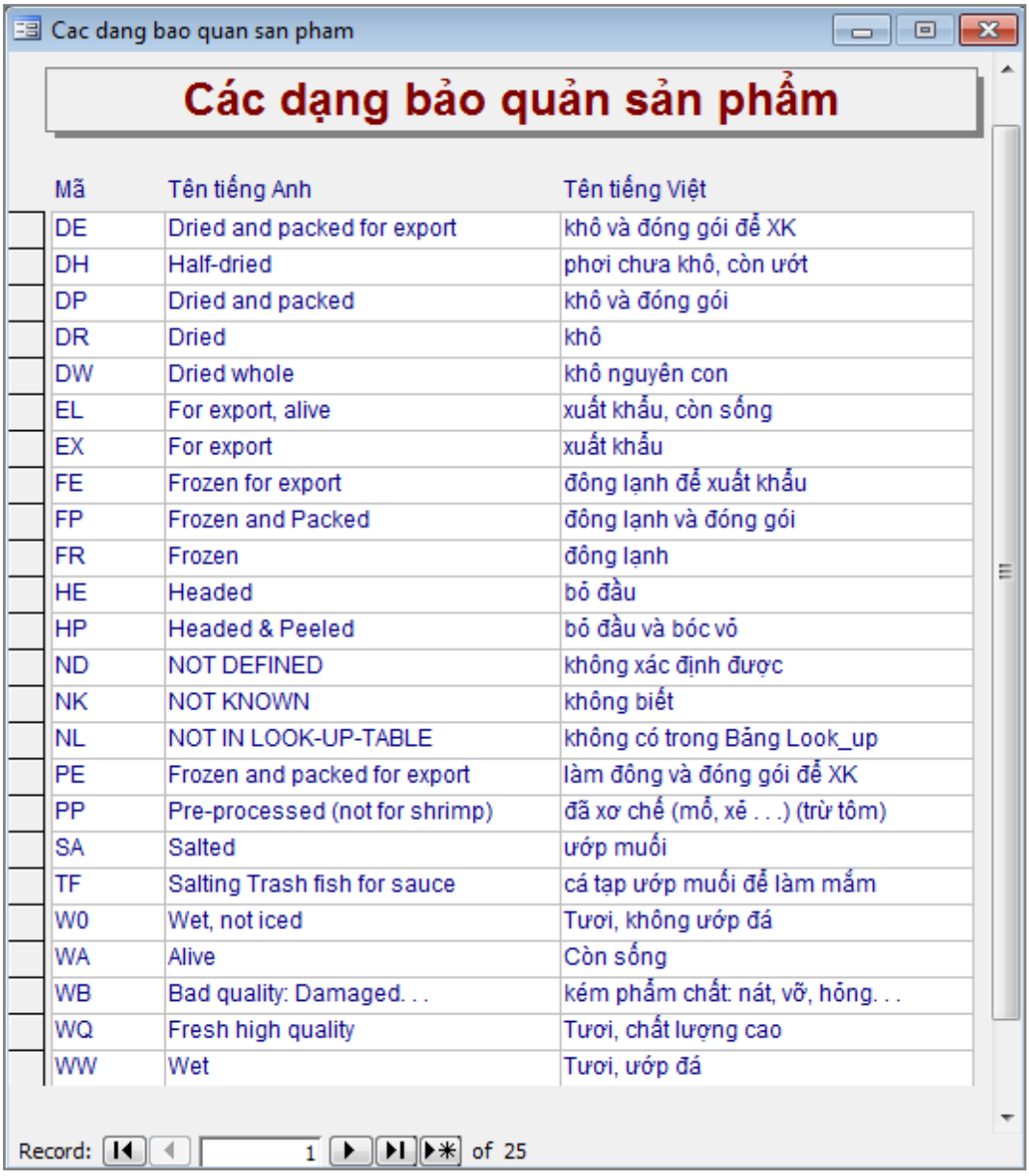
of Marine Fisheries during period from 1996 to 2005. When searching for data entry, the user may have some difficulties choosing catch group namesrecorded in the sampling form and group names from the list. To avoid errors, it is necessary to request the sample collector or a professional to verify the form content before transferring to the data input division. This control procedure should be included in sampling procedures to ensure the validity of the data.

The command button **Exit**: is used to close the data form.

The command button is used to start a new row for data input into the form.

3.4.1.2. Processing

A list of processing methods listing preservation methods employed on board by fishermen. is displayed as a table with columns and rows as in the below graphic:



Mã	Tên tiếng Anh	Tên tiếng Việt
DE	Dried and packed for export	khô và đóng gói để XK
DH	Half-dried	phơi chưa khô, còn ướt
DP	Dried and packed	khô và đóng gói
DR	Dried	khô
DW	Dried whole	khô nguyên con
EL	For export, alive	xuất khẩu, còn sống
EX	For export	xuất khẩu
FE	Frozen for export	đông lạnh để xuất khẩu
FP	Frozen and Packed	đông lạnh và đóng gói
FR	Frozen	đông lạnh
HE	Headed	bỏ đầu
HP	Headed & Peeled	bỏ đầu và bóc vỏ
ND	NOT DEFINED	không xác định được
NK	NOT KNOWN	không biết
NL	NOT IN LOOK-UP-TABLE	không có trong Bảng Look_up
PE	Frozen and packed for export	làm đông và đóng gói để XK
PP	Pre-processed (not for shrimp)	đã xơ chế (mổ, xẻ . . .) (trừ tôm)
SA	Salted	ướp muối
TF	Salting Trash fish for sauce	cá tạp ướp muối để làm mắm
W0	Wet, not iced	Tươi, không ướp đá
WA	Alive	Còn sống
WB	Bad quality: Damaged. . .	kém phẩm chất: nát, vỡ, hỏng. . .
WQ	Fresh high quality	Tươi, chất lượng cao
WW	Wet	Tươi, ướp đá

The box**Code**: is used to enter the code of **Preservation group,** comprised of 2 characters derived from the English name of the preservation group. Dry preservation, frozen and ice group begins with letter D (dried), F (Frozen), and W (Wet) respectively…

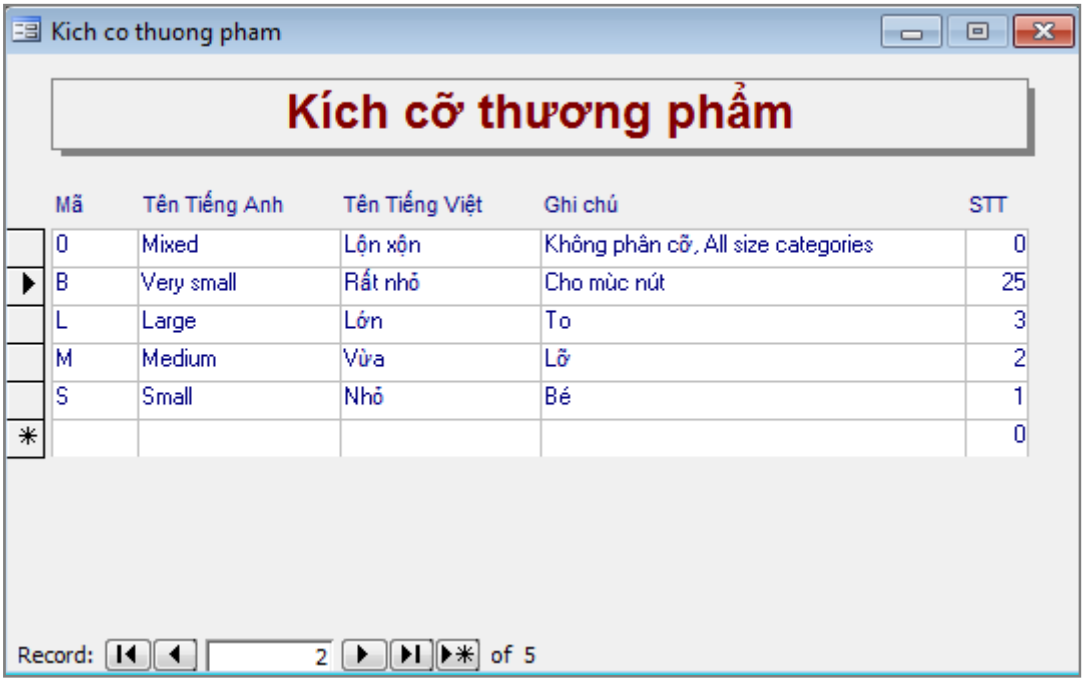
The box**English Name**: is for the English name of the preservation group

The box**Vietnamese Name**: is for the Vietnamese name of the preservation group

The command button is used to start a new row for data input into the form.

