

Hawaiian two-piece fish hook

HAWAII COMMERCIAL FISHING SURVEY

1987

Division of Aquatic Resources
Department of Land and Natural Resources



Summary

Although the responses to the 1987 Hawaii Commercial Fishing Survey represent only a sample of commercial fishermen in Hawaii and are not analyzed in detail, many clear trends seem to emerge.

- Most commercial license holders consider themselves to be part-time or recreational fishermen.
- Fishing effort was about evenly distributed between summer months and the rest of the year.
- Compared to five years earlier, many respondents noted a decrease in the size of fish they catch, or an increase in the distance they travel to fish.
- Most respondents own boats and about two-thirds of these are trailered. However, a majority of the boats are uninsured, and most of the respondents are dissatisfied with launching ramps and related support facilities in their area.
- Many respondents are not satisfied with Hawaii's fishing regulations, especially the lack of protected areas, aspects of net fishing and inadequate enforcement of the regulations.
- Many respondents are unhappy with the present condition of commercial fishing in Hawaii, for various reasons.
- Several past and current Division of Aquatic Resources programs received strong support (e.g., FAD buoys and artificial reefs). Others received mixed reviews, perhaps due in part to their low-profile or localized impact.
- All of the potential programs identified in the questionnaire (additional FAD buoys, artificial reefs and protected areas; studies of ahi movement, fisheries oceanography, and burnt tuna syndrome; a ciguatera poison test kit; improved information and education) received more positive than negative responses, suggesting that the general nature of these programs is appropriate.
- Effective learning sources and means of disseminating information were recognized, as was the clear need for an improved marine education curriculum in schools.

- Many suggestions for State activities were offered. The most popular subjects were improvements to the FAD buoy program, launching facilities and small boat harbors, better enforcement of fishing regulations, and the implementation and enforcement of other environmental protection regulations.

The findings of this survey indicate that a general upgrading of fishing infrastructure is of primary concern to commercial fishermen. Also important are activities that would help guarantee conservation of Hawaii's marine resources.

CONTENTS

	<u>Page</u>
Summary	i
Introduction	1
Results	3
Residence	4
Fishing methods	5
Income	7
Fishing effort: Summer months	8
Non-summer months	9
Size of fish caught	10
Distance traveled to catch fish	11
Vessel: Ownership	12
Insured	13
Insurance availability	14
Launching ramps: Use	15
Satisfaction	16
Reasons for dissatisfaction	17
Ice	23
Bait: Availability	24
Bought or caught	25
Types	26
Hawaii Digest of Fishing Laws	28
Fishing regulations: Satisfaction	29
Problems with fishing regulations:	
Legal minimum fish size	30
Bag limits	31
Protected "kapu" areas	32
Legal net mesh size	33
Enforcement	34
Other	35

Commercial fishing in Hawaii:

General condition	38
Problems with general condition	39

Effect of past and current State projects:

FAD buoys/trolling alley	44
Non-nehu baitfish culturing	45
Ciguatera fish poison test kit	46
Artificial reefs	47
"Burnt tuna" research	48
Monthly fish catch reports	49
Taape market development	50
New ahi fishing grounds exploration	51
Other	52

Effect of future State projects:

Studies of ahi movement	53
More protected "kapu" areas	54
More FAD buoys	55
Studies relating fishing to oceanography	56
More artificial reefs	57
More studies on "burnt tuna"	58
Ciguatera poison test kit	59
Improved information and education	60

Learning sources	61
------------------------	----

Suggestions for State activities	63
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Introduction

Commercial fishing is an important industry in Hawaii, supplying fish for both domestic consumption and export. It is conducted by full-time commercial fishermen, whose income is based largely or solely on fishing, and part-time commercial fishermen, who usually have other sources of income, and who may sell some or all of their catch to defray fishing expenses. Many of the State's commercial fisheries projects conducted by the Division of Aquatic Resources are designed to benefit these fishermen, either directly or indirectly. Examples of these projects include fish aggregating devices, deep water artificial reefs, exploratory tuna fishing, development of a ciguatera fish poison test kit, etc.

Other state, county, and federal programs in Hawaii (such as those relating to boating, education and law enforcement) also affect the quality of fishing, both commercial and recreational, and other ocean-related activities. However, awareness of these programs by fishermen is inadequate, and the perceptions held by government agencies on the actual critical issues facing fishermen are often incomplete.

In order to obtain better information on fishing-related topics directly from fishermen, and to get their views on how to improve the fishing climate in Hawaii, a questionnaire (Figure 1) was sent to every fisherman holding a FY 1987 State of Hawaii commercial marine license. The responses from these fishermen are summarized here.

In this summary, the results are grouped by island of residence because of demographic differences among fishermen from each island. No further attempt was made to analyze the findings on a more detailed basis for this summary, although such analyses will be important in evaluating specific topics. For example, offshore fisherman could be expected to have more opinions on the value and placement of fish aggregation devices than the shoreline fisherman, and trollers could be expected to be more interested in the migratory patterns of ahi than trap-fishermen. These different responses can be extracted from the data, but this summary will classify the responses only by residence, not gear type, income, or any other category.

The Division thanks all of the commercial fishermen who participated in the survey for their assistance and thoughtful insight. Division fishery aides Keith Sakuma and Larry Huff provided logistical support. This project was part of the Division's LNR 153 Commercial Fisheries and Aquaculture Program (Fisheries Master Plan project, administered through the Research Corporation of the University of Hawaii).

Figure 1.

1. Residence: Kauai Molokai Maui non-Hawaii resident
 Oahu Lanai Hawaii

2. Fishing method you use most (check only one):
 Trolling Flagline
 Deep-sea handline (bottomfish) Aku boat
 Inshore handline (opelu, akule, etc.) Traps
 Nets Aquarium fish collection
 Spearfishing Other (please print) _____
 Ika-shibi/palu-ahi

3. Percent of total (gross) income made from fishing:
 0% = Recreation
 1-50% = Part-time Commercial
 51-100% = Full-time commercial

4. Average number of days per month you fish:
 a. June - August: 1-7 8-14 14+
 b. September - May: 1-7 8-14 14+

5. Compared to five years ago, has the average size of the fish you caught in the last year: increased decreased stayed about the same

6. Compared to five years ago, how far do you now travel to catch fish:
 not as far farther about the same

7. Do you own a boat? Yes No
 a. If you own a boat, is it presently insured? Yes No
 c. If you own a boat and it is not presently insured, have you tried and failed to get vessel insurance? Yes No

8. Do you trailer your boat? Yes No
 a. If you trailer your boat, are you satisfied with the launching ramps and ramp facilities in your area? Yes No
 c. If you are not satisfied with the ramps and facilities, why not?
 Too crowded
 Too far from fishing grounds
 Bad condition or unsafe
 Other (please print) _____

9. Are you satisfied with the ice facilities in your area? Yes No

10. a. Do you have trouble getting bait in your area? Yes No
 b. Do you usually buy or catch your bait? Buy Catch
 c. What type(s) of bait do you use? 1) _____ 2) _____

11. Have you read the "Hawaii Digest of Fishing Laws"? Yes No

12. a. Are you satisfied with Hawaii's fishing laws and rules? Yes No
 If "No", what do you think are the problems? (you may check more than one)
 Too Small Too Big
 Too Many Too Many
 Too Few Too Many
 Not Enough Too Many
 Too Small Too Big
 Adequate Not Adequate

13. a. In your opinion, is commercial fishing in Hawaii generally good now?
 Yes No
 b. If "No", what do you think are the reasons? (you may check more than one)
 Fewer fish due to overfishing
 Fewer fish due to natural cycles or climate changes
 Fewer fish due to urbanization and pollution
 Competition from foreign and mainland fishermen
 Seasonally unstable markets
 Other (please print) _____

14. Do you feel that the following State projects have helped Hawaii's fishermen?

a. FAD buoys/trolling alleys	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Don't Know <input type="checkbox"/>
b. Non-nehu baitfish culturing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Development of ciguatera fish poison test kit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Building artificial reefs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. "Burnt Tuna" research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Monthly Fish Catch Reports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Market development for taape	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. New fishing grounds exploration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

 (Other, please print) _____

15. In your opinion, how would the following projects affect fishing in Hawaii?

a. Studies of ahi movement	Would Help <input type="checkbox"/>	Would Not Help <input type="checkbox"/>	Don't Know <input type="checkbox"/>
b. More protected (regulated or no-fishing "kapu") areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. More FAD buoys	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Studies relating fishing to oceanography	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. More artificial reefs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. More studies on "Burnt Tuna"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Ciguatera fish poison test kit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Improved information & education about Hawaii's resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. Which of these sources have helped you learn about fishing and Hawaii's marine life?
 (You may check more than one)
 Television/Radio State of Hawaii--Division of Aquatic Resources
 Fishing Supply Store Federal - National Marine Fisheries Service
 Newspapers/Magazines University/Sea Grant Program/Maikiki Aquarium
 Public/Private Schools

17. Please suggest a State activity or project that you think would help fisherman in Hawaii (please print): _____

Thank you very much for participating in the census. Please fold, seal and return the postage-paid questionnaire.

Results

Questionnaires were mailed to the fishermen on October 30, 1987. The following is a summary of the responses received from November 2, 1987 through January 4, 1988 (the end of the ninth week after mailing), although 95% of the responses were received by December 8, 1987 (the end of the fifth week). Information from questionnaires received after January 4 were not included in the summary.

Total Number of questionnaires mailed out:	2529
Number returned by January 4, 1988:	768 (30.4%)
Number returned by May 1, 1988:	780 (30.8%)

Each question is given below as it was worded on the questionnaire. Following the question, the number and percent of the various responses, as well as a graphic representation (percentages only) of the findings are presented. The percentages are based only on the total number of actual responses for each question for each island, excluding "write-in" responses and comments. With the exception of Question 2, the response rate percentages are calculated only from the total number of responses for each question, not the number of returned questionnaires. In most cases, percent values are rounded to the nearest percent, and may not necessarily add up to 100% due to rounding error. Write-in responses were paraphrased, grouped by island, and listed in the order of their frequency.

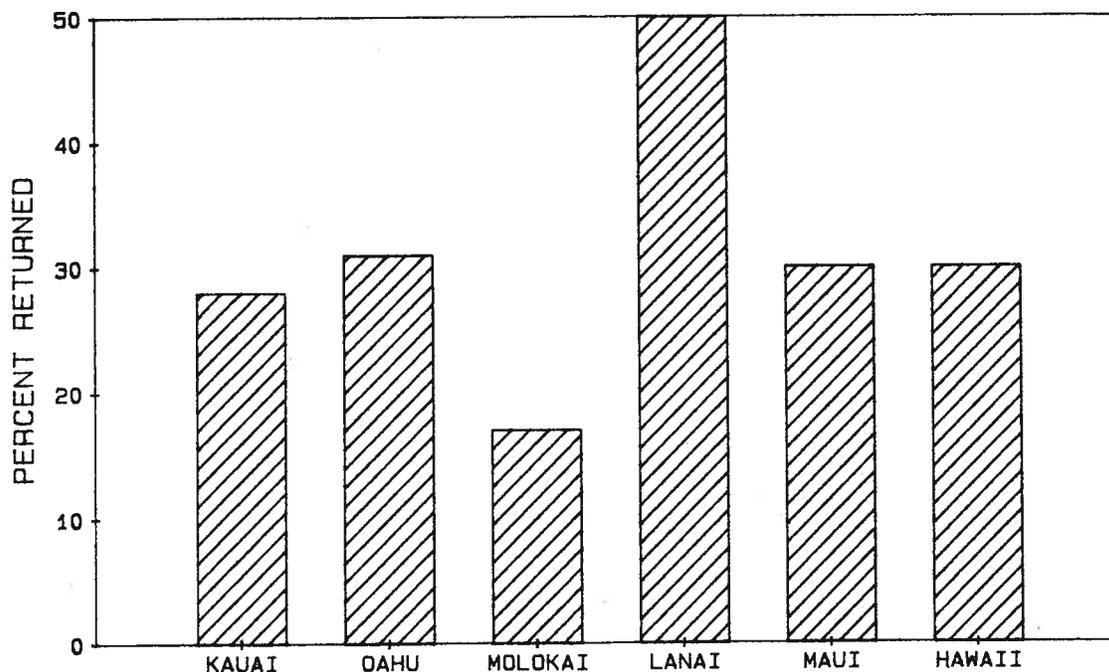
No attempt was made to provide a detailed interpretation of the responses, but in some cases a brief comment is given.

Question 1. Residence. (Figure 2)

	Number of Questionnaires Mailed Out		Number of Questionnaires Returned	
	-----		-----	
Kauai	335	13%	93	12%
Oahu	962	38%	298	39%
Molokai	58	2%	10	1%
Lanai	18	1%	9	1%
Maui	367	15%	107	14%
Hawaii	779	31%	232	30%
Out-of-State	10	0.4%	-	-
	Unspecified		19	N/A

Note that the distribution of returned questionnaires parallels the statewide distribution of commercial fishing license holders. Because the total number of questionnaires returned from Molokai and Lanai are relatively small, comparisons between the response rates from these islands and other islands must be made with caution. Figure 2 shows the response rate from each island. The number of responses from unspecified residences was insignificant and these are not included in the summary.

