Artbasic case study

Part 6: Estimation and reporting

1. Ready to estimate

In the Artbasic screen of main functions the four buttons for tables, landings, boat activities and active days have been marked as completed.

The system has also activated the estimation function (represented by the summation symbol), that was not enabled before.

Clicking on this function will bring in the following screen:

Clicking on the button with the green traffic light will trigger the automatic computation of estimates for all estimation contexts, that is for all combinations of minor strata and boat/gear types for the month of January 2004.

At the end of the process a computations log containing messages and diagnostics will be displayed.
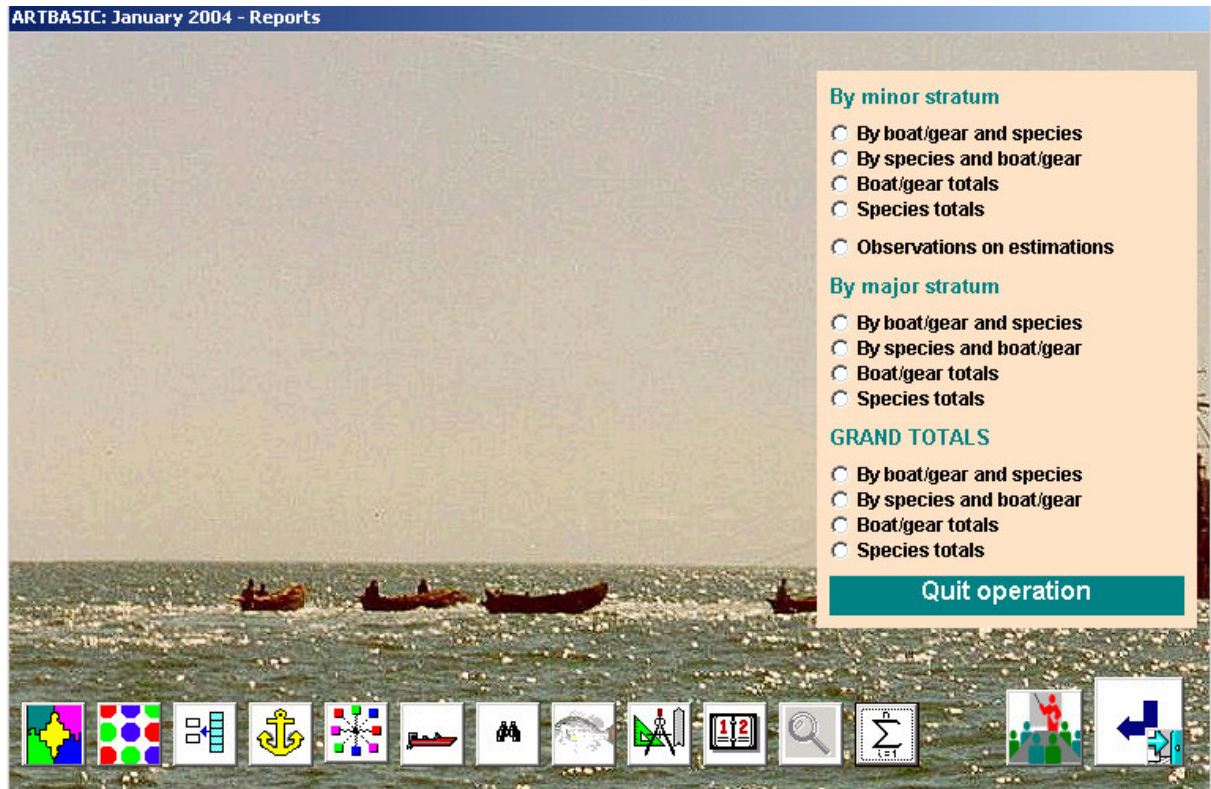
2. Reporting of results

All Artbasic data (including tables, inputted samples and results), are included in the REPORTS function. Clicking on it will activate the following screen:

- The first 10 buttons are used for displaying/printing the nine system tables and the table of active days.
- The function with the magnifying glass is used for obtaining an insight into the inputted sample landings.
- The function with the summation symbol will take to the reporting procedures of estimates (see figure below).