3.4.1.3. Size group

Size groupslists all size groups that fishermen grade fish on board and comprises of 4 main group as in the below graphic:



The box**Code**: is used to enter the code of **Size group** comprising of 01 characterderived from the English name of size group.

The box**Vietnamese name**can be used for the size group.

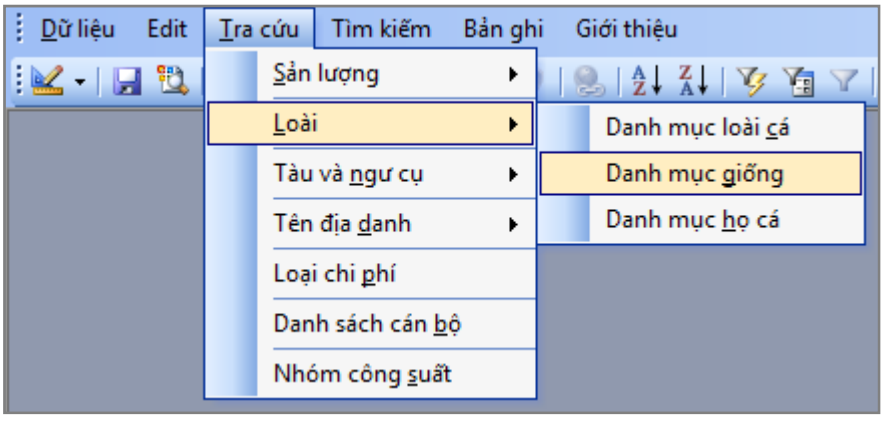
The box**English name**: can also be used for the size group.

The box**Remark**: is used to record information about the size group (if applicable)

The Command button is used to start a new row for data input in the form.

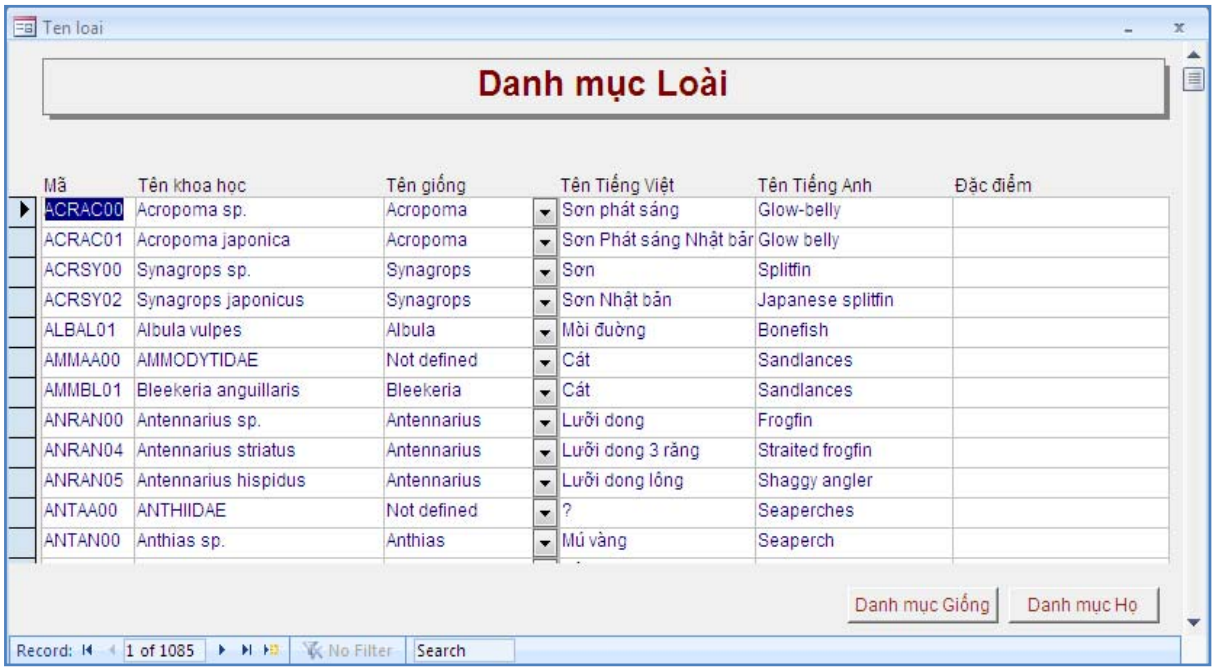
3.4.2. Species

This data item is divided into 3 main lookup data components: List of fish species, List of fish genus, List of fish family.From the menu bar, the user chooses **Lookup/Species** as in the below graphic:



3.4.2.1. List of fish species

List of fish species is a table listing names of the popular fish species observed in commercial fisheries of Vietnam. This list is displayed as a table with columns and rows as in the below graphic:



The box**Code**: is used to enter the code of fish species. The Database employs the fish species code of NANSYS CODE system with the lenghth of 7 characters with a HHHGGLL structure, i.e. the 3 first characters are an abbreviation of fish family, the next 2 characters are an abbreviation of Genus and the last 2 characters are a number regulated for the fish species.

The box**Scientific name**: is used to enter the scientific name (Latin) of the fish species

The box**Genus name**: is used to enter the genus name (Latin) of the fish genus or selected from the built-in list

Ô **Vietnamese name**: is used to enter the popular name of fish species (as in taxonomical research documents)

Ô **English name**: is used to enter popular English name of fish species (as in taxonomical research documents)

Ô **Characteristics**: is used to enter characteristics or remarks for the fish species (if available)

The user should click on the command button 'X'at the top right corner of the form to close the form.

The user should notice that when adding a new species, it is necessary to check the genus to specify an appropriate code because respective genus will have codes for its name and its family. The remaining digits are a number assigned to the species.

If the genus name is not found in the list, the user should click on the command button The list of genus is in the bottom right corner of the form or it can be opened from the list in the menu bar following the path: **Lookup/Species/List of genus** which is similar to the opening of the list of fish species.

When the form of **list of genus** is opened, the user clicks on the command button at the bottom of the form to move to a new record and enter the name of new genus.

3.4.2.2. List of fish genus

List of fish genusis a table list of all the popular fishspecies in the commercial marine fisheries of Vietnam. This Table comprises of columns and rows as in the below graphic.

The box**Code**: is used to enter the code of fish genus which comprises of numbers.

The box**Scientific nane**: is used to enter the scientific name (Latin name) of fish genus.

The box**Vietnamese name**: is used to enter the popular name of fish genus (as in prestige taxonomical research documents)

The box**Fish Family**: is used to enter scientific name (Latin name) of fish family(as in taxonomical research documents).

The command button is used to start a new row for data input in the form.

After completing data input, the form should be closed by clicking the 'X' command button at the top right corner.

3.4.2.3. List of fish family

The list of fish family is a table list of all popular fish species of commercial marine fisheries of Vietnam. This table comprises of columns and rows as in the below graphic.

