

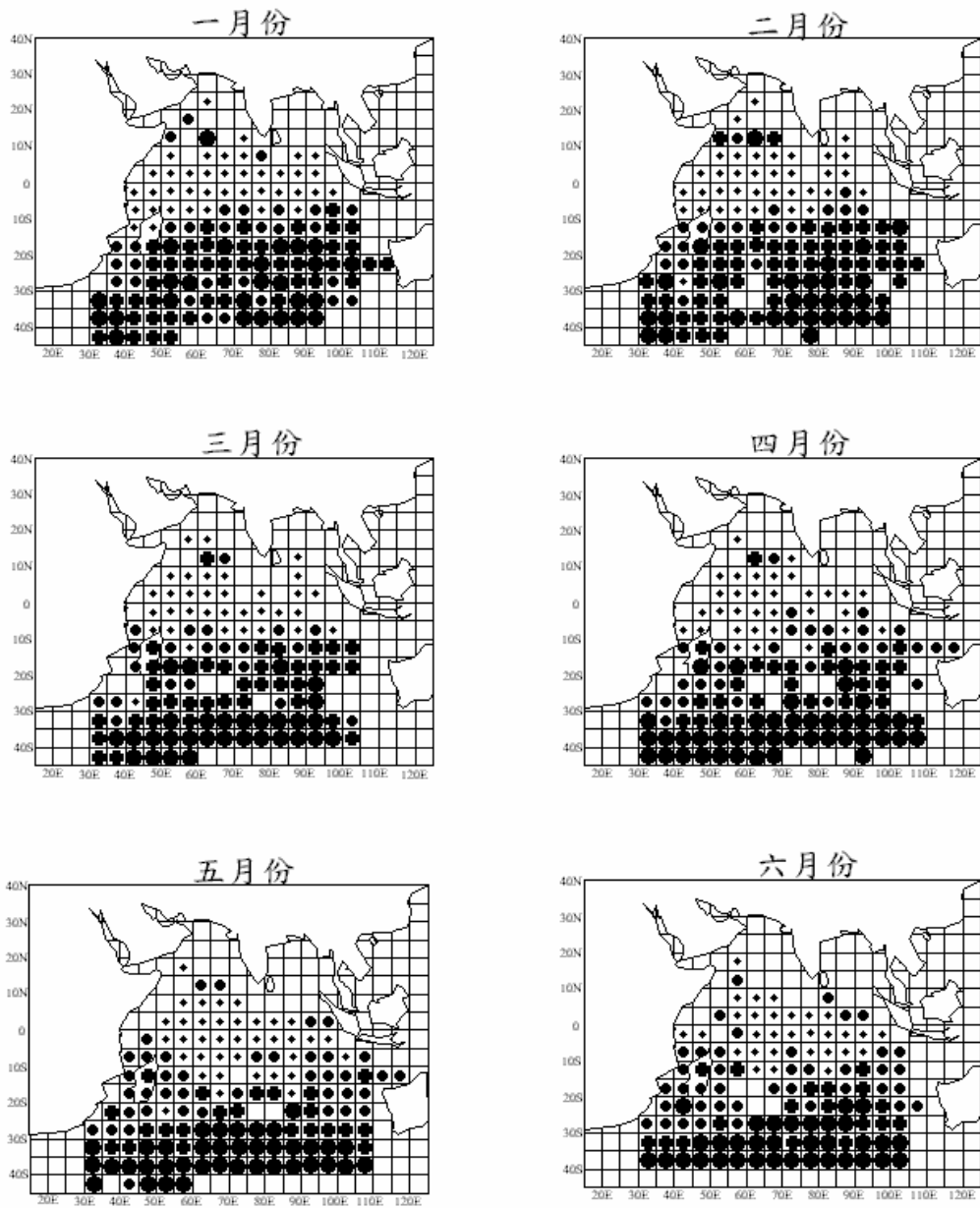
The seasonal distribution of Indian albacore

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Abstract

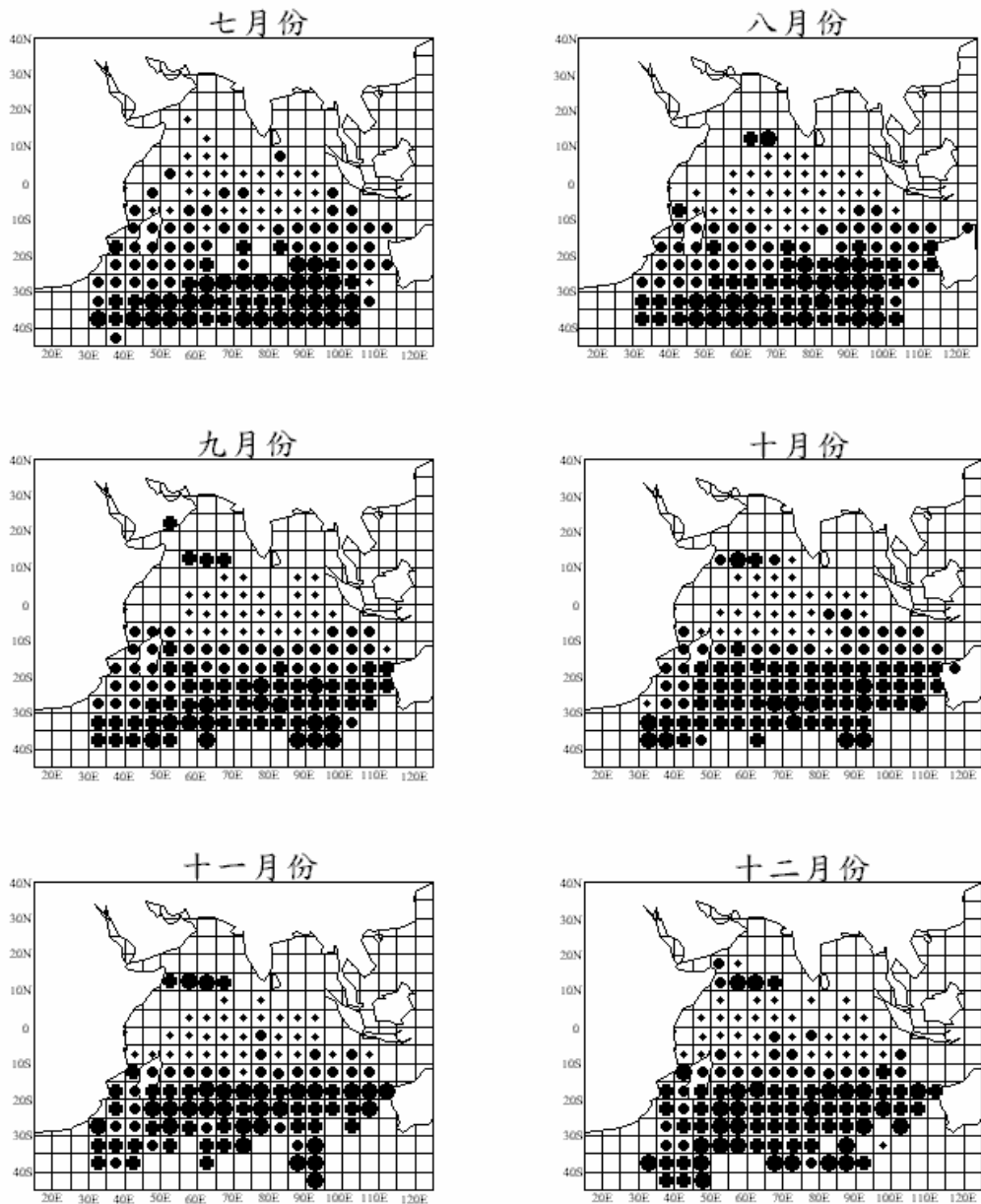
The Indian albacore has been commercially exploited by longline fisheries and others since 1960's. Based on the catch statistics of Taiwanese longliners operated in the Indian Ocean dating back to 1979, it is found that the albacore catch were made mainly between Lat. 10° S~45° S. Although the fishing efforts were distributed almost the entire Indian Ocean, higher CPUE normally occurred in the south of Lat. 10° S, particularly between Lat. 15° S~40° S. The areas with higher CPUE were also found to shift seasonally. Higher CPUE was widely distributed in the Ocean during the period of January-March, thereafter it shifted southward and was restricted in the area of Lat. 25° S~40° S. From October onwards, higher CPUE started to shift northwards until the beginning of the following year. The length distribution of Indian albacore revealed that larger fish tends to appear in the north part of Indian Ocean, while smaller fish were likely limited in the area south of Lat. 25° S. Based on an age-length-key transformation, age groups of the Indian albacore were segregated. It was found that fish younger than 3 years old were restricted in the south of Lat. 25° S all year round. Monthly distribution pattern were observed for the fish above age 3. The elder fish were widely distributed in the Indian Ocean in the first season (Jan.-Mar.). From April or so, they shifted southward and concentrated in the area of Lat. 25° S~40° S. In the period of October to December, they were mainly found the area between Lat.15° S and Lat. 25° S. The differences in the seasonal distribution pattern suggest that the albacore at varied stages of their life span may prefer waters with particular features, such as favorable water temperature, abundant food source, and possibly suitable environment for their spawning purposes.