Figure 2



Question 2. **Fishing method you use (check only one).**

	<u>Kauai</u> (Fig. 3.a)		<u>Oahu</u> (Fig. 3.b)		<u>Molokai</u> (Fig. 3.c)	
	-----	-----	-----	-----	-----	-----
Trolling.....	62	67%	188	63%	4	40%
Deep-sea handline....	26	28%	87	29%	5	50%
Inshore handline....	17	18%	47	16%	4	40%
Nets.....	5	5%	29	10%	4	40%
Spearfishing...	5	5%	23	8%	2	20%
Ika-shibi/ palu-ahi....	24	26%	17	6%	-	-
Flagline.....	-	-	-	-	-	-
Aku boat.....	-	-	7	2%	-	-
Traps.....	1	1%	10	3%	-	-
Aquarium fish collection..	1	1%	11	3%	-	-
Other.....	1	1%	13	4%	-	-

	<u>Lanai</u> (Fig. 3.d)		<u>Maui</u> (Fig. 3.e)		<u>Hawaii</u> (Fig. 3.f)	
	-----	-----	-----	-----	-----	-----
Trolling.....	5	56%	49	46%	127	55%
Deep-sea handline....	3	33%	55	51%	58	25%
Inshore handline....	2	22%	11	10%	35	15%
Nets.....	1	11%	10	9%	14	6%
Spearfishing...	1	11%	13	12%	19	8%
Ika-shibi/ palu-ahi....	-	-	10	9%	61	26%
Flagline.....	-	-	1	1%	4	2%
Aku boat.....	-	-	2	2%	2	1%
Traps.....	-	-	5	5%	3	1%
Aquarium fish collection..	-	-	1	1%	5	2%
Other.....	-	-	1	1%	3	1%

Note: This question should have been worded "Fishing method you use most often (please check only one)", but was not due to an overlooked printing error. Because of the new wording, the results must be viewed with caution because some respondents marked only their primary fishing method, while others marked several methods. The percentages for each island in this question are based on the number of returned questionnaires, not the number of responses to the questions.

The "other" methods included various types of hand-harvesters and pole-and-line fishermen. In Figure 3, the methods that received a positive response rate of less than 5% each were grouped in the "other" category.

Figure 3.a
KAUAI

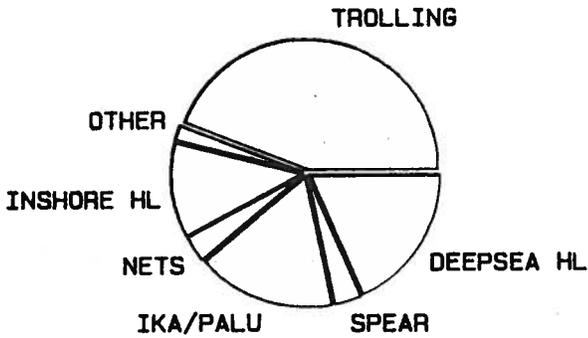


Figure 3.b
OAHU

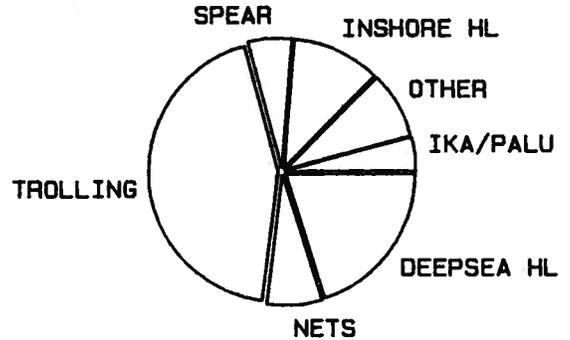


Figure 3.c
MOLOKAI

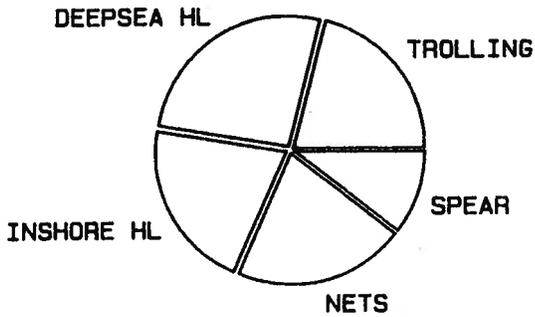


Figure 3.d
LANAI

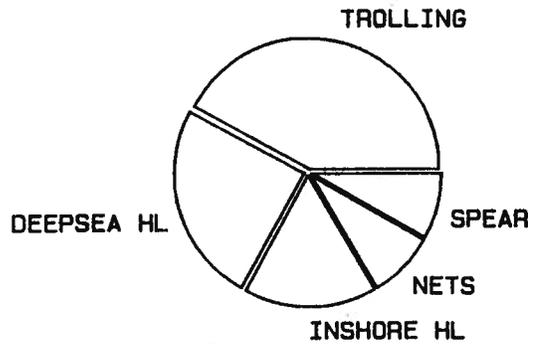


Figure 3.e
MAUI

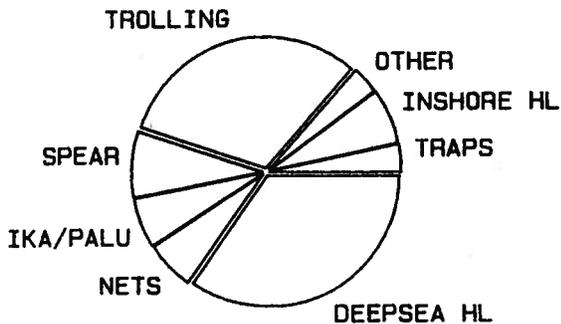
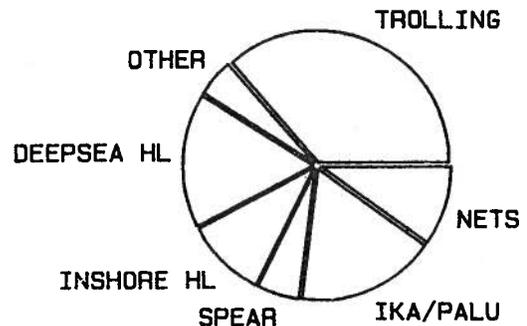


Figure 3.f
HAWAII



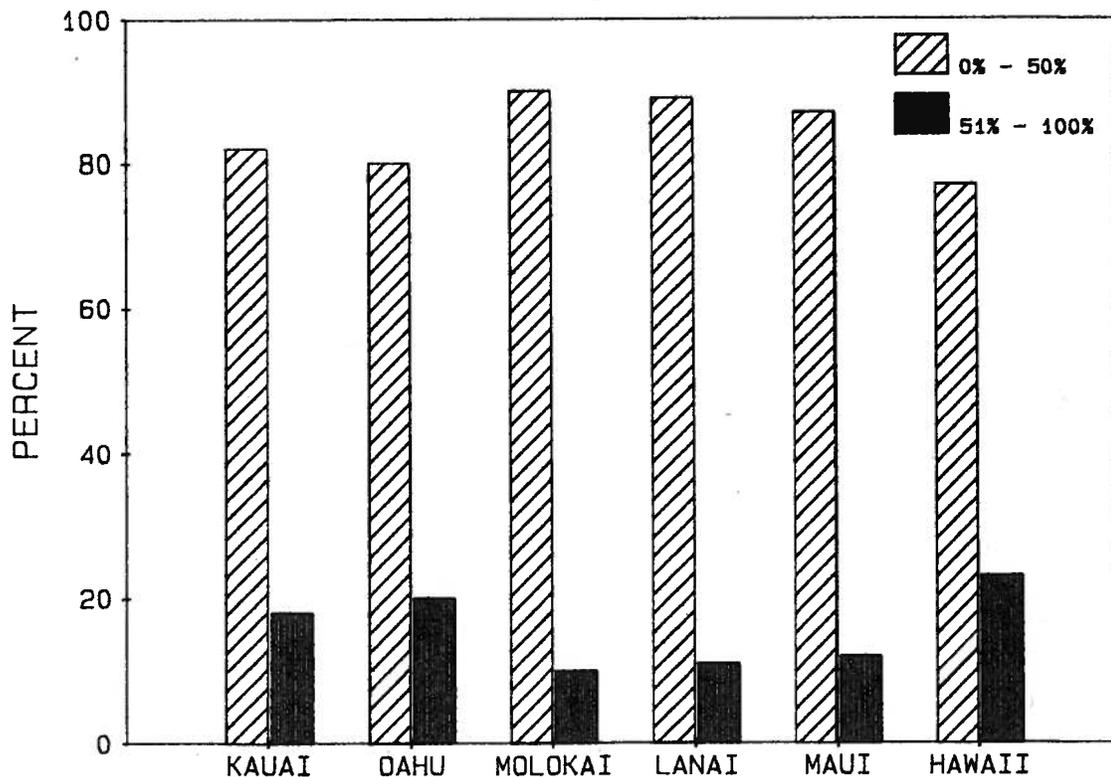
**Question 3. Percent of your total (gross) income from fishing.
(Figure 4)**

	0% Recreation		1 - 50% Part-time Commercial		51 - 100% Full-time Commercial	
	-----		-----		-----	
Kauai	7	8%	67	74%	16	18%
Oahu	27	9%	206	71%	58	20%
Molokai	3	30%	6	60%	1	10%
Lanai	1	11%	7	78%	1	11%
Maui	13	12%	79	75%	13	12%
Hawaii	25	11%	150	66%	52	23%

Note: In Figure 4, the first two categories are combined to form a 0 - 50% category.

Most of the respondents made less than half their gross income from fishing.

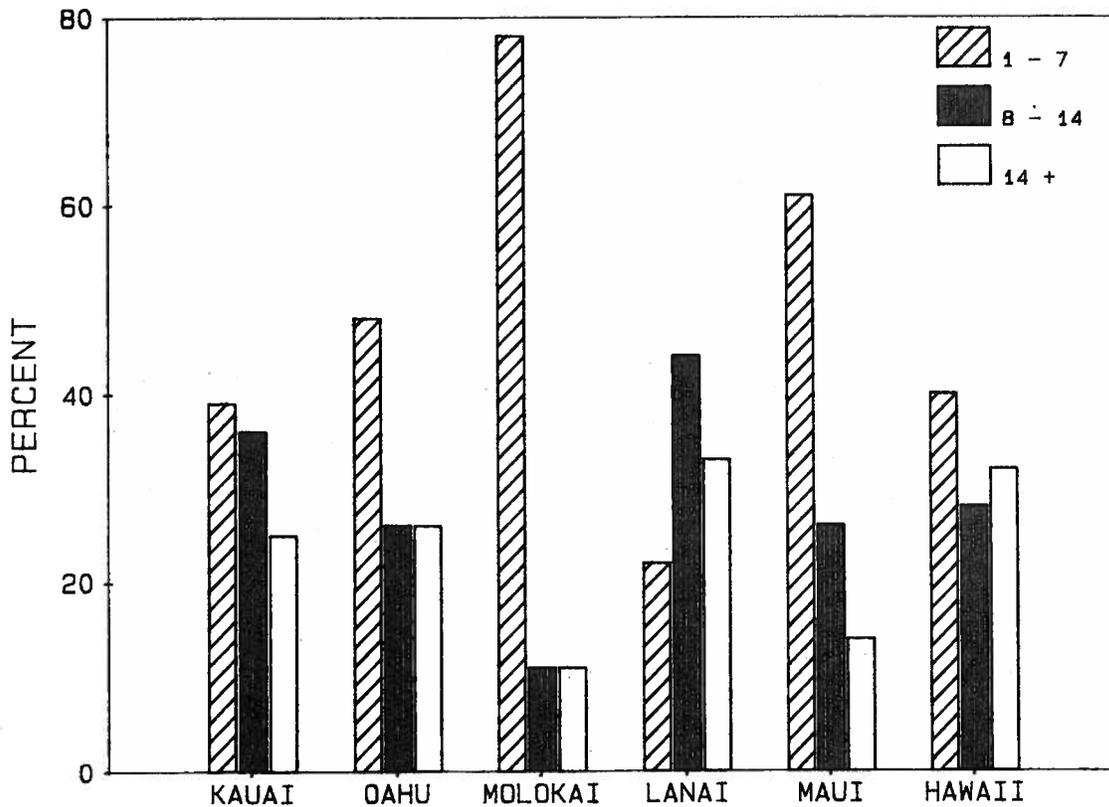
Figure 4



Question 4.a. Average number of days per month you fish: June - August (summer months). (Figure 5)

	1 - 7		8 - 14		14 +	
Kauai	36	39%	33	36%	23	25%
Oahu	135	48%	74	26%	75	26%
Molokai	7	78%	1	11%	1	11%
Lanai	2	22%	4	44%	3	33%
Maui	62	61%	26	26%	14	14%
Hawaii	90	40%	62	28%	72	32%

Figure 5

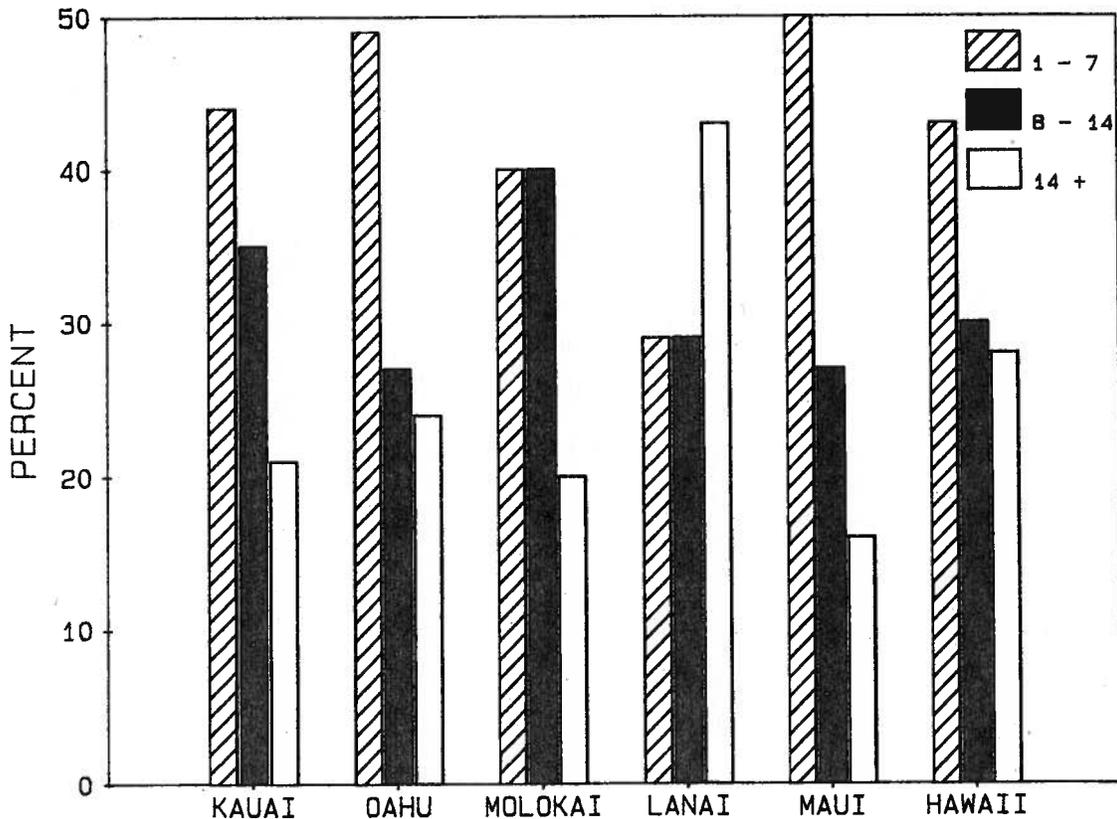


**Question 4.b. Average number of days per month you fish:
September - May (non-summer months). (Figure 6)**

	1 - 7		8 - 14		14 +	
Kauai	39	44%	31	35%	18	21%
Oahu	130	49%	73	27%	65	24%
Molokai	4	40%	4	40%	2	20%
Lanai	2	29%	2	29%	3	43%
Maui	56	57%	26	27%	16	16%
Hawaii	90	43%	63	30%	58	28%

The results from Questions 4.a and 4.b indicated that the respondents' fishing effort was about the same between summer and non-summer months.