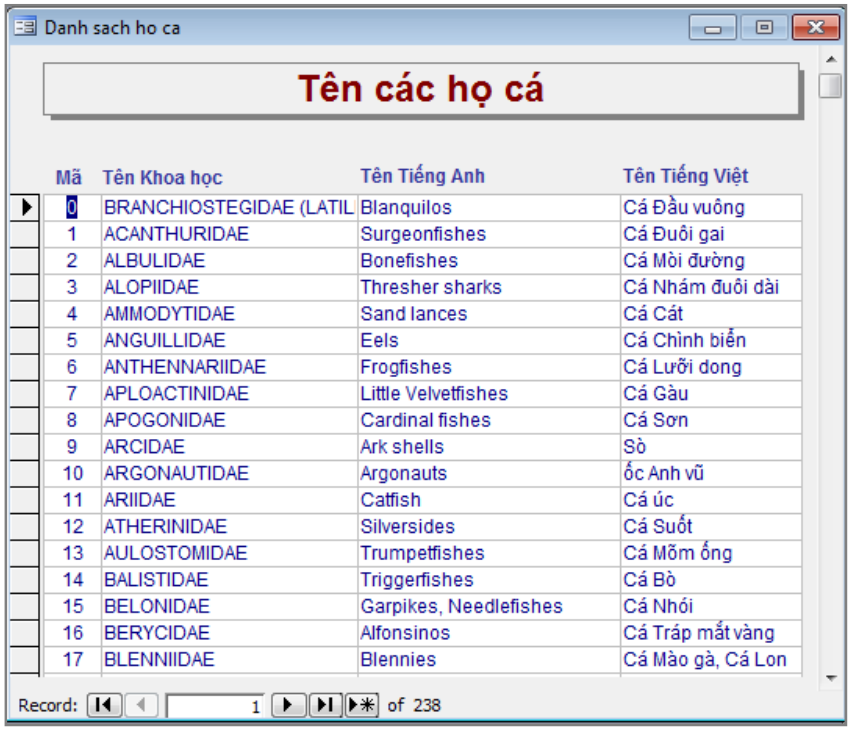
The box**Code**: is used to enter the code of fish family which comprises of digits.

The box**Scientific name**: is used to enter the scientific name (Latin name) of the fish family.

The box**Vietnamese name**: is used to enter the popular name of the fish family (as in taxonomical research documents)

The command button is used to start a new row for data input into the form.

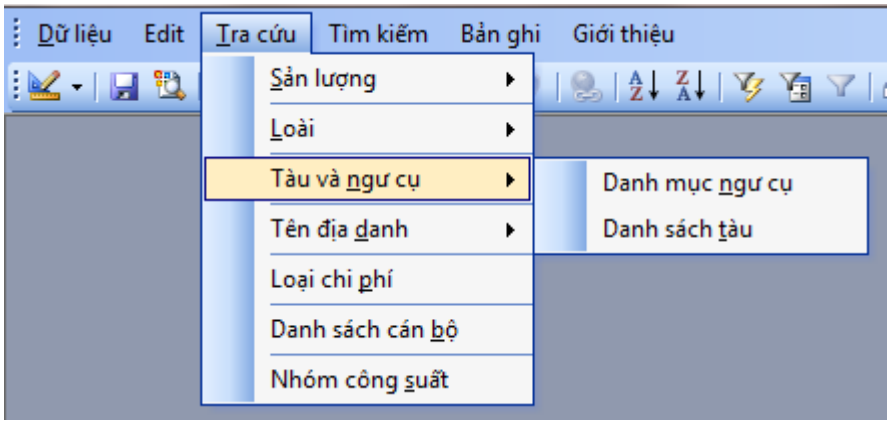
After completing data input, the form should be closed by clicking the 'X'command button at the top right corner.



3.4.3. Vessels and fishing gears

This data group comprises of two main data components: List of fishing gears and list of fishing vessels.

From the menu bar of the Database, choose **Lookup/Vessels and fishing gears** as illustrated in the below graphic:



3.4.3.1. List of fishing gears

In order to access the List of fishing gears, the user shall choose **Lookup/Vessels and fishing gears/List of fishing gears**.

The**List of fishing gears** appearsas a table listing popular fishing gears used in commercial marine fisheries of Vietnam. This table comprises of columns and rows as in the below graphic:

The box**Code**: is used to enter the code of the fishing gear group comprising of 01 Latin letter and followed by 3 digits. The Latin letter indicates the fishing gear group and digits indicate the kind of fishing gear. For example, A is the code of bottom trawl group, B is the code of gillnet group, C is for fix gear group, D is for purse seine group.

The box**English name**: is used to enter the English name of fishing gear.

The box**Vietnamese name**: is used to enter the Vietnamese name of fishing gear.

The command button is used to start a new row for data input in the form.

After completing data input, the form should be closed by clicking the 'X' command button at the top right corner.

3.4.3.2. List of fishing vessels

In order to access the list of fishing gears, the user shall choose **Lookup/Vessels and fishing vessels/List of fishing vessels**. The **List of fishing gears** is showed in the below graphic:

The user should click on the command button to start a new record for a fishing vessel:

The fisrt data box to be inputed is **Vessel Registration Number**. This box is used to enter the registration number of the fishing vessel. Registration number usually comprises of the code of the province where the vessel is registered and the registered number assigned to the vessel. The register number of a vessel is usually unique and recorded in the registration list under the management of Sub-Department of Capture Fisheries and Fisheries Resource Protection in that province. If there is a duplication of fishing vessel registered numbers (vessels have the same registered number but different engine power) in the list, the user should type exactly the registration number recorded in the sampling form and add letter A,B,C… to the end of registered number of the vessel to ensure that the number is unique in the Datebase.

The box**Captain**is used to enter the name of the captain

The box**Engine installed?**is for user to tick the checkbox if the the vessel is motorised with engine(s) For convenience, this check box is ticked as default. If the boat is unmotorised, tick mark should be removed from this check box.

The box**Horse Power (CV)**is used to enter the total power of the vessel.

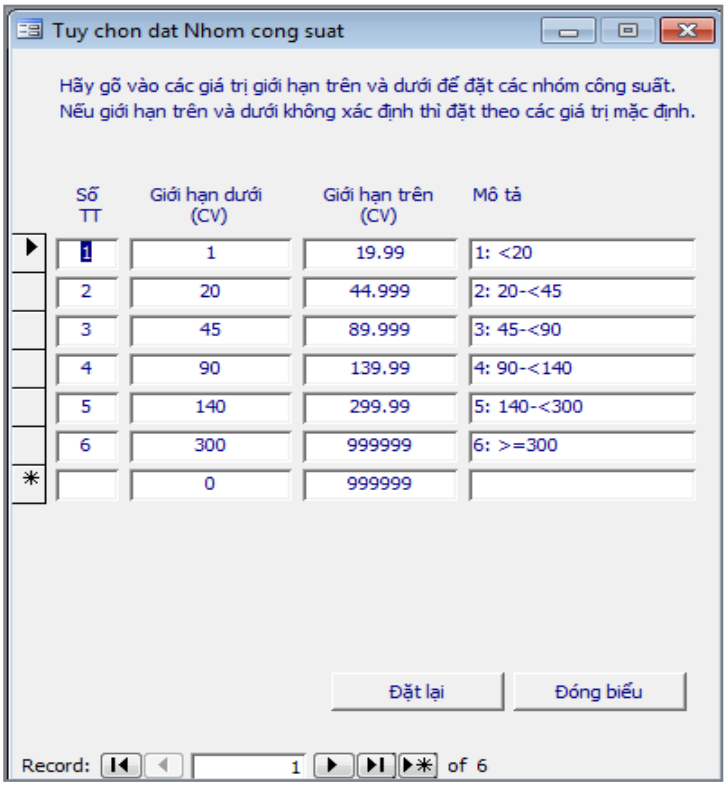
The box**Length (m)**is used to enter the length of the vessel.

The box**Remark** is used to enter remarks about the vessel.

The user clicks on the command button **Close** to close the form.

