

INDICATORS MADE BASED ON MONITORING OF VIETNAMESE COMMERCIAL MARINE FISHERY

Nguyen Thi Dieu Thuy and Karl Johan Staehr
Assessment of the Living Marine Resources in Viet Nam
Ministry of Fisheries
Viet Nam

Introduction

In order to improve the ability of providing fishery multidisciplinary management advice, fleet performance indicators were selected as a tool. For this purpose, we had built the data collecting system for marine commercial fishery in 11 pilot coastal provinces since 1996. Later in 1998, this system was expanded to all 28 coastal provinces, which are sorted into four management areas, in coordination with the administrative areas of Viet Nam: North, Center, Southeast and Southwest. The commercial catches are monitored by sampling the catch of different fleets at the landing places. For the time being, there are 34 enumerators sampling 42 different fleets at 62 landing places of 28 provinces. The information recorded are: vessel parameters, fishing trip details (trip duration, fishing ground, fishing depth, gears used, fishing effort, catch composition, variable cost of the trip (like fuel, ice, salary of crew), fish prices, value (see Interview form in appendix 1). Until the end of 2003, more than 200,000 interview forms were collected.

The definition of the fleet was made based on the main gear used and horsepower group of the boat. The main gears used are:

1. Trawl; divided into single trawl (including otter trawl and beam trawl) and pair-trawl
2. Purse seine; divided into anchovy purse seine (small mesh size used) and other purse seine (large mesh size used).
3. Gillnet; divided into trammel net, drift net and bottom gillnet.
4. Line; separated into squid hand line, fish hand line and long line.
5. Lift net
6. Stick-held falling net.
7. Others.

Horsepower groups are:

1. <20 HP
2. 20-89 HP (20-45HP & 46-89 HP for trawl)
3. 90-140 HP
4. >140 HP (141-300 and >300 HP for trawl)

The non-motorized group is not included because of the considerable uncertainties regarding the size of the fleet. For example, vessel A belongs to fleet Otter trawl 46-89HP if it uses otter trawl gear and its capacity is in the interval 46-89HP.

At the end of each year, the sampling plan for the next year is made at the enumerator workshop.

The principles for selecting sampled fleets in each province are:

- Fleets who contribute the main landing to the landing of the province.
- Select the landing sites where main fleets and main landing of the province landed.
- Try to follow the fleets sampled in previous year unless the fleets go out of the fishery or change the main gear totally.

In each province, at least 20 forms should be collected for each fleet in each month. Interviews must cover the catch of the whole trip. If there is not enough information for the catch of the whole trip, the interview should be dropped. For further reference, the sampling plan for 2004 is given in Appendix 2.

Data collected were encoded into a database which has been developed in Access. This database is divided into two parts: input database and output database. Input database stores all the raw information in the interview forms, output database stores all the standard queries and interfaces to get output data which are indicators. Up to now, the possible indicators have pointed out from this source of data are:

* Fleet level

1. Mean daily catch rate (kg/day)
2. Mean standard catch rate
3. Mean active days per month
4. Mean trip duration
5. Mean turnover per trip
6. Mean cost per trip
7. Mean turnover per day
8. Mean cost per day
9. Catch composition
10. Turnover composition

* Fish group level

1. Mean daily catch rate (kg/day)
2. Standard catch rate

The calculations are distributed on

- Nation level
- Regional level (4 regions)
- Provincial level (28 coastal provinces)
- Fish groups (18 Ecological groups)
- Fleet types
- Monthly basis

This is the list of indicator we have made so far for our work. This list can be added for further analyses. The variation of fish group price is one of the indicators considered.

Methods

A. At Fleet Level

1. Mean daily catch rate (kg/day)

Catch Per Unit of Effort (CPUE) of trip t is:

$$CPUE_t = \frac{C_t (kg)}{E_t (kg)}$$

where

- CPUE _{t} : CPUE of trip t
- C _{t} : Catch of Trip t
- E _{t} : Fishing effort of trip t

Mean CPUE of fleet F in province P (or area A) in month i of year j :

$$\text{Mean CPUE}_{ij} = \frac{\sum_{i=1}^n \text{CPUE}_i}{n} \quad (n \geq 5)$$

Where

n number of observations (total number of trips interviewed of fleet F from province P (or area A) in month i of year j)

2. Mean standard catch rate

Standardized catch rate is catch rate classified by gear as follows:

Otter trawl, pair trawl, beam trawl	Catch per hour of fishing (kg/hour)
Purse seine, lift net, stick held falling net	Catch per fishing operation (kg/operation)
Driftnet, stationary net, trammel net	Catch per km net (kg/km)
Long line	Catch per 100 hooks (kg/100 hooks)
Fish hand line, squid hand line	Catch per line (kg/line)

Standardized CPUE of trip t :

$$\text{Standardized CPUE}_t = \frac{C_t(\text{kg})}{E_t(\text{unit})}$$

where Standardized CPUE _{t} : Standardized CPUE of trip t

C_t : Catch of Trip t

E_t : Fishing effort of trip t

unit: See above

Mean standardized CPUE of fleet F in province P (or area A) in month i of year j :

$$\text{Mean standardized CPUE}_{ij} = \frac{\sum_{i=1}^n \text{Standardized CPUE}_i}{n} \quad (n \geq 5)$$

Where

n number of observations (total number of trips interviewed of fleet F from province P (or area A) in month i of year j)

3. Mean active days per month

This indicator describes the mean active days per month of fleet, by measuring the total number of days away from harbour for fishing purpose in a month

Mean active day per month of fleet F of province P (or area A) in month i of year j :

$$\text{ActiveDay}_{ij} = \frac{\sum_{i=1}^n \text{AD}_i}{n} \quad (n \geq 5)$$

Where

AD_i Active days of the last month derived from interview of trip t

n number of observations (total number of interviews with Active days of the last month information of fleet F from province P (or area A) in month i of year j)

4. Mean trip duration

The mean trip duration is the length of the fishing trip measured in days (including days with no fishing activity such as steaming days).

Mean trip duration of fleet F of province P (or area A) in month *i* of year *j*:

$$\text{MeanTripDuration}_{ij} = \frac{\sum_{t=1}^n D_t}{n} \quad (n \geq 5)$$

Where

- D_t Length of trip *t* (day)
- n number of observations (total number of trips interviewed of fleet F from province P (or area A) in month *i* of year *j*)

5. Mean cost per trip

This is the variable cost including ice, fuel, provision, bait, fees and taxes related to the fishing trip.

Cost of trip *t*:

$$\text{Cost}_{\text{trip } t} = \text{Cost}_{\text{Ice}} + \text{Cost}_{\text{Fuel}} + \text{Cost}_{\text{Food}} + \text{Cost}_{\text{Salary}} + \dots$$

Cost per trip from fleet F of province P in month *i* of year *j*:

$$\text{MeanCostPerTrip}_{\text{month } ij} = \frac{\sum_{t=1}^n \text{Cost}_t}{n} \quad (n \geq 5)$$

Where

- n number of observations (total number of trips interviewed with cost information of fleet F from province P (or area A) in month *i* of year *j*)

6. Mean turnover per trip

This is calculated as the total value of the trip's total catch. This amount is not the revenue of the trip. In some cases the prices of one or a few fish groups are missing. In these cases a price of the fish group, derived from other interviews of the same fleet in the same month and the same province (or area), is included.

Income per trip of fleet F of province P (or area A) in month *i* of year *j*:

$$\text{IncomePerTrip}_{ij} = \frac{\sum_{t=1}^n \text{Income}_t}{n} \quad (n \geq 5)$$

Where

- Income_t Income of trip *t*
- n number of observations (total number of trips interviewed with income information of fleet F from province P (or area A) in month *i* of year *j*)

7. Mean cost per day

This is the variable cost calculated on daily basis

Cost per day of trip t:

$$\text{Cost}_t = \text{Cost}_{\text{Ice}} + \text{Cost}_{\text{Fuel}} + \text{Cost}_{\text{Food}} + \text{Cost}_{\text{Salary}} + \dots$$

$$\text{CostperDay}_t = \frac{\text{Cost}_{\text{Tript}}}{E_t(\text{day})}$$

Cost per day from fleet F of province P in month *i* of year *j*:

$$\text{MeanCostPerDay}_{ij} = \frac{\sum_{t=1}^n \text{Cost per Day}_t}{n} \quad (n \geq 5)$$

Where

n number of observations (total number of trips interviewed with cost information of fleet F from province P (or area A) in month *i* of year *j*)

8. Mean turnover per day

Income per day of trip t is defined as total income of trip t divided by number of fishing days of trip t:

$$\text{IncomeperDay}_t = \frac{\text{Income}_{\text{Tript}}}{E_t(\text{day})}$$

Average income per day of fleet F from province P (or area A) in month *i* of year *j* is:

$$\text{IncomePerDay}_{ij} = \frac{\sum_{t=1}^n \text{Income per Day}_t}{n} \quad (n \geq 5)$$

Where

n number of observations (total number of trips interviewed with income information of fleet F from province P (or area A) in month *i* of year *j*)

9. Catch composition

This indicator describes the catch composition by percentages of fish groups in the monthly catches of fleets

Percentage of group A in the catches of fleet F from province P in month *i* of year *j*:

$$\text{PercentageOfGroupA}_{ij} = \frac{\sum_{t=1}^m C_{At}}{\sum_{t=1}^n C_t} \quad (n \geq 5)$$

Where

C_{At} Catch of fish group A in trip *t*

C_t Catch of trip *t*

m total number of trips interviewed of fleet F from province P in month *i* of year *j*, which have group A in their catches

n total number of trips interviewed of fleet F from province P in month *i* of year *j*

10. Turnover composition

This indicator describes the proportion of turnover by percentages of fish groups in the monthly catches of fleets

Percentage of group A in the total value of fleet F from province P in month *i* of year *j*:

$$\text{PercentageOf Group A}_{ij} = \frac{\sum_{t=1}^m V_{At}}{\sum_{t=1}^n V_t} \quad (n \geq 5)$$

Where

- V_{At} Value of fish group A in trip *t*
- V_t Value of trip *t*
- m* total number of trips interviewed of fleet F from province P in month *i* of year *j*, which have group A in their catches
- n* total number of trips interviewed of fleet F from province P in month *i* of year *j*

B. At Fish Group Level

1. Daily catch rate (kg/day)

CPUE of fish group A in trip *t* is:

$$\text{CPUE}_{At} = \frac{C_{At}(\text{kg})}{E_t(\text{day})}, \text{ where}$$

- CPUE_{At} : CPUE of fish group A in trip *t*
- C_{At} : Catch of fish group A in Trip *t*
- E_t : Fishing effort of trip *t*

Mean CPUE of group A in the catch of fleet F from province P (or area A) in month *i* of year *j*:

$$\text{Mean CPUE}_{\text{Group A in Month } ij} = \frac{\sum_{t=1}^n \text{CPUE}_{At}}{n} \quad (n \geq 5)$$

where

- CPUE_{At} : CPUE of fish group A in trip *t*
- n* number of observations (total number of trips interviewed of fleet F from province P (or area A) in month *i* of year *j*), which have group A in their catches

2. Standard catch rate

Standardized CPUE of fish group A in trip *t*:

$$\text{Standardized CPUE}_{At} = \frac{C_{At}(\text{kg})}{E_t(\text{unit})}$$

- where Standardized CPUE_{At} : Standardized CPUE of fish group A in trip *t*
- C_{At} : Catch of fish group A in trip *t*
- E_t : Fishing effort of trip *t*
- unit*: See II.A.2.

Mean standardized CPUE of group A in the catches of fleet F from province P (or area A) in month i of year j :

$$\text{Mean standardized CPUE}_{\text{Group A month } ij} = \frac{\sum_{t=1}^n \text{Standardized CPUE}_{At}}{n} \quad (n \geq 5)$$

Where

Standardized CPUE_{At} : Standardized CPUE of fish group A in trip t

n number of observations (total number of trips interviewed of fleet F from province P (or area A) in month i of year j), which have group A in their catches

Results

The following three examples are given to show how the time series on indicators from the monitoring of commercial catches can be used to describe the changes in performance of a given fleet.

The following three fleets were chosen as examples:

- Otter trawl 46-89 HP in Ben Tre Province
- Squid hand line 46-89 HP in Ben Tre province
- Otter trawl 20-45 HP in Khanh Hoa

The mean standard catch rate, mean catch rate per day, mean trip duration, mean active day and mean turnover per day for the total catch together with catch composition, proportion of turnover and mean standard catch rate by ecological groups are shown in Figures 1 to 11.

To give an impression of changes over time, a regression analysis was made for each indicator. The regression line is shown on each graph (Figures 1 to 11) together with the slope and intercept. If too few data are available in a time series, a regression analysis will not be made. To decide if the slopes of the regression lines are significantly different from 0, the P values of the 95% confidence interval were calculated and shown on the figures. As a rule of thumb, the slope is statistically different from 0 if the P value is below 0.05.