Reporting of estimates can be done in three geographical levels represented by three distinct blocks of reporting procedures:

- **At minor stratum**
- **At major stratum**
- **Grand total**

Within each block there are four identical data grouping functions:

- **Statistics for each boat/gear type and then for all species caught by the gear**
- **Statistics for each species and then for all boat/gears that have targeted the same species**
- **Grouped estimates for boat/gears (all species together)**
- **Grouped estimates for species (irrespective of boat/gear)**

The very first report is by minor stratum and then by each boat/gear type and then for all species caught by the gear. It is the most detailed of all reports and contains all statistical messages and diagnostics required for evaluating the reliability of the resulting estimates.

Notes:

- *Clicking on the yellow part of the screen will return to the reports menu*
- *All different reports produced in a single session are accumulated into an Execl worksheet (see last section)*

Some examples of reports are given below:

Example 1: Details by boat/gear and species, and at minor stratum level

```
ARTBASIC: January 2004 - Reports ( Estimation )

    Minor stratum : NORTH/NORTH-WEST
    Order : By boat/gear and species
    =============================================================================
    UNITS IN USE

    Catch in: Kg
    Effort in: Fishing days
    CPUE in: Kg/Fishing days
    Prices in: US$/Kg
    Values in: US$
    Average weight of fish in: Kg/fish

    NORTH/NORTH-WEST : Mot.boats - traps
    =============================================================================
    Estimation of effort

    BAC - Boat Activity Coefficient........ 52.500 %
    Accuracy level......................... 92.329 %
    Units sampled.......................... 160
    Active................................. 84

    # sites................................ 2
    # days................................. 8
    BAC variability........................ 6.325 %
    BAC var component (space).............. 1.568 %
    BAC var component (time)............... 4.758 %
    BAC lower limit at 95%................. 45.991 %
    BAC upper limit at 95%................. 59.009 %

    Units in frame survey.................. 300
    Active days............................ 27.000
    Estimated effort (days)................ 4 253
    Effort lower limit at 95%.............. 3 725
    Effort upper limit at 95%.............. 4 780

    Estimation of catch

    CPUE................................... 46.625
    Accuracy level......................... 90.033 %
    Landings sampled....................... 32
    Sample catch........................... 2 611
    Sample effort.......................... 56.000

    # sites................................ 2
    # days................................. 8
    CPUE variability....................... 4.614 %
    CPUE var component (space)............. 0.565 %
    CPUE var component (time).............. 4.049 %
    CPUE lower limit at 95%................ 42.408
    CPUE upper limit at 95%................ 50.842

    Estimated catch (Kg) .................. 198 273
    Catch variability...................... 7.829 %
    Catch lower limit at 95% (Kg) ......... 167 847
    Catch upper limit at 95% (Kg) ......... 228 699

    Total value (US$) ..................... 899 787
    Average price (US$/Kg) ................ 4.538

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    Catch by species                   Quant.           CPUE            Value
                                       Effort           Aver.W          Price

    Grouper                        124 310 ( 62.7%)     29.232      569 537 ( 63.3%)
                                     4 253               2.279        4.582

    Snapper                         50 498 ( 25.5%)     11.875      293 747 ( 32.6%)
                                     4 253               0.553        5.817

    Misc.reef-fish                  23 465 ( 11.8%)      5.518       36 503 (  4.1%)
                                     4 253               0.384        1.556


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    NORTH/NORTH-WEST : Mot.boats - Hook & Line
    =============================================================================
    Estimation of effort

    BAC - Boat Activity Coefficient........ 34.375 %
    Accuracy level......................... 92.279 %
    Units sampled.......................... 160
```

```
    Active................................ 55

    # sites.............................. 2
    # days............................... 8
    BAC variability...................... 11.526 %
    BAC var component (space)............. 0.563 %
    BAC var component (time).............. 10.963 %
    BAC lower limit at 95%............... 26.609 %
    BAC upper limit at 95%............... 42.141 %

    Units in frame survey................ 750
    Active days.......................... 31.000
    Estimated effort (days).............. 7 992
    Effort lower limit at 95%............ 6 187
    Effort upper limit at 95%............ 9 798

    Estimation of catch

    CPUE................................. 26.219
    Accuracy level....................... 90.017 %
    Landings sampled..................... 32
    Sample catch......................... 839
    Sample effort........................ 32.000

    # sites.............................. 2
    # days............................... 8
    CPUE variability..................... 6.289 %
    CPUE var component (space)........... 2.650 %
    CPUE var component (time)............ 3.640 %
    CPUE lower limit at 95%.............. 22.987
    CPUE upper limit at 95%.............. 29.451

    Estimated catch (Kg) ................ 209 545
    Catch variability.................... 13.131 %
    Catch lower limit at 95% (Kg) ....... 155 617
    Catch upper limit at 95% (Kg) ....... 263 473

    Total value (US$) ................... 1 056 917
    Average price (US$/Kg) .............. 5.044
```