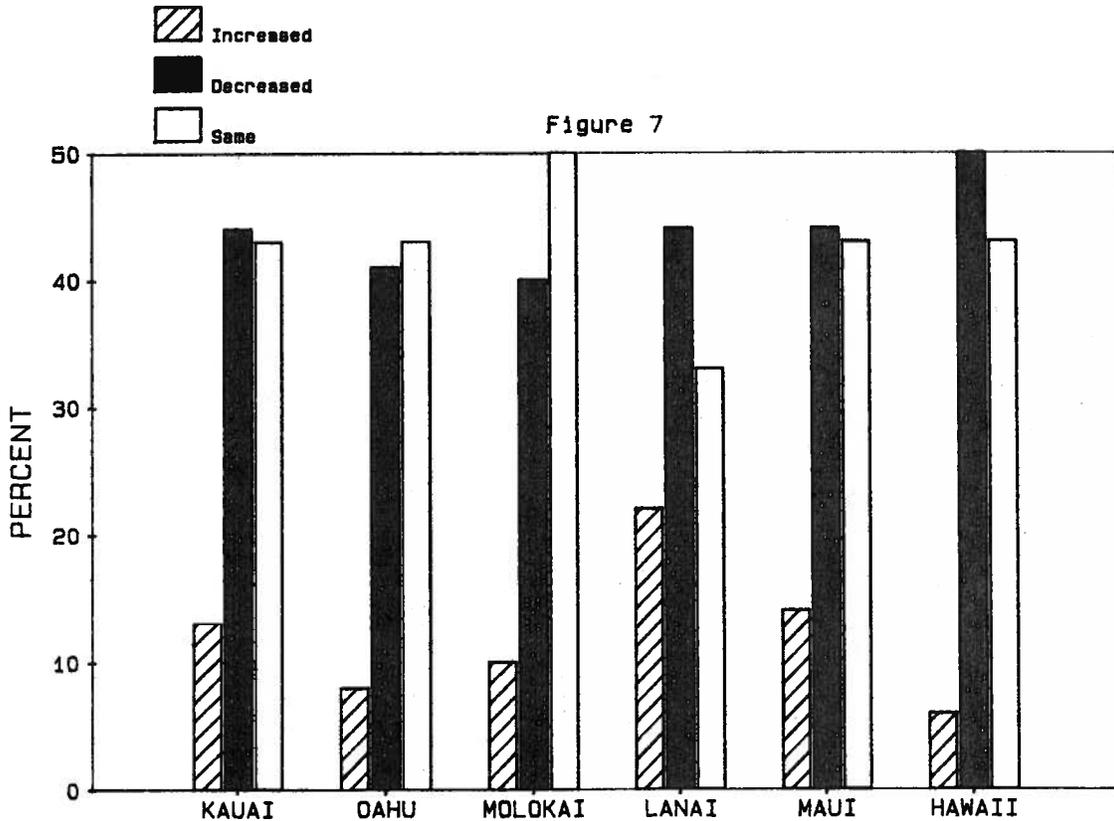
Figure 6



Question 5. Compared to five years ago, has the average size of the fish you caught in the last year: (Figure 7)

	Increased		Decreased		Stayed about the same	
	-----		-----		-----	
Kauai	11	13%	39	44%	38	43%
Oahu	24	8%	126	41%	131	43%
Molokai	1	10%	4	40%	5	50%
Lanai	2	22%	4	44%	3	33%
Maui	14	14%	45	44%	44	43%
Hawaii	13	6%	111	51%	94	43%

Although these results were not analyzed by target species, many of the respondents stated that the size of the fish they caught during the last year was smaller than fish they caught five years ago. This trend could indicate, among other things, natural changes in the size frequency distribution of the stocks, or heavy fishing pressure.

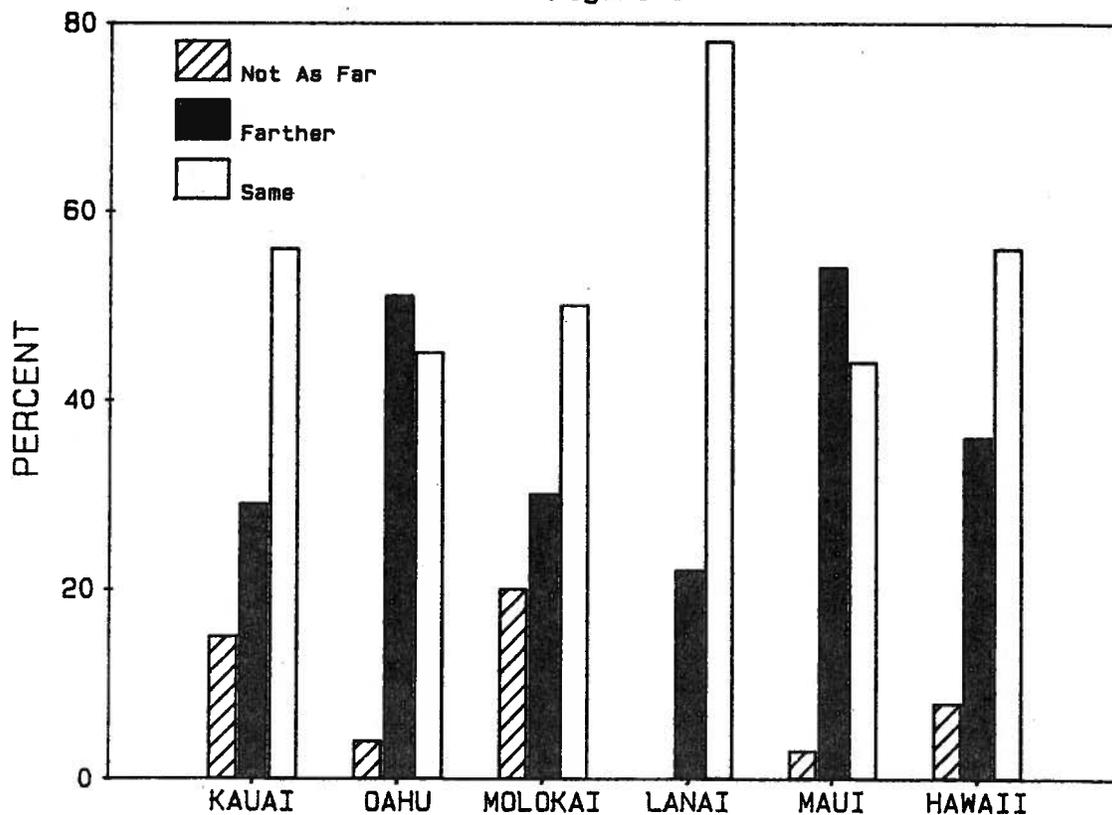


Question 6. Compared to five years ago, how far do you now travel to catch fish: (Figure 8)

	Not as far		Farther		About the same	
Kauai	13	15%	25	29%	48	56%
Oahu	11	4%	149	51%	131	45%
Molokai	2	20%	3	30%	5	50%
Lanai	-	-	2	22%	7	78%
Maui	3	3%	54	54%	44	44%
Hawaii	17	8%	82	36%	126	56%

Although the majority of the respondents indicated that they traveled about the same distance to fish in the last year compared to five years ago, many stated that they travel farther. This trend may indicate natural changes in the areal distribution of stocks, or localized heavy fishing pressure.

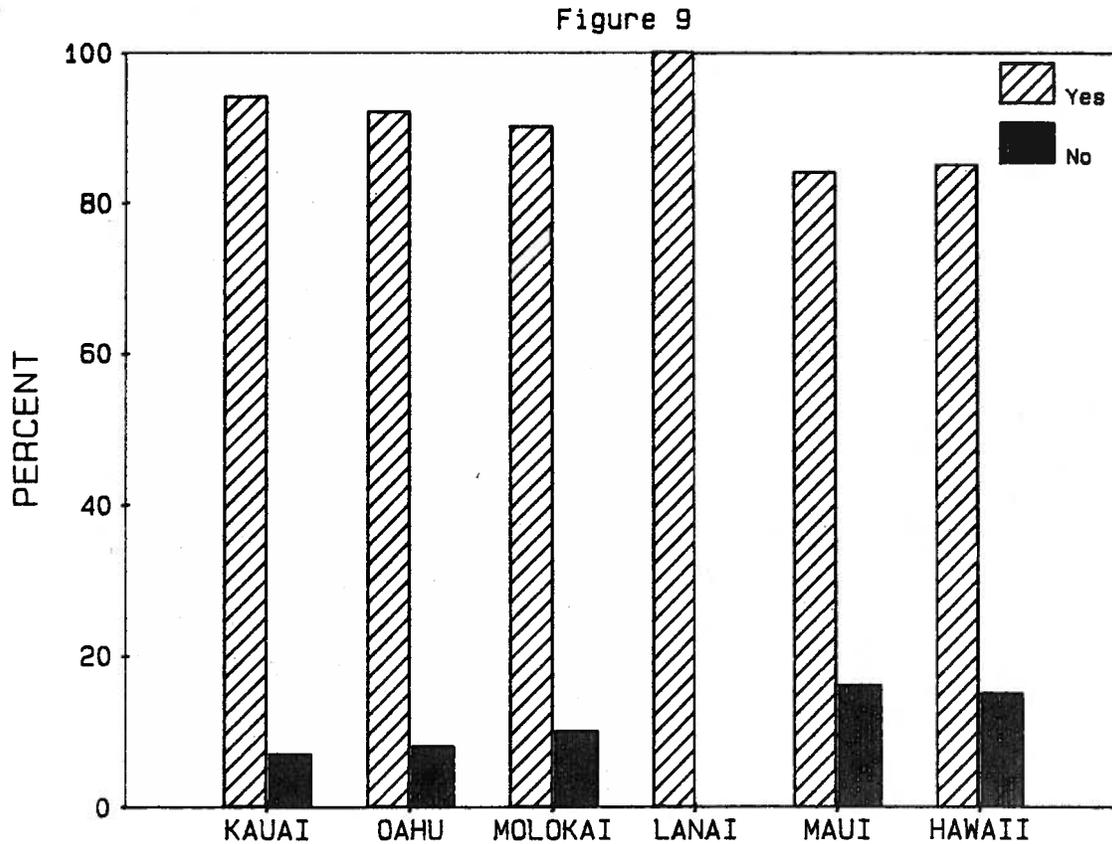
Figure 8



Question 7.a. Do you own a boat? (Figure 9)

	Yes		No	
Kauai	86	93%	6	7%
Oahu	268	92%	24	8%
Molokai	9	90%	1	10%
Lanai	9	100%	-	-
Maui	89	84%	17	16%
Hawaii	197	85%	35	15%

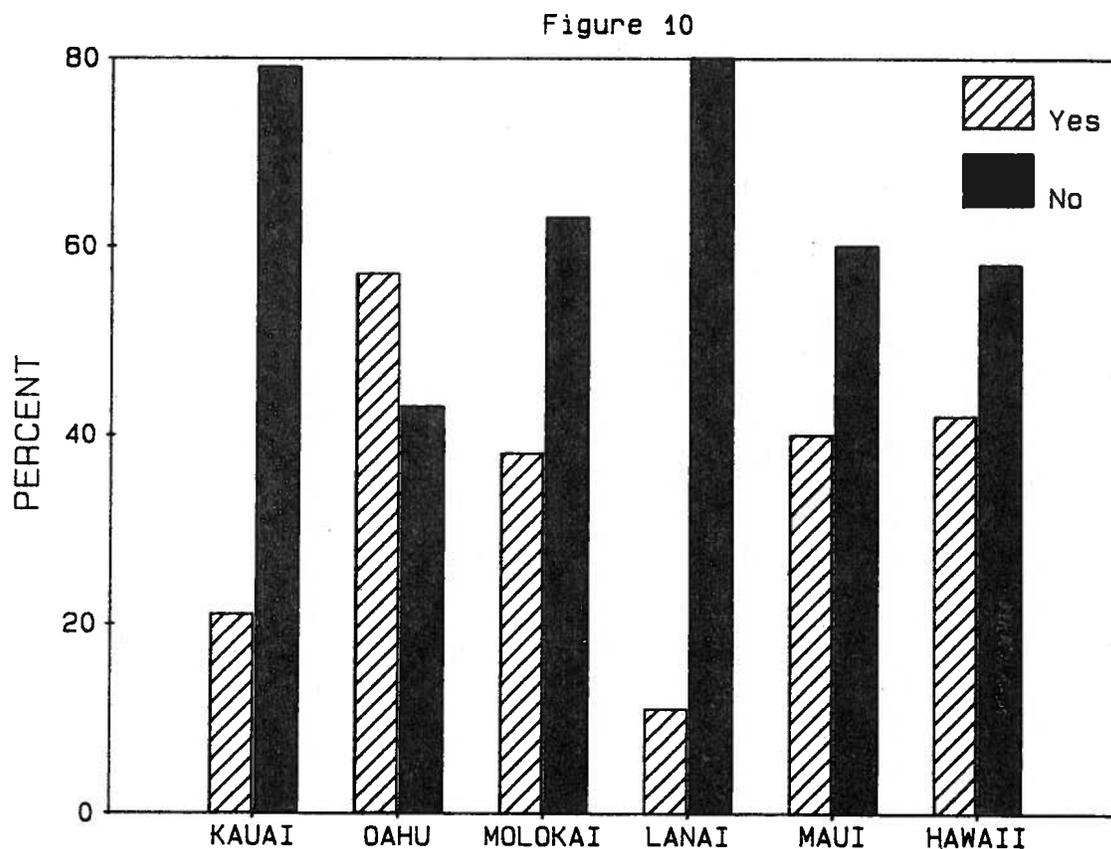
Most of the respondents owned boats.