Otter trawl 46-89 HP in Ben Tre

Data from monitoring of the otter trawl 46-89 HP in Ben Tre for the period from August 2000 to January 2003 were available for analysis. Graphs on the time series of the indicators for the fleet otter trawl 46-89 HP are shown in Figures 1 to 4.

In Tables 1 and 2 an overview of the trends over time are given for the indicators on the total catch and by ecological groups respectively.

Table 1: Trends in indicators on total catch for Otter trawl 46-89 HP in Ben Tre

Mean Standard catch rate Kg/hour	Mean Catch rate per day Kg/day	Mean trip duration Day	Mean active day per month Day	Mean turnover per day 1000 VND
++	++	+	Too short time period	+

- Significant decrease
- Insignificant decrease
- + Insignificant increase
- ++ Significant increase

Table 2: Trends in indicators on ecological groups for Otter trawl 46-89 HP in Ben Tre

Ecological group	Catch composition (%)	Proportion of turnover (%)	Mean standard catch rate (kg/hour)
Shrimp	-- seasonality	--	-
Trash fish	+	++	+
Mixed fish	++	++	++
Crabs	+	+	+
Cephalopods	-	-	+
Cuttle fish	+	++	++
Squid	++ seasonality	++	++
Octopus	Too few data seasonality	Too few data	Too few data
Demersal fish	+	+	++
Coral fish	Too few data seasonality	Too few data	Too few data seasonality
Ray	Rare in catch	Rare in catch	Rare in catch

- Significant decrease
- Insignificant decrease
- + Insignificant increase
- ++ Significant increase

From Table 1 and Figure 1 it can be seen that the mean standard catch rate (kg/hour) and mean catch rate per day has increased significantly for the otter trawler 46-89 HP in Ben Tre over the time period. The mean trip duration has been quite stable over the same period at a level with an average of 9-10 days. During the same period the mean turnover per day has had an insignificant increase.

For an explanation in the trends over time for the total catch, the indicators by ecological groups had to be examined (Figures 2 to 4). From Table 2 and Figure 2 it can be seen that the percentage in the catch composition has decreased significantly for shrimp but has increased significantly for mixed fish and squid. Other ecological groups only showed insignificant changes in percentage in catch over the time period. For the mean standard catch rate by ecological groups (Figure 4) there had been significant increases in mean kg/hour for mixed fish, cuttlefish, squid

and demersal fish. From Figure 3 it can be seen that proportion of turnover by ecological groups decreased significantly for shrimp but increased significantly for trash fish, mixed fish, cuttlefish and squid.

Based on this the changes in the trends for indicators of the total catch for otter trawl 46-89 HP fleet in Ben Tre could be due to a change in the ecological groups targeted in this fleet from shrimp to mixed fish, cuttlefish, squid and demersal fish. This change could either be due to a change of gear or due to a change in fishing ground. From a management point of view it should be investigated if this change in the fishery by the fleet is due to a decline in the shrimp resources or a decline in the market demand and thereby in the turnover possible by targeting shrimp.

Squid hand line 46-89 HP in Ben Tre

Data from monitoring of the squid hand line 46-89 HP in Ben Tre for the period from August 2000 to February 2003 were available for analysis. The time series data of the indicators for the fleet squid hand line 46-89 HP are shown in Figures 5 to 7.

In Tables 3 and 4, the trends over time are given for indicators of the total catch and by ecological groups respectively.

Table 3: Trends in indicators of total catch for Squid hand line 46-89 HP in Ben Tre

Mean Standard catch rate (kg/day/person)	Mean Catch rate per day (kg/day)	Mean trip duration (days)	Mean active days per month (days)	Mean turnover per day (1000 VND)
-	-	+	Too short time period	-

Table 4: Trends in indicators on ecological groups for Squid hand line 46-89 HP in Ben Tre

Ecological group	Catch composition (%)	Proportion of turnover (%)	Mean standard catch rate (kg/day/person)
Squid	+ Seasonality	+	0
Large pelagic	Seasonality	Rare in catch	Rare in catch
Cephalopod	Seasonality	Rare in catch	Rare in catch

- 0 No change
- Significant decrease
- Insignificant decrease
- + Insignificant increase
- ++ Significant increase

From Table 3 and Figure 5 it can be seen that the mean standard catch rate (kg/day/person) and mean catch rate per day decreased insignificantly for squid hand line 46-89 HP over the time period. High variation in the monthly mean catch rate could be seen for both indicators, but there was no clear seasonality. The mean trip duration was quite stable at a level of 19-20 days. During the same period the mean turnover showed monthly variations corresponding to the variations seen in the mean catch rate. The mean turnover showed an insignificant decrease over the time period.

For a deeper understanding of the development over time for the total catch indicators, the indicators by ecological groups had to be examined (Figures 6 and 7).

From Table 4 and Figure 6 it can be seen that squid was the major part of the catches for all month. For some months large pelagics and cephalopods contributed up to 50% of the catches, but these large pelagics and cephalopods had not been seen in the catches since the beginning of 2002. This is the reason for the insignificant increase for squid in the catch composition and proportion of turnover.

Either the squid hand line 46-85 HP fleet had changed its fishing pattern from targeting large pelagics for periods of the year or the resources of large pelagics had declined in the operation area. For management purposes, this has to be investigated based through other means e.g. scientific resource surveys.

Otter trawl 20-45 HP in Khanh Hoa

Data from monitoring of the otter trawl 20-45 HP in Khanh Hoa for the period October 1996 to December 2002 were available for analysis. Time series for the indicators of the fleet of the otter trawl 20-45 HP are shown in Figures 8 to 11.

In Tables 5 and 6, the trends over time are given for indicators of the total catch and by ecological groups respectively.

Table 5: Trends in indicators on total catch for Otter trawl 20-45 HP in Khanh Hoa

Mean Standard catch rate (kg/hour)	Mean Catch rate per day (kg/day)	Mean trip duration (days)	Mean active day per month (days)	Mean turnover per day (1000 VND)
--	--	0	--	++

- 0 No change
- Significant decrease
- Insignificant decrease
- + Insignificant increase
- ++ Significant increase

From Table 5 and Figure 8 it can be seen that mean standard catch rate (kg/hour) and mean catch rate per day decreased significantly for the otter trawl 20-45 HP fleet in Khanh Hoa over the time period. The mean trip duration was quite stable over the same period at a level around 1 day. During the same period the mean turnover per day increased significantly.

To be able to explain the trends over time for the total catch indicators, an examination of the indicators by ecological groups was conducted (Figures 9 to 11).

Table 6: Trends in indicators on ecological groups for Otter trawl 20-45 HP in Khanh Hoa

Ecological group	Catch composition (%)	Proportion of turnover (%)	Mean standard catch rate (kg/hr)	Mean price (VND/kg)
Cephalopods	++	++	++	--
Demersal fish	-	--	+	-
Small pelagics	-	-	0	
Mixed fish	++	++	+	+
Anchovy	Too few data	Too few data	Too few data	
Trash fish	+	-	--	++
Coral fish	++	+	Too few data	-
Octopus	+	-	Too few data	
Crabs	0	++	--	++
Squid	0	0	+	+
Cuttlefish	+	+	Too few data	++
Shrimp	-	+	-	++

- 0 No change
- Significant decrease
- Insignificant decrease
- + Insignificant increase
- ++ Significant increase

From Table 6 and Figure 9 it can be seen that the percentage in the catch composition increased significantly for cephalopods, mixed fish and coral fish. For the rest of the ecological groups, no or only insignificant changes were seen over the time period.

For the mean standard catch rate cephalopods showed a significant increase whereas trash fish and crabs showed a significant decrease. For the rest of the ecological groups found in the catches, no or insignificant changes were seen.

The significant increase in the mean turnover of the total catch despite a significant decrease in the mean standard catch per day can be explained only by the significant increase in the prices (VND/kg) for some of the ecological groups as trash fish, crabs, cuttlefish and shrimp. From a management point of view further investigations should be made on trash fish as this ecological group contributed approximately 45% of the catch (Figure 9). It has to be investigated if the significant decrease in mean standard catch rate of trash fish is due to over-fishing forced by a demand and high prices on the market.

Discussion

The regression analysis on pressure indicators from the monitoring of commercial catches only has the aim to give a first impression of the time trends for a given indicator. No single pressure indicator gives a full description for the performance of a fleet. By combining information from more indicators a picture of the performance of a fleet can be seen. This picture can lead to a situation of alarm and closer inspections of data have to be taken. To come to a detailed understanding of the situation for a fishery based on which a management decision can be taken the above mentioned analysis has to be combined with analyses of fleet indicators, e.g. number of vessels, and state indicator for the resources from scientific resource surveys.

If management tools have been introduced to regulate a fishery the pressure indicators from the monitoring of the commercial fishery can be used to give a first impression if the regulation has had the intended effect on the fishery. But also here these analyses have to be combined with analyses of the state indicators on the resources to give a full picture of the result.