1979-2002 CPUE (No. /Hooks*1000)

- >16
- 5-16
- 0.3-5
- ◆ <0.3

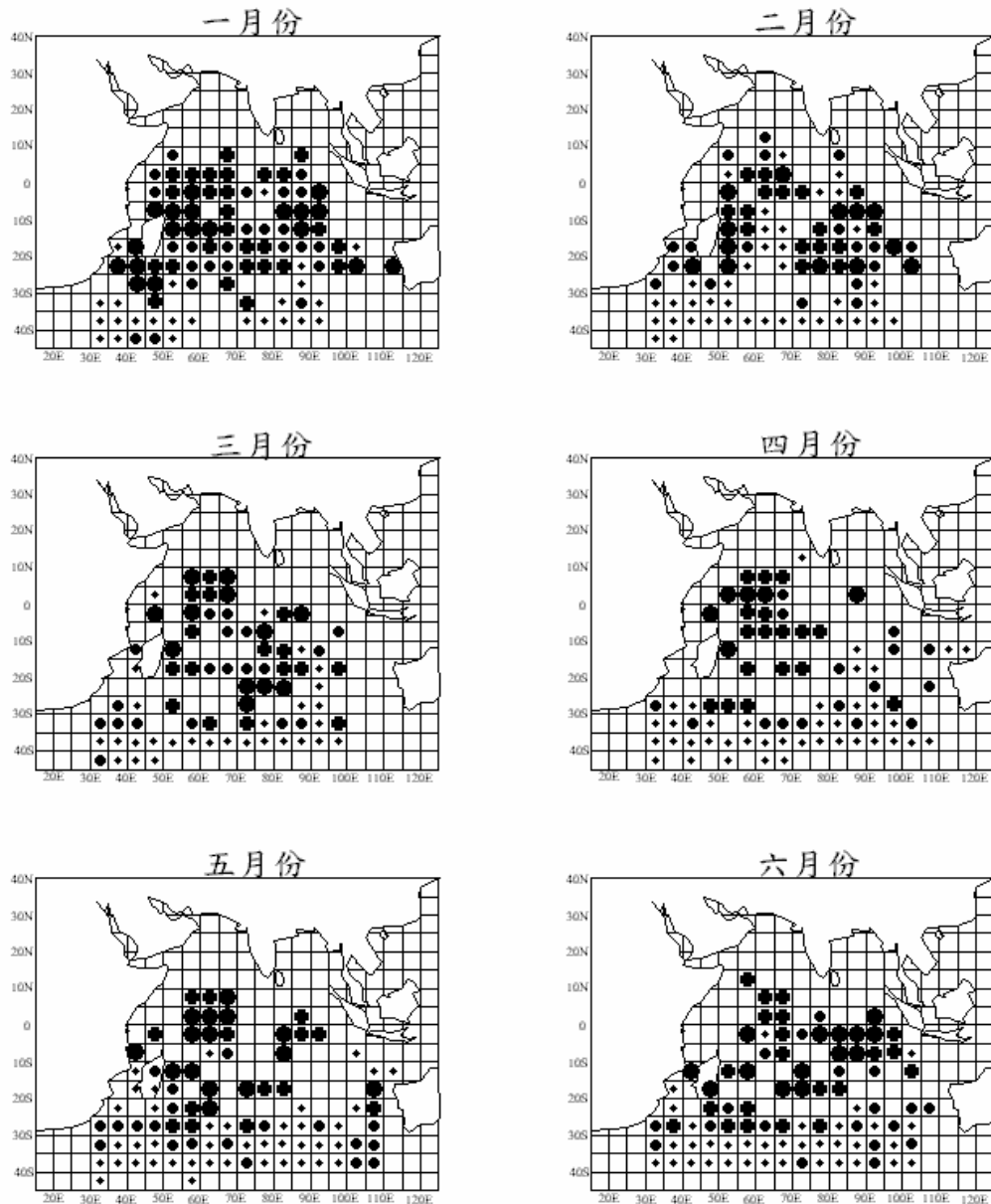
Fig.1. The monthly distribution of Indian albacore CPUE made by Taiwanese longline fishery,1979-2002.



1979-2002 CPUE (No./Hooks*1000)

- >16
- 5-16
- 0.3-5
- ◆ <0.3

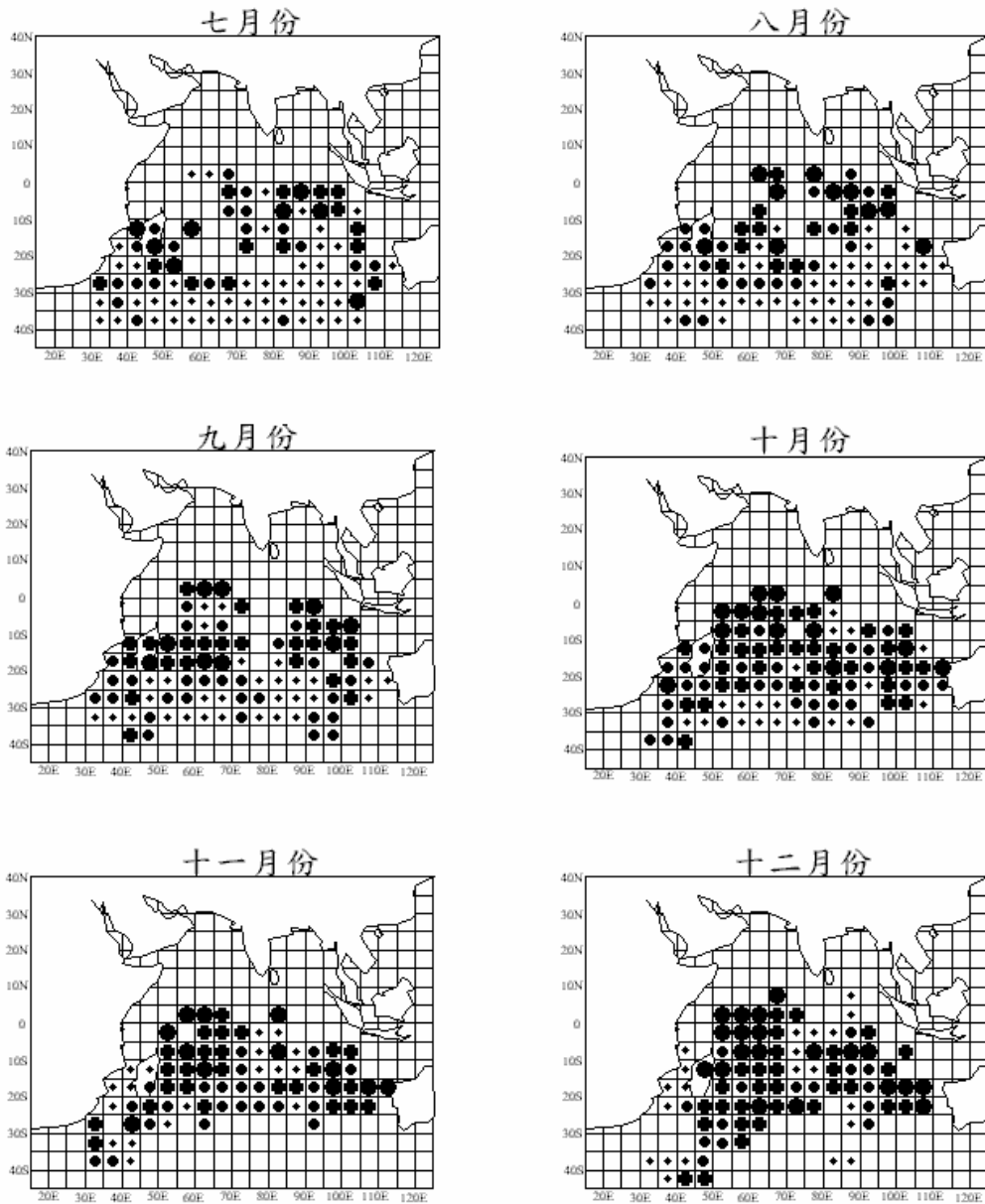
Fig.1. continued



1980~2002 平均體長(cm)

- >105
- 95~105
- 85~95
- <85

Fig 2. The monthly distribution of mean length of Indian albacore caught by Taiwanese longline fishery,1980-2002.



