



# May 2020 WorldFish Carp Genetic Improvement Program Electronic Pond Book Guide

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#### About WorldFish

WorldFish is an international, nonprofit research organization that harnesses the potential of fisheries and aquaculture to reduce hunger and poverty. Globally, more than one billion poor people obtain most of their animal protein from fish and 800 million depend on fisheries and aquaculture for their livelihoods. WorldFish is a member of CGIAR, a global research partnership for a food-secure future.

#### **Acknowledgments**

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Front cover, Matthew Hamilton/WorldFish.



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## **1.Introduction**

WorldFish has developed an Electronic Pond Book in the form of a of Microsoft Excel workbook. The primary purpose of the Electronic Pond Book is to capture data relating to the management of all ponds used in the Carp Genetic Improvement Program (CGIP) in a single repository accessible by multiple users. Furthermore, it allows the tracking of fish movements and water movement among ponds. For each pond a current feed, fertiliser and treatments regime must be specified. Data entry errors are minimised through the specification of click down lists for many inputs.

Outputs include estimates of fish weight by pond and species, estimates of feed, fertiliser and treatments required in coming days and summaries of water chemistry, Secchi disc measurements, water depth, feed inputs, fertiliser inputs, water/pond treatments, weight of randomly sampled fish and mortalities by pond over time.

On a daily basis, an appointed member of the CGIP team will ensure that data has been is inputted appropriately into the CGIP pond sheet workbook and the file saved to a folder accessible by all relevant local and remote users.

### 2.Pond sheets

For each CGIP pond there is a sheet in the workbook. These sheets capture data inputs for water chemistry (pH, dissolved oxygen, temperature and ammonia) and other characteristics (Secchi disc measurement and water depth), feed inputs, fertiliser inputs, water/pond treatments, weight of randomly sampled fish and mortalities (on worksheet per pond). The names of these sheets correspond to ponds listed in the PONDS worksheet (Section 5).

Each pond sheet contains one row for each day in a year (Figure 1) and an additional row at the beginning of the year to capture data from the most recent random weight measurement. Not all cells need to be filled for each day. The data entered on any given day will be determined by the relevant Standard Operating Procedure, the current feed, fertiliser and treatment regime and the frequency of mortality events.

In addition to cells for inputs, at the top of each pond sheet feed, fertiliser and treatment recommendations are shown. These are derived from current feed, fertiliser and treatment regimes (Section 5), pond size (Section 6) and the most recent fish weight measurements.

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Figure 1. Part of the TAL\_01 pond sheet.

### 3. Tracking fish and water movements

The movement of fish and water among ponds is tracked using the 'FISH TRANSFER' (Figure 2) and 'WATER TRANSFER' (Figure 3) worksheets respectively. In the case of fish transfer, the number of each species transferred from one pond to another must be specified on a separate line.

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2	17-Apr-20	Rohu	YEAR_START	MUK_01	425							
3	17-Apr-20	Silver carp	YEAR_START	MUK_01	413							
4	17-Apr-20	Rohu	YEAR_START	MUK_02	42							
5	17-Apr-20	Silver carp	YEAR_START	MUK_02	12							
6	17-Apr-20	Black carp	YEAR_START	TAL_01	8							
7	17-Apr-20	Catla	YEAR_START	TAL_01	844							
8	17-Apr-20	Chital	YEAR_START	TAL_01	3							
9	17-Apr-20	Grass carp	YEAR_START	TAL_01	7							
10	17-Apr-20	Raj puti	YEAR_START	TAL_01	7							
11	17-Apr-20	Silver carp	YEAR_START	TAL_01	833							
12	17-Apr-20	Black carp	YEAR_START	TAL_02	3	1 Magur present						
13	17-Apr-20	Catla	YEAR_START	TAL_02	742	1 Magur present						
14	17-Apr-20	Chital	YEAR_START	TAL_02	3	1 Magur present						
15	17-Apr-20	Grass carp	YEAR_START	TAL_02	7	1 Magur present						
16	17-Apr-20	Raj puti	YEAR_START	TAL_02	9	1 Magur present						
17	17-Apr-20	Silver carp	YEAR_START	TAL_02	858	1 Magur present						
18	17-Apr-20	Black carp	YEAR_START	TAL_03	8							
19	17-Apr-20	Catla	YEAR_START	TAL_03	98							
20	17-Apr-20	Chital	YEAR_START	TAL_03	3							
21	17-Apr-20	Grass carp	YEAR_START	TAL_03	5							
22	17-Apr-20	Raj puti	YEAR_START	TAL_03	4							
23	17-Apr-20	Rohu	YEAR_START	TAL_03	204							
24	17-Apr-20	Silver carp	YEAR_START	TAL_03	6							
25	17-Apr-20	Black carp	YEAR START	TAL 04	8							
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Figure 2. Field in the FISH TRANSFER worksheet.