Question 7.b. If you own a boat, is it presently insured?
(Figure 10)

	Yes		No	
Kauai	19	21%	70	79%
Oahu	153	57%	115	43%
Molokai	3	38%	5	63%
Lanai	1	11%	8	89%
Maui	36	40%	55	60%
Hawaii	84	42%	114	58%

Questions 7.a and 7.b show that, although a large majority of the respondents owned boats, the majority of boats on all islands, except Oahu, were uninsured.

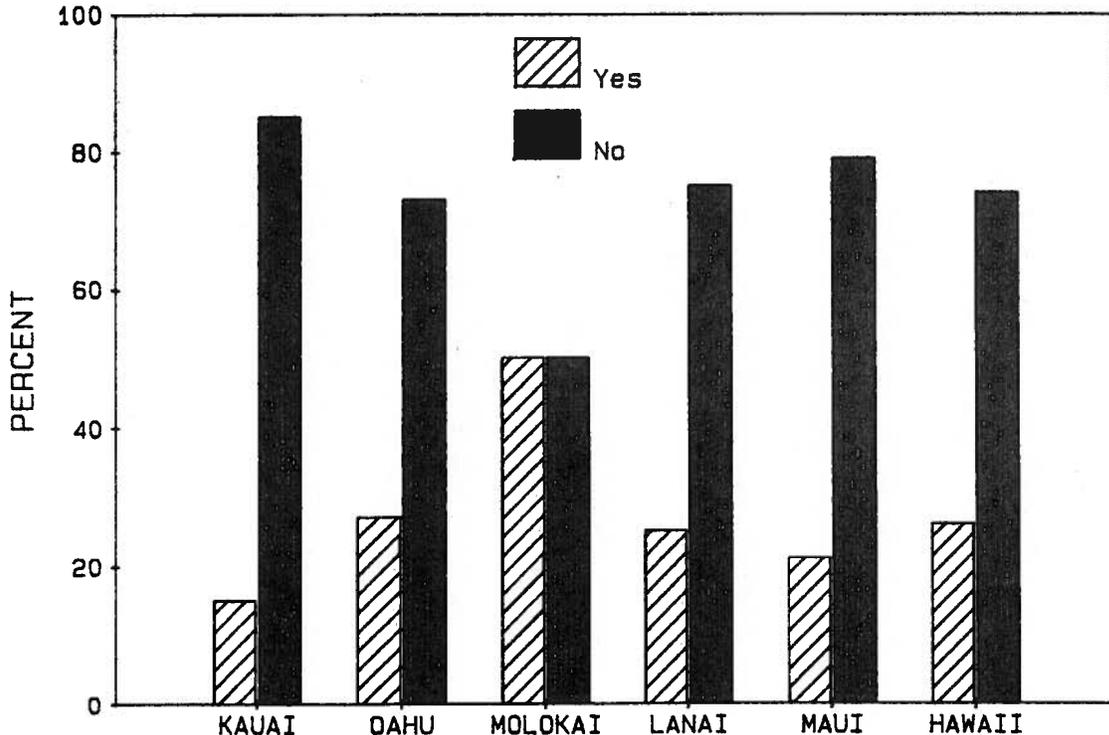


Question 7.c. If you own a boat, and it is not presently insured, have you tried and failed to get vessel insurance? (Figure 11)

	Yes		No	
	Count	Percentage	Count	Percentage
Kauai	10	15%	57	85%
Oahu	31	27%	85	73%
Molokai	3	50%	3	50%
Lanai	2	25%	6	75%
Maui	11	21%	42	79%
Hawaii	32	26%	92	74%

Some of the owners of uninsured boats indicated that they had tried to obtain vessel insurance and failed (due to the high premiums or other factors). Several more stated that they had not attempted to get insurance because of the known high rates.

Figure 11

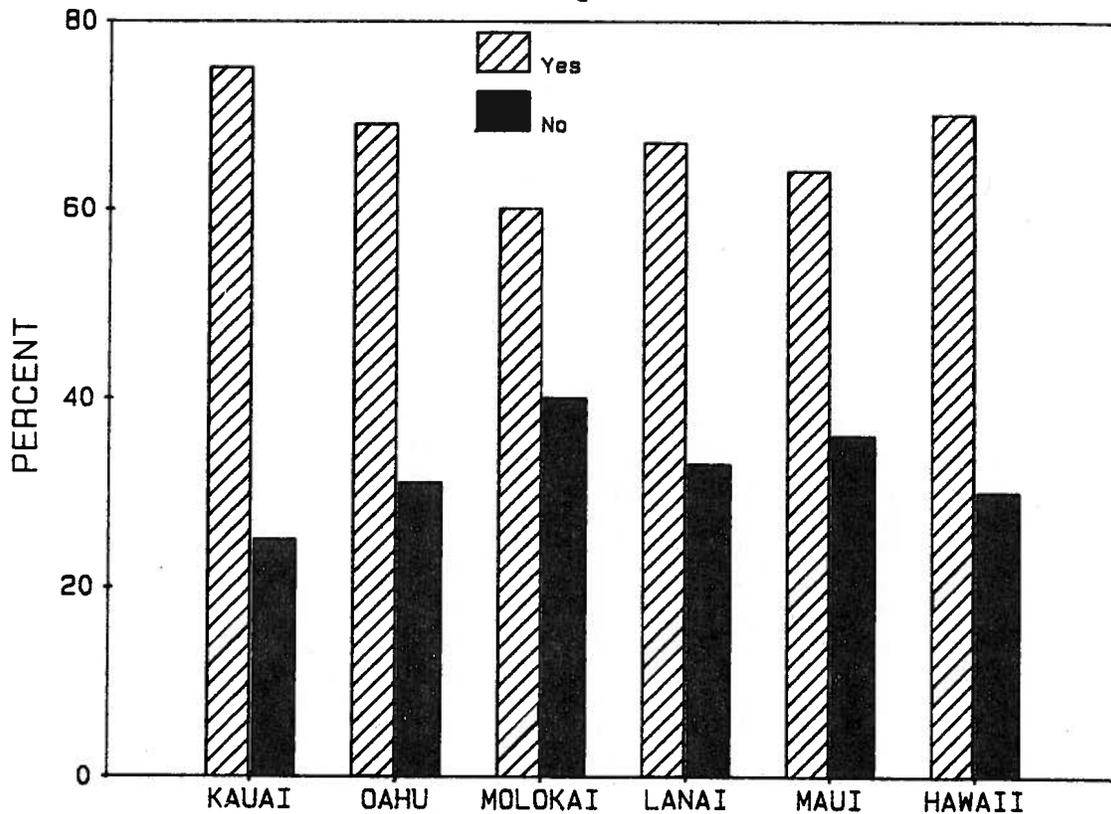


Question 8.a. Do you trailer your boat? (Figure 12)

	Yes		No	
Kauai	39	75%	13	25%
Oahu	194	69%	88	31%
Molokai	6	60%	4	40%
Lanai	6	67%	3	33%
Maui	39	64%	22	36%
Hawaii	90	70%	38	30%

These results reflect the small, mobile nature of fishing boats in Hawaii.

Figure 12

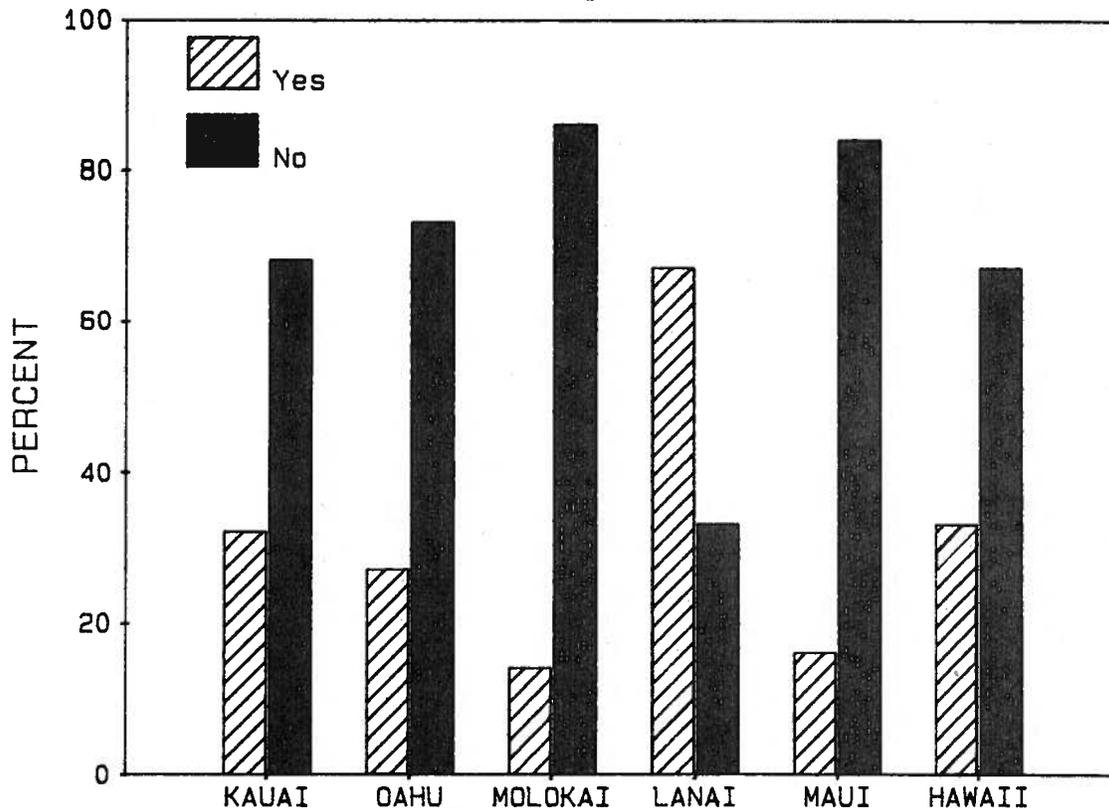


Question 8.b. If you trailer your boat, are you satisfied with the launching ramps and ramp facilities in your area? (Figure 13)

	Yes		No	
	Count	Percentage	Count	Percentage
Kauai	25	32%	53	68%
Oahu	55	27%	148	73%
Molokai	1	14%	6	86%
Lanai	4	67%	2	33%
Maui	13	16%	69	84%
Hawaii	61	33%	125	67%

Although a majority of the respondents trailered a boat, most of them were not satisfied with the launching ramps and ramp facilities in their area.

Figure 13

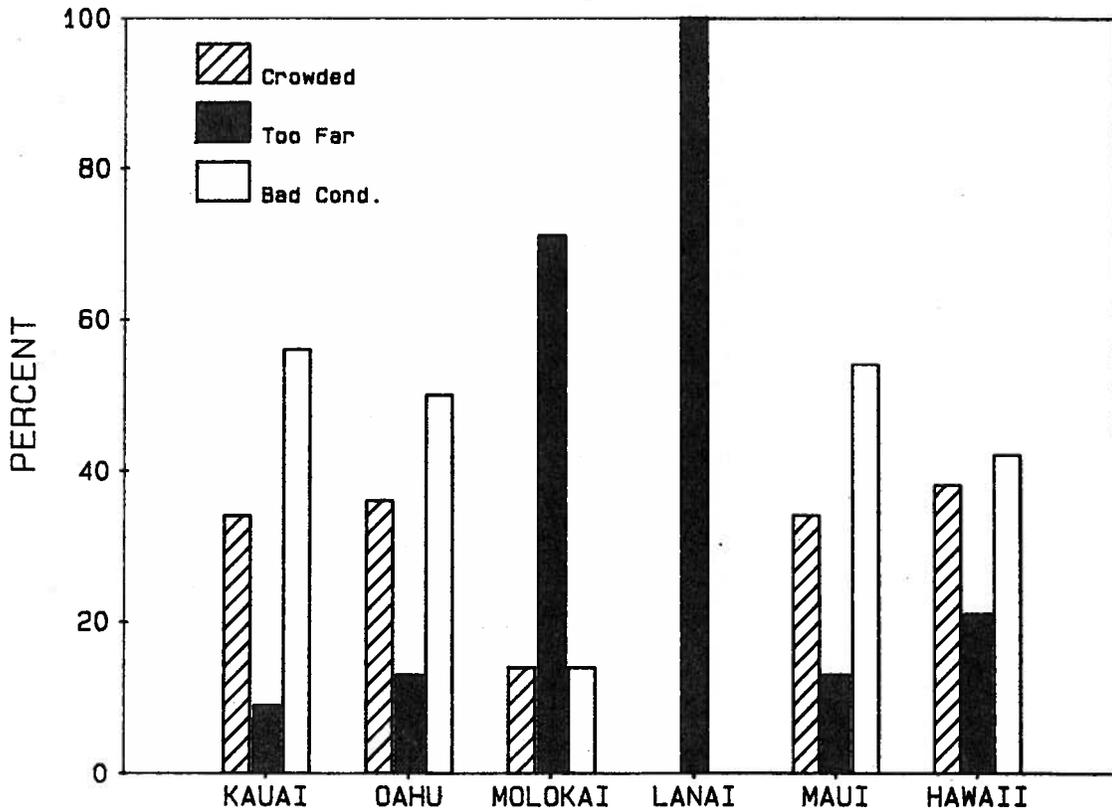


Question 8.c. If you are not satisfied with the ramps and facilities, why not? (you may check more than one). (Figure 14)

	Too Crowded		Too far from fishing grounds		Bad condition or unsafe	
Kauai	22	34%	6	9%	36	56%
Oahu	68	36%	25	13%	94	50%
Molokai	1	14%	5	71%	1	14%
Lanai	-	-	2	100%	-	-
Maui	32	34%	12	13%	51	54%
Hawaii	66	38%	36	21%	73	42%

Note: Written responses to "other" reasons for ramp dissatisfaction are listed below.