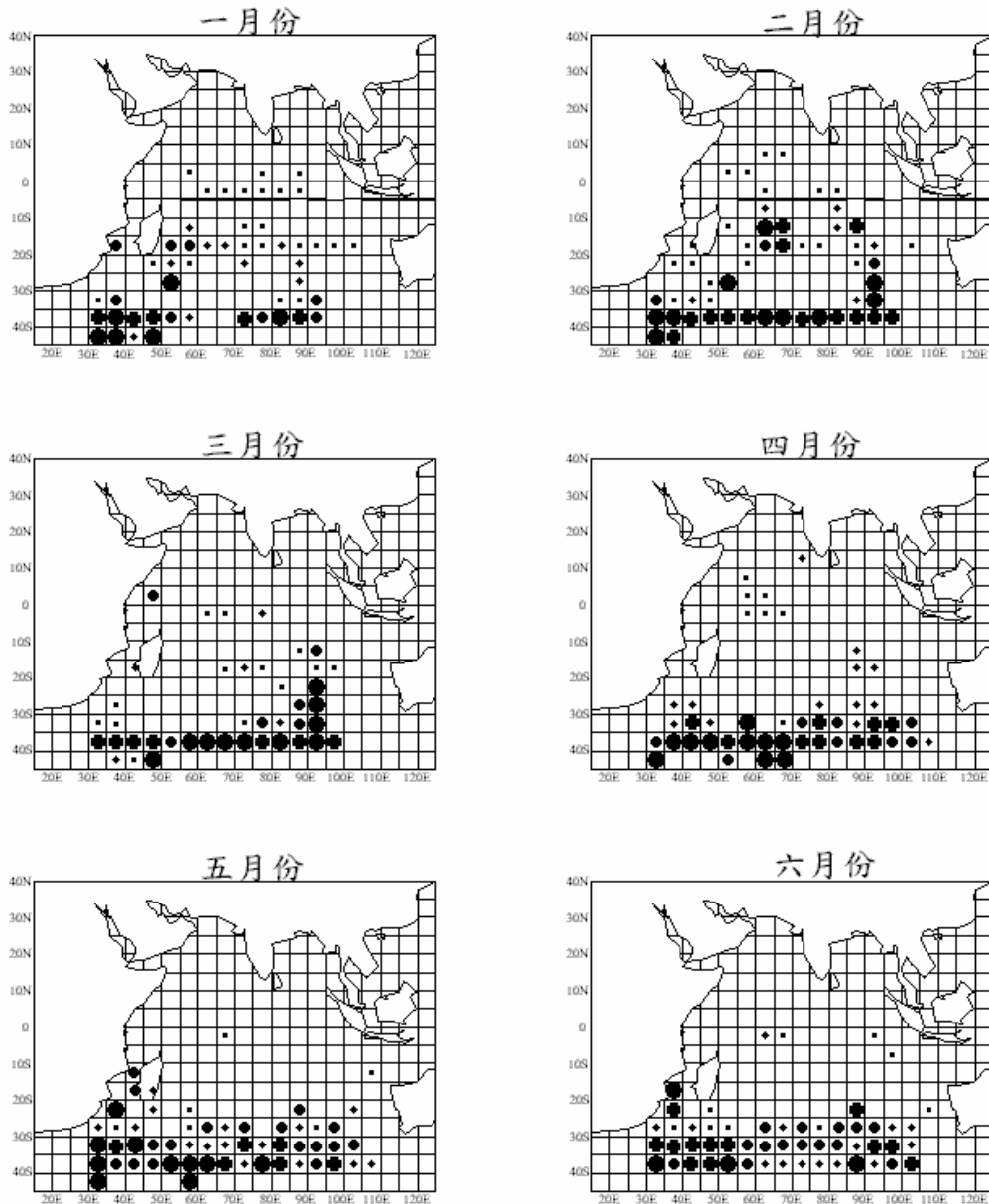
1980~2002 平均體長(cm)

- >105
- 95~105
- 85~95
- <85

Fig.2. continued

Table 1. The sampled length-at-age frequencies of albacore, *Thunnus alalunga*, in the Indian Ocean

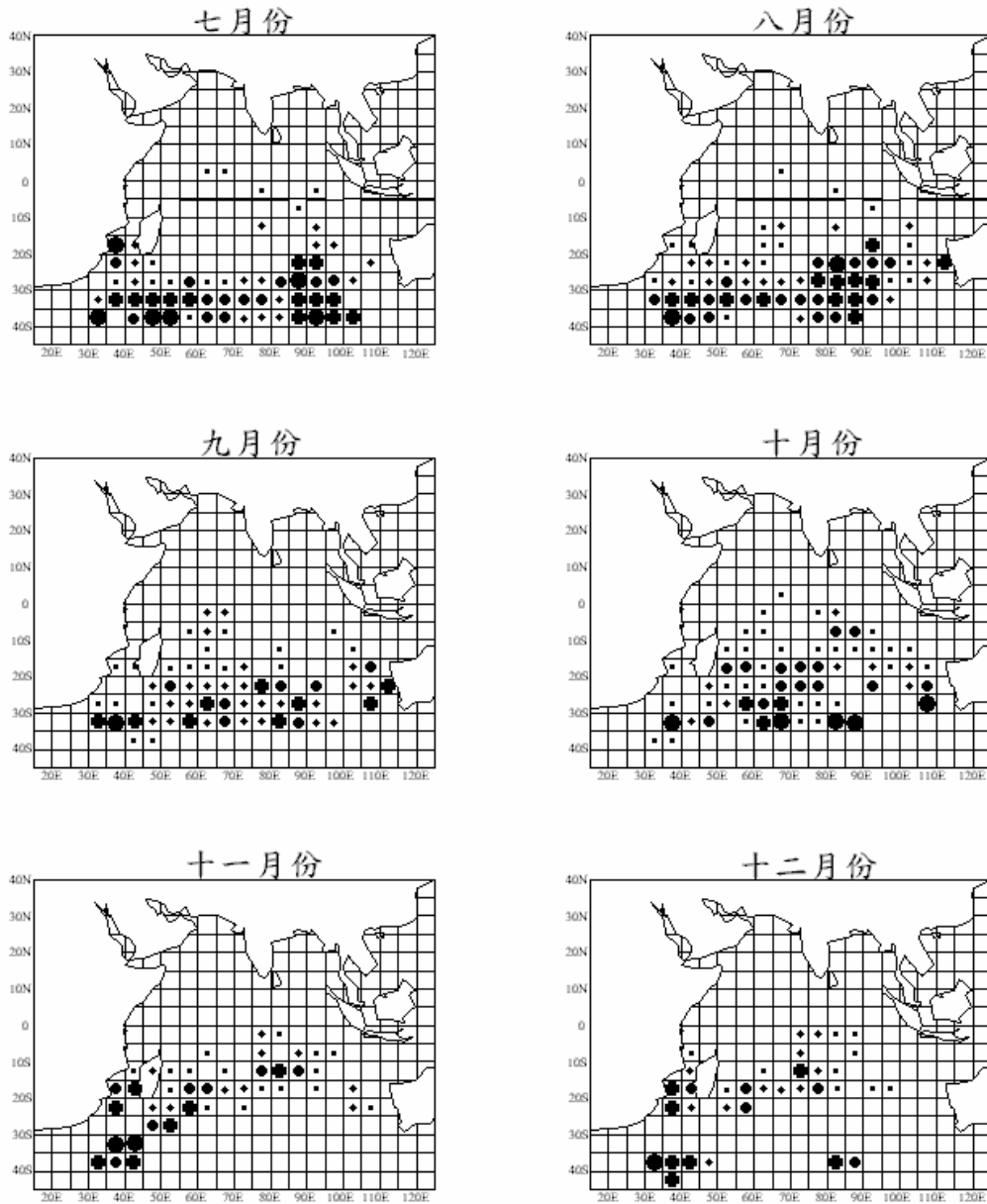
Length class (cm)	I	II	III	IV	V	VI	VII	VIII	IX	X	Sum
44-47	9										9
48-51	4	1									5
52-55		1									1
56-59	1	6									7
60-63		4									4
64-67		1	2	1							4
68-71		1	12	3							16
72-75			17	14	1						32
76-79			15	22	1						38
80-83			3	27	19						49
84-87			1	23	41						65
88-91			1	3	33	10	1				48
92-95					7	21	4				32
96-99					1	8	6				15
100-103						2	5	7			14
104-107						2	7	9			18
108-111							6	5	2	2	15
112-115							4	5	2	2	13
116-119								1	2	2	5
120-123										1	1
Sum	14	14	51	93	103	43	33	27	6	7	391



1980~2002小於三歲魚的CPUE(No./1000Hooks)

- >3.0
- 1.0~3.0
- 0.3~1.0
- ◆ 0.04~0.3
- <0.04

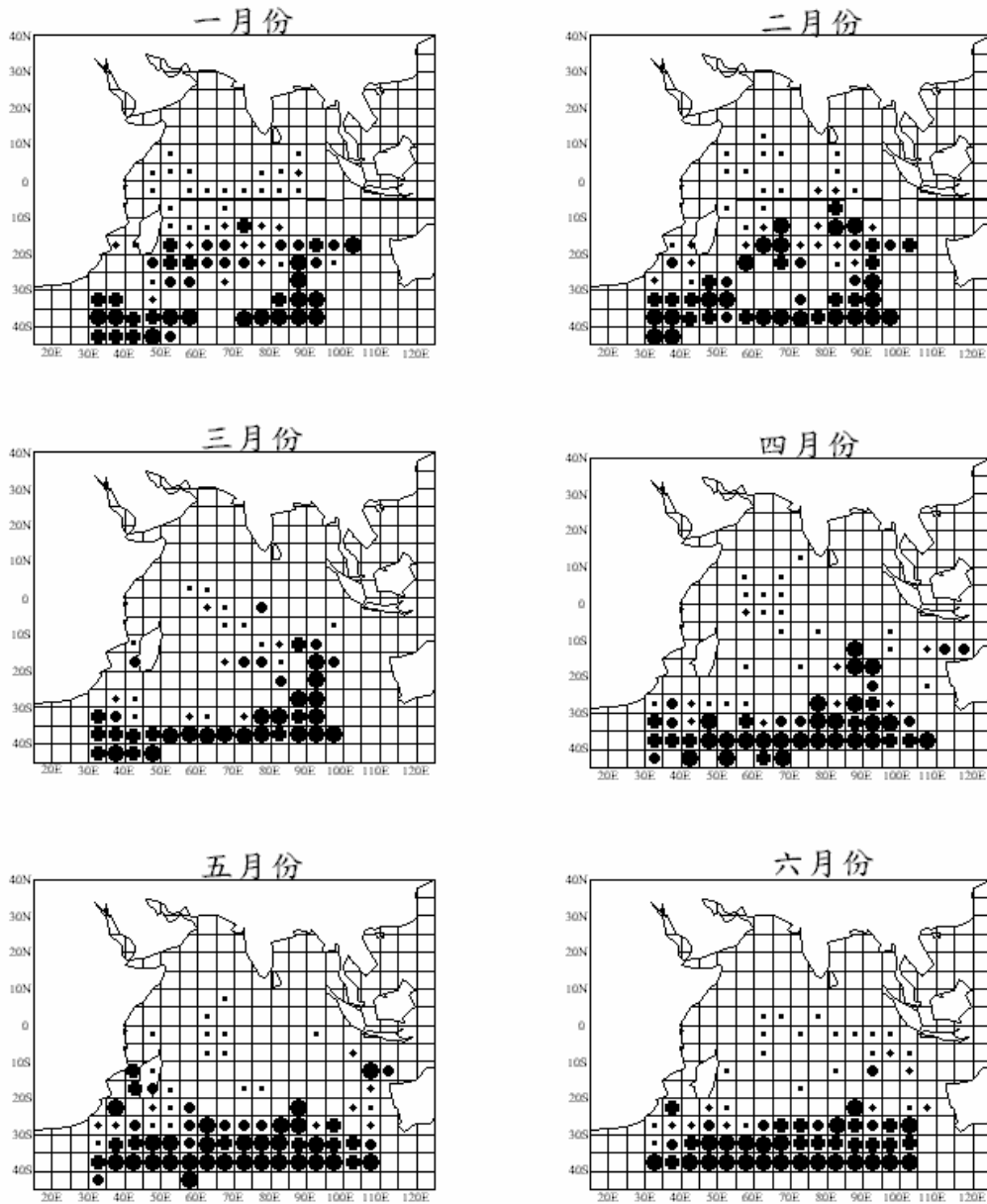
Fig.3. The monthly CPUE distribution of Indian albacore younger than 3 years old.