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Catch by species	Quant. Effort	CPUE Aver.W	Value Price
Grouper	148 605 (70.9%) 7 992	18.594 0.855	725 436 (68.6%) 4.882
Snapper	60 940 (29.1%) 7 992	7.625 0.480	331 481 (31.4%) 5.439

Example 2: Summary by boat/gear type and at major stratum level

```
ARTFISH ISLAND : All boat/gear types
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Units in frame survey................. 1 922
Estimated effort (days)............... 26 233
Estimated catch (Kg) ................. 1 017 250
CPUE.................................. 38.777
Total value (US$) .................... 4 700 879
Average price (US$/Kg) ............... 4.621
```

Catch by boat/gear types	Quant. Effort	CPUE	Value Price
Mot.boats - traps	697 554 (68.6%) 13 372 (51.0%)	52.164	3 080 545 (65.5%) 4.416
Mot.boats - Hook & Line	319 696 (31.4%) 12 861 (49.0%)	24.858	1 620 333 (34.5%) 5.068

Example 3: Summary by species and at major stratum level

```
ARTFISH ISLAND : All species
===============================================================

Estimated effort (days)................ 26 233
Estimated catch (Kg) .................. 1 017 250
CPUE................................... 38.777
Total value (US$) ..................... 4 700 879
Average price (US$/Kg) ................ 4.621


Catch by species                    Quant.                     Value
                                                               Price


Grouper                             607 908 ( 59.8%)      3 126 024 ( 66.5%)
                                                               5.142


Snapper                             240 768 ( 23.7%)      1 392 742 ( 29.6%)
                                                               5.785


Misc.reef-fish                      168 574 ( 16.6%)        182 113 (  3.9%)
                                                               1.080
```

3. Exporting of results

During an Artbasic reporting session all different reports that have been produced by the same run are accumulated automatically into the Excel worksheet **ARTBASIC.XLS** which is in:

<p align="center">C:\ARTBAS\EXPORTS</p>

Calling it up must be followed by the following two actions:

- **Enabling the worksheet macros**
- **Pressing CTL+a**

The worksheet will have the following format:

	A	B	C	D	E	F	G
4	Minor stratum : NORTH/NORTH-WEST						
5	Order : By boat/gear and species						
6							
7		# Units	Effort	Catch	CPUE	Price	Value
8							
9	Mot.boats - traps	300	4252.5	198272.812	46.625	4.538	899787.401
10							
11	Grouper		4252.5	124309.687	29.232	4.581	569536.872
12	Snapper		4252.5	50498.437	11.875	5.816	293747.215
13	Misc.reef-fish		4252.5	23464.687	5.517	1.555	36503.313
14							
15	Mot.boats - Hook & Line	750	7992.188	209545.171	26.218	5.043	1056916.974
16							
17	Grouper		7992.188	148604.74	18.593	4.881	725436.185
18	Snapper		7992.188	60940.431	7.625	5.439	331480.789
19							
20							
21	ARTBASIC: January 2004 - Reports (Estimation)						
22							
23	Major stratum : ARTFISH ISLAND (Boat/gear totals)						
24							
25		# Units	Effort	Catch	CPUE	Price	Value
26							
27	All boat/gear types	1922	26233.05	1017249.765	38.777	4.621	4700878.804
28							
29	Mot.boats - traps	823	13372.31	697553.656	52.164	4.416	3080545.469
30	Mot.boats - Hook & Line	1099	12860.74	319696.109	24.858	5.068	1620333.334
31							