3.4.4. Power group

The user can choose**Lookup/Power group**and a list of the power groups will be shown as in the below graphic:



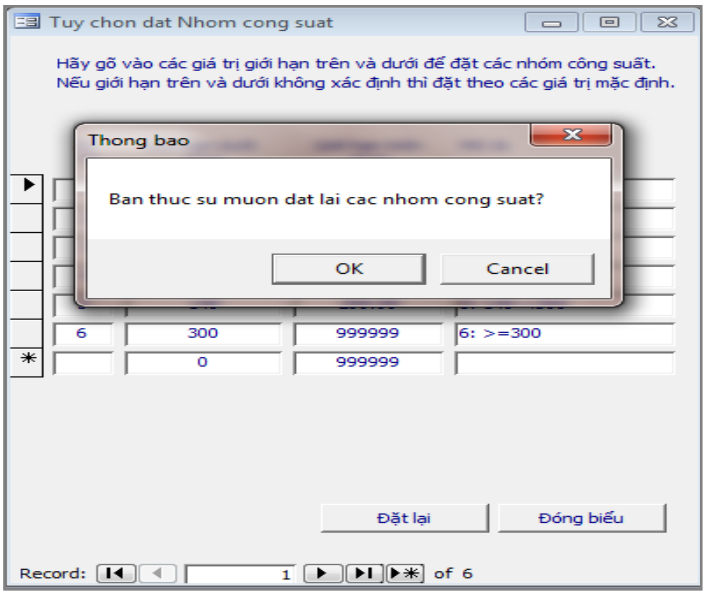
The box**No.**: is used to enter the order of the vessel power group.

The box**Lower limit (HP)**: is used to enter the lower limit of power group and should be higher than 0since 0 HP power is for unmotorised boats.The lower limit is an integer.

The box**Upper limit (HP)**: is used to enter the upper limit of the power group. Data is a number with 2 digits after the decimal point. For example, if the power is< 21, data should be entered as 20.99 and if power is <46 ,data should be entered as 45.99.

The box**Desciption:**is used to enter a description of power group or the name of the power group. This box is automatically updated once data is inputed into boxes No., Lower limit and Upper limit.

The command button **Reset**: is used to delete existed records and to create new records for the purpose of re-defining power groups. When this command button is clicked, the Database will ask the user to confirm the reset command before deleting existed records:



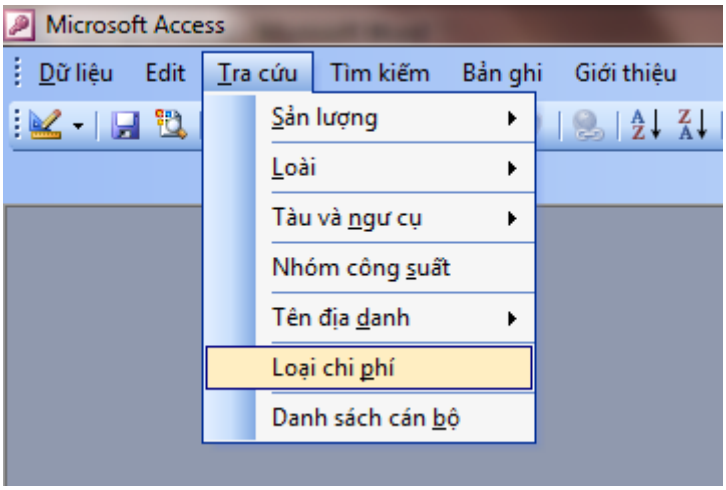
To confirm re-defining of the power group, the user should click the OK button, otherwise click the Cancel button to abort the command.

The command button is used to start a new row for data input in the form.

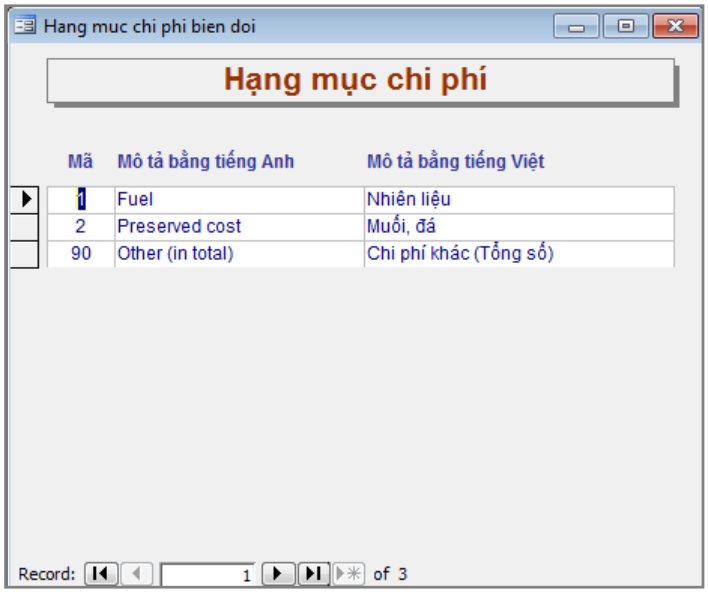
After completing data input, the form should be closed by clicking either the 'X' command button at the top right corner or the Close button.

3.4.5. Cost

The user should choose the menubar**Lookup/List of costs**.



The**List of cost**is shown in as table listing names of costs for the fishing trip. . Danh m□c đ□□c s□p x□p d□ng b□ng g□m các hàng và c□t, nh□ hình d□□i:



The box**Code**: is used to enter the code of costs

The box**Description in English**: is used to enter the English names of costs.

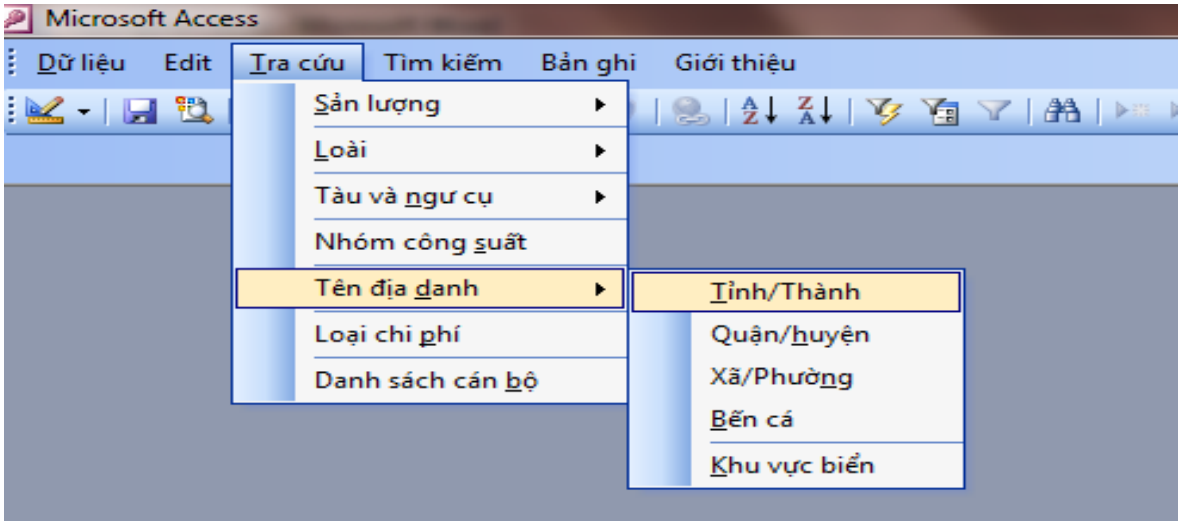
The box**Vietnamese name**: is used to enter theVietnamese names of costs.

The Command button is used to start a new row for data input in the form.

After completing data input, the form should be closed by clicking either the 'X' command button at the top right corner.

3.4.6. Location name

To open the list of fishing gears, the user should choose**Lookup/Location name**.



3.4.6.1. List of provinces/municipalities

The user should choose from the menu **Lookup/Location name/Province/Municipality**to open a list of provinces/municipalities:

The box**Code**: is used to enter the code of the province or municipality.