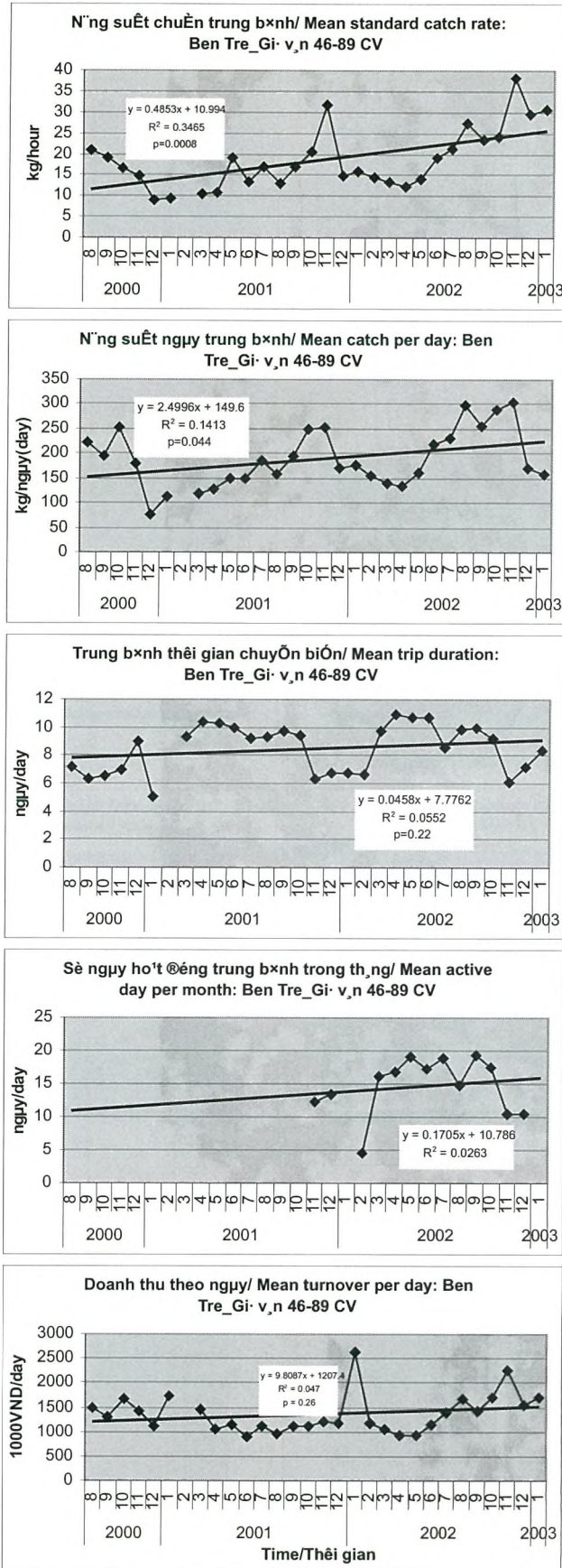


Figure 1: General indicators on total catch for Otter trawl 46-89 HP in Ben Tre

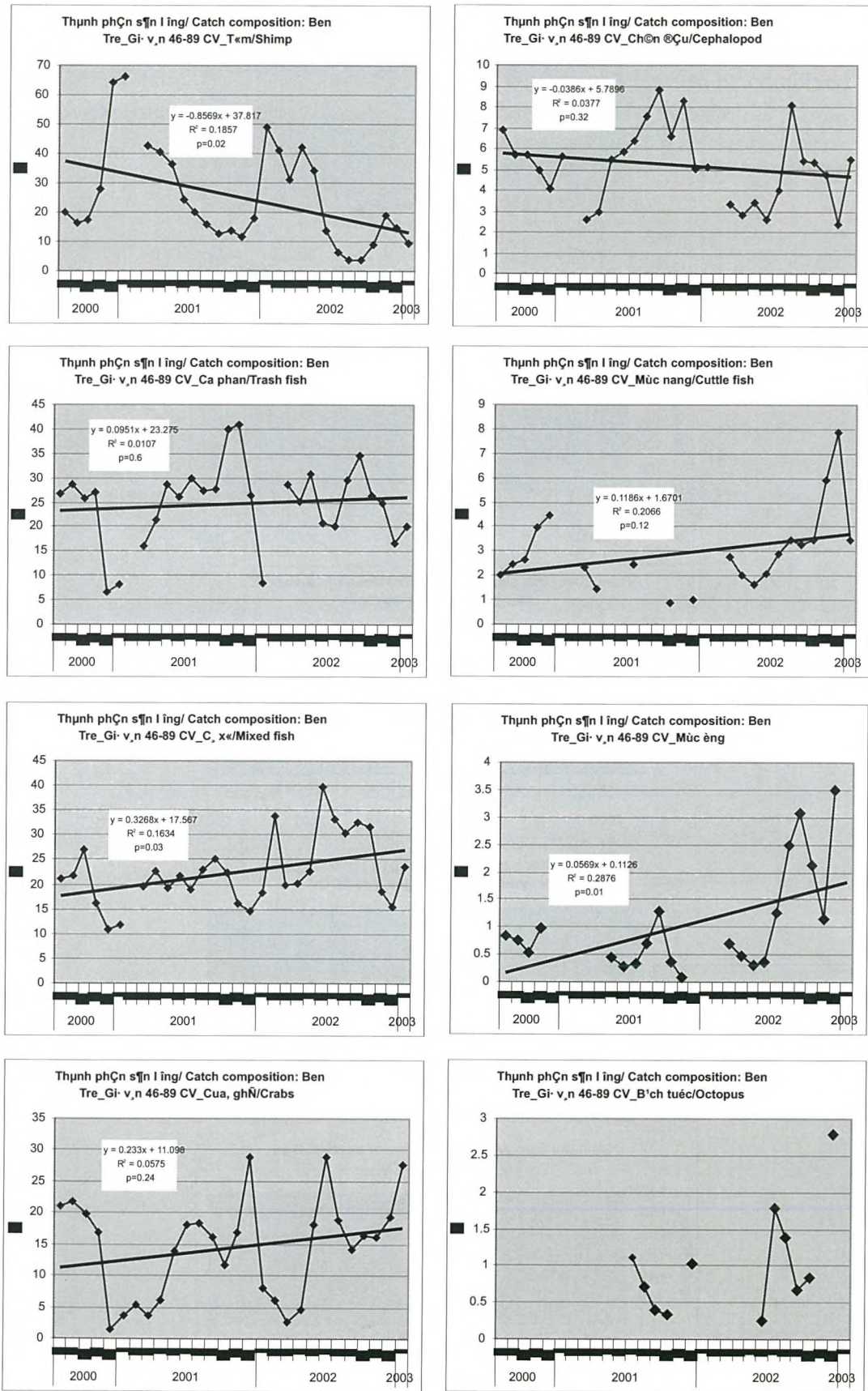


Figure 2: Indicator on catch composition by ecological groups for Otter trawl 46-89 HP in Ben Tre

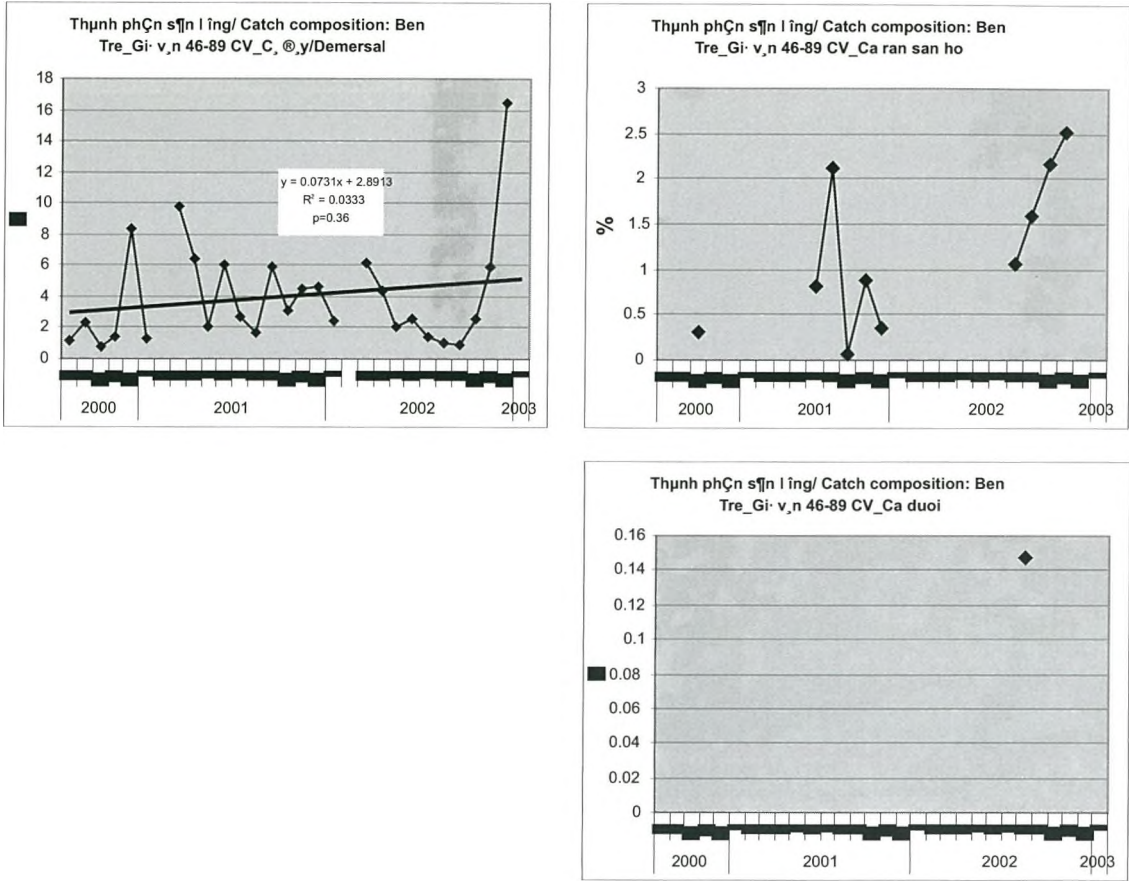


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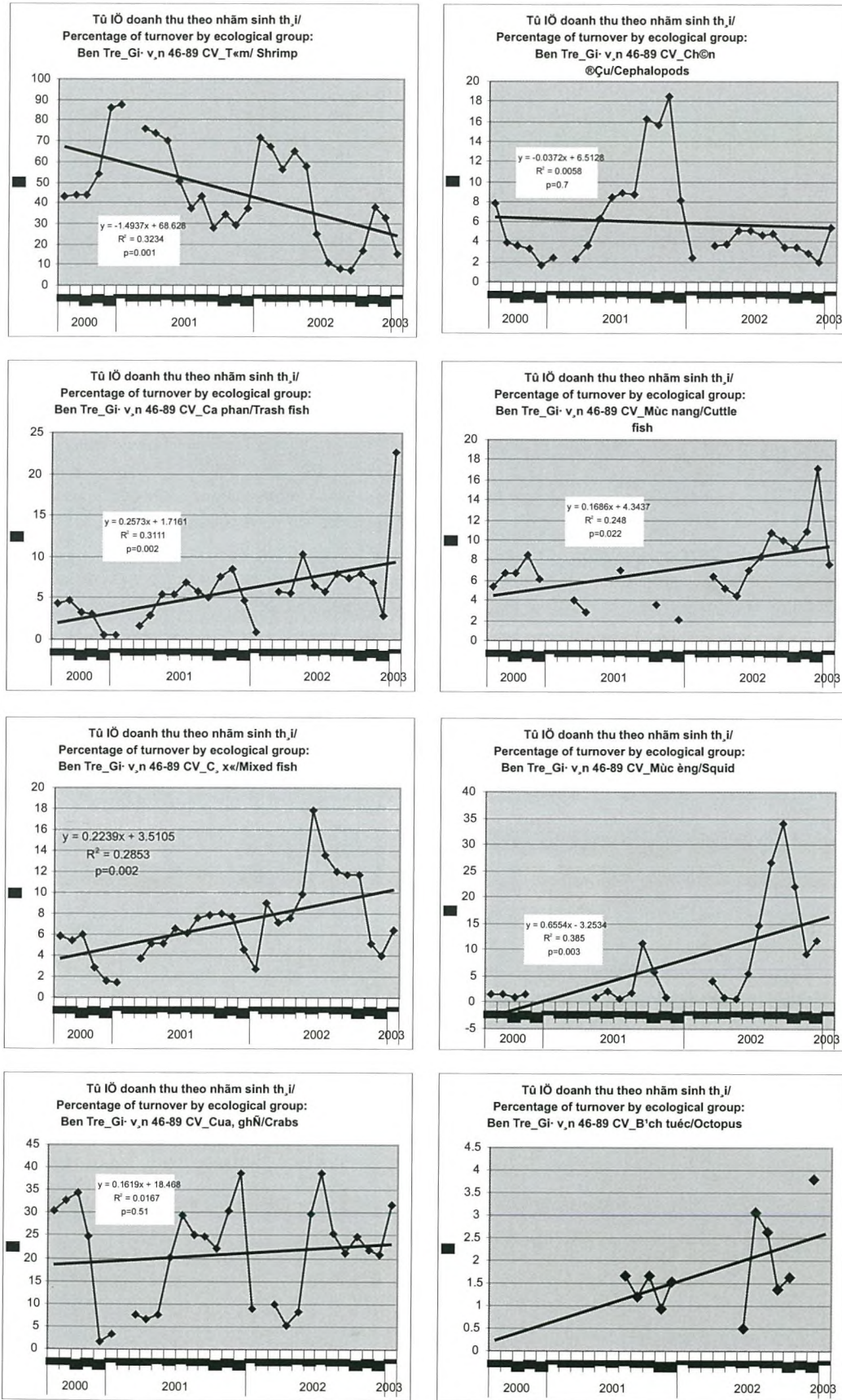


Figure 3: Indicator on proportion of turnover by ecological groups for Otter trawl 46-89 HP in Ben Tre

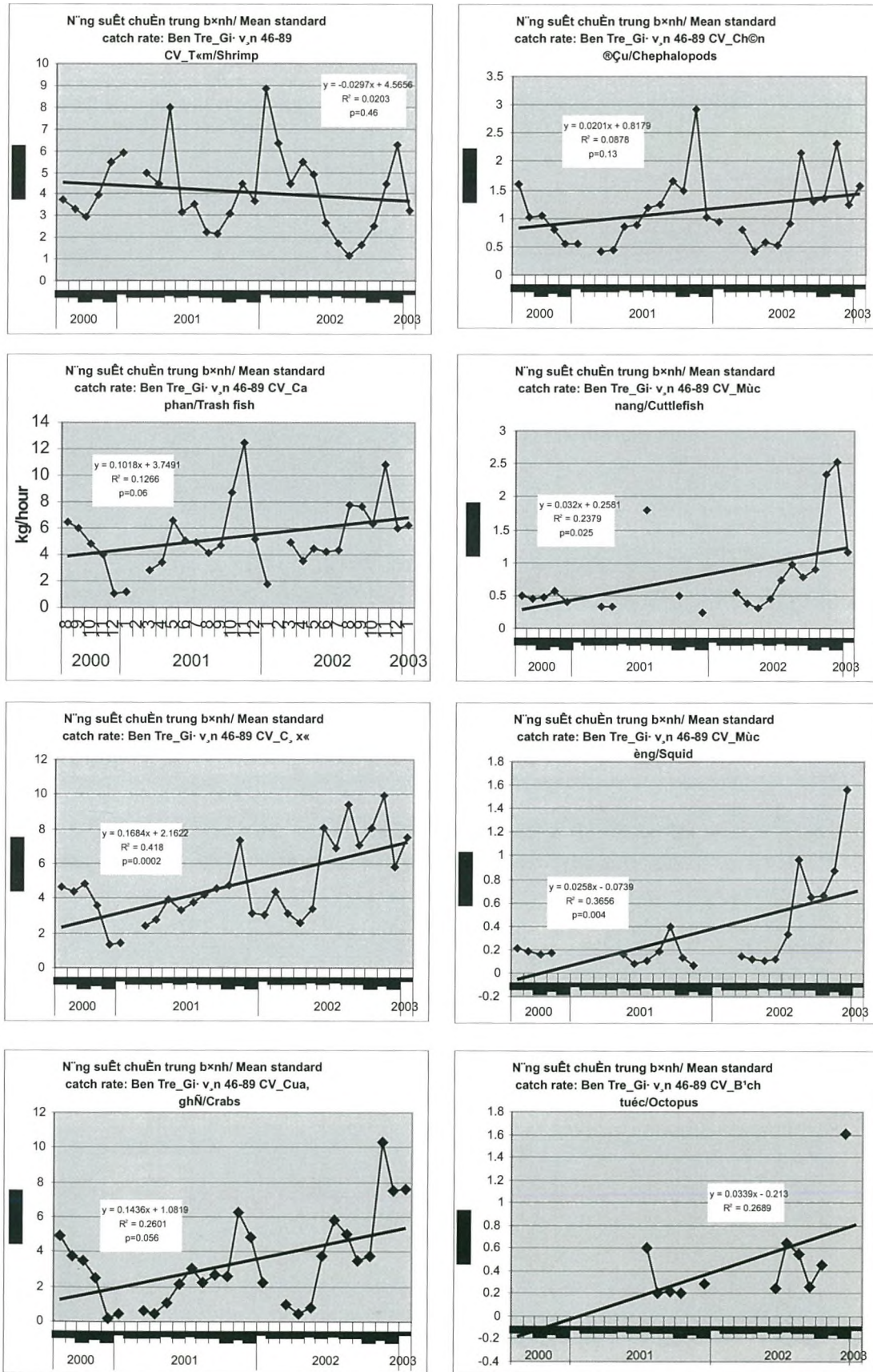


Figure 4: Indicator on mean standard catch rate by ecological groups for Otter trawl 46-89 HP in Ben Tre