1980~2002小於三歲魚的CPUE(No./1000Hooks)

- >3.0
- 1.0~3.0
- 0.3~1.0
- ◆ 0.04~0.3
- <0.04

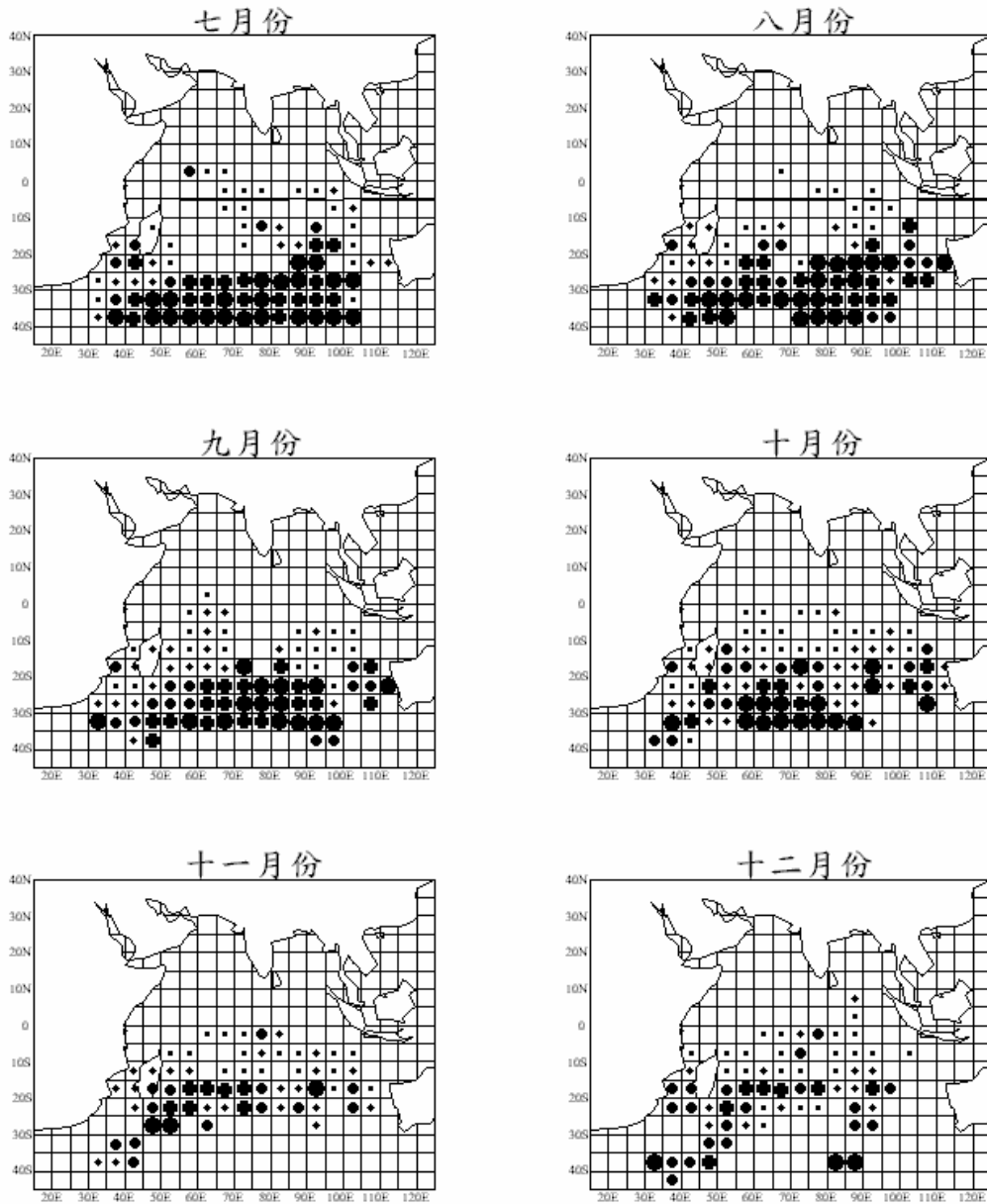
Fig.3. continued



1980-2002三歲魚的CPUE(No./1000Hooks)

- >3.0
- 1.0-3.0
- 0.3-1.0
- ◆ 0.04-0.3
- <0.04

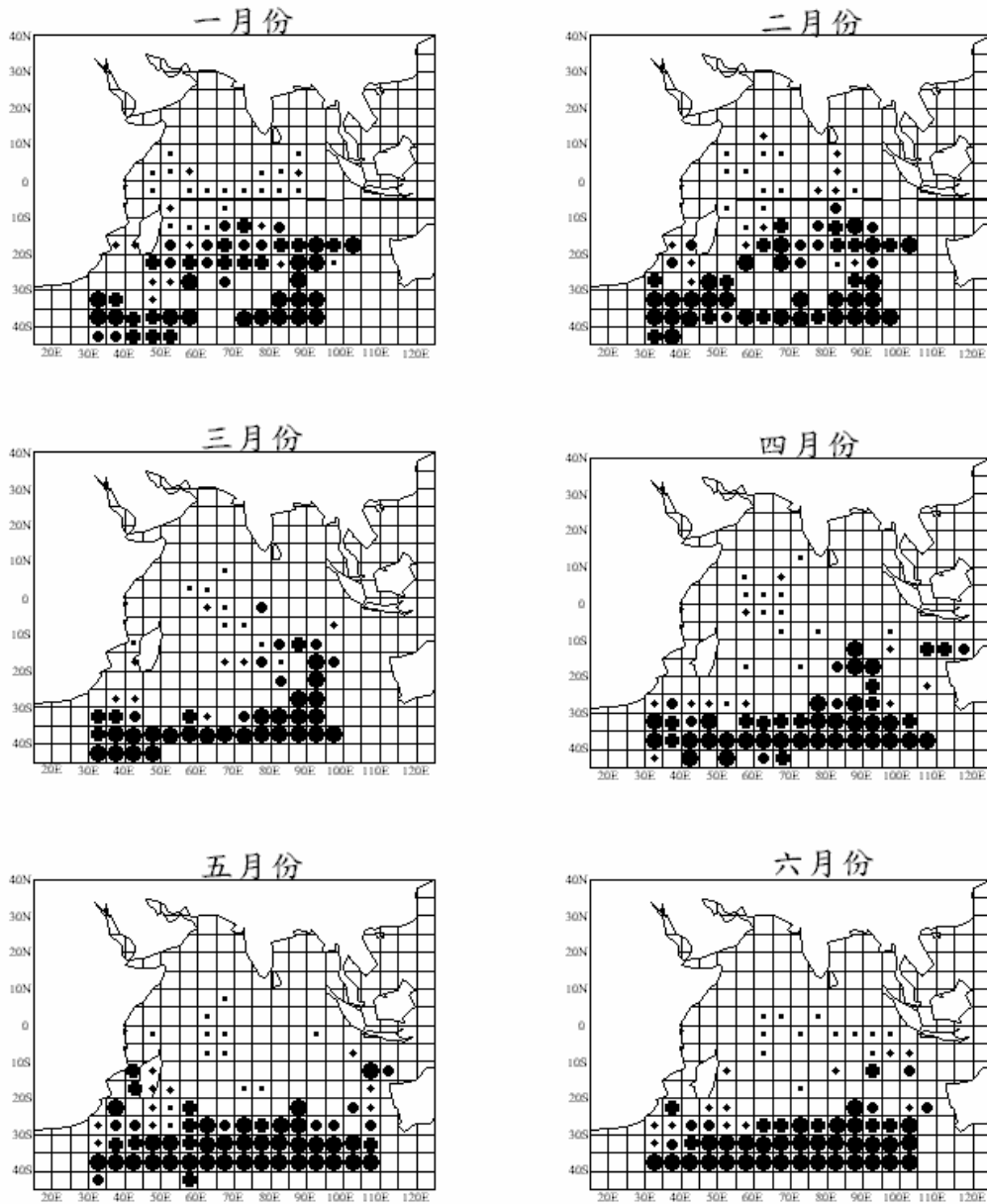
Fig.4. The monthly CPUE distribution of age 3+ Indian albacore.