The box**Abbreviation**: is used to enter the abbreviation name of province, which usually consists of first letters e.g. HP (H□i Phòng), TB (Thái Bình), KG (Kiên Giang)…

The box**Name of province/municipality**: is used to enter the name of province or municipality

The command button is used to start a new row for data input into the form.

After completing the data input, the form should be closed by clicking the 'X' command button at the top right corner.

3.4.6.2. List of District/County

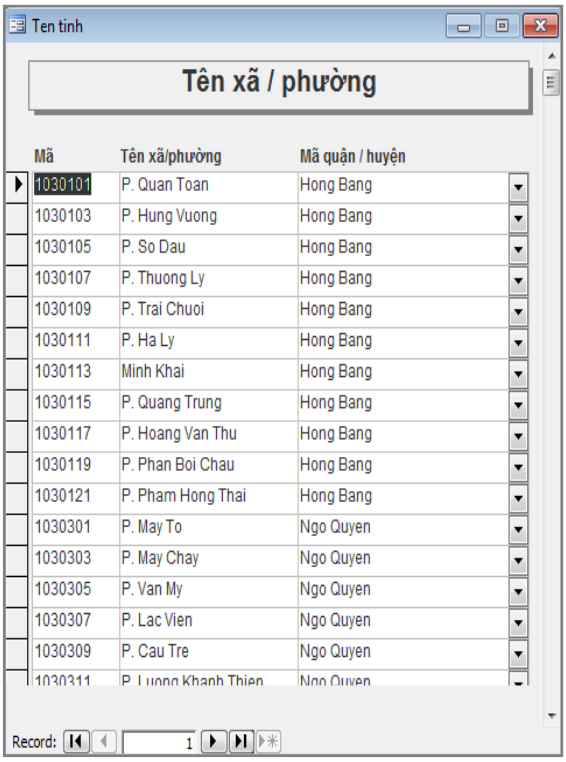
The user should choose**Lookup/Location name/District/County**to open the list for District/County.

The box**Code of district/county**: is used to enter the code of the district or county. The code consists of 5 digits TTTQQ including the threefirst digits as province code and last twodigits as the district code.

The box**District/County name**: is used to enter the name of the district or county.

The box**Name of province/municipality**: is used to enter the name of the province or municipality or it cam be selected from the list.

The command button is used to start a new row for data input into the form.



After completing data input, the form should be closed by clicking the ‘X’ command button at the top right corner.

3.4.6.3. List of Commune/Ward

The user should open**Lookup/ Location name/Commune/Ward** to see the list for commune/ward.

The box**Code of Commune/Ward**: is used to enter code of the commune or ward. The code consists of 7 digitsincluding the threefirst digits of province code followed by two digits for the district code and two last digits for the commune code.

The box**Name of Commune/Ward**: is used to enter the name of the commune or ward.

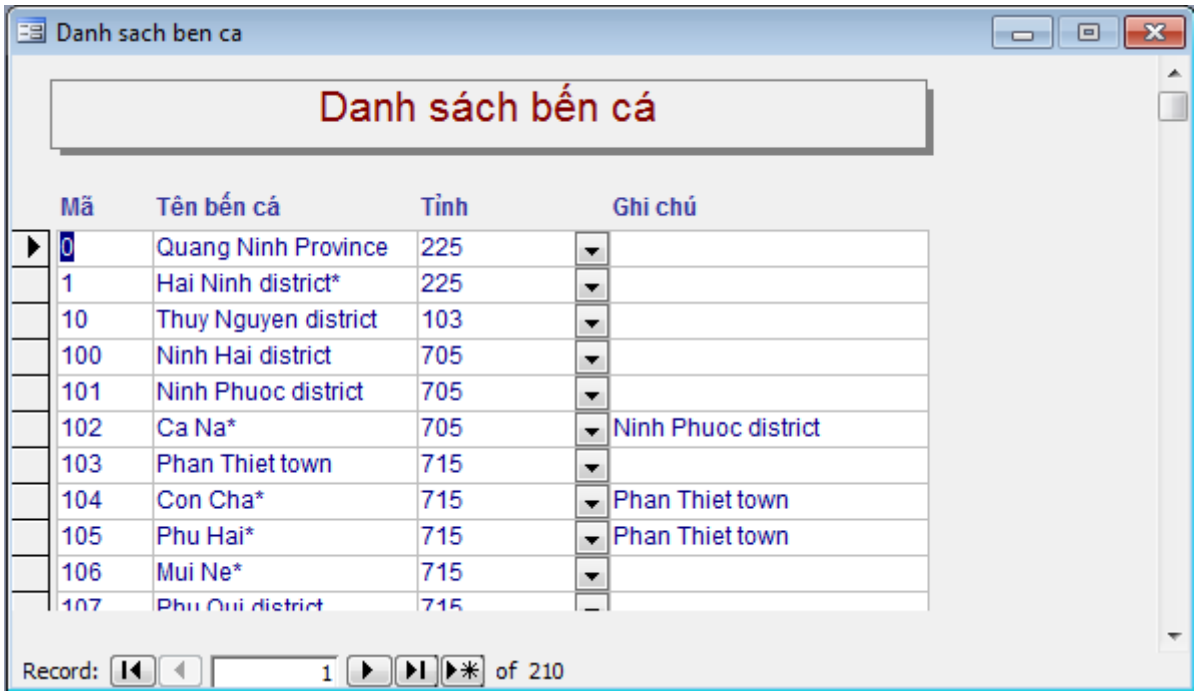
The box**Code of district/county:**is used to enter the code of the district or county or selected from the list.

The command button is used to start a new row for data input in the form.

After completing data input, the form should be closed by clicking the'X' command button at the top right corner.

3.4.6.4. List of landing sites

The user can use a search menu "**Search/Landing sites**"/"**Tra c□u/B□n cá"**to select a list of landing sites.The list of landing sites will appear as below graphic. The list will show all of the landing sites of all the provinces.



The boxCode/**Mã**: is used to enter the code number of the landing site.

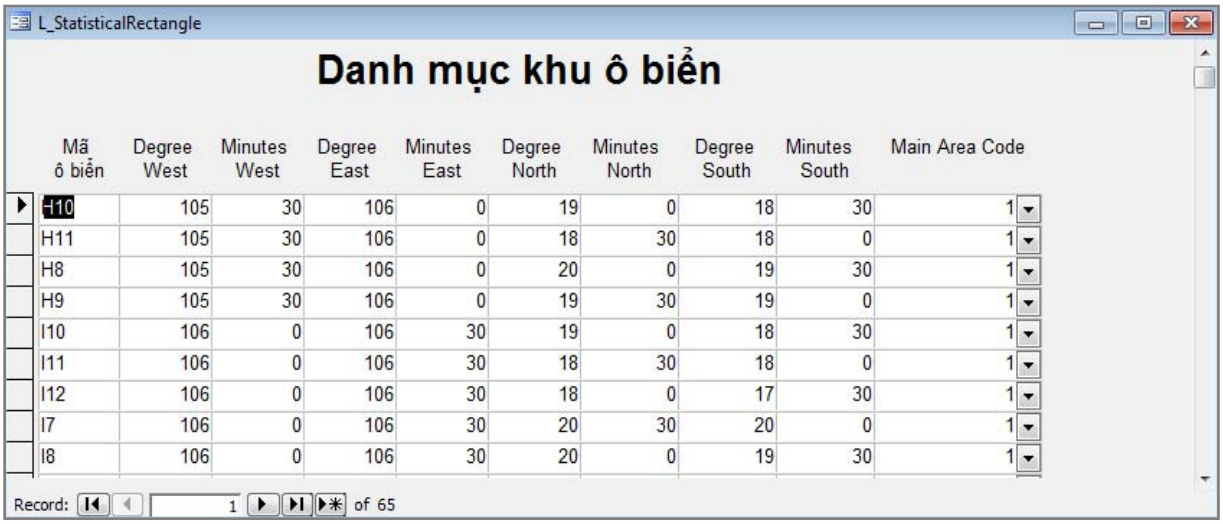
The box "**Name of landing site/Tên b□n cá"**: is used to enter the name of landing site.