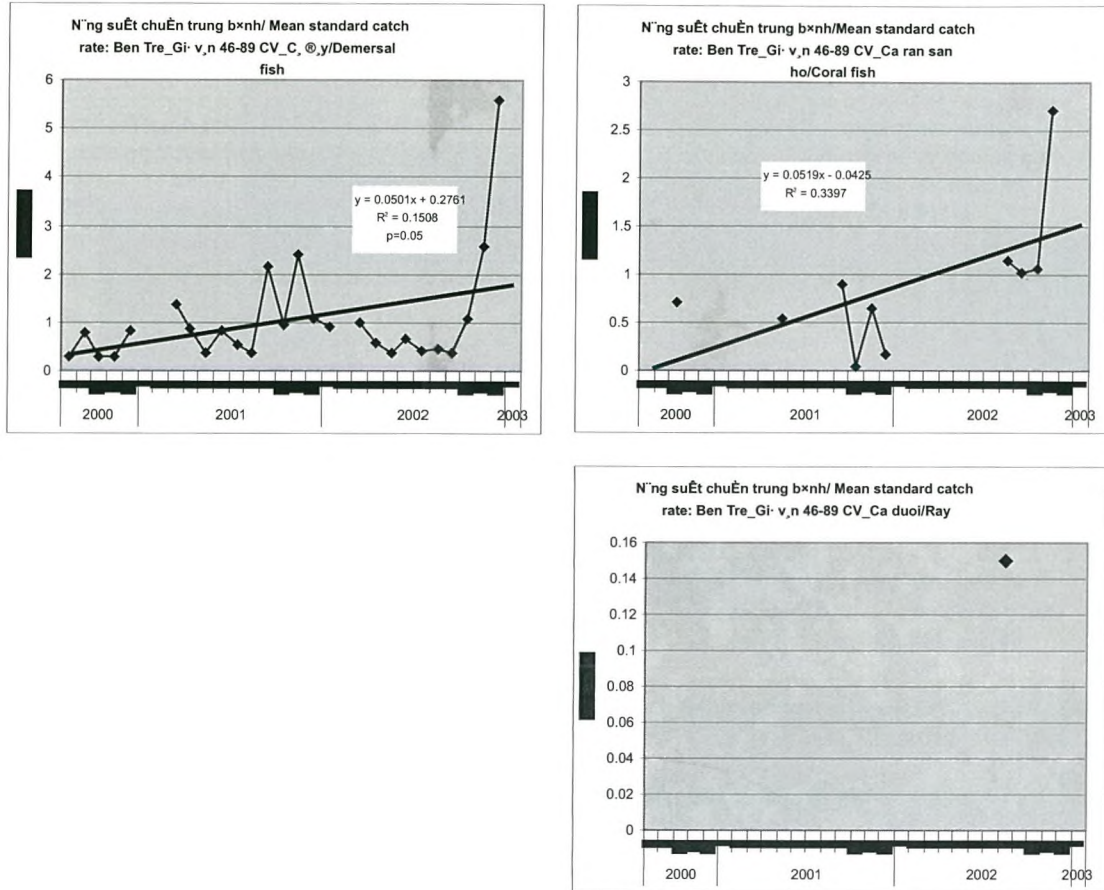


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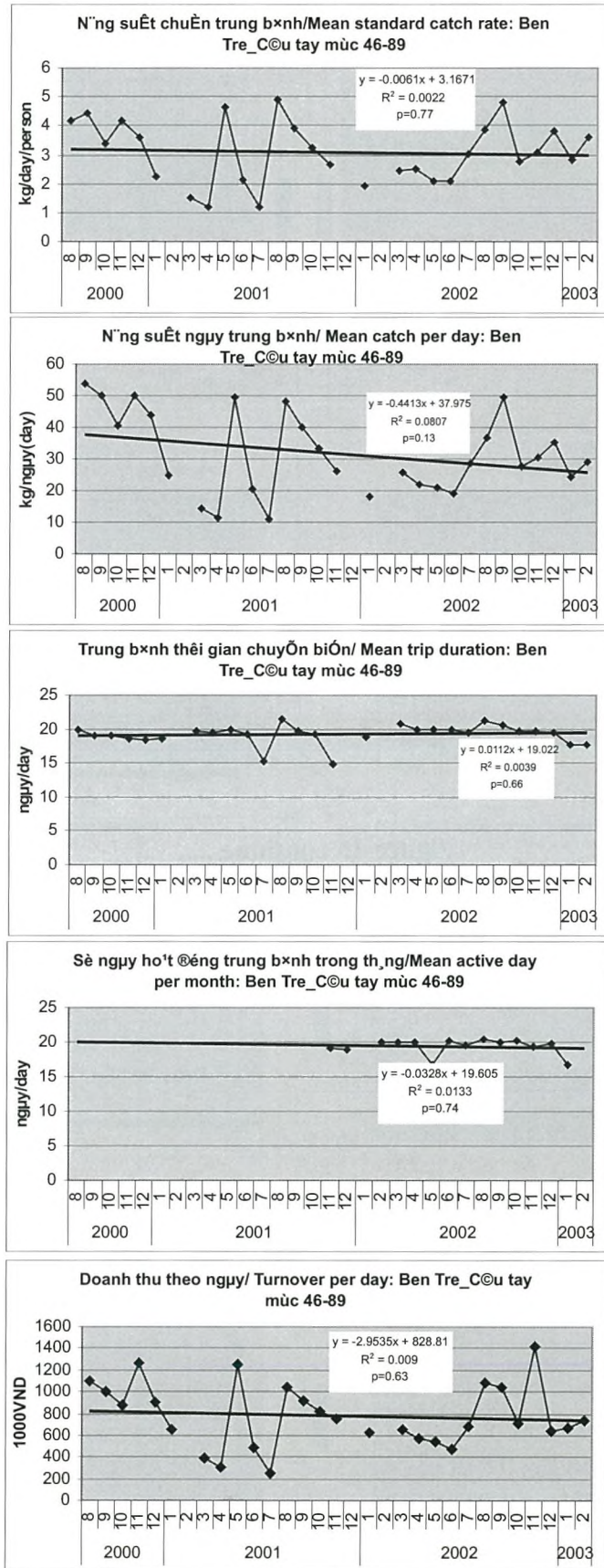


Figure 5: General indicators on total catch for Squid hand line 46-89 HP in Ben Tre

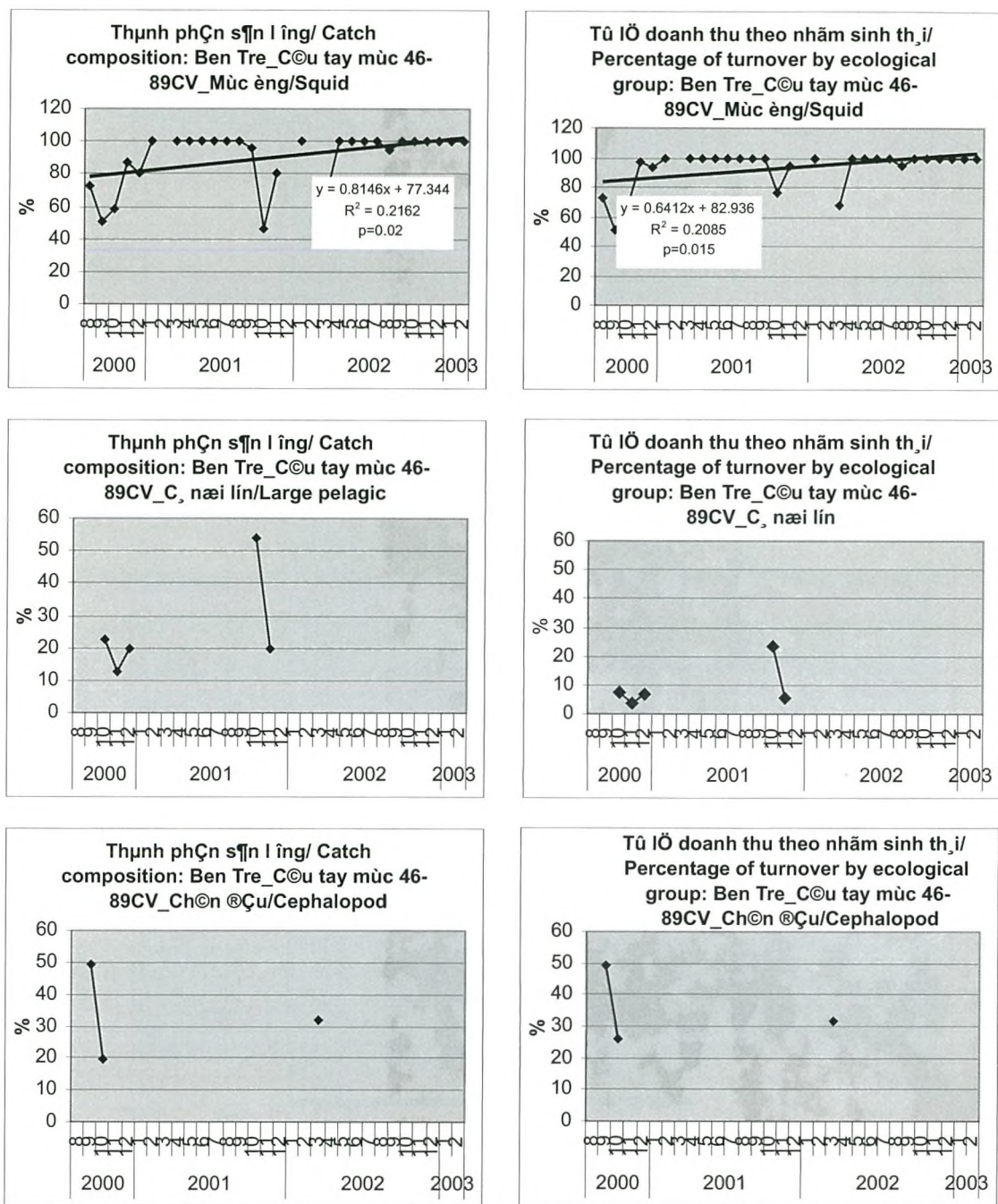


Figure 6: Indicator on catch composition and proportion of turnover by ecological groups for Squid hand line 46-89 HP in Ben Tre

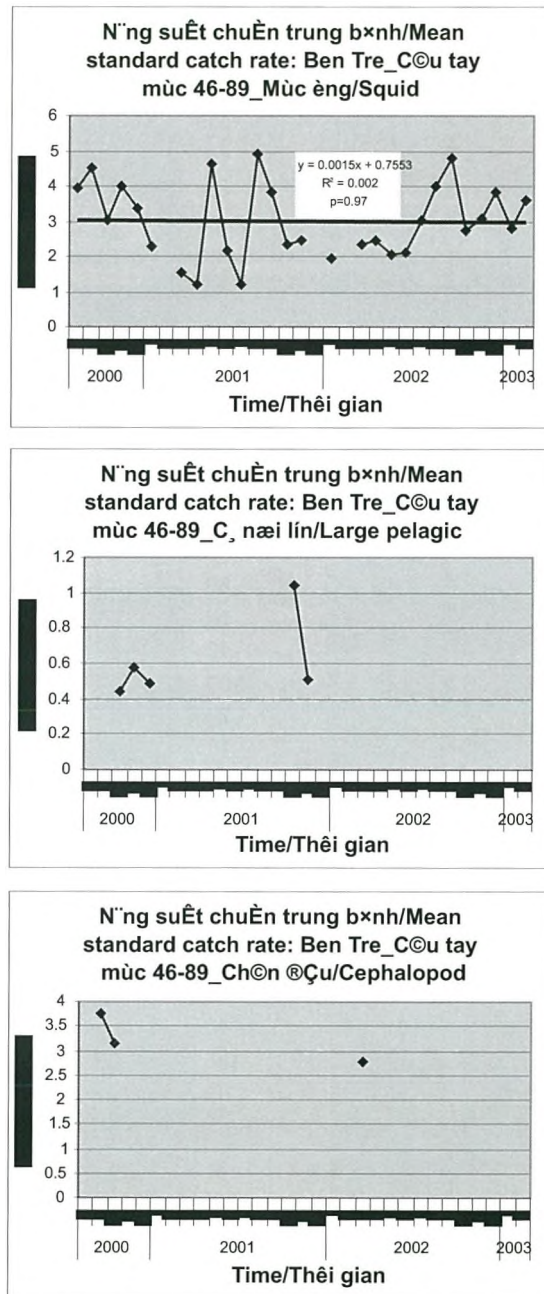


Figure 7: Indicator on mean standard catch rate by ecological groups for Squid hand line 46-89 HP in Ben Tre