1980-2002三歲魚的CPUE(No./1000Hooks)

- >3.0
- 1.0-3.0
- 0.3-1.0
- ◆ 0.04-0.3
- <0.04

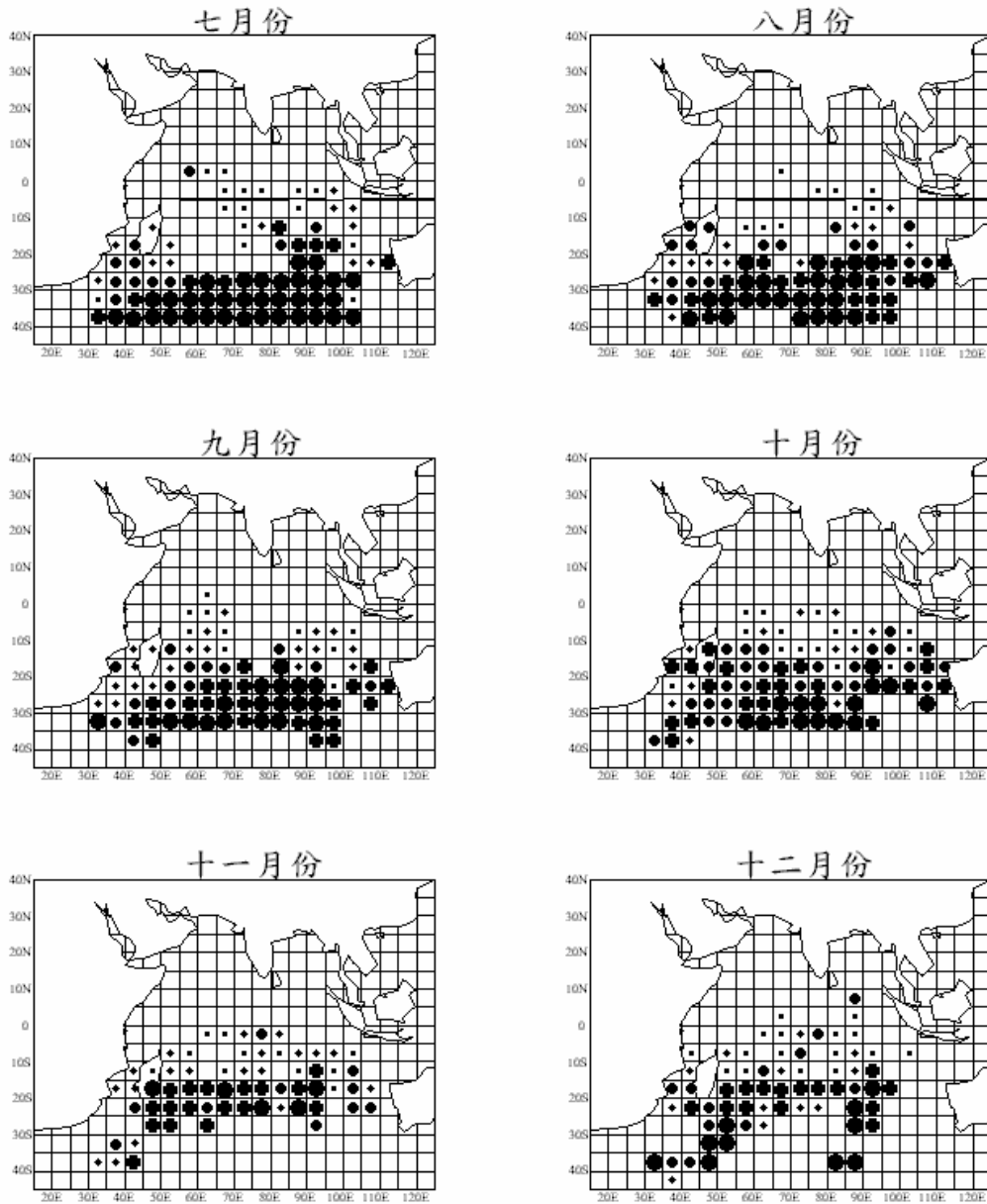
Fig 4. continued



1980-2002四歲魚的CPUE(No./1000Hooks)

- >3.0
- 1.0-3.0
- 0.3-1.0
- ◆ 0.04-0.3
- <0.04

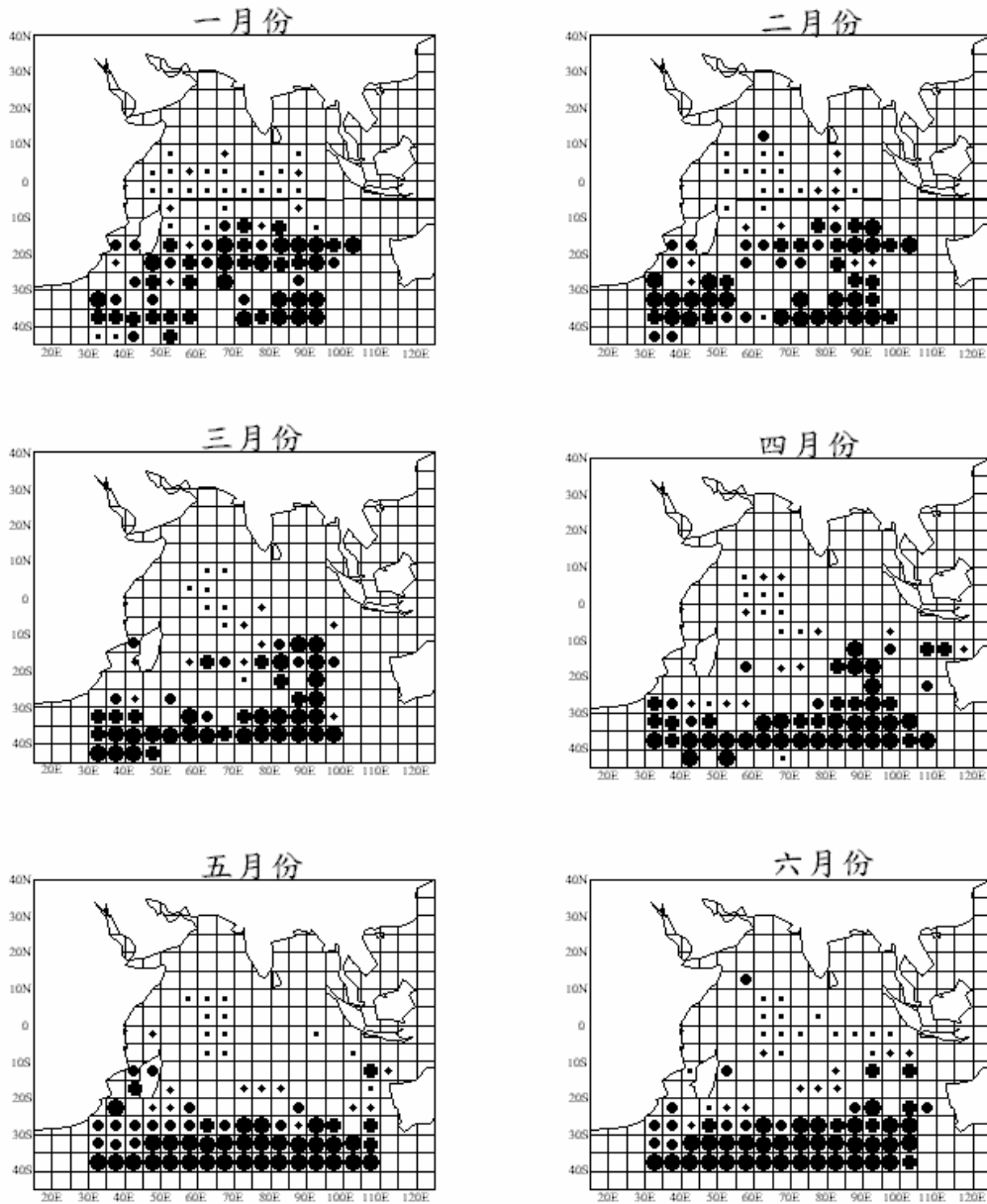
Fig.5. The monthly CPUE distribution of age 4+ Indian albacore.



