Web application and database for collecting and managing fisheries data

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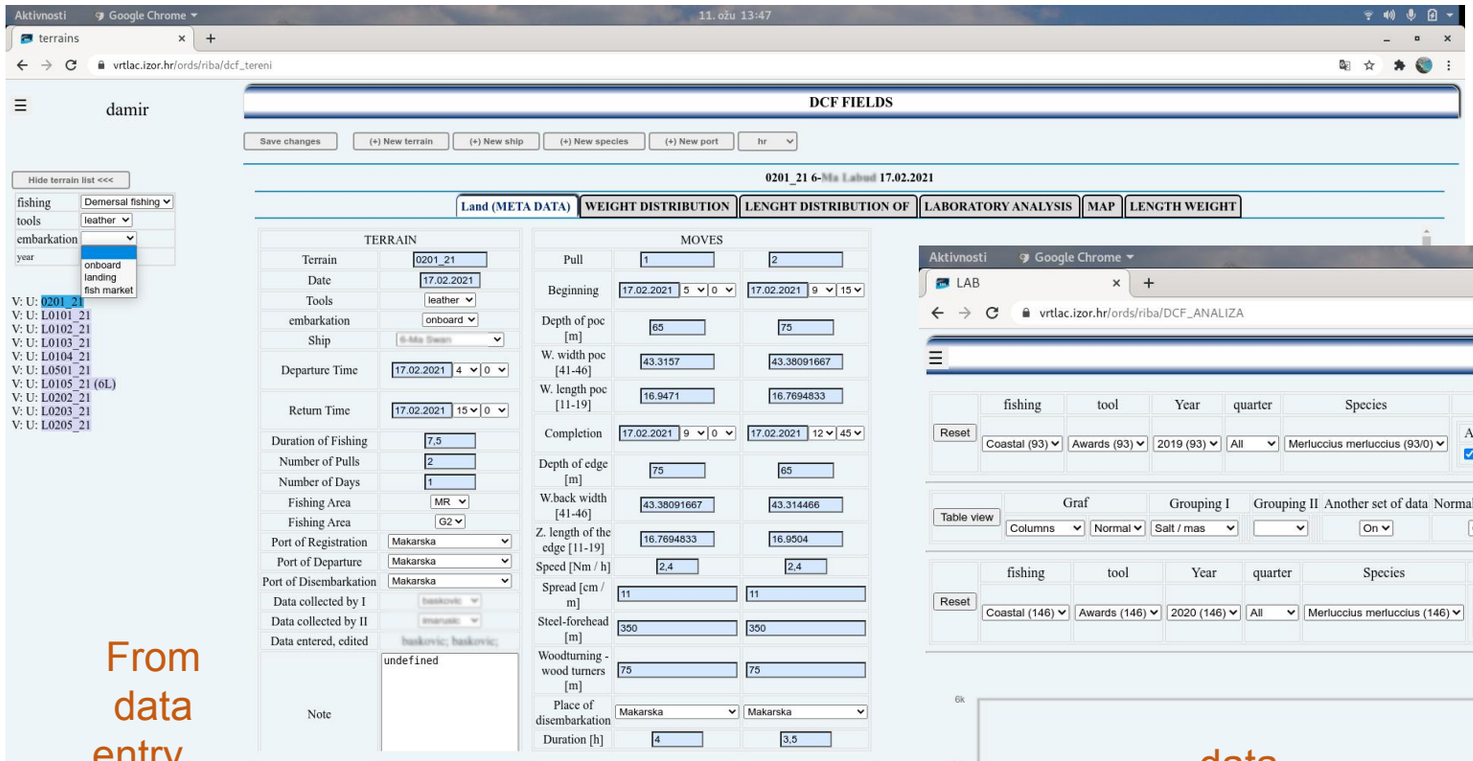
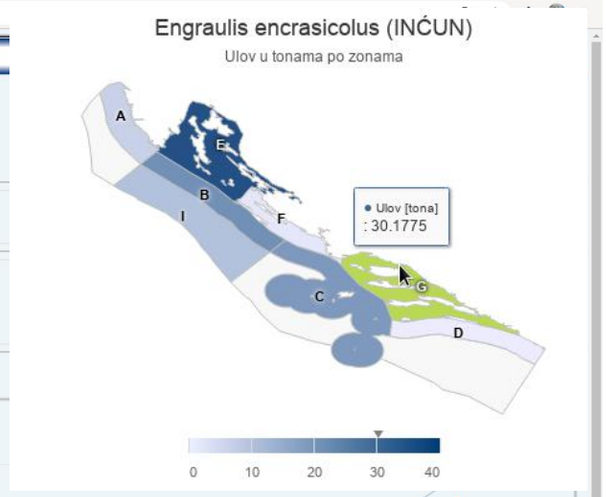
On the Institute of Oceanography and Fisheries web application based on relational database is developed for the purpose of managing and validation of fisheries data. Application also provide outputs needed for preparing various reports. Application manage data from different fishing gear / fishing method (bottom trawl, cast net, drift net, etc.) and for commercial and non commercial species. Interface have fields for filtering data on the left side, and it is organized hierarchically with tabs. Tabs are: metadata about fishing including coordinates, weight distribution, length distribution laboratory analysis, map and length-weight distribution. Data are inserted directly from web browser with build in semi-automatic validation