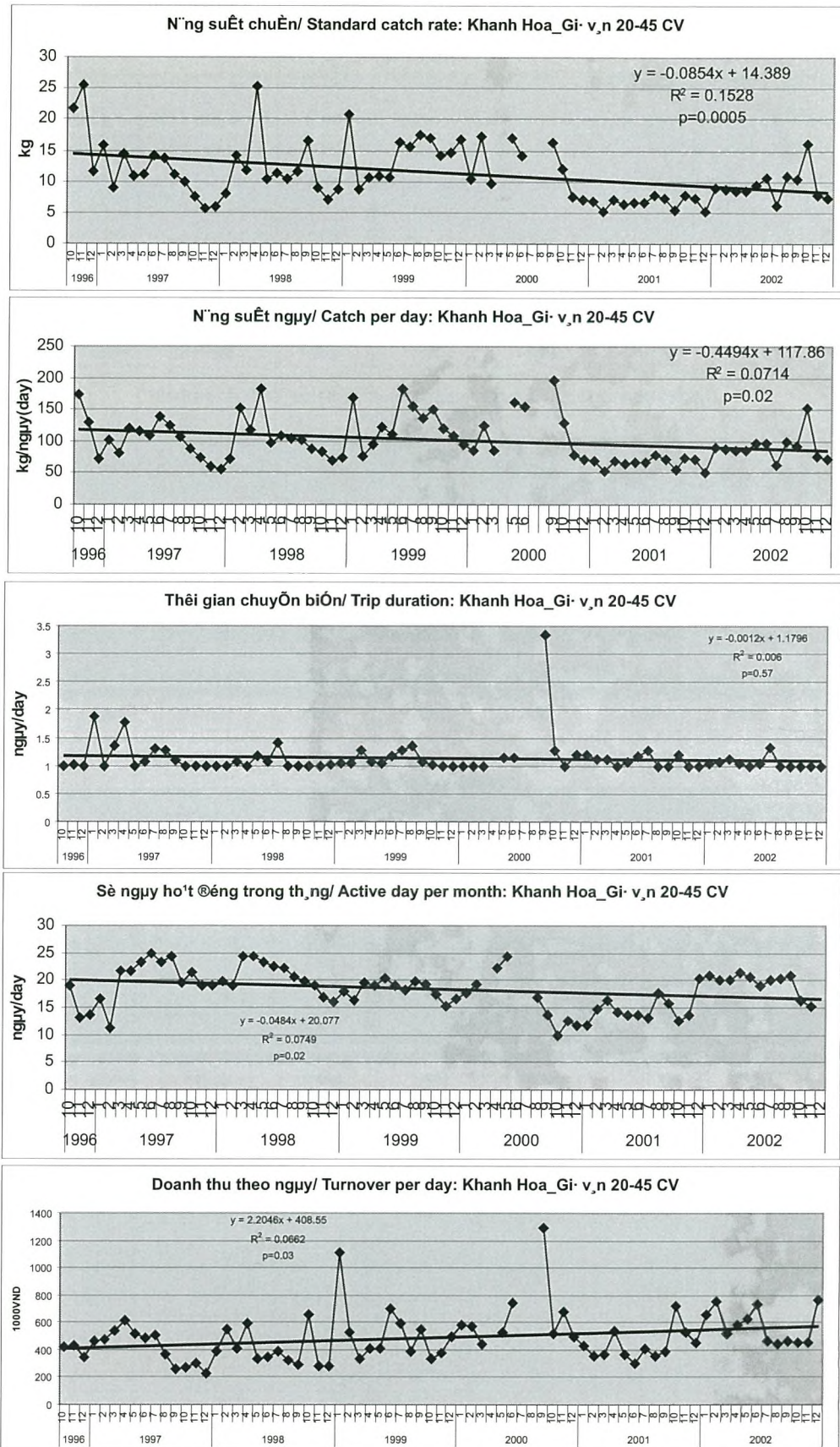


Figure 8: General indicators on total catch for Otter trawl 20-45 HP in Khanh Hoa

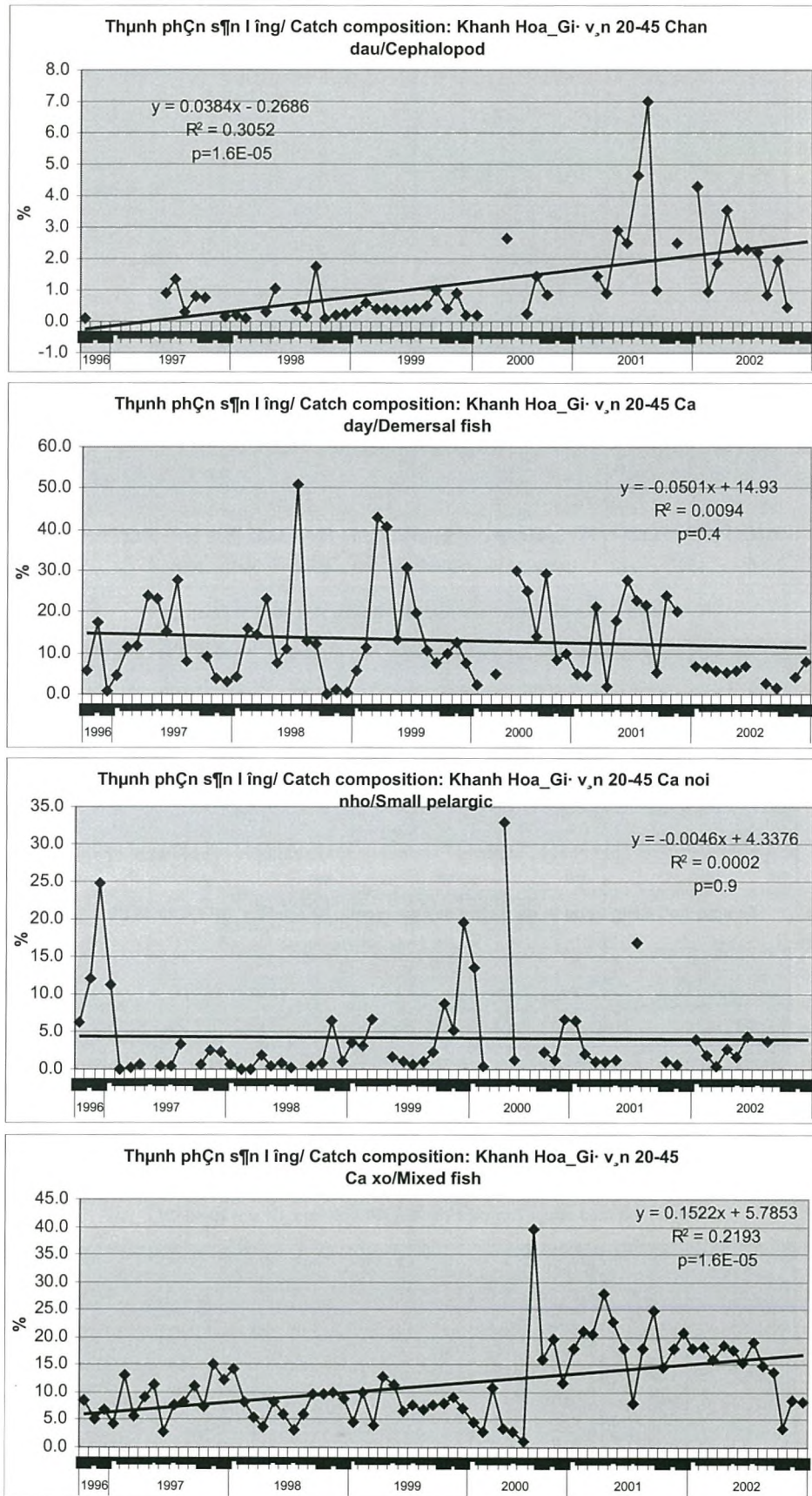


Figure 9: Indicator on catch composition by ecological groups for Otter trawl 20-45 HP in Khanh Hoa