Figure 14



Question 8.c Written reasons for launching ramp dissatisfaction:

<u>Ramp:</u>	<u>Response:</u>	<u>Number Responses:</u>
I. KAUAI		
Nawiliwili	inadequate lighting.....	2
	entrance road unpaved.....	1
	conflict with commercial operations.....	1
Port Allen	bad/dangerous surge.....	3
Kapaa	poor channel markers/lights.....	1
	too small.....	1
Koloa	bad surge.....	1
	too small.....	1
Kukuiula	bad surge.....	2
Kekaha	too small.....	1
Waieka	poor channel markers/lights.....	1
Unspecified	too shallow.....	7
	inadequate lighting.....	5
	discourteous/inactive harbor police & cleaning crews.....	5
	entrance road unpaved/hazardous.....	3
	poor channel markers/lights.....	3
	bad surge.....	2
	conflict with commercial operations.....	2
	insufficient washdown facilities.....	2
	not enough ramps.....	1
	limited parking.....	1
	too short.....	1
	poor designs/locations.....	1
	no ramp near Hanalei.....	1
II. OAHU		
Hawaii Kai	insufficient washdown facilities.....	20
	inadequate lighting.....	8
	too short.....	5
	not enough ramps.....	4
	no fuel.....	2
	no ice.....	2
	no launch pier.....	2

	center island makes launch difficult.....	2
	conflict with commercial jet ski operations	2
	restrooms too far.....	1
Waianae	bad/dangerous surge.....	21
	loading docks not maintained.....	1
Heeia Kea	limited parking.....	2
	insufficient washdown facilities.....	2
	inadequate lighting.....	1
	conflict with commercial jet ski operations	1
	overhead wires hazardous.....	1
	poor channel markers/lights.....	1
Sand Island	not enough ramps.....	2
	insufficient washdown facilities.....	2
	inadequate lighting.....	1
Kaneohe	not enough ramps.....	2
	limited parking.....	2
Kailua	bad surge.....	1
	generally inadequate.....	1
Kahana Bay	generally inadequate.....	2
Haleiwa	too steep.....	1
	insufficient washdown facilities.....	1
Ala Wai	too steep.....	1
	slippery.....	1
Unspecified	bad/dangerous surge.....	10
	inadequate lighting.....	6
	limited parking.....	5
	not enough ramps.....	5
	insufficient washdown facilities.....	5
	poor channel markers/lights.....	3
	generally inadequate.....	3
	inadequate security and enforcement of harbor rules.....	2
	too steep.....	1
	lack of restrooms.....	1
	too shallow.....	1
	no loading dock.....	1
	too remote.....	1
	too small.....	1
	no ramp near Ewa.....	1
	no ramp between Keehi & Waianae.....	1
	no ramp between Kaneohe & Maunaloa.....	1

III. MOLOKAI

Unspecified no ramp on East Molokai.....2
 not enough ramps.....1
 too remote.....1

IV. LANAI

Unspecified not enough ramps.....1
 too remote.....1
 too small.....1

V. MAUI

Kahului too shallow.....6
 too small.....5
 insufficient washdown facilities.....3
 generally inadequate.....2
 not enough ramps.....2
 entrance road unpaved.....1

Mala generally inadequate.....1
 too shallow.....1
 washdown area not sloped.....1
 conflict with commercial operations.....1
 harbor rules not enforced.....1

Kihei not enough ramps.....2
 generally inadequate.....1
 conflict with commercial operations.....1

Maalaea too small.....1
 limited parking.....1
 insufficient washdown facilities.....1

Kamaole no loading dock.....1

Hanole limited parking.....1

Maliko big rock near ramp is hazardous.....1

Unspecified insufficient washdown facilities.....6
 lack of restrooms.....4
 conflict with commercial operations.....3
 too shallow.....2
 not enough ramps.....1
 limited parking.....1
 harbor rules not enforced.....1
 bad surge.....1
 kids swimming around ramp.....1
 no ramp near Olowalu.....1

VI. HAWAII

Keahou	bad surge.....	3
	inadequate lighting.....	2
	limited parking.....	2
	too steep.....	2
	washdown area not sloped.....	1
	too small.....	1
Honaunau	too steep.....	2
	too small.....	1
	generally inadequate.....	1
	lack of restrooms.....	1
	inadequate lighting.....	1
	limited parking.....	1
	too shallow.....	1
Honkohau	washdown area not sloped.....	2
	inadequate lighting.....	2
	generally inadequate.....	1
	lack of restrooms.....	1
	limited parking.....	1
	entrance road not maintained.....	1
Kawaihae	bad surge.....	2
	not enough ramps.....	1
	not enough moorings.....	1
	conflict with canoe clubs.....	1
	no loading dock.....	1
	too small.....	1
Pohoiki	not enough ramps.....	4
	inadequate lighting.....	1
	too shallow.....	1
South Point	generally inadequate.....	2
Puako	no loading dock.....	1
	general disrepair.....	1
Hilo	not enough ramps.....	1
Laupahoehoe	general disrepair.....	1
Unspecified	not enough ramps.....	8
	limited parking.....	7
	insufficient/unsanitary washdown facilities.....	6
	inadequate lighting.....	4
	restrooms/dumpsters not cleaned.....	3

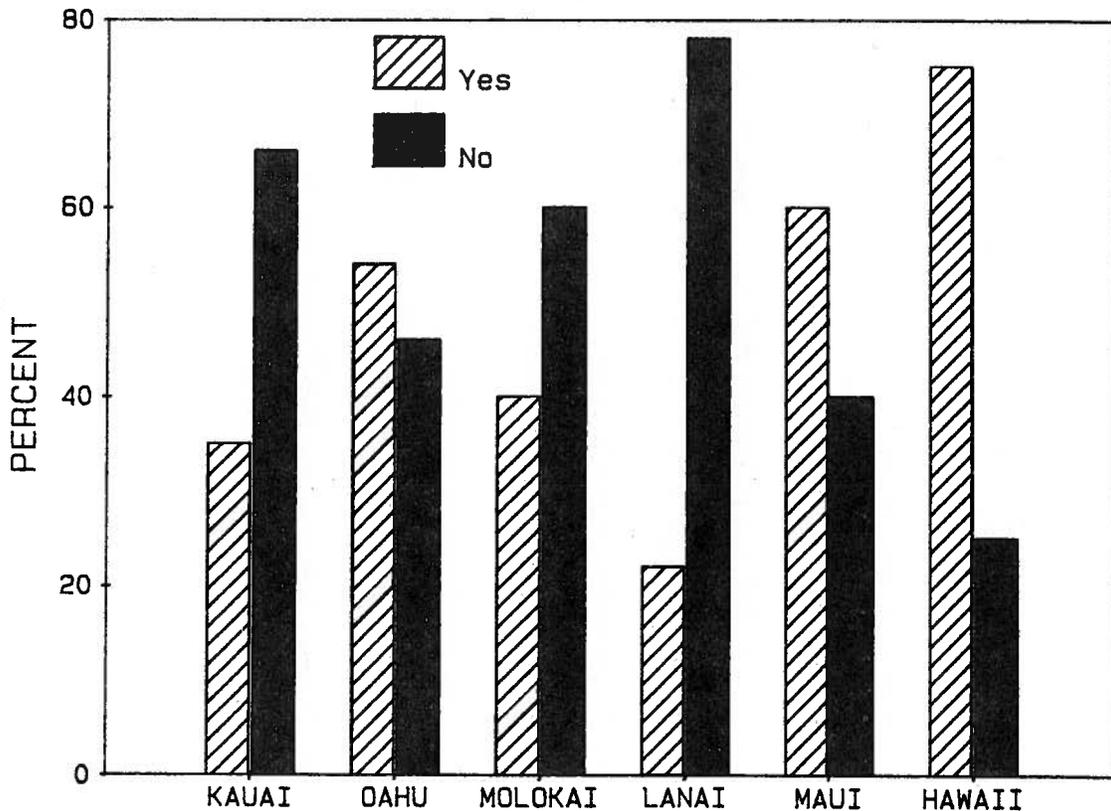
too steep.....	2
no ramp in South Kona area.....	2
too small.....	2
conflict with commercial operations.....	2
kids swimming around ramp.....	2
lack of restrooms.....	2
conflict with canoe clubs.....	2
entrance road unpaved.....	2
slippery.....	2
inadequate security & enforcement of harbor rules.....	2
bad surge.....	1
too remote.....	1
no ramp near Punaluu.....	1

Question 9. Are you satisfied with the ice facilities in your area? (Figure 15)

	Yes		No	
	Count	Percentage	Count	Percentage
Kauai	30	35%	57	66%
Oahu	149	54%	129	46%
Molokai	4	40%	6	60%
Lanai	2	22%	7	78%
Maui	62	60%	41	40%
Hawaii	167	75%	57	25%

Respondents from Hawaii and Maui were generally satisfied with their ice facilities. On Oahu, the ratio of responses was nearly equal. Respondents from Kauai, Molokai and Lanai were generally dissatisfied with their ice facilities. It should be noted that several of the respondents who marked "yes" (satisfied) stated that they make their own ice because they were unhappy with ice facilities in their area.

Figure 15



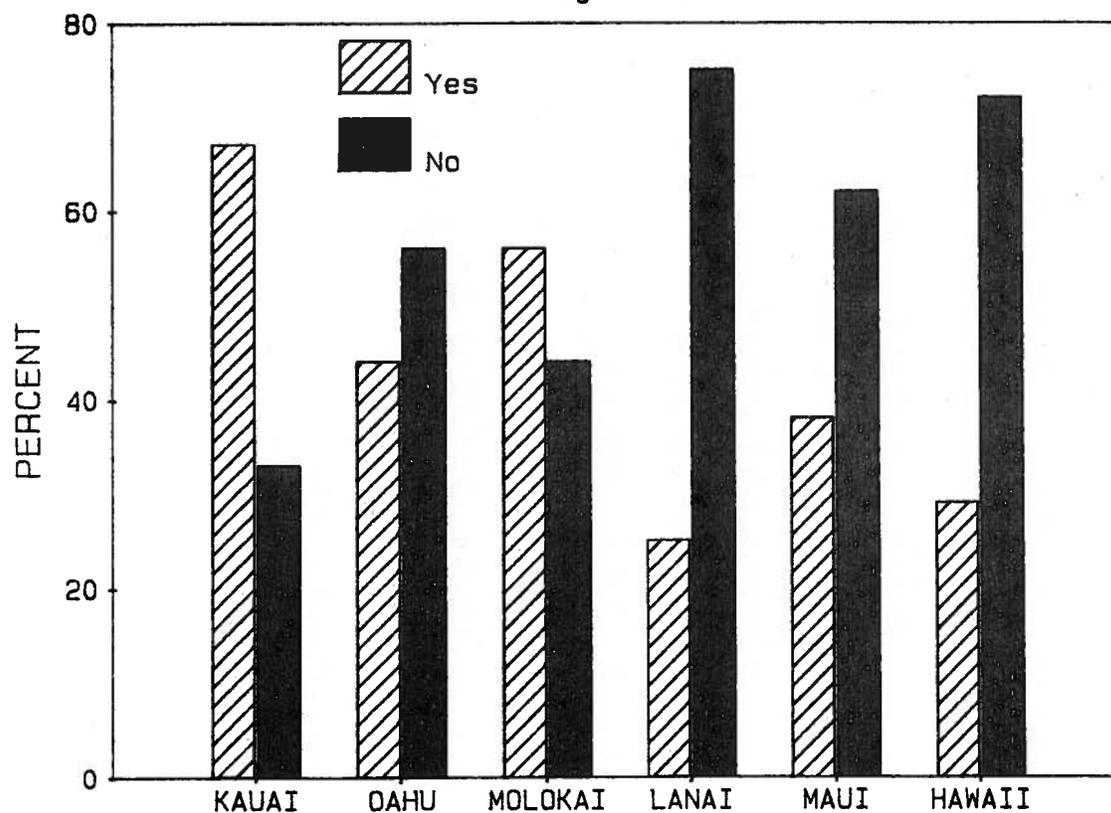
Question 10.a.

Do you have trouble getting bait in your area? (Figure 16)

	Yes		No	
	Count	Percentage	Count	Percentage
Kauai	58	67%	29	33%
Oahu	113	44%	144	56%
Molokai	5	56%	4	44%
Lanai	2	25%	6	75%
Maui	37	38%	60	62%
Hawaii	61	29%	153	72%

Respondents from Kauai had the most trouble obtaining bait, but a large proportion from other islands stated that they also had a problem.