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Figure 3. Fields in the WATER TRANSFER worksheet.

### 4. Specifying feed, fertiliser and treatment regimes

For each pond, the current feed, fertiliser and treatments regimes must be entered into the 'FEED FERT TREAT REGIME' worksheet (Figure 4). Up to 3 different feeds, fertilisers and treatments can be specified for each pond.

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7	MUK 02	Mega Carp Grower	0.5	1											
8	TAL 01	Mega Pre Starter	0.5	2											
9	TAL_02	Mega Pre Starter	0.5	2											
10	TAL_03	Mega Pre Starter	1.5	2											
11	TAL_04	Mega Pre Starter	1.5	2											
12	TAL_05	Mega Carp Grower	0.5	2											
13	TAL_06	Mega Nursery Powder	3	2											
14	TAL_07	Mega Pre Starter	1.5	3											
15	TAL_08	Mega Pre Starter	1.5	3											
16	TAL_09														
17	TAL_10														
18	TAL_11														
19	TAL_12	Mega Nursery Powder	0.15	2											
20	TAL_13	Mega Pre Starter	1.5	3											
21	TAL_14														
22	TAL_15	Mega Nursery Powder	0.15	2											
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Figure 4. Feed fields in the FEED FERT TREAT REGIME worksheet

### 5. Minimising data entry errors

Additional worksheet (coloured yellow) provide options for click down lists in input worksheets (Sections 3 to 5). The use of click down lists in input sheets minimises errors, such as typos, and ensures that legitimate data is entered. These worksheet are coloured yellow and are entitled, 'SPECIES', (Figure 5) 'PONDS' (Figure 6), 'FEED TYPES' (Figure 7), 'FERT TYPES' (Figure 8), 'TREATMENT TYPES' (Figure 9) and 'CAUSES OF DEATH' (Figure 10). The content of these tabs should only be altered by an appointed member of the CGIP team. They should not be altered routinely and once a row has been added it should not be changed in any one year – additional rows should be added instead. These worksheets should be 'protected' and may be hidden from view to ensure they are not altered inappropriately.

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2 C	C	Catla catla	Catla														
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Figure 5. Fields in the SPECIES worksheet.

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42			MAG_01	13									
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46			TAL_01	35									
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58			TAL_13	56									
59			TAL_14	47									
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62			TAL_17	44									
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### Figure 6. Fields in the PONDS worksheet.

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2	Mega Nursery Powder	35 (min)	31 (max)	6 (min)	16 (max)	12 (max)											
3	Mega Pre Starter	33 (min)	30 (max)	8 (min)	18 (max)	12 (max)											
4	Mega Carp Grower	23 (min)	40 (max)	3 (min)	22 (max)	12 (max)											
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Figure 7. Fields in the FEED TYPES worksheet.

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Figure 8. Fields in the FERT TYPES worksheet.

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Figure 9. Fields in the TREATMENT TYPES worksheet.

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2	Cull (post harvest measure)	After har	vest measu	rement or	nly retain b	est individ	luals in each	family										
3	Cull (post spawning)	After spa	wning only	retain par	rents of the	e next gen	eration and s	some othe	er genetica	lly elite ani	mals							
4	Cull (obsolete animals)	Cull of ob	solete gene	eration aft	ter spawnir	ng (e.g. gra	andparents o	of spawn)										
5	Cull (other)	Cull for u	nconventio	nal reasor	n													
6	Unknown	Unknown	n cause of d	eath														
7	Disease/parasites	Death the	ought to be	due to dis	sease or pa	rasite infe	estation											
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Figure 10. Fields in the CAUSE OF DEATH worksheet

### 6.Outputs

Outputs include estimates of fish weight by pond and species, estimates of feed, fertilise and treatments required in coming days ('FEED FERT TREAT SUMMARY' worksheet; Figure 11) and summaries of water chemistry, Secchi disc measurements and water depth, feed inputs, fertiliser inputs, water/pond treatments, weight of randomly sampled fish and mortalities by pond over time (POND SUMMARY' worksheet; Figure 12). Output worksheets have blue tabs. The only cells in the worksheets that may be changed by the user are highlighted in red. Note that to allow plots to refresh it is necessary to 'Trust access to the VBA project object model' (Figure 13) and enable macros when the file is opened.

There is an additional DATA TO PLOT worksheet that is hidden from users. It contains intermediate computations required to generate the plots in the POND SUMMARY worksheet.