1980-2002四歲魚的CPUE(No./1000Hooks)

- >3.0
- 1.0-3.0
- 0.3-1.0
- ◆ 0.04-0.3
- <0.04

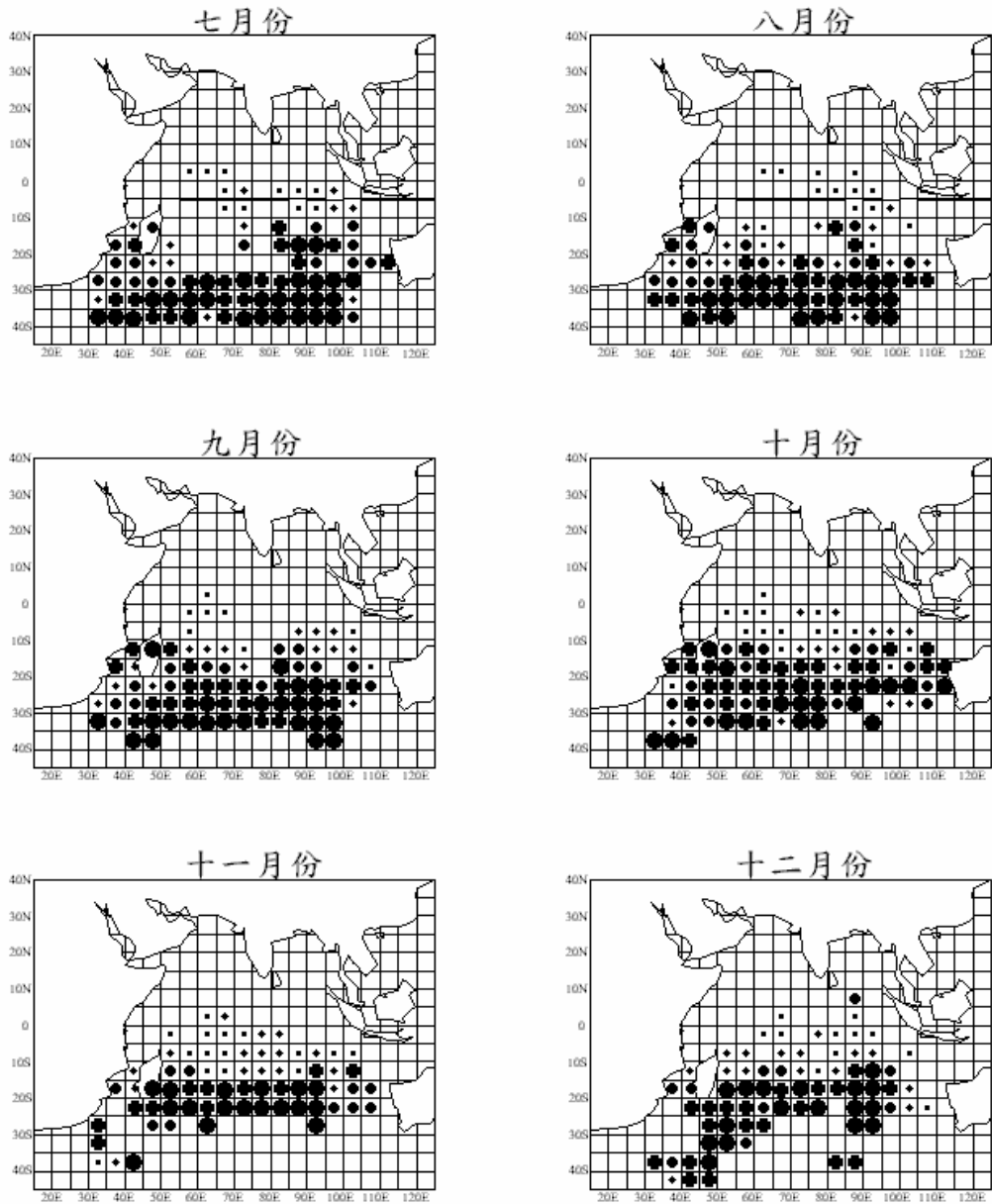
Fig.5. continued



1980-2002 五龄鱼的CPUE(No./1000Hooks)

- >3.0
- 1.0-3.0
- 0.3-1.0
- 0.04-0.3
- <0.04

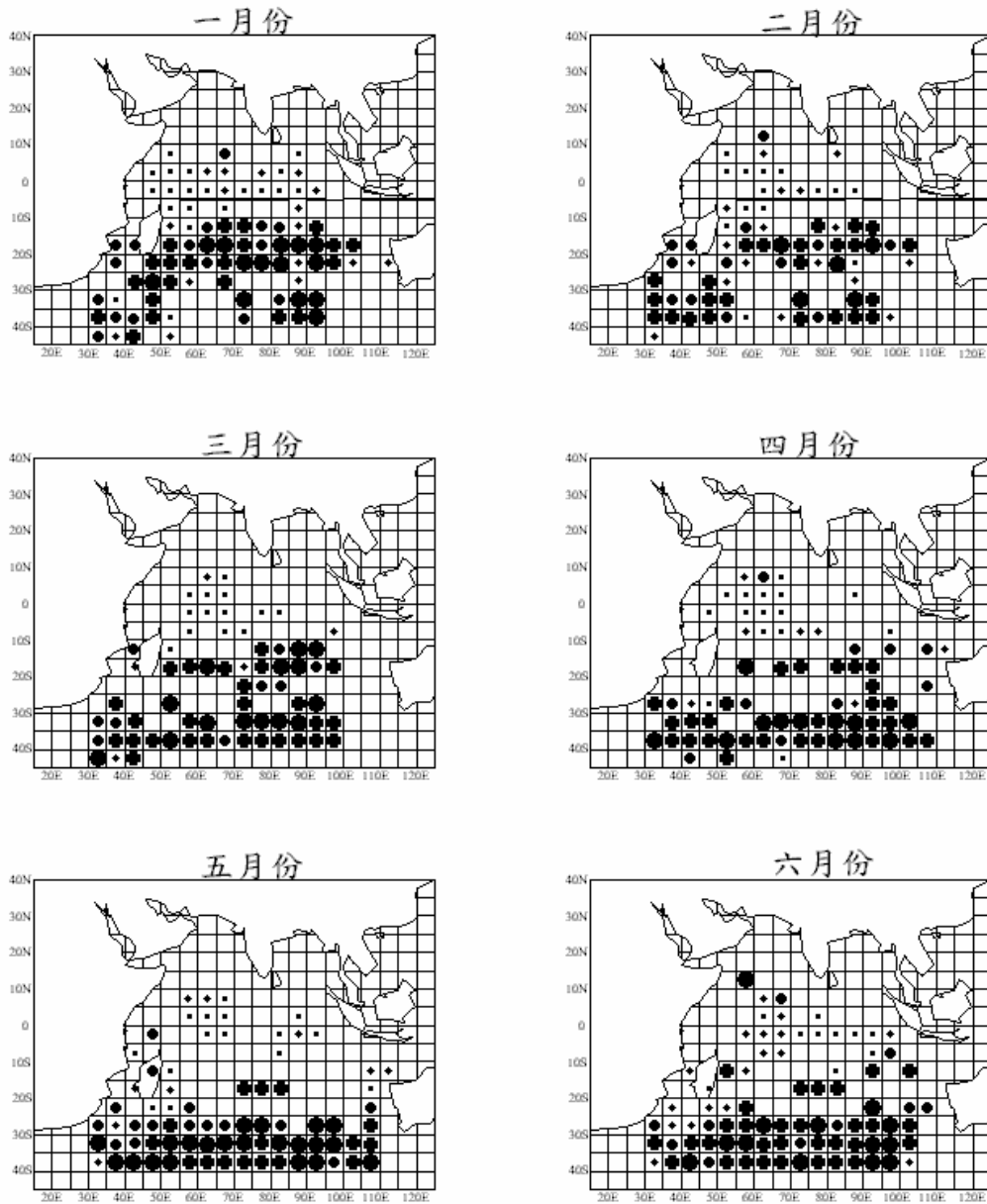
Fig 6. The monthly CPUE distribution of age 5+ Indian albacore.



1980-2002五龄鱼的CPUE(No./1000Hooks)