Figure 16

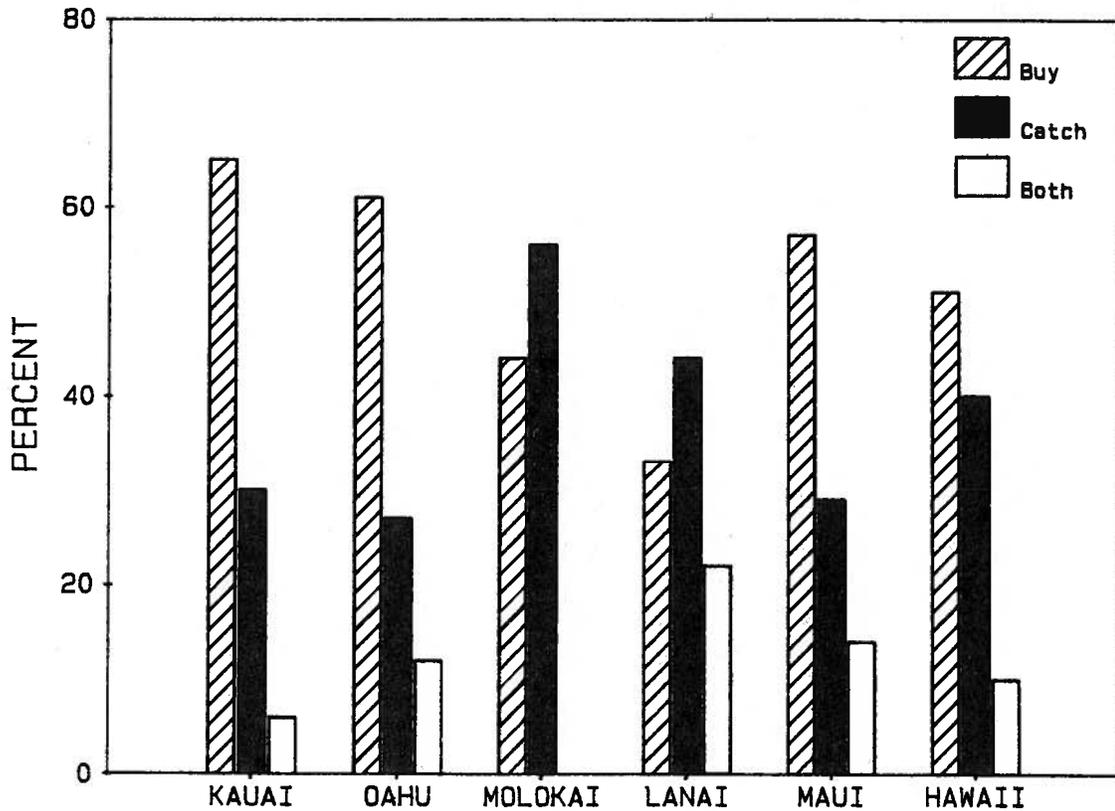


Question 10.b.

Do you usually buy or catch your bait?
(Figure 17)

	Buy		Catch		Both	
Kauai	57	65%	26	30%	5	6%
Oahu	157	61%	68	27%	31	12%
Molokai	4	44%	5	56%	-	-
Lanai	3	33%	4	44%	2	22%
Maui	58	57%	29	29%	14	14%
Hawaii	106	51%	83	40%	20	10%

Figure 17



Question 10.c.**What type(s) of bait do you use?**

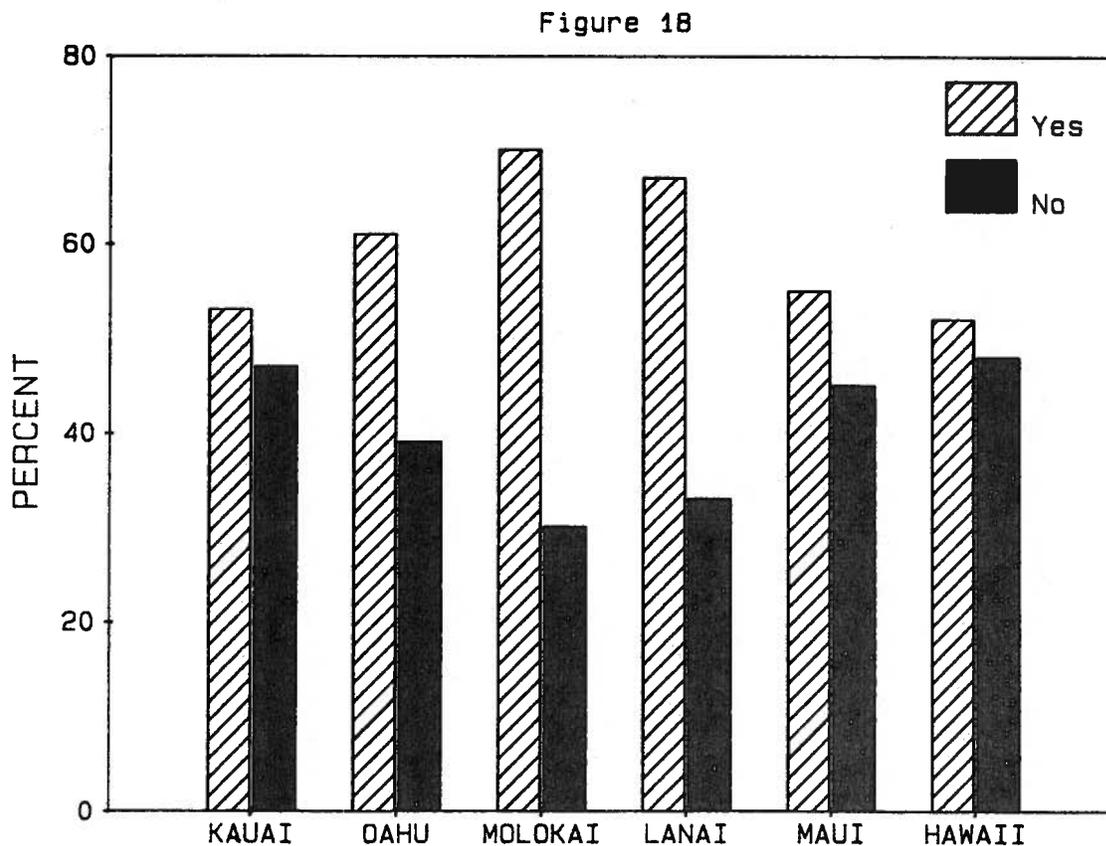
		Responses	
<u>Bait Type</u>		<u>Number</u>	<u>Percent</u>
I. KAUAI	mackerel scad (opelu)	64	42.4
	squid (ika)	41	27.2
	bigeye scad (akule)	22	14.6
	tunas (aku/ahi/kawa)	18	11.9
	anchovy	3	1.9
	mackerel	2	1.3
	saury	1	0.6
II. OAHU	mackerel scad (opelu)	133	29.4
	tunas (aku/ahi/kawa)	114	25.2
	squid (ika)	103	22.8
	bigeye scad (akule)	46	10.2
	anchovy/sardine/etc.	18	4.0
	saury (sanma)	12	2.6
	unidentified fish	7	1.5
	octopus (tako)	6	1.3
	mackerel	4	0.9
	shrimp	4	0.9
	bonefish (oio)	1	0.2
	oilfish (walu)	1	0.2
	urchins	1	0.2
	bread	1	0.2
	dog food	1	0.2
III. MOLOKAI	mackerel scad (opelu)	3	21.4
	squid (ika)	3	21.4
	bigeye scad (akule)	2	14.3
	tuna (aku)	2	14.3
	octopus (tako)	1	7.1
	shrimp	1	7.1
	goatfish (oama)	1	7.1
	unidentified fish	1	7.1
IV. LANAI	mackerel scad (opelu)	7	43.8
	squid (ika)	3	18.8
	tuna (aku)	3	18.8
	bigeye scad (akule)	2	12.5
	mackerel	1	6.3

V.	MAUI	squid (ika)	52	30.6
		mackerel scad (opelu)	50	29.4
		tunas (ahi/aku/kawa)	38	22.4
		bigeye scad (akule)	10	5.9
		anchovy/sardine/etc.	7	4.1
		octopus (tako)	5	2.9
		unidentified fish	3	1.8
		goatfish (weke)	2	1.2
		rainbow runner (kamanu)	1	0.6
		worms	1	0.6
		garbage	1	0.6
VI.	HAWAII	mackerel scad (opelu)	172	49.6
		tunas (ahi/aku/kawa)	73	21.0
		squid (ika)	61	17.6
		bigeye scad (akule)	12	3.4
		anchovy/sardine/etc.	11	3.2
		octopus (tako)	5	1.4
		shrimp	5	1.4
		needlefish	1	0.3
		marlin	1	0.3
		mackerel	1	0.3
		unidentified fish	1	0.3
		flagtail (aholehole)	1	0.3
		crab (aama)	1	0.3
		pumpkin	1	0.3
		oatmeal	1	0.3

Question 11. Have you read the "Hawaii Digest of Fishing Laws"?
(Figure 18)

	Yes		No	
	Count	Percentage	Count	Percentage
Kauai	47	53%	42	47%
Oahu	169	61%	108	39%
Molokai	7	70%	3	30%
Lanai	6	67%	3	33%
Maui	57	55%	46	45%
Hawaii	118	52%	109	48%

Many of the respondents had not read about Hawaii's fishing regulations, suggesting that they were unfamiliar with the laws.



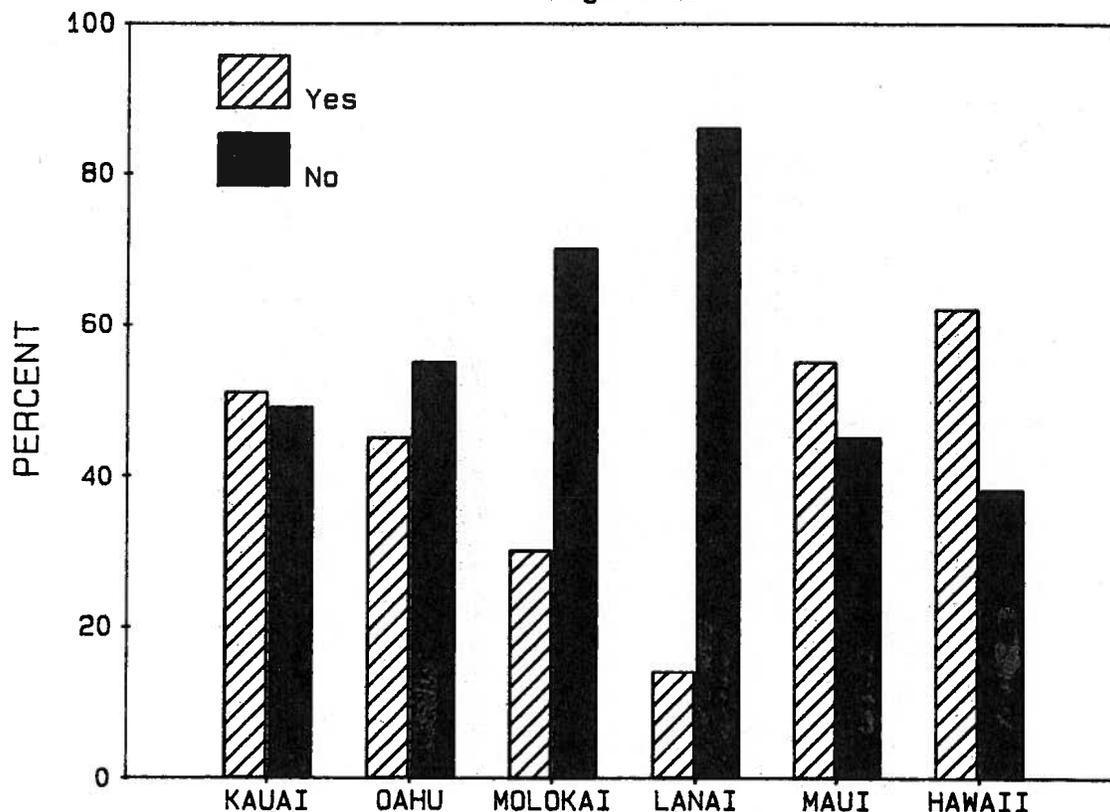
Question 12.a.

Are you satisfied with Hawaii's laws and rules? (Figure 19)

	Yes		No	
Kauai	45	51%	44	49%
Oahu	122	45%	147	55%
Molokai	3	30%	7	70%
Lanai	1	14%	6	86%
Maui	52	55%	42	45%
Hawaii	130	62%	79	38%

The mixed response reflects the diversity of fishing regulations, as well as the large proportion of fishermen who were unfamiliar with all of the regulations (see Question 11).

Figure 19

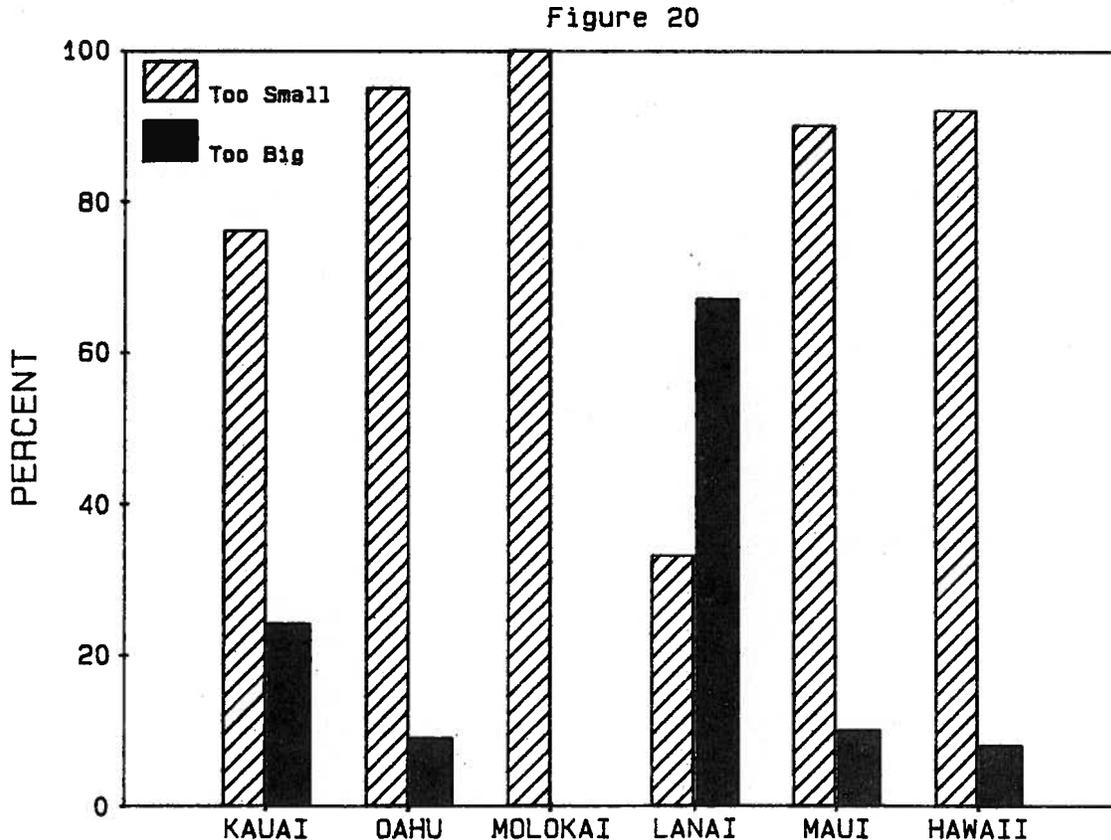


Questions 12.b through 12.g all refer to Question 12.a, and should be read "If 'No', what do you think are the problems? (you may check more than one)".

