

**A NEW MODULA TYPO-DIMENSIONAL, CONSTRUCTIVE  
AND FUNCTIONAL CONCEPT OF VIVA DON EXPERT®  
FLOATABLE FISH CAGES FOR INTENSIVE  
AQUACULTURE IN INLAND WATERS**

**UN NOU CONCEPT MODULAR TIPO-DIMENSIONAL,  
CONSTRUCTIV ȘI FUNCȚIONAL DE VIVIERE FLOTABILE  
VIVA DON EXPERT® PENTRU ACVACULTURĂ INTENSIVĂ  
PE APELE CONTINENTALE**

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*This scientific work presents succinct information about the trials which takes place between 2005-2009 in Constanta (fish farm Canalul Rompetrol). This trials includes the fish farming in cages and leads to finishing off and elaboration of a new modular typo-dimensional, constructive and functional concept of viva don Expert® floatable fish cages for intensive aquaculture in inland waters from Romania like an efficient solution for the qualitative and quantitative increase of local fish production's (by water volume optimizations, plants, fish farms and technologies optimizations)*

**Keywords** : floatable fish cages, modulus, concept

### **Introduction**

The intensive cage aquaculture is currently a major form of fish and other aquatic organisms farming. A large variety of species are grown in various types of cages in sea, oceans, lakes, large rivers.

A cage represents a delineated volume in the body of water, where the fishes and others aquatic organisms can be farmed

For a lot of inland waters (ponds, lakes, navigable canals, large lakes and ponds) the efficient fish farming are successfully use in floatable fish cages.

Between 2005-2009 we designed and tested a new modular typo-dimensional, constructive and functional concept of floatable fish cages for intensive aquaculture in inland waters from Romania.

## Materials and Methods

The construction of this floatable fish cages and the experiments takes place between 2005-2009 and still continue in Navodari, Constanta county, Canalul Rompetrol fish farm.

We made next experiments :

- typo-dimensional and constructive modulating
- functional modulating (different cages, different volumes depending on season, weather and hydrological conditions, species, age, technological stage)
- constructive and functional reliability (the behavior and strength of cages materials at different mechanicals actions and meteorological and hydrological conditions : waves, water currents, winds, storms, frost-defrost, land transport and water transport, storage)
- process of production and technological operations (parking, quarantine, wintering, fingerlings growth, fish growth, manual feeding and “ ad libitum “, rearing, cropping, feeding control, growing control, sanitary control, water transport of living fish, selling)
- economical efficiency of cages (cost price, manual labor, liquidation, production capacity)

In our experiments we used next species:

- carp (*Cyprinus carpio*)
- waller (*Silurus glanis*)
- pike fish (*Esox lucius*)
- pike perch (*Lucioperca lucioperca*)
- sturgeon (*Acipenser güldenstaedti*)
- rainbow trout (*Salmo irideus*)
- brook trout (*Salvelinus fontinalis*)
- goldfish (*Carasius auratus*)

## Results and Discussion

Daily observations during 5 years (2005-2009) directing to finishing off a new modular concept of floatable fish cages and typo-dimensional, constructive and functional standardization of them depending on local features of aquatic ecosystem.

The raw materials used at cages constructions proved their qualities and reliability. The cage (by originality and its constructive, dimensional and functional features) proved that is very resistance in time (more than 5 years), easy to use, easy maintenance, transport, storage.

All this observations and results are proved by an ample technical descriptive material, short movies, pictures which are a part of a doctorate's thesis and an utility pattern at OSIM.

Table 1

## Typo-dimensional and constructive modulating

Name and code of fishcages	Recommended uses	Float diameter, Ømm	Constructive dimensions				Area Sq.m	Volum Cubic m.
			L m	l m	H total m	H useful m		
VIVA 111C	P,V,C	75	1	1	1	1	1	1
VIVA 111M	P,V,C,T,Pd	75	1	1	1	0.5	1	0.5
VIVA 111.5M	P,V,C	75	1	1	1.5	1	1	1
VIVA 211C	P,V,C,T,PR	110	2	1	1	1	2	2
VIVA 211M	P,V,C,T,PR,RR	110	2	1	1	0.5	2	1
VIVA 211.5M	P,V,C,R,PR,Pd	110	2	1	1.5	1	2	2
VIVA 221C	P,V,CR,PR,R	110	2	2	1	1	4	4
VIVA 221M	P,V,CR,PR,R	110	2	2	1	0.5	4	2
VIVA 221.5M	P,V,CR,PR,C	110	2	2	1.5	1	4	4
VIVA 222C	P,V,CR,PR,C	110	2	2	2	2	4	8
VIVA 222M	P,V,CR,RR,PR	110	2	2	2	1.5	4	6
VIVA 222.5M	P,V,CR,RR,I	110	2	2	2.5	2	4	8
VIVA 321M	P,V,C,PR,CR,Pd	160	3	2	1	0.5	6	3
VIVA 321.5M	P,V,C,PR,CR,Pd	160	3	2	1.5	1	6	6
VIVA 322M	P,V,PR,CR,C	160	3	2	2	1.5	6	9
VIVA 322.5M	P,V,CR,PR	160	3	2	2.5	2	6	12
VIVA 331M	P,V,C,PR,R,Pd	160	3	3	1	0.5	9	4.5
VIVA 331.5M	P,V,C,PR,R,CR	160	3	3	1.5	1	9	9
VIVA 332M	P,V,PR,CR,I	160	3	3	2	1.5	9	13.5
VIVA 332.5M	CR,RR,I	160	3	3	2.5	2	9	18
VIVA 333M	CR,RR,I	160	3	3	3	2.5	9	22.5
VIVA 441.5M	CR,PR,RR	160	4	4	1.5	1	16	16
VIVA 442M	CR,PR,RR,I	160	4	4	2	1.5	16	24
VIVA 442.5M	CR,PR,I,RR	160	4	4	2.5	2	16	32
VIVA 443M	CR,PR,I,RR	160	4	4	3	2.5	16	40
VIVA 443.5M	CR,PR,I,RR	160	4	4	3.5	3	16	48
VIVA 661.5M	CR,PR,RR	200	6	6	1.5	1	36	36
	CR,PR,I,RR	200	6	6	2.5	2	36	72

VIVA 662.5M VIVA 663.5M	CR,PR,I,RR	200	6	6	3.5	3	36	108
	P - parking V - selling living fish C - quarantine T - transport PR- sires parking (male and female parking) R - natural controlled reproduction RR - sires restoration (male and female restoration) CR - growth I - wintering Pd - growth first stage (fingerling)							

### Conclusions

Though it was a lot of studies about fish cages in Romania, the number of real applications are limited.

The floatable cages Viva donExpert® can be used in all kind of inland waters from Romania (ponds, lakes, navigable canals, large lakes and ponds). We can use it because of constructive, dimensional and functional features are in conformity with economical necessities and legal regulations about waters and environment.

### References

1. Onea, D., 2002-2009, personal notes
2. Onea, D., 2005 – 2009, foto / movies dON EXPERT's gallery