FISHING SKIPJACK TUNA WITH NORTHERN ANCHOVY IN HAWAIIAN WATERS

Second Trial, June 14-18, 1977

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BAIT DISTRIBUTION

The Pacific Trojan arrived at Kewalo Basin, Honolulu, at 1645 on June 10, 1977 with approximately 400 scoops (3.6 kg (8 lb) per scoop) of northern anchovy, Engraulis mordax. The anchovy was captured 15-20 days previous. Two "aku boats" had been selected by drawing lots to receive the anchovy for field testing: the Lehua and the Anela. After considerable discussion, it was decided that the Lehua would first take on four solid baitwells of anchovy and the remainder would go to the Anela if sufficient amount of bait remained. Transferring of the anchovy, by bucket, took place on June 12. After transferring four wells, the Anela conceded her option because the remainder was insufficient for her. The Lehua took on six solid baitwells of anchovy, estimated at 50 buckets (9.1 kg (20 lb) per bucket).

The anchovy was judged to be in excellent condition. Approximately 60% of the anchovy was less than 7.6 cm (3 in.) in SL, with the remainder averaging 13 cm (5 in.).

FISHING OBSERVATIONS

Fishing trials commenced on June 14 and continued through June 18. Bait mortality for 7 days was estimated at 5%. Data were collected by observers from four trips in which the anchovy was used for skipjack tuna, Katsuwonus pelamis, fishing. Observational record forms were the same as used last year (Uchida 1976). For each school, the time of sighting, start of chumming, and the start and end of fishing were recorded. The amount of bait used per school, the number of men fishing, species caught, estimated average size of fish by school, estimated total catch, and reason for abandoning a school were recorded (Table 1). In addition, subjective observations on school behavior, bait behavior, and reaction of skipjack tuna (aku) to anchovy were noted.

FISHING RESULTS

During the four trips by the Lehua, a total of 20 schools was sighted of which 18 were chummed with anchovy, one school was chummed with nehu, Stolephorus purpureus, and one school was chummed with both nehu and anchovy. The results are summarized in Table 1. Remarks were also entered when external circumstances may have affected fishing.

In general, the average catch using anchovy alone compared favorably with the catches of other aku boats that had used nehu during the same period. Discounting fish caught on nehu, the Lehua averaged 1,770.9 kg (3,896 lb) for 3 effective fishing days and the remainder of the aku fleet

averaged 1,715.9 kg (3,775 lb) in 14 effective trips during the same 3 days of fishing. The average catch per effectively fished school by the Lehua amounted to 884.1 kg (1,945 lb). The catches from two other schools were not included because fishing was not fully pursued due to the small-sized fish.

Of 19 schools chummed with anchovy (nehu-anchovy included) 8 or 42% were successfully fished. The anchovy produced catch rates of 4.1 skipjack tuna per minute on fish larger than 7.7 kg (17 lb) and 9.2 fish per minute on fish smaller than 3.1 kg (7 lb) by an average of six fishermen. Chumming nehu and anchovy separately on one school of small skipjack tuna produced a catch rate of 19.6 skipjack tuna per minute with nehu (fished for 8 min) and 10.4 skipjack tuna per minute with anchovy (fished for 50 min). No comparison is possible with catch rates for the fleet during this period, but data from cannery landings and conversations with fishermen indicate that schools were few and generally slow biting.

For those schools successfully fished, 35 buckets (9.1 kg (20 lb) per bucket) of anchovy produced a total catch of 5,313.2 kg (11,689 lb) of skipjack tuna (Table 1). The catch per bucket amounted to 160.9 kg (354 lb), which is significantly higher than the catch of 104.1 kg (229 lb) per bucket recorded during similar trials conducted last year (Uchida 1976). In terms of total anchovy usage (including no-response chumming), catch per bucket was 118.2 kg (260 lb). The relatively more favorable result this year was probably attributable to the smaller size of anchovy (more individuals per school chummed) and to the presence of larger skipjack tuna that constituted 75% of the total catch by the Lehua. Cannery records for the 3 days show that large fish (larger than 6.8 kg (15 lb)) predominated in the catch--51.9% of the landings were large aku, 8.2% were medium aku (3.6-6.8 kg (8-15 lb)), and 39.9% were small aku (less than 3.6 kg (8 lb)). Last year, most of the fishing was conducted with larger anchovy on schools of small aku. Success rate was only 33% (7 of 21 schools chummed) as compared to 42% success this year.