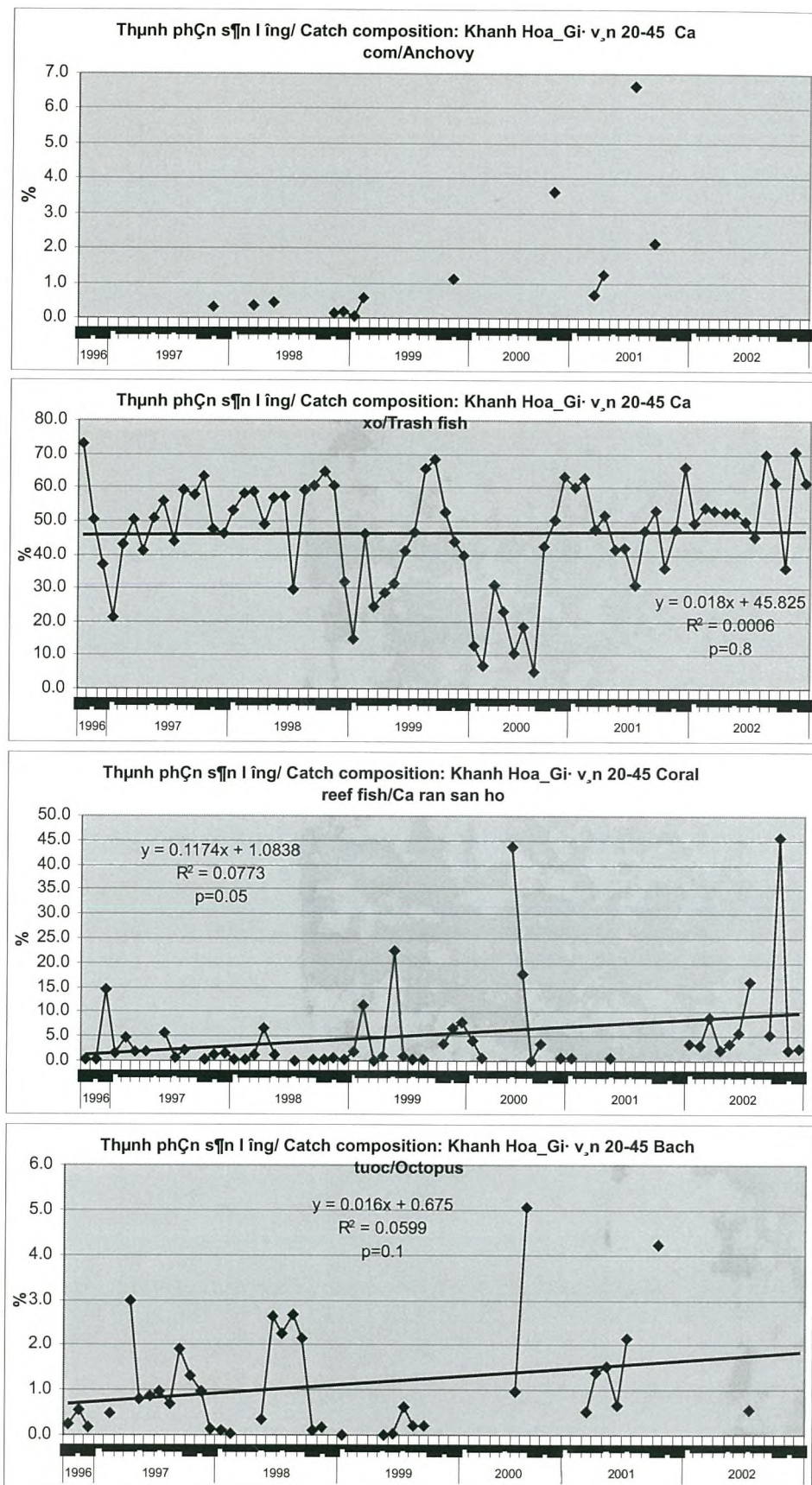


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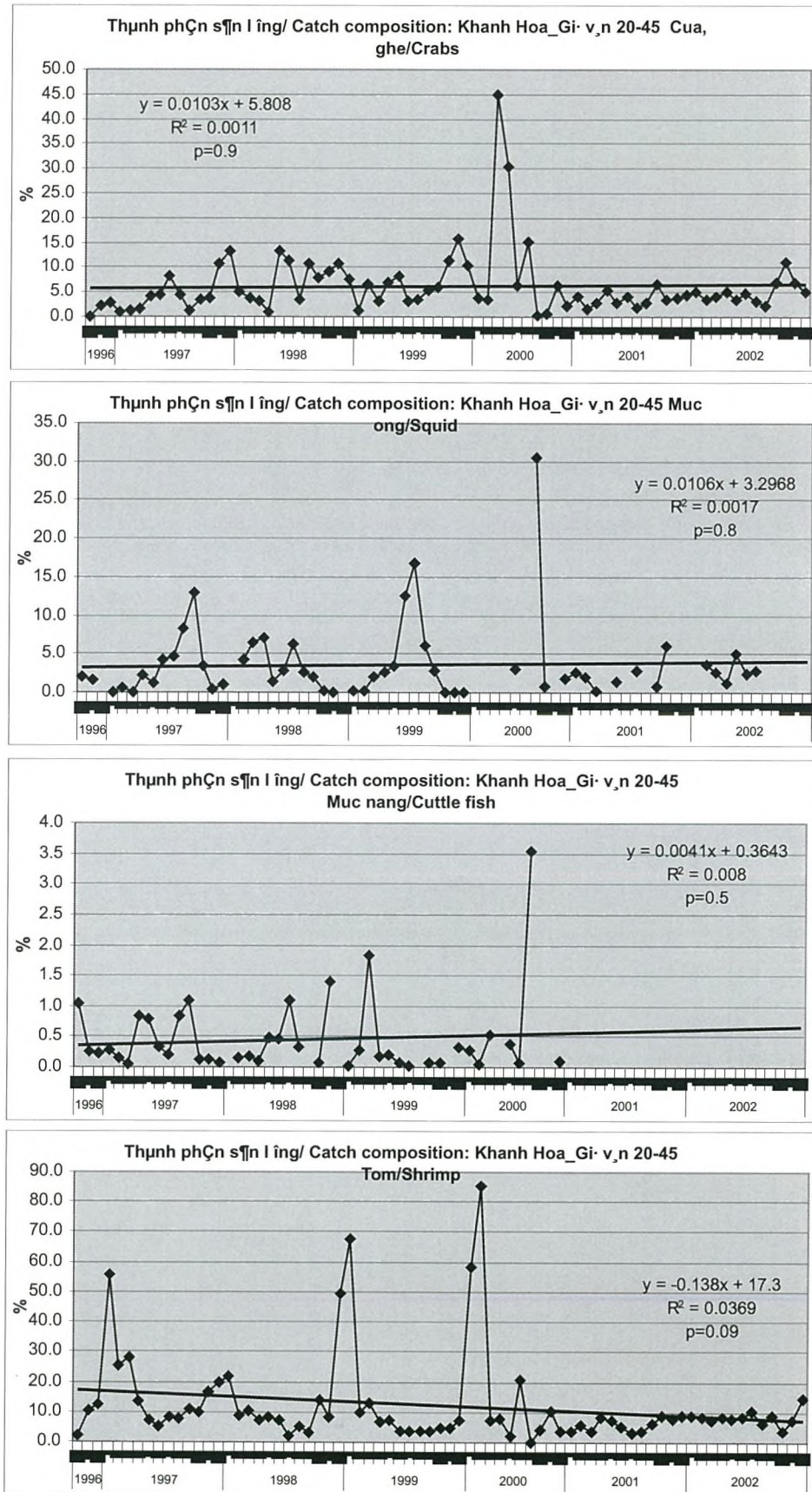


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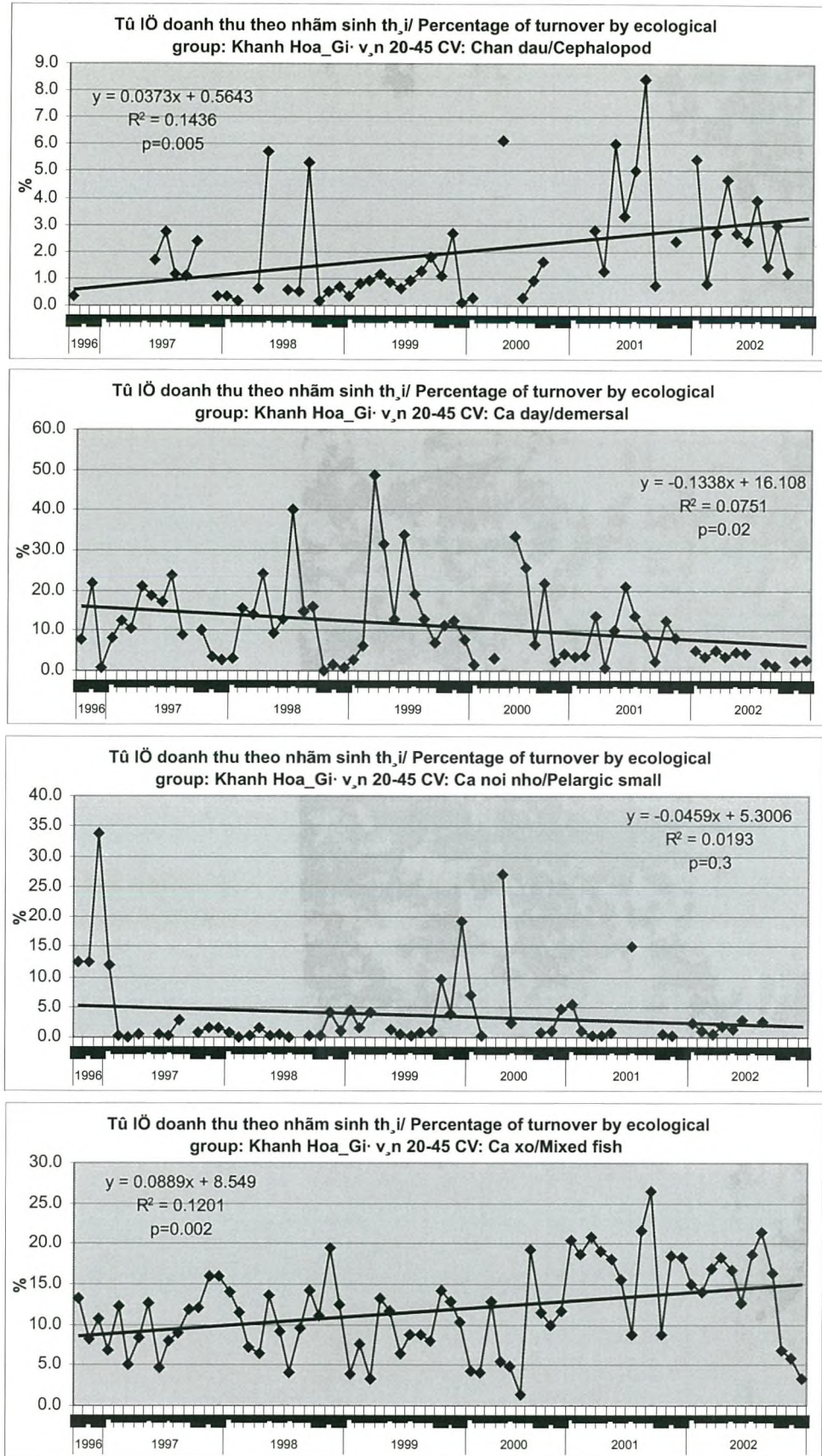


Figure 10: Indicator on proportion of turnover by ecological groups for Otter trawl 20-45 HP in Khanh Hoa