The box"**Province/T□nh":**is sued to enter the province code or to select from the list.

The user can press under the database table to move to a new record

List of fishing grounds

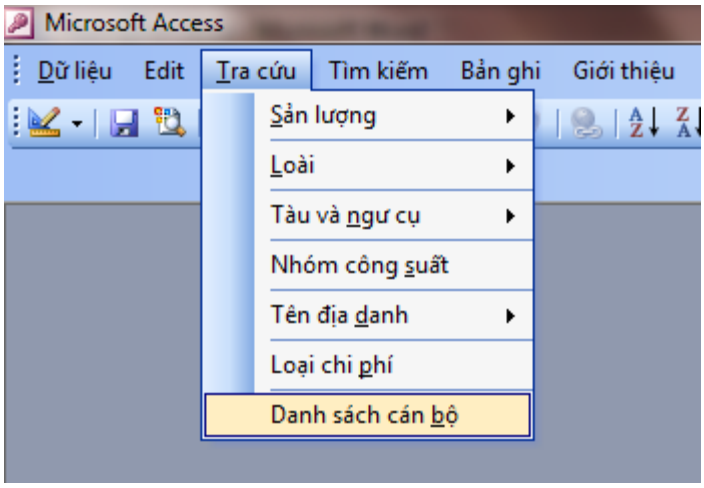
The user can use a **"search menu of fishing ground/Tra c□u/Vùng bi□n"**to select from a list of fishing grounds. The list of fishing grounds appears as a table with the name of each fishing ground defaulted by different longitudes and lagitudes. The list of fishing grounds includes rows and columns as indicated in the graphic below.



Users can press the symbol under the database table to move to a new record in order to enter into the new record.

3.4.6.5. List of enumerators and encoders

In the main menu, there is a list of search options that users can use: **Search/List of enumerators/Tra c□u/Danh sách cán b□**.



The **list of enumerators** appears as a table from which the names of enumerators and encoders can be selected. The list appears as in the graphic below:

The box**Code/Mã**: is used to to enter the code of enumerators/encoders with abbreviations of for the first Capital of their full name.

The box Family/**H**: is sued to to enter the family name of the enumerators/encoders.

The box**Midle name/Tên đệm**: is used to enter the middle name of enumerators/encoders

The box**Name/Tên**: to used to enter the first name of the enumerators/encoders

The box**Fullname/Tên đầy đ**: will automatically generate the fullname of enumerators/encoders

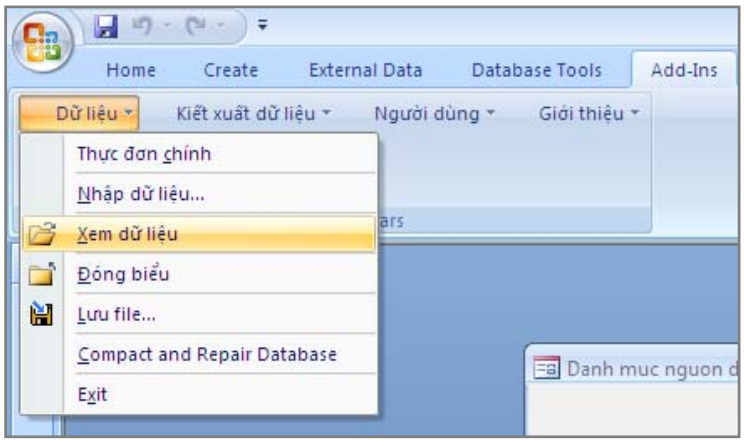
The box**Sex/Giới tính**: is used to enter the sex of enumerators/encoders

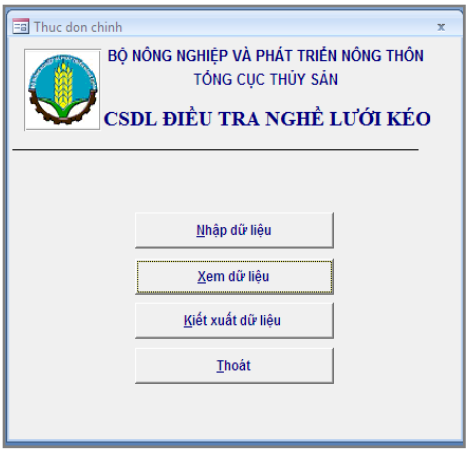
The box address**/địa chỉ/địa phương**: is used to enter the place where enumerators/encoders were working

The user can use the symbol under the database table to move to a new record.

3.5. Data V_look up

In order to look up data, users can select from the main menu/data V_look up (**Thực đơn chính**) or can open directly from the data menu and use the Data V_Look up option which appears as follows:





A window will appear, as below so that users can select the data type:

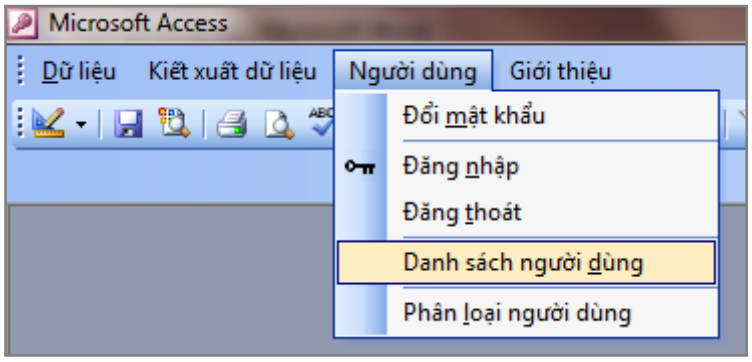
Once the database has been logged into by the encoder, he/she will have right to open all data types which they have entered to delete, edit, or create new records.

Once the database is signed out, other users can open and access the database but only in "read-only" status. He/she cannot edit, delete or create any new record using the user name of others.

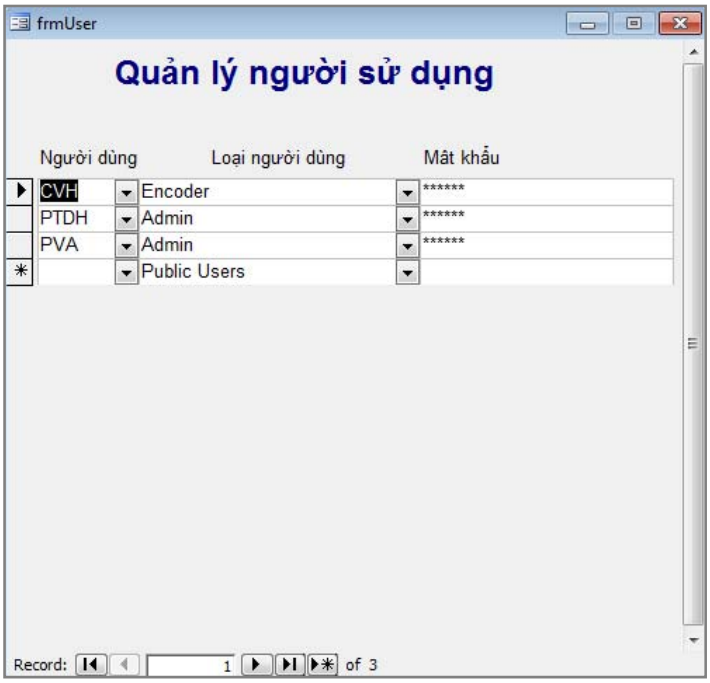
3.6. User management

3.6.1. User authorization

When you want to open the list of database users, to add, remove or update, the administrator can select **user/list of database users** (**Ng□□i dùng/Danh sách ng□□i dung**) as shown below.