Question 12.b. **Legal minimum fish sizes.** (Figure 20)

	Too Small		Too Big	
	Count	Percentage	Count	Percentage
Kauai	16	76%	5	24%
Oahu	56	95%	5	9%
Molokai	3	100%	-	-
Lanai	1	33%	2	67%
Maui	9	90%	1	10%
Hawaii	44	92%	4	8%

Most of the respondents felt that the legal minimum fish sizes were too small.



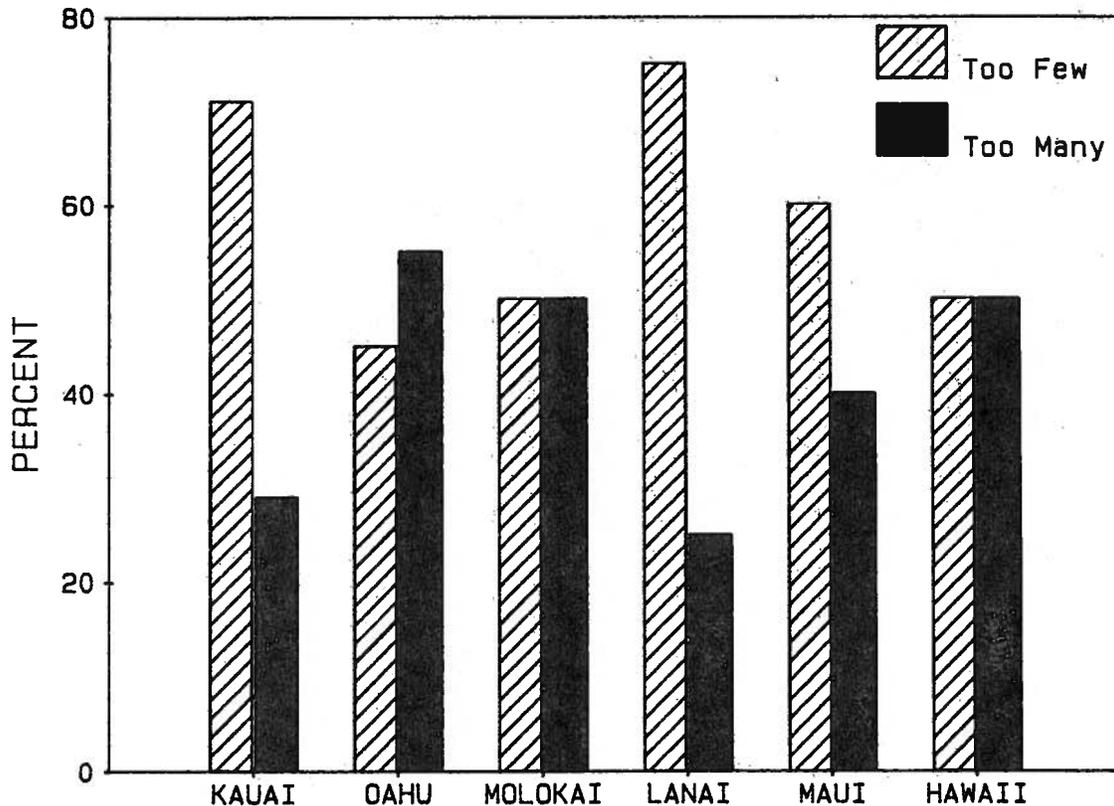
Question 12.c.

Bag (daily catch) limits. (Figure 21)

	Too Few		Too Many	
Kauai	10	71%	4	29%
Oahu	17	45%	21	55%
Molokai	1	50%	1	50%
Lanai	3	75%	1	25%
Maui	6	60%	4	40%
Hawaii	15	50%	15	50%

Note: It was pointed out by several respondents that this question could be interpreted as "too few or too many fish of a given species allowed in a given bag limit", or "too few or too many species covered by bag limits". Therefore, the responses to this question should be viewed with caution.

Figure 21

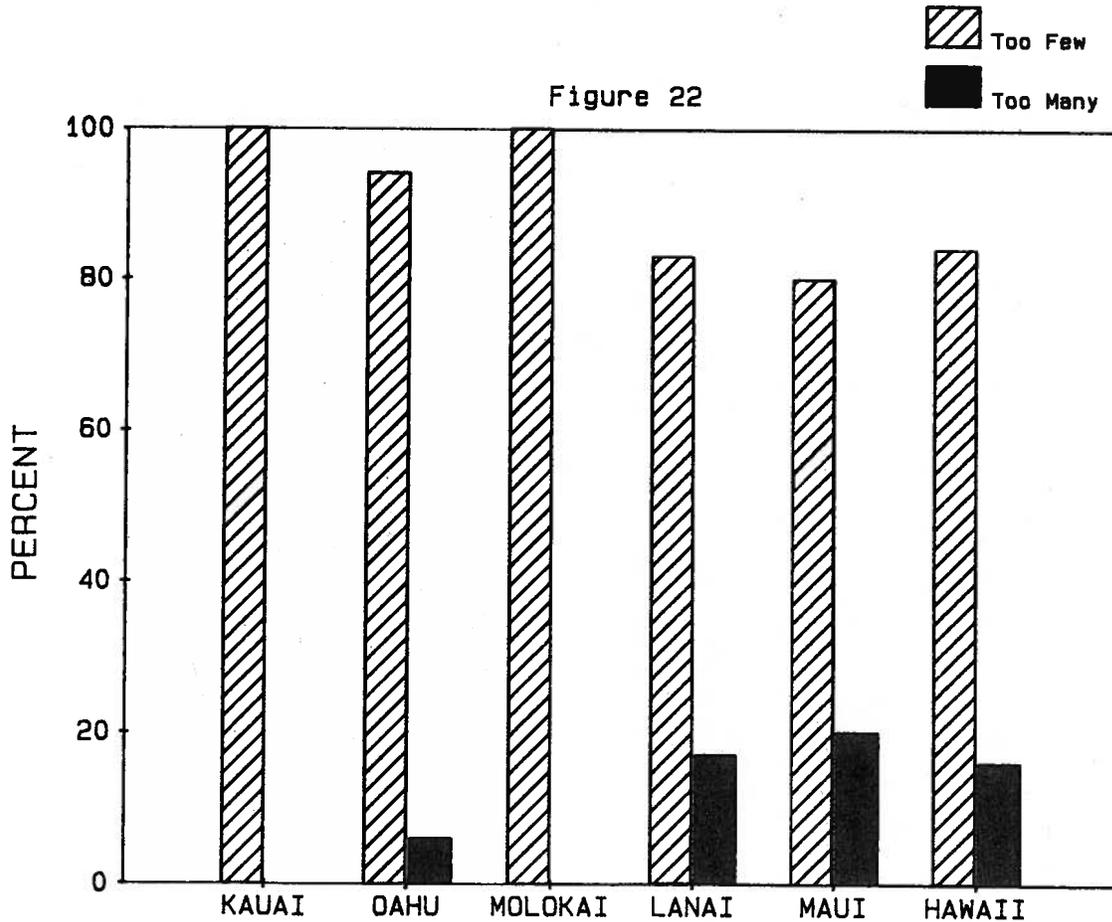


Question 12.d.

Protected areas (regulated or no-fishing "kapu"). (Figure 22)

	Not Enough		Too Many	
Kauai	25	100%	-	-
Oahu	73	94%	5	6%
Molokai	2	100%	-	-
Lanai	5	83%	1	17%
Maui	20	80%	5	20%
Hawaii	31	84%	6	16%

The majority of the respondents felt that there were not enough protected "kapu" areas.

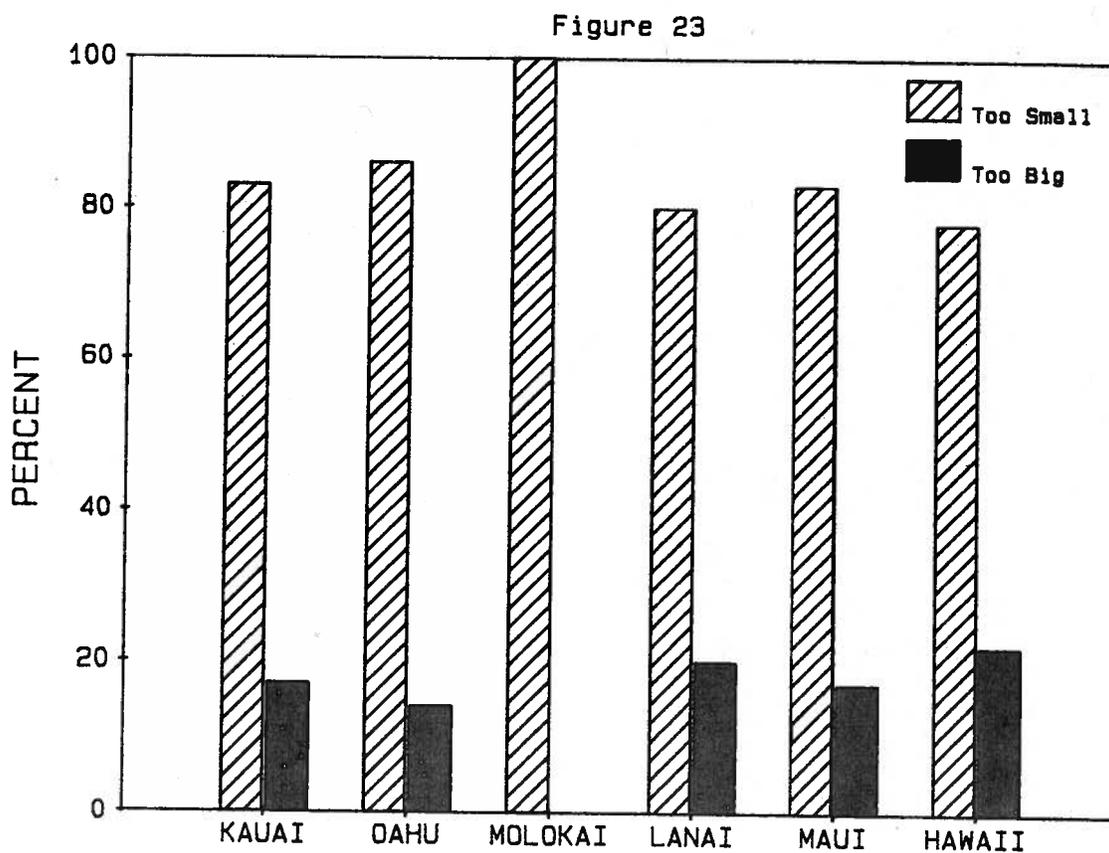


Question 12.e.

Legal minimum net mesh sizes. (Figure 23)

	Too Small		Too Big	
Kauai	20	83%	4	17%
Oahu	69	86%	11	14%
Molokai	3	100%	-	-
Lanai	4	80%	1	20%
Maui	15	83%	3	17%
Hawaii	25	78%	7	22%

Most of the respondents felt that the allowable net mesh size was too small. That is, these fishermen generally felt that the size of net mesh openings should be larger.

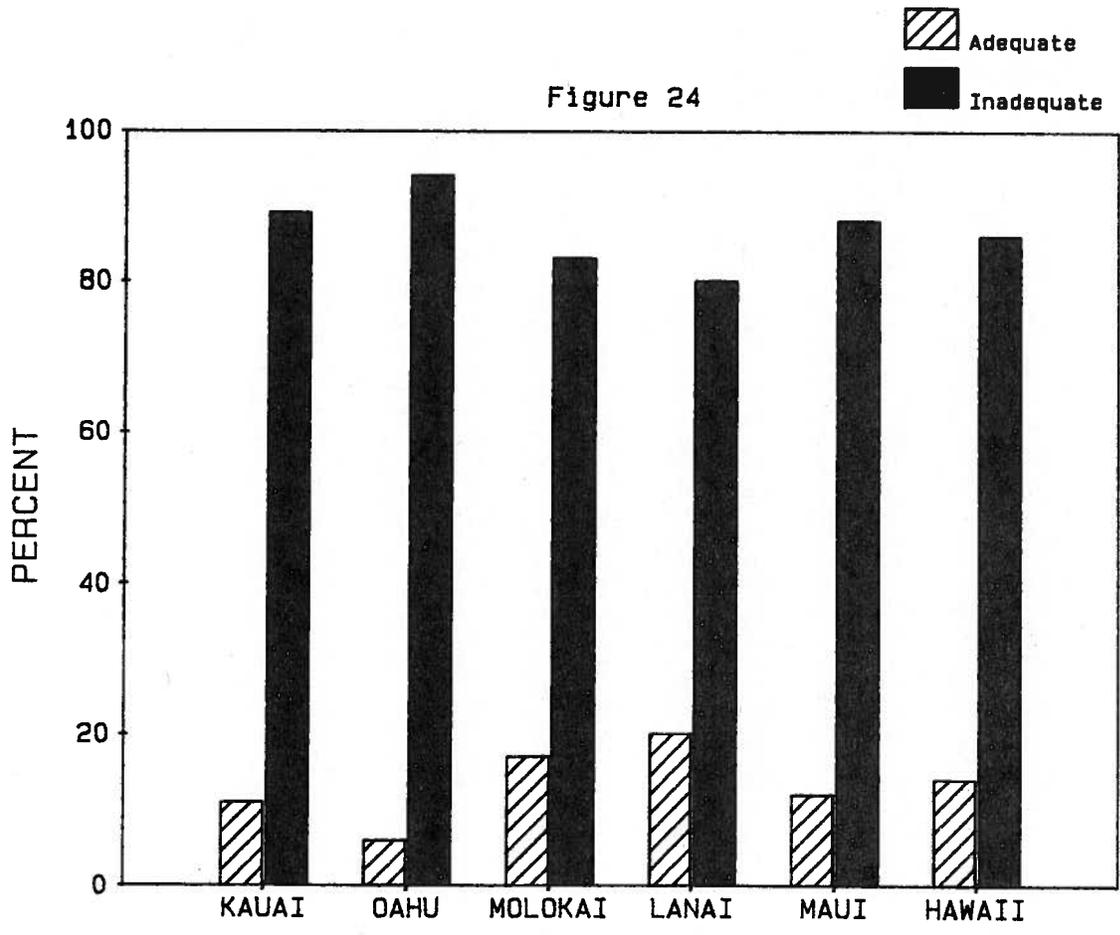


Question 12.f.