OBSERVATION AND REMARKS

Anchovy and Skipjack Tuna Interaction

Anchovy, irrespective of size, tended to sound and disperse when chummed. A variety of fishing tactics was employed during fishing. None of the tactics, as chumming more anchovy, stunning the anchovy prior to chumming, stopping the vessel or doubling back on the school, resulted in improved fishing. During the chumming, only a few "surface breaks" were observed, indicating that the skipjack tuna were primarily

feeding below the surface. Reports from other vessels during this period indicated that aku schools were responding poorly to nehu, with the fish generally surfacing only for brief periods.

During the 5-day fishing trial period (four trips), Lehua ranked third among 11 boats in total catch (Table 2).

In general, Captain Kinney of the Lehua felt that catch rates would have been higher with nehu. The anchovy did not draw the fish to the stern like the commonly used nehu. On the positive side, the Lehua spent only 4 h on baiting operations during the 7-day period, including 2 h on the final day to catch six buckets of nehu to supplement the remaining anchovy.

Captain Kinney expressed the opinion (in common with other captains interviewed) that he would use anchovy, particularly when nehu was scarce, but only if the cost were considerably lower than the projected $20 per bucket.

Assuming all fish were sold to the cannery, approximately 30% of the catch revenues would have gone for bait costs at $20 per bucket. However, taking into consideration the generally poor catches for the entire fleet during the trial period, it is probable that catch per bucket (and profitability) would increase during normal "season" fishing.

REFERENCE

Uchida, Richard N.
1976. Fishing skipjack tuna with northern anchovy in Hawaiian waters, July 20-22, 1976. Southwest Fisheries Center Administrative Report No. 6H, 8 p.

Table 1.--Fishing results.

Time Per School				Bait Used Predominant Size						
Chumming	Fishing	Species	Size Range			Amount	Skipjack Tuna		Reason School Abandoned	Remarks
Min	Min		Cm	Cm	In.	Bkt	Lb	Avg Lb		
8		Anchovy		12.7	5	.15			No response	
1		Anchovy		12.7	5	.05			No response	
40		Anchovy		12.7	5	3.50			No response	
18		Anchovy		12.7	5	.30			No response	
25		Anchovy		12.7	5	2.00			No response	
30	22	Anchovy		12.7	5	3.00	1,710	18	Biting stopped	
15	5	Anchovy		7.6	3	.25	16	4	Small fish	
8	2	Anchovy		7.6	3	.25	4	4	Small fish	
23	17	Anchovy		7.6	3	5.00	1,136	(18)(4)	Biting stopped	
17	14	Anchovy	7.6-12.7	7.6	3	5.00	1,818	18	Biting stopped	
17	14	Anchovy	7.6-12.7	12.7	5	4.00	1,241	17	Biting stopped	
8		Anchovy	7.6-12.7	12.7	5	.25			No response	
10		Anchovy	7.6-12.7	12.7	5	1.00			No response	
8		Anchovy	7.6-10.1	10.1	4	.25			No response	
3		Anchovy	7.6-10.1	10.1	4	.25			No response	
42	29	Anchovy	5.1-10.1	10.1	4	8.00	2,916	18	Biting stopped	Blood entering water
18		Anchovy	5.1-10.1	5.1	2	2.00			No response	
8		Anchovy	5.1-10.1			.25			No response	
28	27	Nehu				1.75	738	6	Biting stopped	Problem with spray
11	8	Nehu				2.00	864	5.5		Same school
50	50	Anchovy	5.1-10.1			8.50	2,848	5.5	Biting stopped	

Table 2.--Comparative catch in pounds per boat by Hawaiian skipjack tuna fleet during Lehua anchovy fishing trials.

Vessel #	7/14	7/15	7/16	7/18	Total
I	5,199	3,916	2,994	9,454	21,654
II	12,290	*	*	8,020	20,310
Lehua	0	6,189	2,868	3,834	12,891
IV	1,709	1,462	2,215	3,669	9,055
V	2,557	*	897	3,714	7,168
VI	3,307	*	3,664	*	6,971
VII	*	4,850	*	*	4,850
VIII	*	3,626	*	*	3,626
IX	*	3,572	*	*	3,572
X	0	*	708	*	708
XI	403	*	*	*	403
TOTAL	25,462	23,615	13,346	28,782	91,208

*Indicates baiting or zero catch.