A **List of database users** appears as a table and lists all the names of users that are authorised to use the database, such as encoder/Admin/Public users:



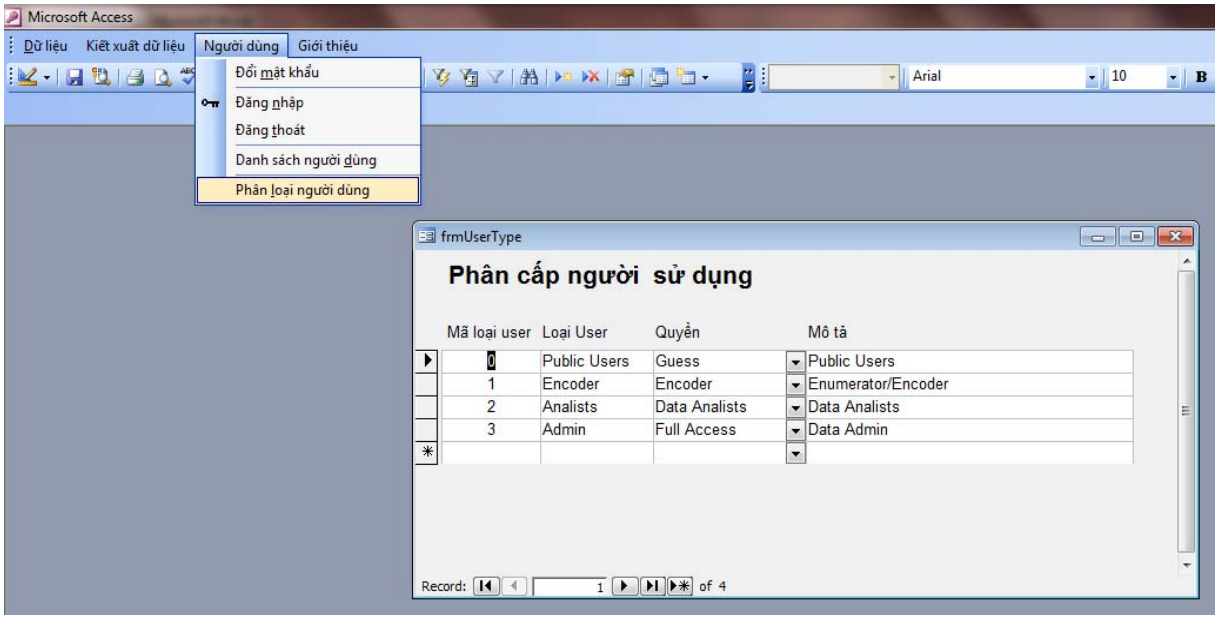
The box User name: is used to enter user codes or it can be selected from the list.

The box user authorized: is used to enter the user rights that are authorized.

The box password: is used for the password of the user

3.6.2. User classification

To classify users, the user can select from the main menu/user/use classification that appears as graphic below:



The box**types of user**: is used to classify users, the number of characters used to distinguish users' rights from low to high priority.

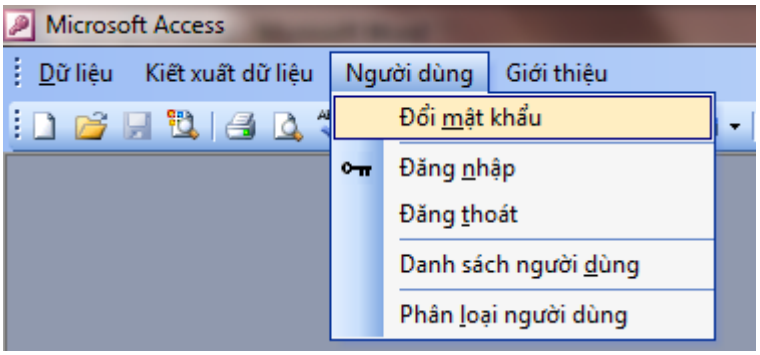
The box user **type classification** is used to enter a user code or select from the list.

The box**Users' right**: is used to enter the user's permission.

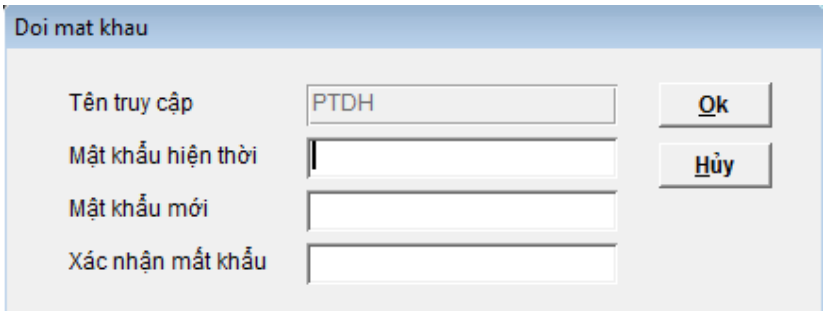
The box**description**: is used to enter descriptive information about a user's permissions

3.6.3. Change the password

To change the password, the user should select the menu Users/Change Password



A window appears to allow users to change their password as below:



The box**user name**: will automatically display identification number of users (user names), read-only (read-only).

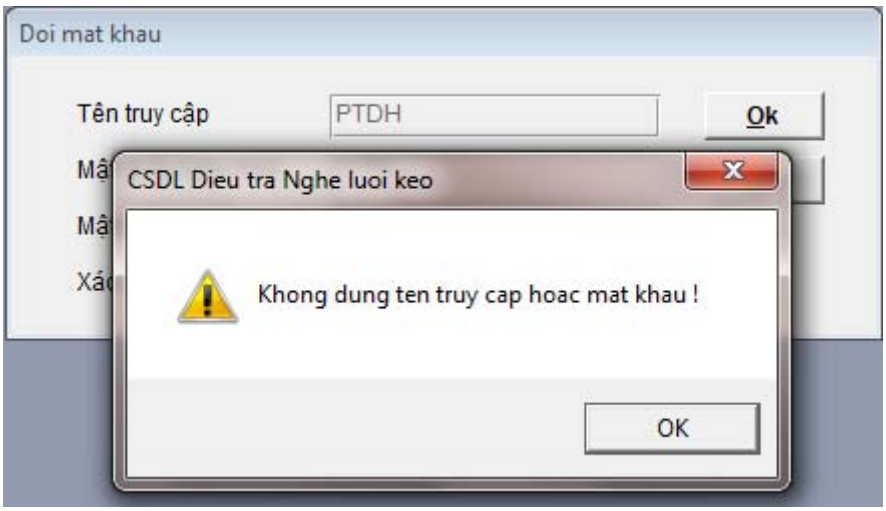
The box**Current Password**: is used by users to enter their current password.

The box**New Password**: is for the user to type in a new password.

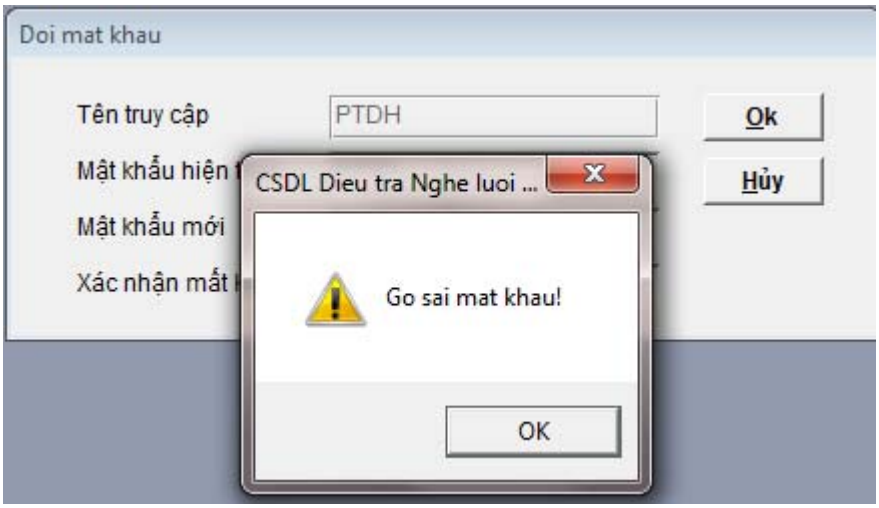
The box**Confirm new password**: is for the user to retype the new password to confirm it.

