

Effect of Colour on the Catch of Gill Nets

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The effect of white, green, blue and yellow coloured drift gill nets on their catch with respect to *Scomberomorus guttatus* (Schneider), *Scomberomorus commerson* (Lacepede), *Scomberomorus lineolatus* (Cuvier), *Parastomateus niger* (Bloch), *Euthynnus affinis* (Cantor) and sharks *Carcharias melanopterus* is discussed. White nets were more effective for *S. guttatus* while the coloured ones caught more of *P. niger*. Blue had no significant effect for sharks. In the case of *S. lineolatus*, *S. commerson* and *E. affinis* no preference to colour was noted.

As the visibility of the fishing net in the water has an effect on its catch, many workers studied the effect of coloured nets (Nomura, 1959, 1961; Von Brandt & Liepolt, 1955; Andreev, 1958; Levy, 1964). Nomura (1961) noted increased catch in dark coloured nets during day with no effect during night. Andreev (1962) found that nets dyed with light colour did not fish well. Jester (1973) indicated that colour is species specific. Attempts have not been made in India to study the effect of coloured gill nets on catch. This paper reports the attempt of the authors to study the effect of coloured gill nets on the catch of seer, pomfret, tuna and sharks along the Andhra coast.

Materials and Methods

The material was polyamide white twine of Nm 34/3/3 with a uniform mesh size of 50 mm bar, undyed and dyed with green, blue and yellow. The twines were kept for 20 min. at 60°C in a 1% solution of neutral soap and ammonia (1:1). Subsequently it was kept in a bath with material to dye bath ratio 1:10 at a dye concentration of 0.1%. To this, acetic acid was added to get a pH of 3-4. The solution was heated to 60°C and the material after thorough washing and drying is introduced to the dye solution and heated to boil for 30 min. The material was taken out, excess dye solution was drained, washed and dried. Dyes used

were manufactured by M/s. Sandoz (India) Ltd., Bombay. The net fleet had 16 units, the combination being four under each colour. Each net had 50 m mounted length and 6 m hung depth. The nets were operated in juxtaposition as surface drift at 20-65 m off Kakinada giving equal chances for all units.

Results and Discussion

Table 1 shows that in general, white nets caught more of *S. guttatus*, while blue and yellow caught more of *S. commerson*. It is seen that for *S. guttatus*, variation between days and colours is significant at 1% level. Critical difference in catch was worked out to be 0.09365 with the mean logarithmic catch of the four different coloured nets as 0.4012 (white), 0.2411 (green), 0.1679 (yellow) and 0.2300 (blue). Accordingly white nets gave significantly higher catch in comparison with the other three, which were more or less similar in their catching rate. As regards *S. commerson* and *S. lineolatus* the variance between nets and days was not significant even at 5% level indicating similarity of catch rate in all nets (Table 1). As only limited number of these species were caught further experiments are necessary for confirmation.

The catching rate is different for different coloured nets (Table 2). *P. niger* was caught more in green nets, whereas *E. affinis* was relatively more in green nets followed by white and sharks in yellow. The chi-square test (Table 2) reveals that in *P. niger* and sharks, the colour of the net has

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Table 1. Analysis of variance

	White		Green		Yellow		Blue		SS	DF	MS	F
	no	wt	no	wt	no	wt	no	wt				
<i>S. guttatus</i>	69	71.95	39	43.00	26	34.05	38	40.90	8.8956	143	—	—
									1.0790	3	0.3563	8.67*
									3.5047	35	0.1001	2.47*
									4.3218	105	0.0411	—
<i>S. commerson</i>	6	13.50	3	9.05	10	30.65	11	38.00	1.9892	67	—	—
									0.1262	3	0.0421	1.30
									0.3112	16	0.0194	0.60
									1.5513	48	0.0323	—
<i>S. lineolatus</i>	10	18.40	3	4.50	5	11.20	6	10.70	1.3570	27	—	—
									0.1722	3	0.0574	1.02
									0.1705	6	0.0284	0.50
									1.0143	18	0.0563	—

* Significant at 1% level

Table 2. Chi-square analysis for *P. niger*, *E. affinis* and shark

Species	White		Green		Yellow		Blue		Calculated X ²	DF	Remarks
	no	wt	no	wt	no	wt	no	wt			
<i>P. niger</i>	69	52.00	119	72.13	102	65.77	113	71.99	14.78	3	0.01 < P < 0.001
<i>E. affinis</i>	59	97.30	63	106.20	49	86.10	40	63.60	6.08	3	0.20 < P < 0.10
Sharks	62	216.65	58	150.95	71	271.95	39	170.20	9.48	3	0.05 < P < 0.02

Table 3. *Chi-square analysis for P. niger and shark*

	Colour	X	DF	Remarks
<i>P. niger</i>	Green, blue and yellow	1.34	2	0.70 P 0.50
Sharks	White, green and yellow	1.39	2	0.50 P p.30

significant effect on the catch, but not in *E. affinis*. Hsiao (1951) while studying the response of five tunnies to artificial light by confining them in a tank illuminated with two 60 W bulbs and coloured lights of moderate intensity, observed that they were equally attracted by coloured and white lights. But Hsiao & Jester (1952) found that white lures were slightly superior to coloured ones, white was not significant to *P. niger* and blue to sharks and hence chi-square was applied for the three coloured nets leaving the one with less catch in the case of *P. niger* and sharks (Table 3). The chi-square test indicated that for *P. niger* the effect of green, yellow and blue was the same while for sharks white, green and yellow was equal.

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