- >3.0
- 1.0-3.0
- 0.3-1.0
- ◆ 0.04-0.3
- <0.04

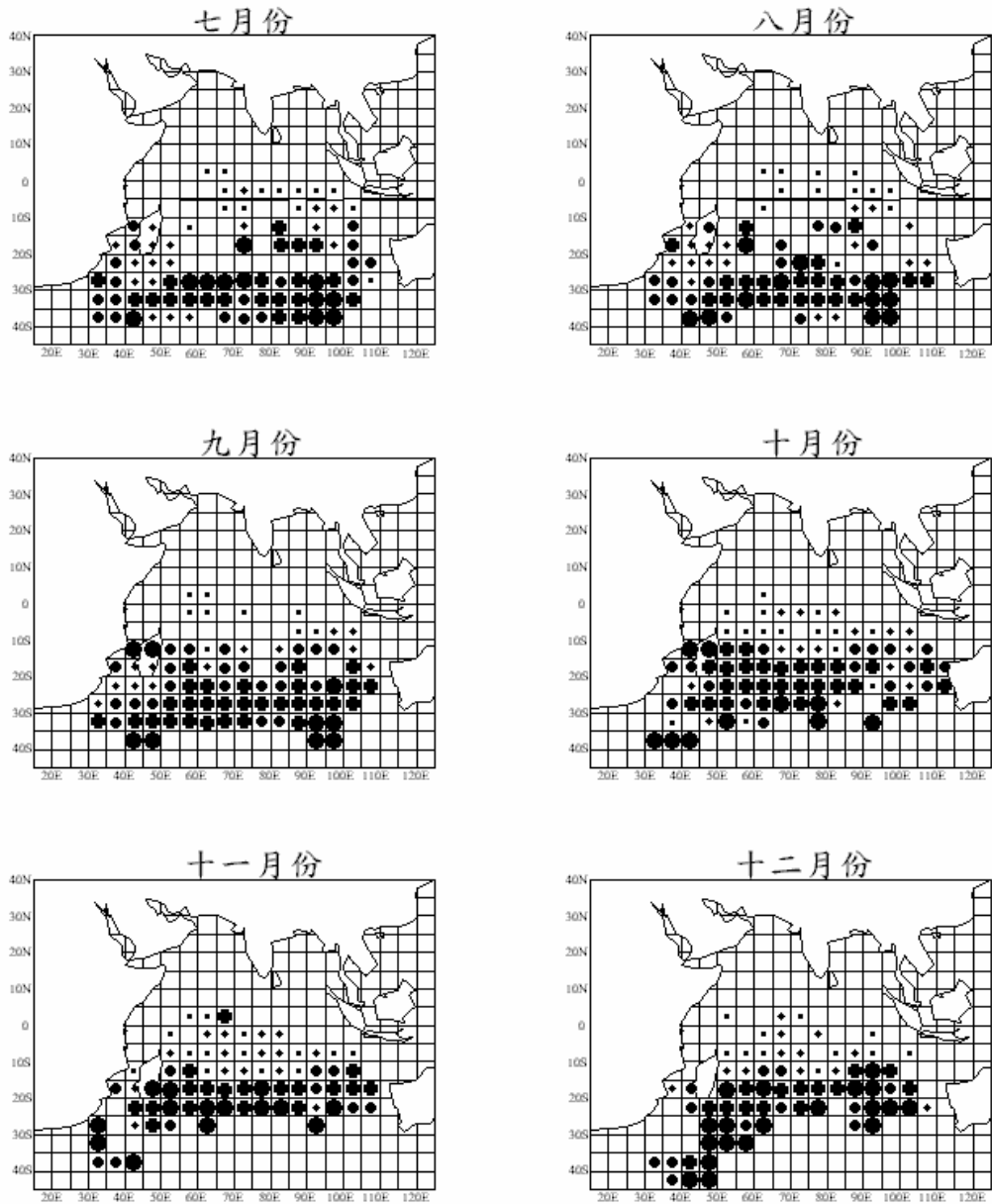
Fig 6. continued



1980-2002六歲魚的CPUE(No./1000Hooks)

- >3.0
- 1.0-3.0
- 0.3-1.0
- ◆ 0.04-0.3
- <0.04

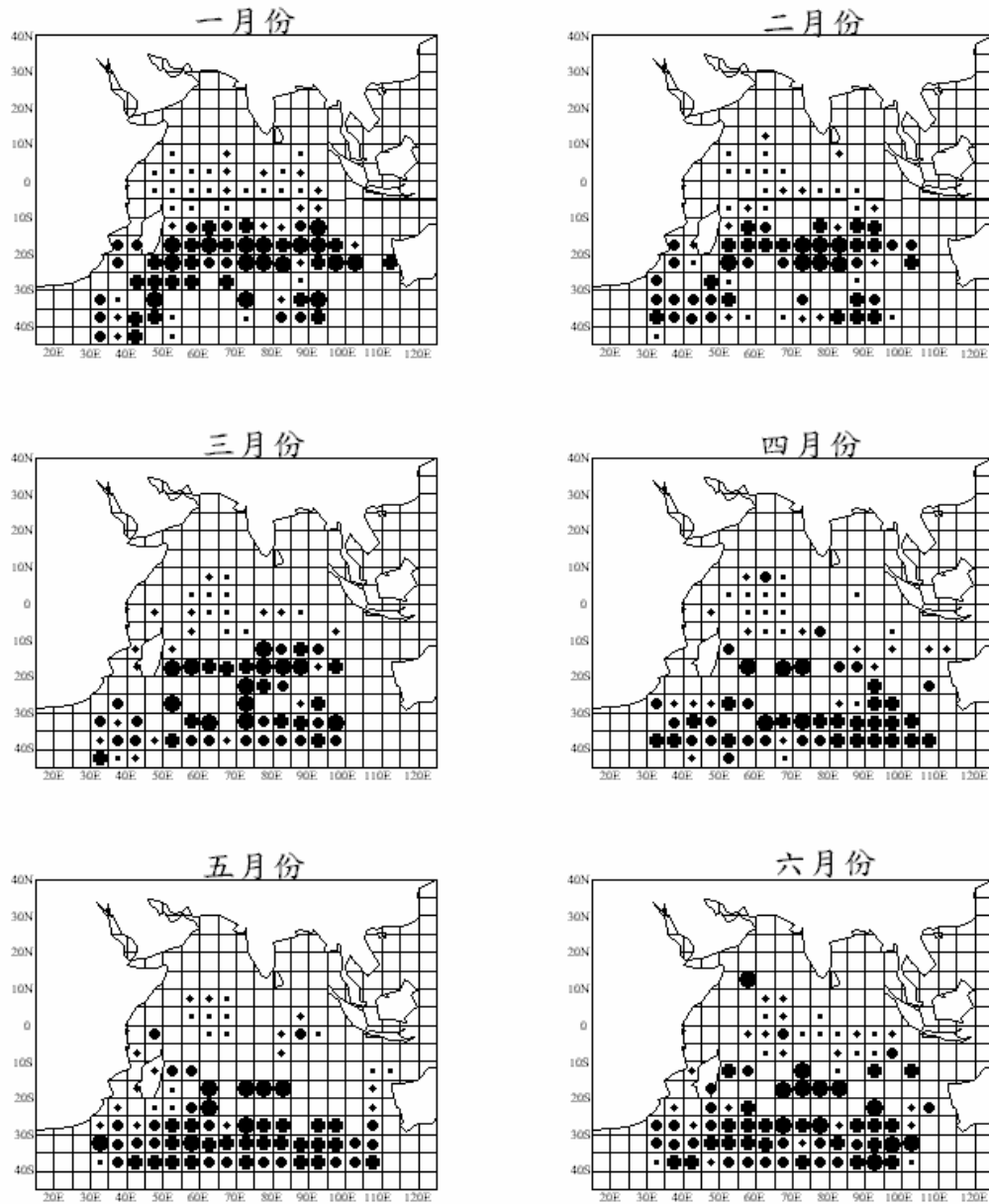
Fig.7. The monthly CPUE distribution of age 6+ Indian albacore.



1980-2002六歲魚的CPUE(No./1000Hooks)

- >3.0
- 1.0-3.0
- 0.3-1.0
- ◆ 0.04-0.3
- <0.04

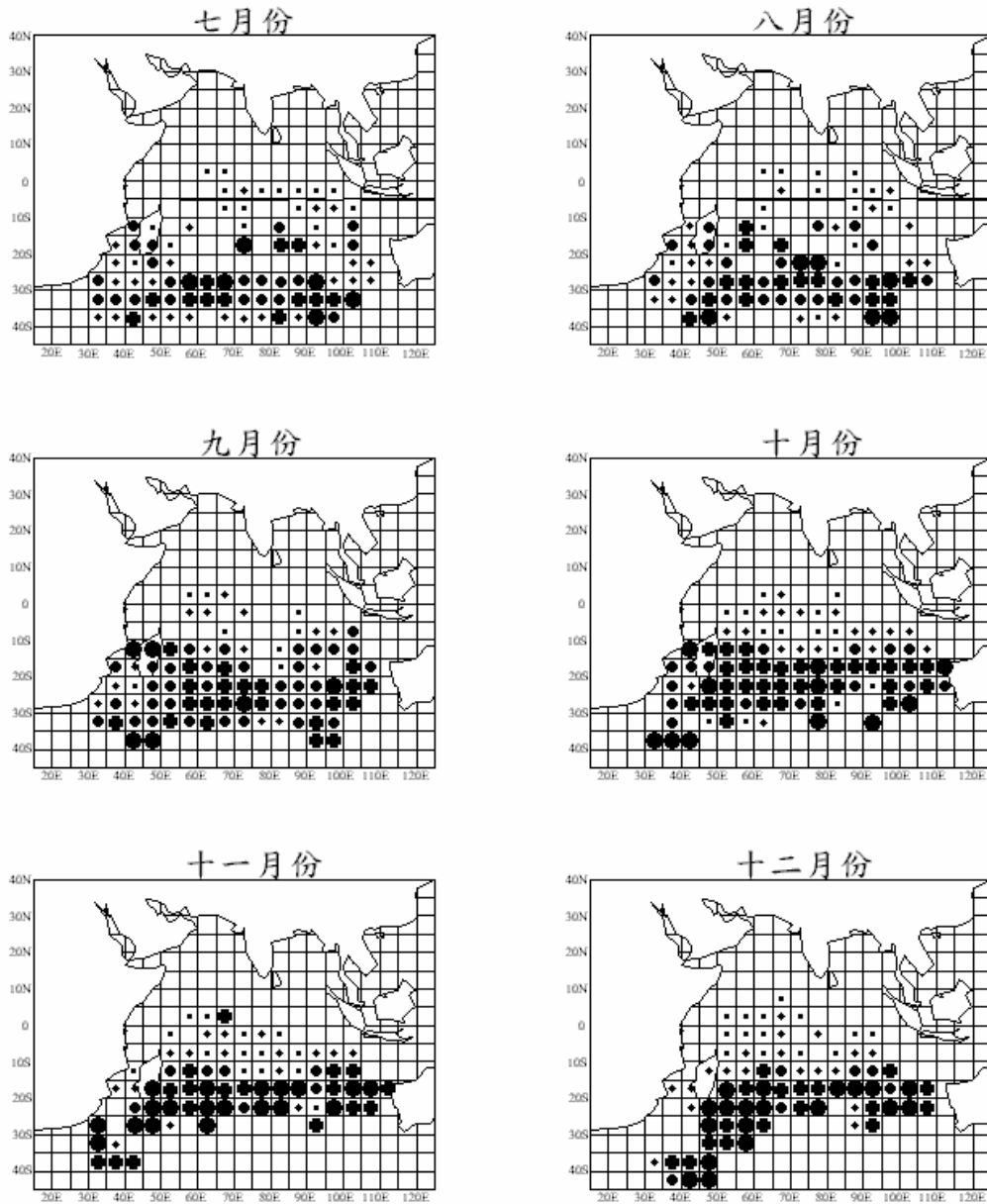
Fig.7. continued



1980-2002七歲魚的CPUE(No./1000Hooks)