The user should then press the OK button to request the password to be changed. The Cancel button can be pressed if you do not want to make changes to your current password.

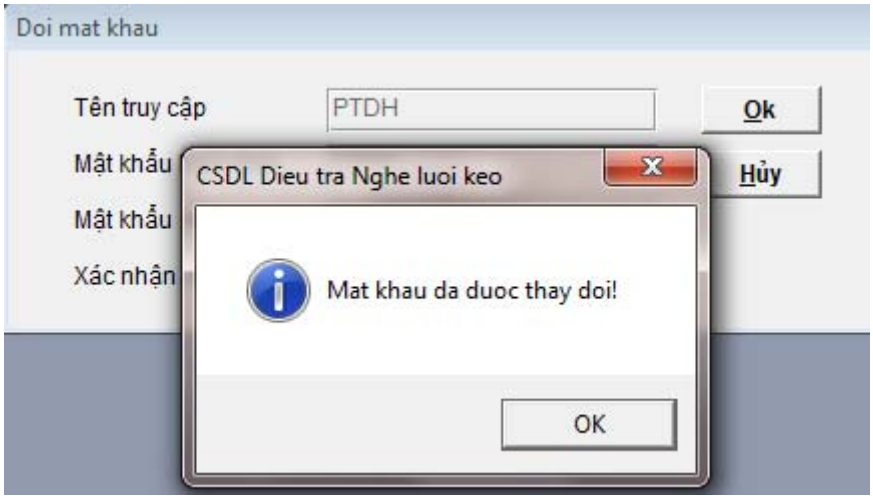
Before the change request is made, the database will check to confirm the identification number and current password match. If they do not match then the database will send an error message as shown below:



If the identification number and current password are defined correctly, but the new password entered twice did not match, the database will send an error message as follow:



If the passwords match, changes will be made and the database will accept the new password and display a confirmation message as follow:

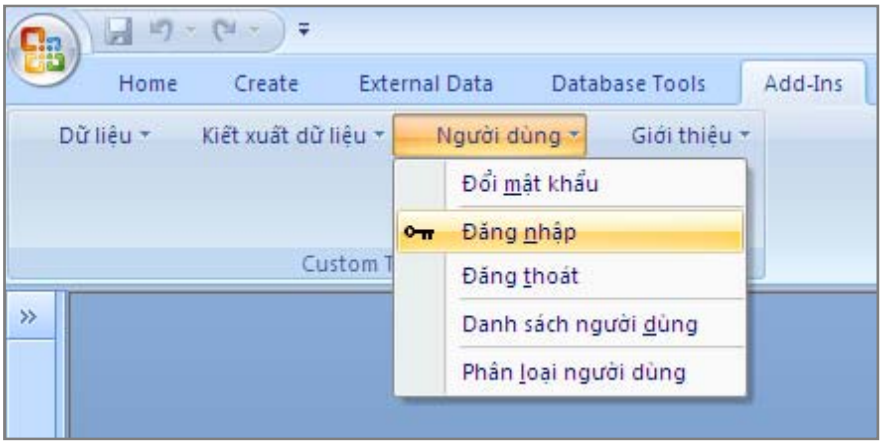


Once confirmation of the change has been seen, users can click the OK button to close the window and move to other operations.

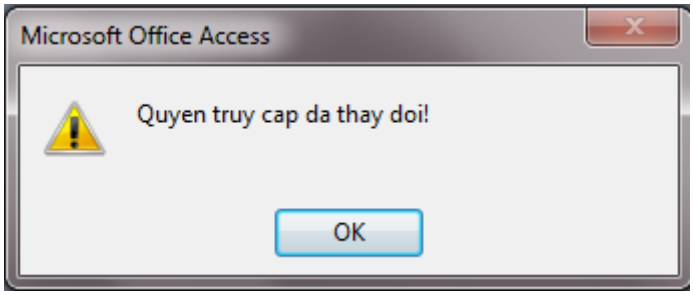
3.6.4. Sign out the database

When the user wants to finish work without closing the database or to leave the database for other users, then the user should sign outof database first to ensure data security.

Users can sign out by selecting Users/Login exit as shown below:



Immidiately, the database will confirm with a notification of changing user, as shown below:



Term of reference: Develop, update and manage Databases for Trawl Fisheries

Job title	DEVELOP, UPDATE & MANAGE A DATABASE FOR TRAWL FISHERY
Project Number	REBYC-II CTI- Activity 3.1.3.
Location	Hanoi, Vietnam (with possible internal travel)
Expected Start Date	1st April 2014 Duration: 29 Days
Reports to	NTO and NPC DECAFIREP

GENERAL DESCRIPTION OF TASKS AND OBJECTIVES.

The Southeast Asia is one of the world's most biologically diverse, economically productive and potentially vulnerable marine zones. As a result of increasing populations and exploitation pressures, growing threats from pollution and major ecosystem change are a particular concern in the region. Also – as more widely in the global context – the non-targeted capture of fish and non-fish species, commonly called as bycatch and discards, is an increasing concern. Bycatch includes fish, turtles, corals and other seabed fauna and flora. This part of the catch tends to be poorly monitored and not managed but could have an important impact on fishery resources, habitats and ecosystems. In some fisheries and regions, there is an increasing trend towards retention of the bycatch consisting of juveniles and small-sized fish for use as food for human consumption or for utilization as aquafeed. This is therefore a complex issue, requiring resource and biodiversity aspects to be tackled alongside human needs and involving a mix of policy, technical and community support measures. The project "Strategies for trawl fisheries bycatch management" (REBYC-II CTI) was conceived based on the successes of the 2002-2008 FAO/UNEP/GEF global project "Reduction of Environmental Impact from Tropical Shrimp Trawling through the Introduction of Bycatch Reduction Technologies and Change of Management". The REBYC-II CTI project intends to focus on multispecies bottom trawling, where bycatch issues are amongst the most serious, with potentially significant effects on ecosystems and livelihoods. The Project aims to address these challenges by promoting sustainable fishing practices and improved trawl management. The REBYC-II CTI project was developed under the leadership of FAO (project implementing agency) in close collaboration with its partners: Southeast Asian Fisheries Development Center (SEAFDEC) and the governments of the participating countries Indonesia, Papua New Guinea, Philippines, Thailand and Viet Nam.

In Vietnam, trawl fisheries data will be collected in the duration of project implementation. However, so far there is not a standard database for data entry and thus it can cause losing or ineffective use of trawl fisheries data. An activity to develop trawl fisheries database is seen as necessary.

GENERAL TASKS OF THE ASSIGNMENT

- Carry out a review of current national database of Vietnam (Vietfishbase, Trawlbase, TUFMAN) to recommend if there is a need to develop a separate database for trawl fisheries or only make suitable modules to integrate with the existing databases.

- Develop a suitable database (modules) for data entry of trawl fisheries data collected.

KEY PERFORMANCE INDICATORS

Expected outputs	**Completion Date:**
1. A Review of existing fisheries databases of Vietnam.	April 15th 2014
2. A functioning database for trawl fisheries data.	April 30th 2014
3. Guidelines on how to use the database	April 30th 2014
4. Final report in English and Vietnamese, sent to NTO and NPC.	May 15th 2014
5. Participate in any other project related activities as directed by the National Project Coordinator and National Technical Officer	as required

REQUIRED SKILLS AND EXPERIENCES

- At least 10 years working in fisheries sector and holding a degree of MSc or higher in Fisheries Management or Fisheries Sciences, Natural Resources Management;
- Good knowledge in fisheries management system in Vietnam;
- A comprehensive understanding of trawl fisheries and management;
- High capacity in independent work and also in team;
- Proficiency in working in English including oral, writing and reading skills;
- Good computer skills, especially in Word, Excel, PowerPoint and internet applications;
- Good understanding about the project is considered as a plus