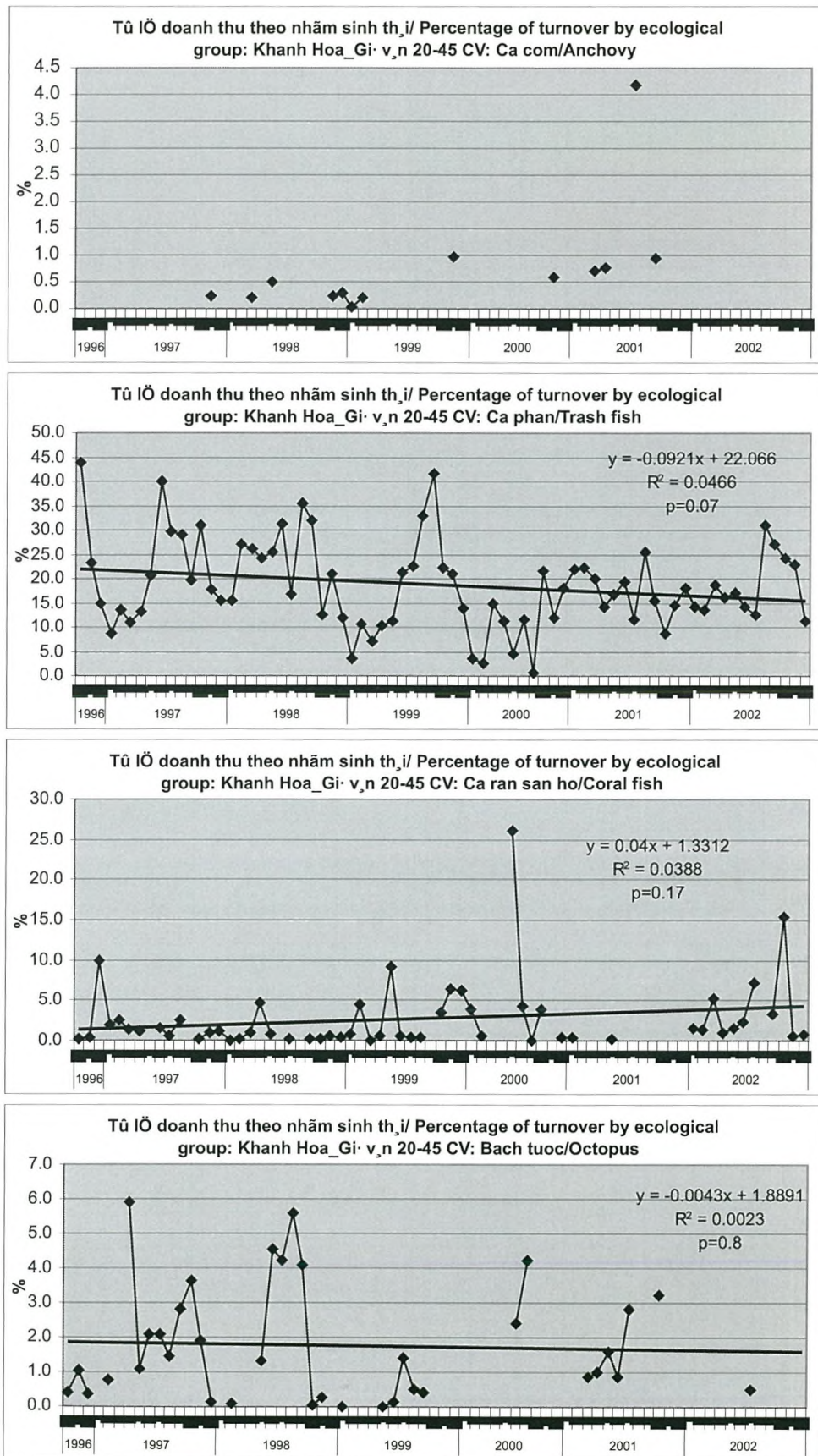


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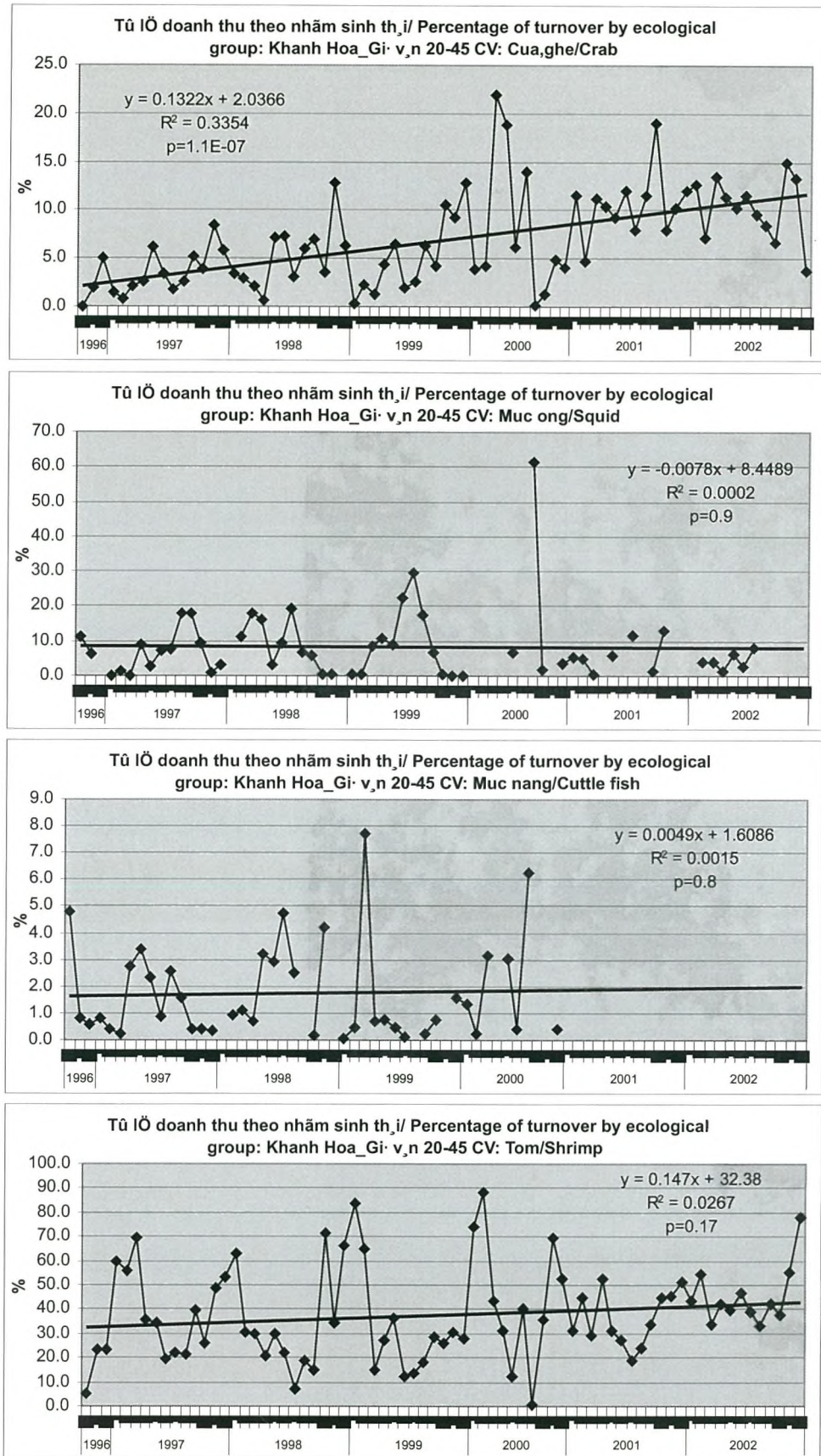


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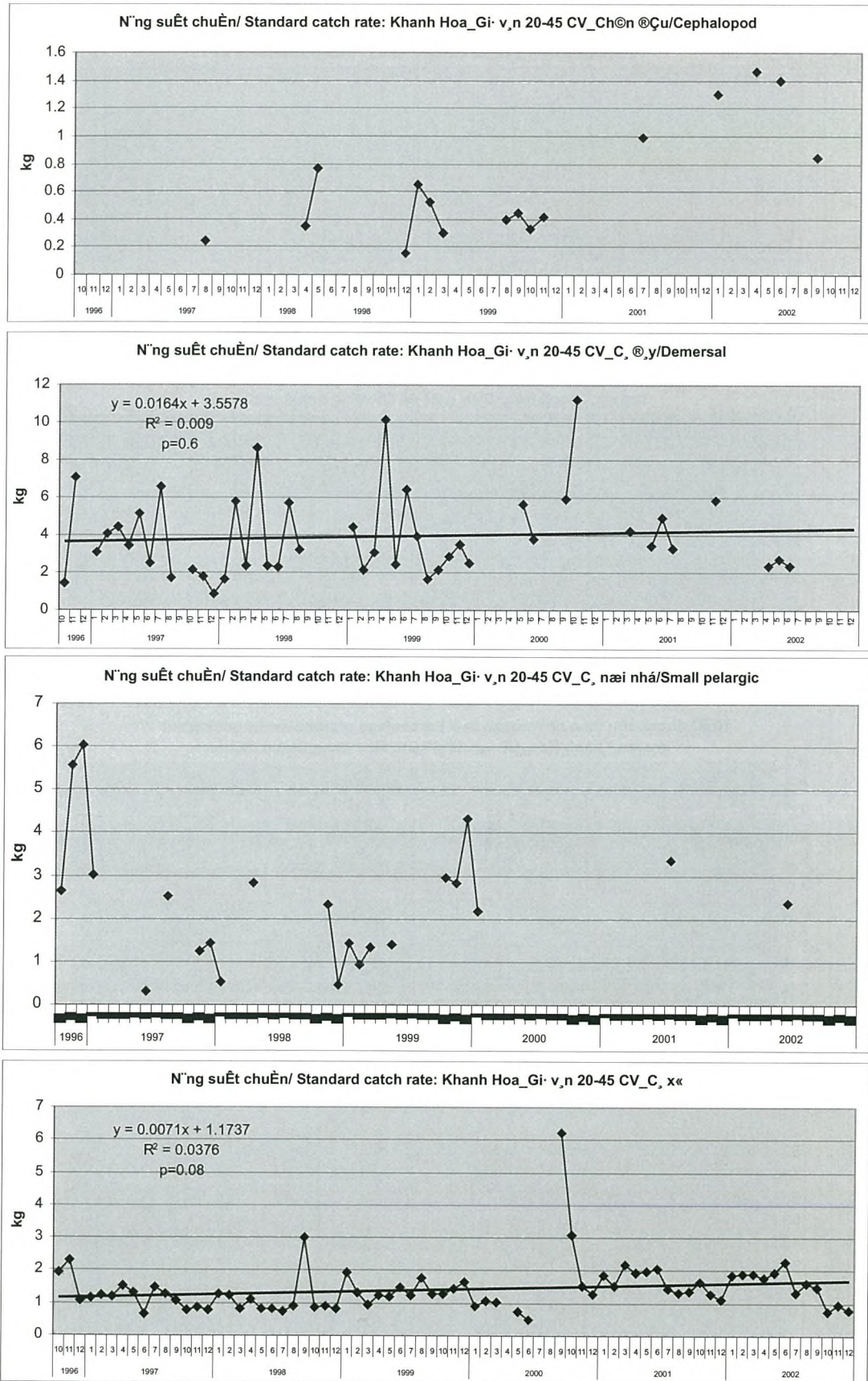


Figure 11: Indicator on mean standard catch rate (kg/hour) by ecological groups for Otter trawl 20-45 HP in Khanh Hoa