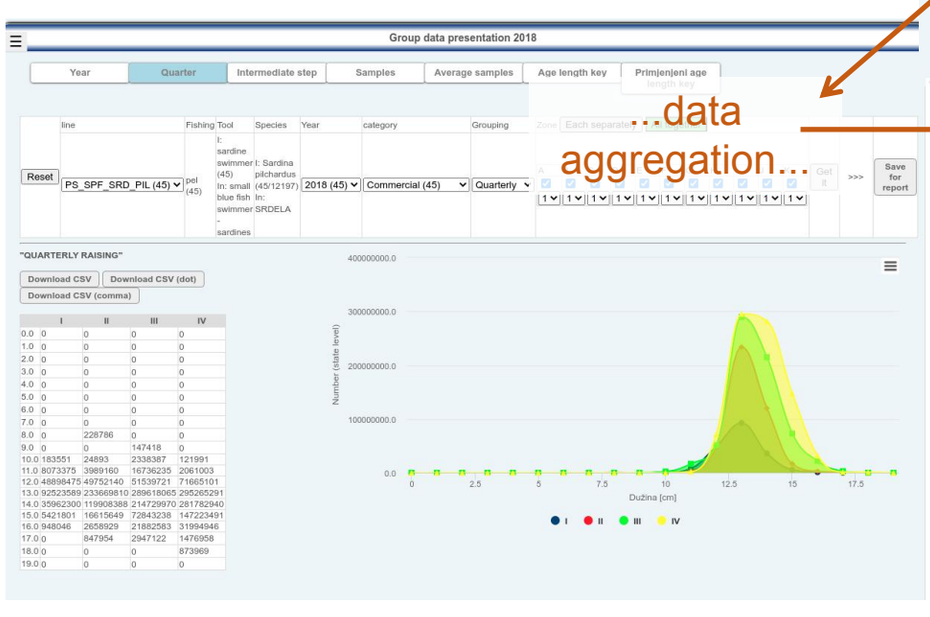


From data entry...

...data visualizations and validations...



As output results from application and database various outputs were created. Data quality was increased by two major methods. Direct input have consistency checks and limitations (no free text for species or ship) with automatic sums checks (total weight of sample vs. sum of weight distribution). Also all outputs were available at any time (not need to collect all data and then perform analysis) what in case of spotted irregularity makes space for organizing additional data collection for some area or time period.



...data aggregation...

...to stock estimation

DOB	0	1	2	3	4	5	6	7	8	9	10	11	12	13
NUMBER UK 1	4799	168617	1107541	597297	164102	14955	7301	19480	74	0	0	0	0	0
AVG DUZ 1	13.1	16.6	22.0	29.1	34.1	39.0	44.9	49.4	53.0					
AVG m 1	15.8	33.1	77.7	173.3	275.8	406.1	627.1	822.1	1011.4					
NUMBER UK 2	904	88632	1106702	526422	164977	25684	11752	4748	269	202	0	0	0	0
AVG DUZ 2	13.4	17.5	22.2	29.2	34.3	39.6	42.9	48.5	59.8	63.0				
AVG m 2	15.6	36.6	76.6	174.0	280.3	431.3	550.0	798.1	1529.1	1775.1				
NUMBER UK 3	3979	102151	801925	523760	139610	37311	19947	3241	0	0	0	0	0	0
AVG DUZ 3	13.3	16.3	22.6	29.0	34.3	39.9	43.1	48.3						
AVG m 3	16.7	31.9	84.5	171.6	280.7	433.5	550.3	762.0						
NUMBER UK 4	1795	87233	788013	491912	86493	17057	8696	4079	723	0	0	0	0	0
AVG DUZ 4	13.2	16.5	22.8	28.5	34.2	39.8	42.3	49.5	53.0					
AVG m 4	15.3	31.0	84.2	161.2	279.9	434.8	525.8	851.9	1039.0					

Test of the ratio of the sum of the masses in the result and the mass of the state catch:

Quarter	1	2	3	4
Sum / Drz	0.96 -> 0.99	0.93 -> 0.98	0.96 -> 1.00	0.94 -> 0.99

Conclusion

Biological data are often hardest for transposing into some predefined structure. Tight collaboration between fisheries expert, data manager and IT developer is needed. Database procedures manages methodology for calculation of estimated total stock based on available measured samples. As result we have improved data quality and semi automatically prepared data for reporting. Visualisation of some trends and fish distribution (Figure 3) make possible for fish expert to better plan and manage such valuable resource as fish stock.

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