- >3.0
- 1.0-3.0
- 0.3-1.0
- ◆ 0.04-0.3
- <0.04

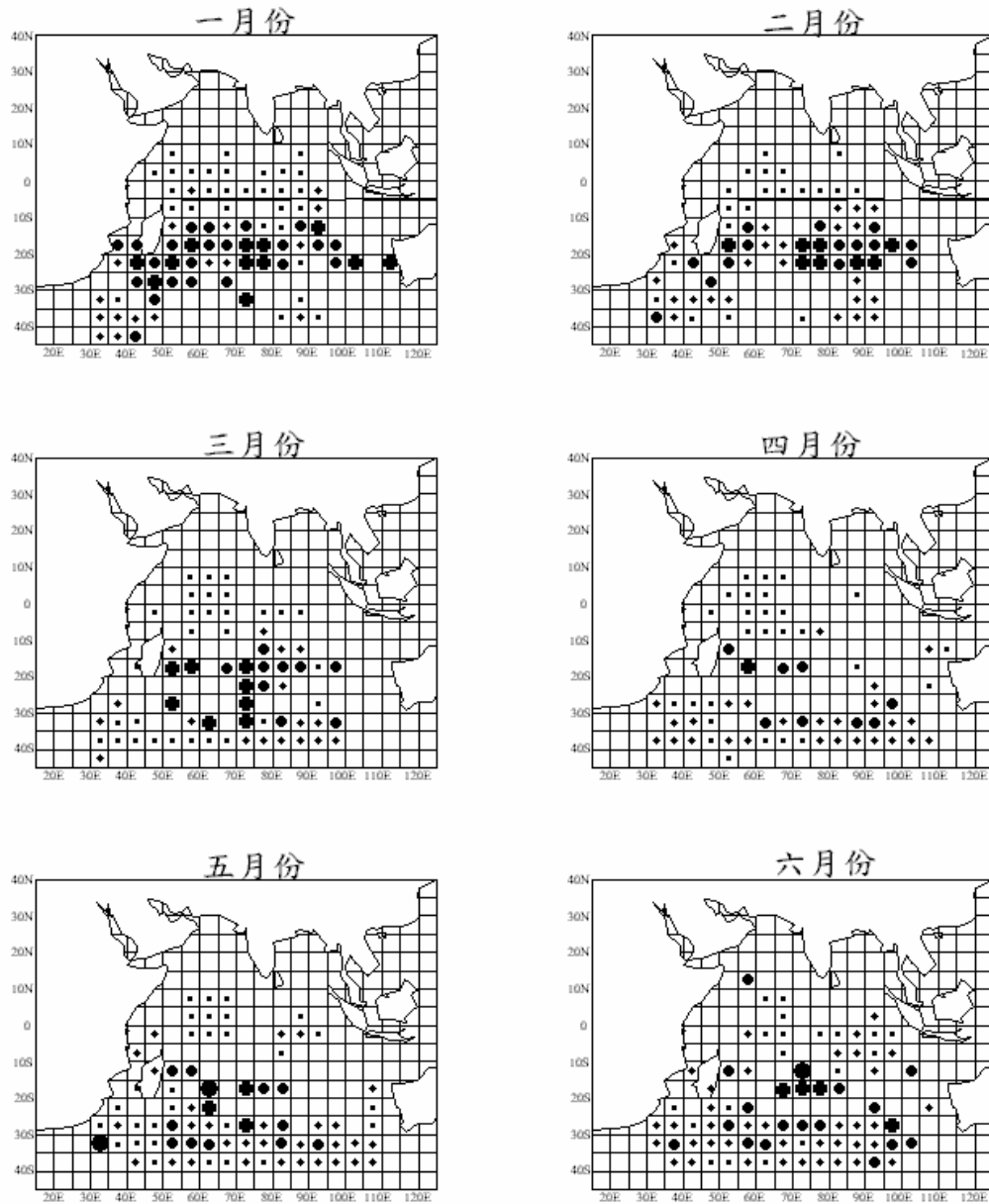
Fig 8. The monthly CPUE distribution of age 7+ Indian albacore.



1980-2002七歲魚的CPUE(No./1000Hooks)

- >3.0
- 1.0-3.0
- 0.3-1.0
- ◆ 0.04-0.3
- <0.04

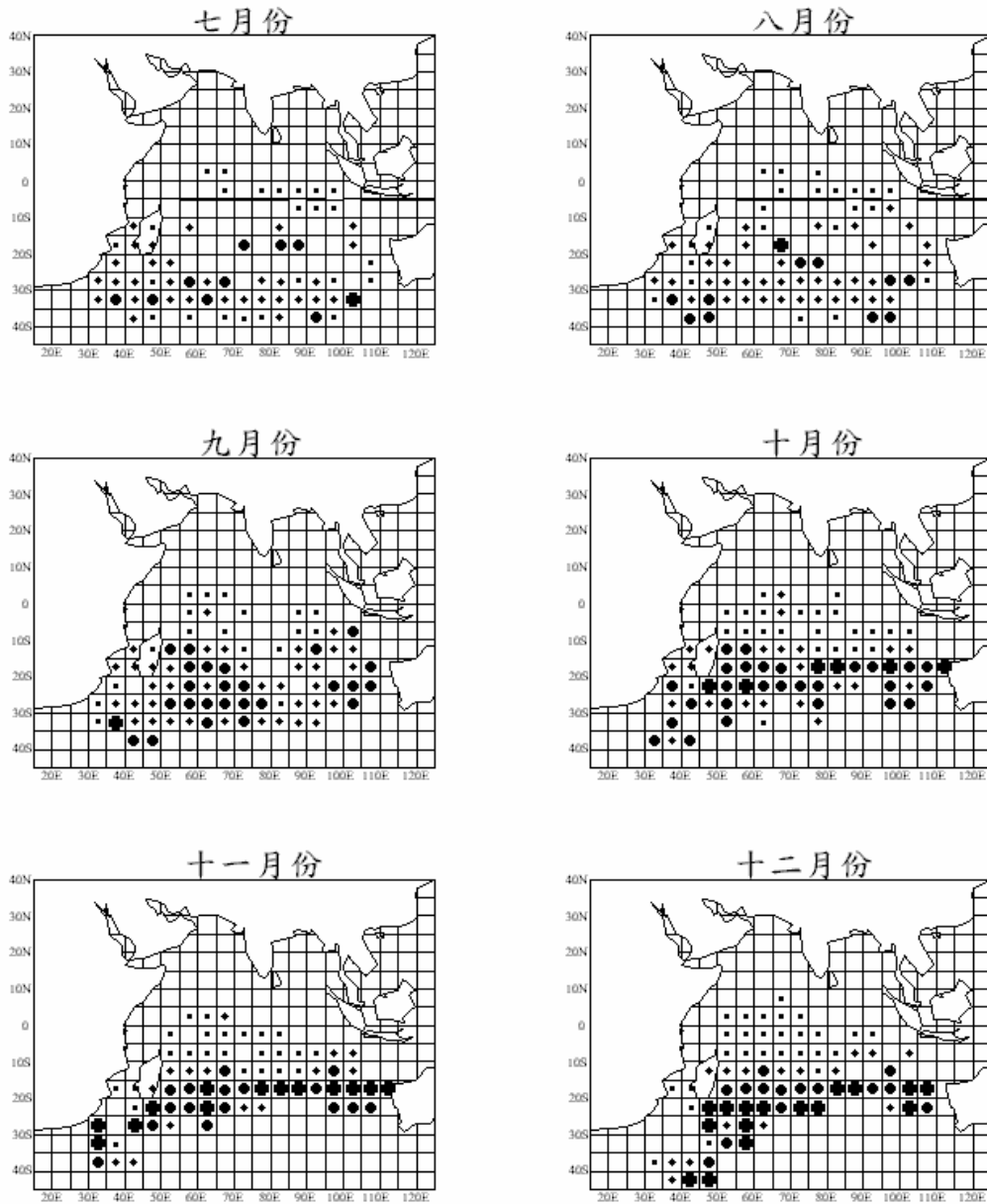
Fig.8. continued



1980-2002大於七歲魚的CPUE(No./1000Hooks)

- >3.0
- 1.0-3.0
- 0.3-1.0
- ◆ 0.04-0.3
- <0.04

Fig.9. The monthly CPUE distribution of Indian albacore elder than 7 years old.



1980-2002大於七歲魚的CPUE(No./1000Hooks)

- >3.0
- 1.0-3.0
- 0.3-1.0
- ◆ 0.04-0.3
- <0.04

Fig 9. continued