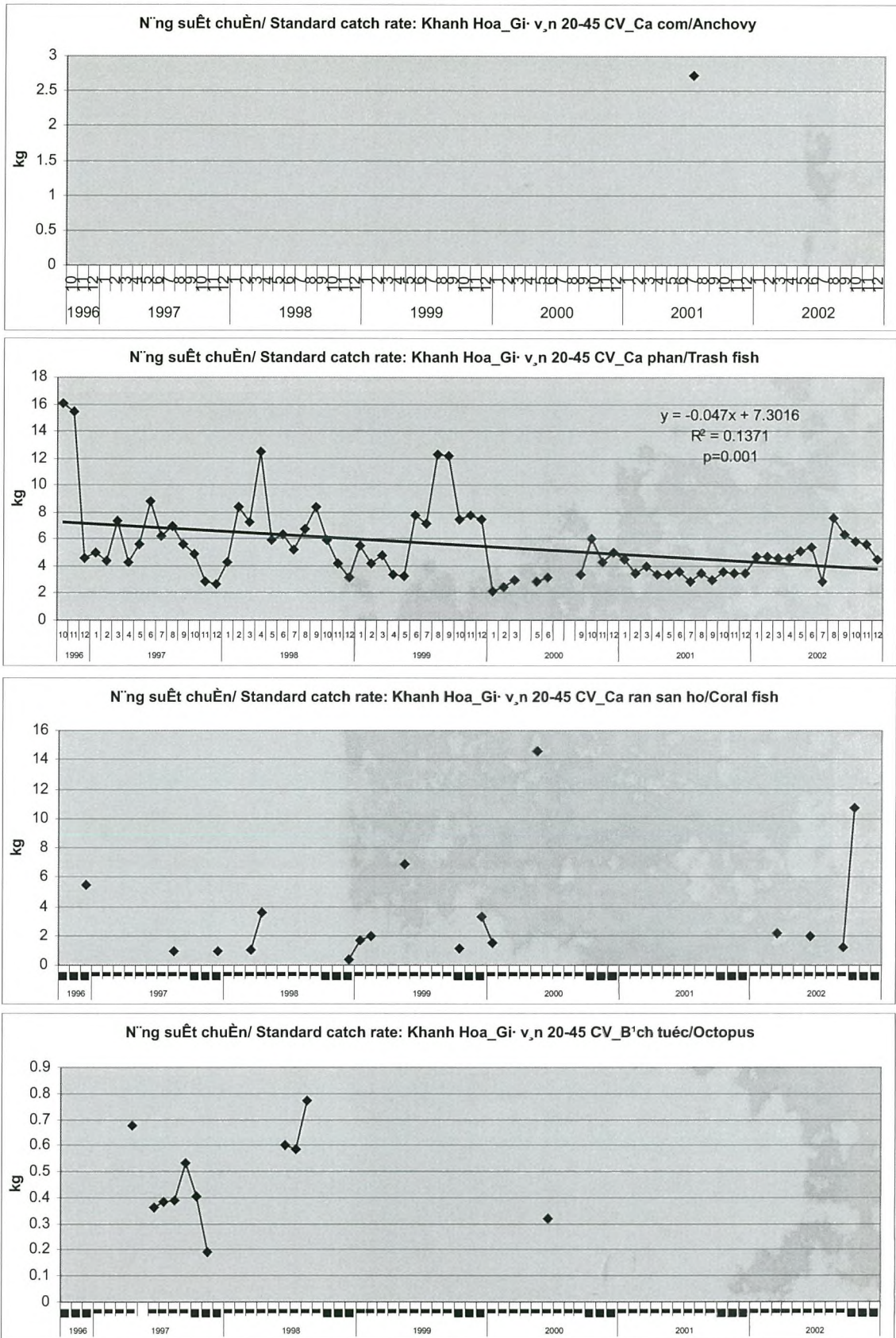


Figure 11: continue

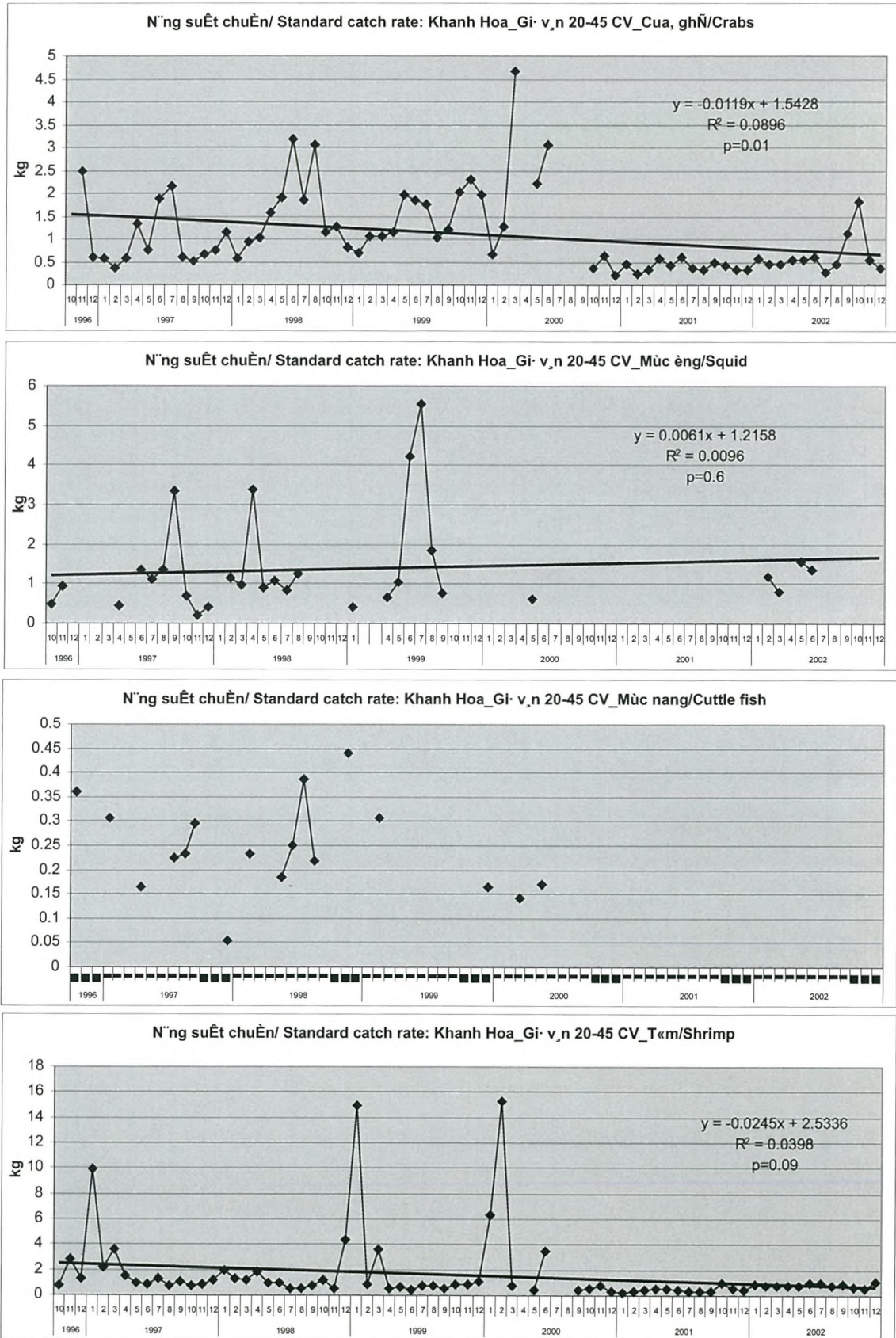


Figure 11: continue

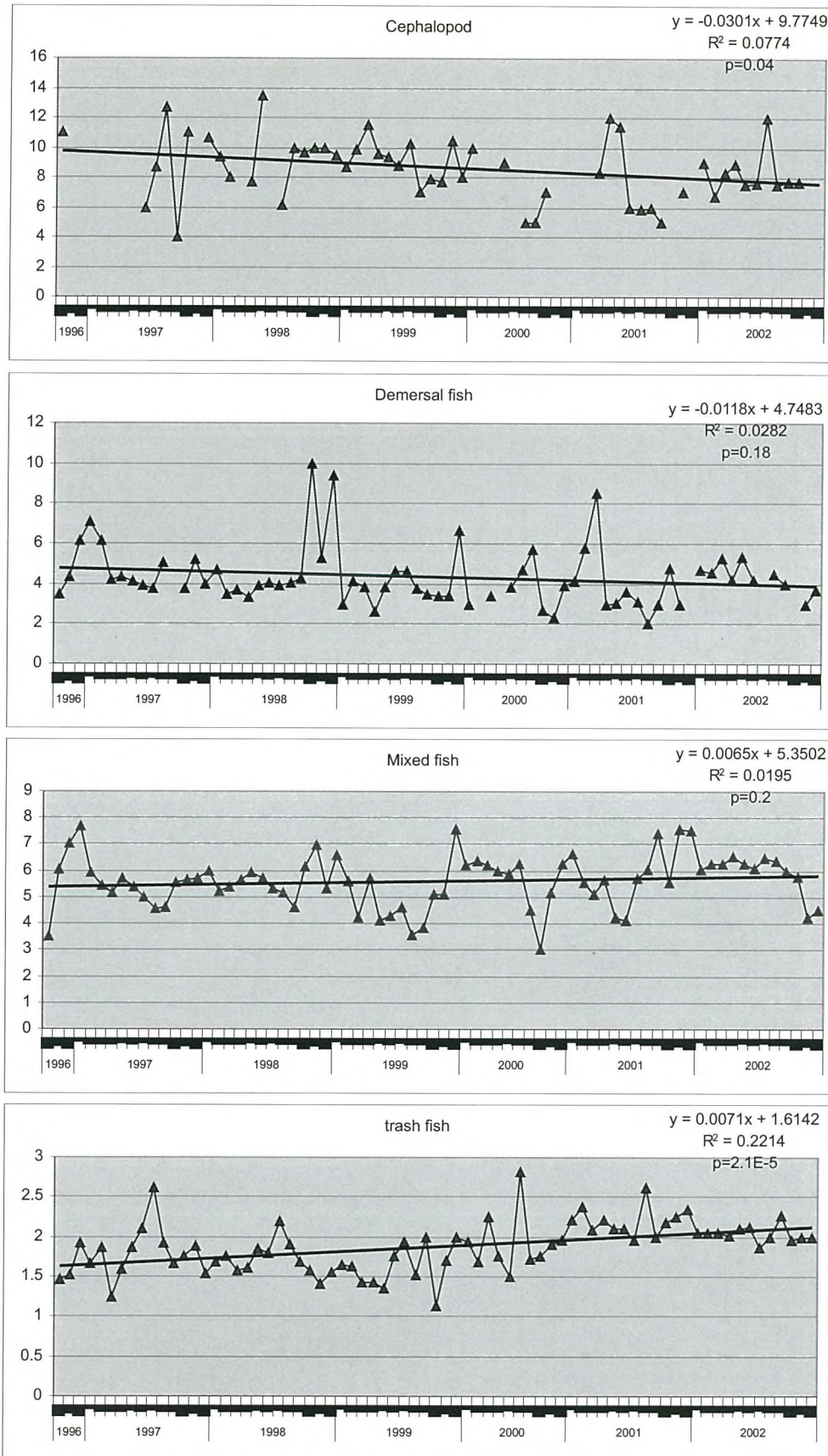


Figure 12: Mean price in VND/kg for some ecological groups for Otter trawl 20-45 HP in Khanh Hoa

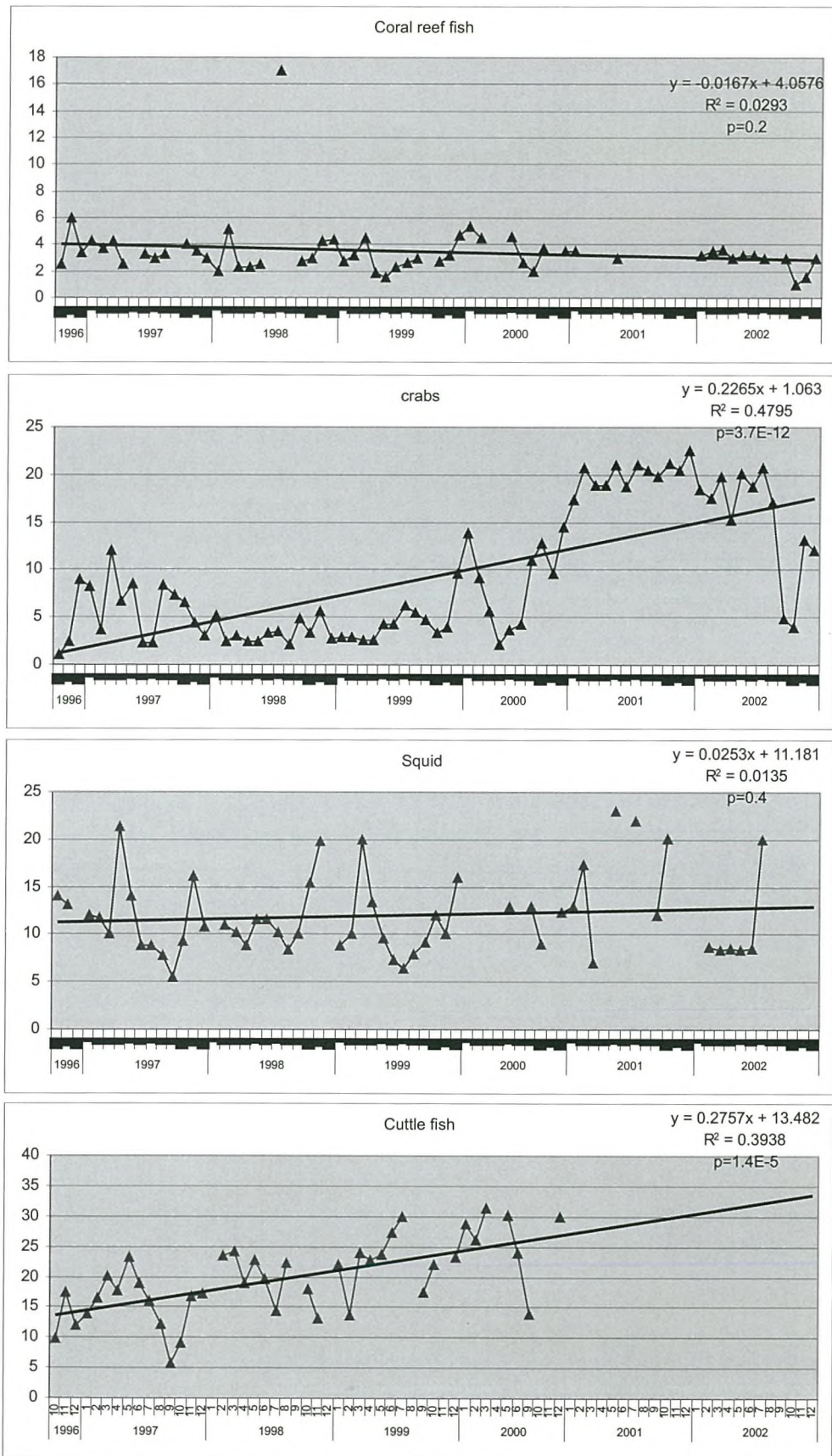


Figure 12: continue

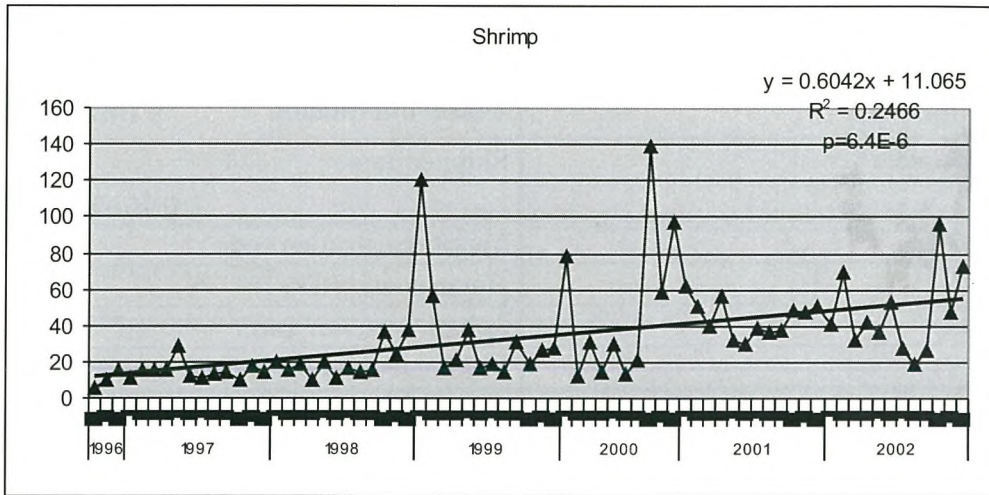


Figure 12: continue

Appendix 1: Interview Form

Questionnaire No. 1

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General information	Vessel information
Sampling Province :	Skipper name :
Enumerator :	
Sampling data :	Vessel registration code :
Sample No :	Horse power (HP) :
Landing data :	Length of vessel (m) :
Landing place :	Fishing days in the last month :

Trip information	Cost of trip (1000 VND)
Number of crew :	Fuel (only this trip):
Fishing ground : <input type="checkbox"/> not known <input type="checkbox"/> out of map	Bait :
Fishing depth (m) :	Storage cost :
Target species :	Provision for the crew
Length of trip (days) :	Small repair
Non-active days during this trip :	Salary
Number of haul :	Others (Fee, ... (clarify))
Duration of the haul (hour) :	.....
Fishing time : (day/night/day & night)	.....

Gear						
Name of gear		Total length (m)	Mesh size (2a) (mm)	Number of gear	No. of hooks/line	Height of gear (m)
Gill net	Drift net			.....	.....
	Stationary net			.....	.....
	Trammel net			.....	.....
Trawl	Pair trawl	L _{Load rope}	in cod end :		.....	.....
	Otter trawl	L _{Load rope}	in cod end :		.....	.....
	Beam trawl	L _{Load rope}	in cod end :		.....	.....
Purse seine	Purse seine		in cod end :	.....	.....
	Anchovies p.s.		in cod end :	.....	.....
	A.D./use light		in cod end :	.....	.....
Lines	Long line		.....	.....		L _{Hanging line}
	Fish hand line	.....	.....	Number of lines :		.....
	Squid hand line	.....	.....	Number of lines :		.....
Stick held falling net	Circuit of the opening :			.....	.....
Lift net	Area (m ²)			.....	.....	.....
Portable Lift net	The wing spread :			.....	.....	.....
Dredging for clam	Length of steel frame:	.....		.....	.....	Height of steel frame:
Stow net	Length of steel frame:	in cod end :		Number of net:	.....	.....