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1	MINIMUM FISH IN RANDOM SAMPLE TO DETERMINE WEIGHT	1	Change this in th	e 'POND SUMM#	ARY' sheet							
	POND	POND AREA	TOTAL COUNT	DATE WEI	GHED RANGE	TOTAL WEIGHT	FEED 1 TYPE	FEED 1	FEED 1	FEED 1	FEED 1 NEXT	FEED 2 TYPE
						(kg)		FREQUENCY	AMOUNT PER	PREVIOUS	APPLICATION	
3									APPLICATION	APPLICATION		
4		(Decimal)		(Earliest)	(Latest)			(Days)	(g)			
5	MAG_01	13										
6	MAG_02	30										
7	MUK_01	84	838		16-May-20	607.133	Mega Carp Grower	1	510.0		Today	_
8	MUK_02	27	54		16-May-19	48.252	Mega Carp Grower	1	13.0		Today	
9	TAL_01	35	1702		14-Oct-19	742.233	Mega Pre Starter	2	1039.1		Today	
10	TAL_02	36	1622		14-Oct-19	818.996	Mega Pre Starter	2	1179.4		Today	
11	TAL_03	42	328		22-Mar-20	152.33	Mega Pre Starter	2	255.9		Today	
12	TAL_04	39	410		22-Mar-20	196.16	Mega Pre Starter	2	306.0		Today	
13	TAL_05	39	380		3-Mar-20	1373.851	Mega Carp Grower	2	2143.2		Today	
14	TAL_06	402	3271		3-Mar-20	5488.368	Mega Nursery Powder	2	88253.0		Today	
15	TAL_07	51	329		25-Mar-20	214.39	Mega Pre Starter	3	984.1		Today	
16	TAL_08	32	253		25-Mar-20	191.537	Mega Pre Starter	3	551.6		Today	
17	TAL_09	126	55		5-Mar-20							
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Figure 11. Some fields in the FEED FERT TREAT SUMMARY worksheet

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3											
4	SUMMARY BY SPE	CIES									
5										Average of pH MOR	NING Average of pH
6	Area (decimals)	35								Average of primor	average of pri
7										1.2	
8	SPECIES	COUNT	FISH PER DECIMAL	DATE WEIGHED	MEAN WEIGHT (g)	TOTAL WEIGHT (kg)	KG PER DECIMAL	COUNT WEIGHED		1	
9	Catla	844	24.11	14-Oct-19	394	332.54	9.50	86		0.8	
10	Silver carp	833	23.80	14-Oct-19	409	340.70	9.73	78		0.6	
11	Rohu									0.0	
12	Grass carp	7	0.20	14-Oct-19	4800	33.60	0.96	2		0.4	
13	Black carp	8	0.23	14-Oct-19	3900	31.20	0.89	1		0.2	
14	Chital	3	0.09								
15	Raj puti	7	0.20	14-Oct-19	600	4.20	0.12	2		20 00 00	0 0 0
16										1122312202 512202	1201 91201 11201 3120
<	FEED FERT TREAT SUMMARY	POND SUMMARY	FEED FERT TREAT REGIME	FISH TRANSFER WATEF	R TRANSFER MAG_01 M	AG_02 MUK_01 🕀 :	4	+I			
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**Figure 12.** Some fields in the POND SUMMARY worksheet

### Change macro settings in the Trust Center

Macro settings are located in the Trust Center. However, if you work in an organization, the system administrator might have changed the default settings to prevent anyone from changing settings.

**Important:** When you change your macro settings in the Trust Center, they are changed only for the Office program that you are currently using. The macro settings are not changed for all your Office programs.

- 1. Click the File tab.
- 2. Click Options.
- 3. Click Trust Center, and then click Trust Center Settings.
- 4. In the Trust Center, click Macro Settings.
- 5. Make the selections that you want.
- 6. Click OK.

The following image is the Macro Settings area of the Trust Center.

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**Figure 13.** Procedure to access the check box to that states 'Trust access to the VBA project object model'

## 7. Changing access privileges

The Electronic Pond Book should be saved to a folder accessible to all members of the Carp Genetic Improvement Team. Different users of the Electronic Pond Book can be assigned different access privileges (full, read or read-write). Full access privileges are held by the Carp Genetic Improvement Program Geneticist and Platform Manager only. They are able to change the access privileges of others by clicking on File  $\Rightarrow$  Info  $\Rightarrow$  Protect Workbook  $\Rightarrow$  Restrict Access  $\Rightarrow$  Restricted Access (Figure 14).

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Close	Control what types of changes people can make to the current sheet.			Related People	2					
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Figure 14. How to change access privileges



#### **About WorldFish**

WorldFish is an international, nonprofit research organization that harnesses the potential of fisheries and aquaculture to reduce hunger and poverty. Globally, more than one billion poor people obtain most of their animal protein from fish and 800 million depend on fisheries and aquaculture for their livelihoods. WorldFish is a member of CGIAR, a global research partnership for a food-secure future.