Enforcement of existing regulations.
(Figure 24)

	Adequate		Not Adequate	
	-----		-----	
Kauai	4	11%	33	89%
Oahu	7	6%	111	94%
Molokai	1	17%	5	83%
Lanai	1	20%	4	80%
Maui	4	12%	29	88%
Hawaii	7	14%	44	86%

There appears to be a need for more and/or better enforcement of fishing regulations.



Question 12.g. Written responses to "other" reasons for
dissatisfaction with fishing regulations:

<u>Response:</u>	<u>Number Responses:</u>
I. KAUAI	
Net fishing should be restricted or banned.....	9
Trap fishing should be restricted or banned.....	4
Nets should have larger eye.....	2
Laws not being enforced.....	2
Native Hawaiian fishing rights need to be more extensive and consistent.....	1
Senior citizens should get break on papio, moilii, etc. regulations.....	1
Should redefine "commercial fisherman" and have limited entry for full-time fishermen only.....	1
Moi bag limits should be 100 small and 50 large.....	1
II. OAHU	
Net fishing should be restricted or banned.....	44
Enforcement is inadequate.....	8
Regulations should be based on gear, not species (e.g., number of hooks, mesh size, etc.).....	3
Need recreational saltwater license.....	3
50-ft. nehu net is unfair to non-aku boats (same licensing requirements, taxes, etc. otherwise).....	2
Need minimum size for ahi sales (e.g., 10 lb.).....	2
Need minimum size for aku sales (e.g., 5 lb.).....	2
Public needs to be educated about laws.....	2
License fees should go to enforcement.....	2
Need to restrict aku boats around FADs.....	2
Long-term goals re: resources are lacking and/or misdirected due to politics and inferior managers.....	2
Need to restrict foreign fishing in Hawaiian waters.....	1
Need closed seasons for more species.....	1
Need immediate 2-year moratorium on lobster fishing.....	1
Need rotating kapu areas.....	1
Re-define "commercial fisherman".....	1
Should be total kapu in Waimea Bay.....	1
Native Hawaiian fishing rights should be made consistent with other Native Americans.....	1
Baiting permits should not be required for small operations.....	1
Laws are not stated clearly or are inconsistent.....	1
Laws should be based more on species' biology.....	1

III. MOLOKAI

- Licenses should be required of tourists.....1
- Charter boats should have higher fees.....1
- Some laws, e.g., deep bottomfish, should be re-examined re: practicality (they die anyway).....1
- Mullet kapu should be extended to 4 mo. (Dec. to Mar.)...1
- Netting should be allowed off Kaunakakai wharf.....1
- Netting of akule and reef fish should be restricted.....1

IV. LANAI

- Fishermen need to be educated about the reasons for fishing regulations.....1
- Should have option of leaving catch reports at HDAR.....1
- Need more than one warden on Lanai.....1
- Should have limited entry.....1
- Net fishing and other non-selective gear should be restricted.....1

V. MAUI

- Net fishing should be restricted or banned.....5
- Nehu catches should be allowed for commercial aku boats only.....2
- Need bag limits for more species.....1
- Enforcement is inadequate.....1
- Need enforcement hot line.....1
- Kapu areas should be opened only for a few months, and only for pole & line fishing.....1
- Redefine "commercial fisherman".....1
- Some laws, esp. deep bottomfish, should be re-examined re: practicality (they die anyway).....1
- Spotter planes should be banned.....1
- Need rotating kapu areas.....1

VI. HAWAII

- Need minimum size for ahi sold (e.g., 5, 15, 20 lb.)....8
- Net fishing should be restricted or banned.....6
- Enforcement is inadequate.....5
- Redefine "commercial fisherman".....2
- Licensing and selling not enforced.....2
- Keep foreign fishermen out of Hawaiian waters.....2
- Limit number of fishing tournaments.....1
- Need minimum size for aku (e.g., 5 lb.).....1
- Current laws are generally inadequate as conservation measures.....1
- Not enough species covered by laws.....1
- Sale of aquarium fish should be banned.....1
- Need rotating kapu system.....1

Closed lobster season is unnecessary if eggs and sizes protected.....1
Need bag limit for ahi, esp. small ones.....1
Meat palu should be banned.....1
DOT should enforce boating laws.....1
Public not being educated about regulations.....1
Release of small billfish should be mandatory.....1
Need saltwater recreational license.....1
Need one-day license for visitors.....1
License fees should go to enforcement.....1
Restrict bait-fishing in NWHI.....1
Restrict length of longlines and set minimum distance they can fish from FADs.....1

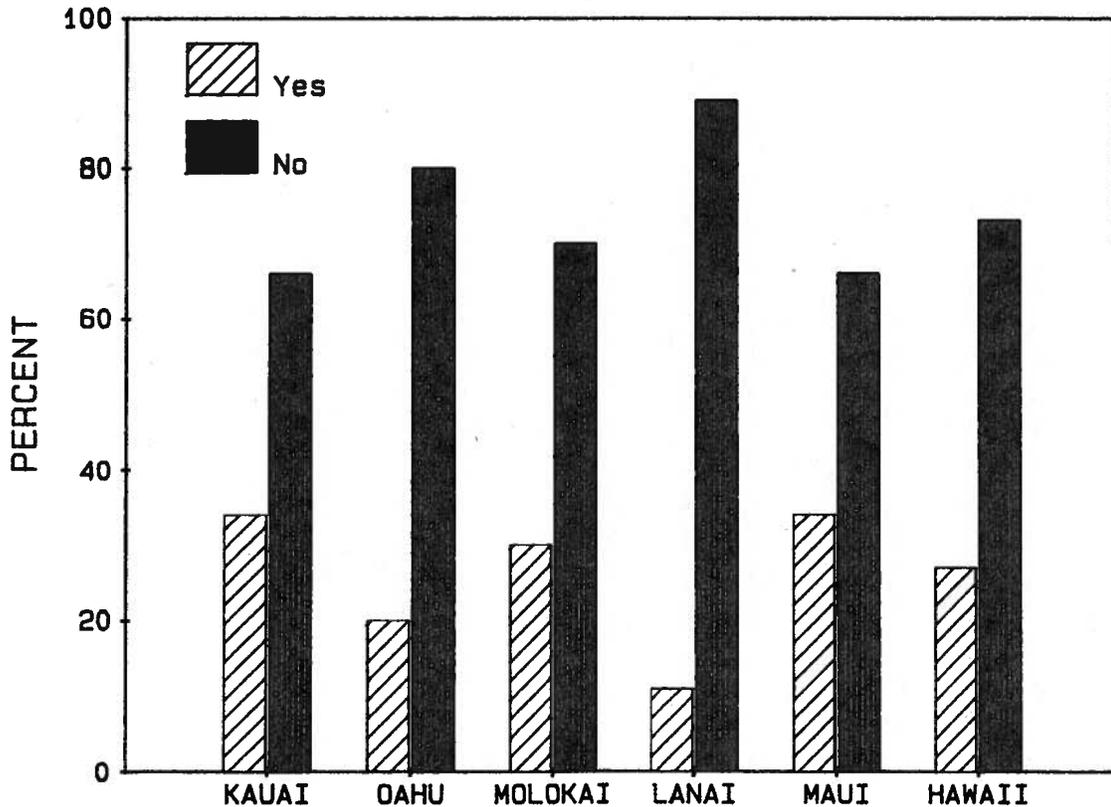
Question 13.a.

In your opinion, is commercial fishing generally good now? (Figure 25)

	Yes		No	
	Count	Percentage	Count	Percentage
Kauai	31	34%	60	66%
Oahu	57	20%	233	80%
Molokai	3	30%	7	70%
Lanai	1	11%	8	89%
Maui	34	34%	67	66%
Hawaii	61	27%	168	73%

Although this was a general question, most of the respondents indicated that they were unhappy with the present state of commercial fishing in Hawaii. The reasons follow.

Figure 25



Question 13.b.

If "No" (to Question 14.a) what do you think are the reasons? (you may check more than one):

	<u>Kauai</u> (Fig. 26.b)	<u>Oahu</u> (Fig. 26.c)	<u>Molokai</u> (Fig. 26.d)
Fewer fish due to over-fishing	35 29%	152 31%	6 30%
Fewer fish due to natural cycles or climate changes ..	21 17%	54 11%	3 15%
Fewer fish due to urbanization and pollution	15 12%	104 21%	5 25%
Competition from foreign and mainland fishermen ..	15 12%	99 21%	3 15%
Seasonally unstable markets	36 30%	80 16%	3 15%

	<u>Lanai</u> (Fig. 26.e)	<u>Maui</u> (Fig. 26.f)	<u>Hawaii</u> (Fig. 26.g)
Fewer fish due to over-fishing	6 50%	41 37%	90 25%
Fewer fish due to natural cycles or climate changes..	2 17%	14 13%	73 21%
Fewer fish due to urbanization and pollution	2 17%	23 21%	55 16%
Competition from foreign and mainland fishermen..	1 8%	18 16%	47 13%
Seasonally unstable markets	1 8%	16 14%	90 25%

Note: Written responses to "other" reasons commercial fishing is not generally good now, are listed below.

Figure 26.a
KAUAI

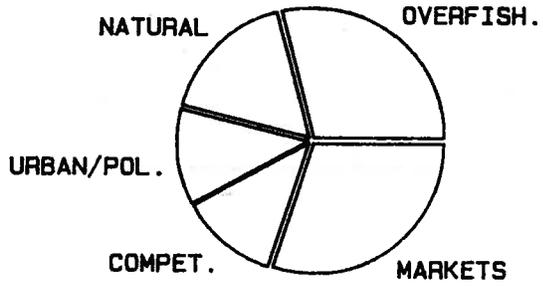


Figure 26.b
OAHU

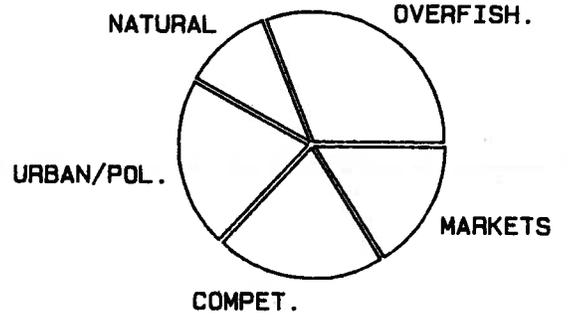


Figure 26.c
MOLOKAI

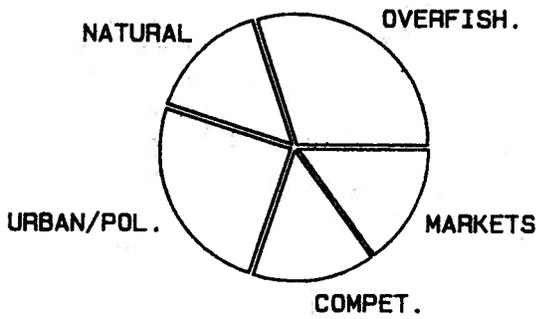


Figure 26.d
LANAI

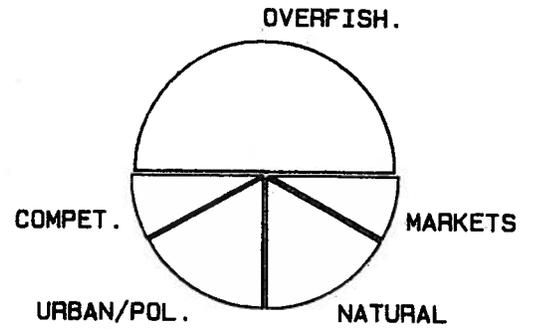


Figure 26.e
MAUI

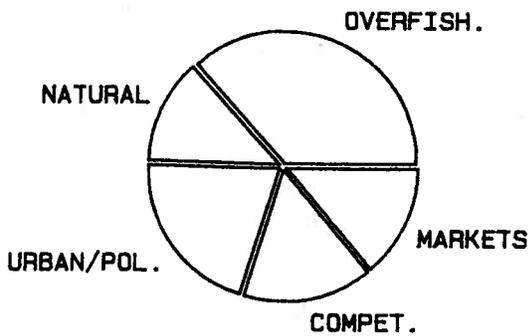
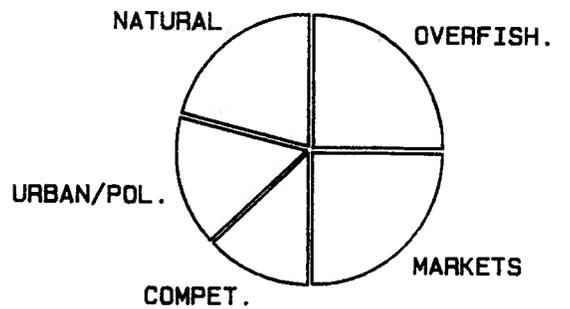


Figure 26.f
HAWAII



Question 13.b Written responses to "other" reasons why commercial fishing in Hawaii is not generally good now:

<u>Response:</u>	<u>Number Responses:</u>
I. KAUAI	
Nets and traps cause non-specific over-harvesting.....	5
Need to redefine "commercial"; competition from recreational and part-timers.....	2
Aerial spotting contributes to over-fishing.....	1
Unstable ex-vessel prices.....	1
FADs not being replaced.....	1
FADs disrupting normal fishing patterns.....	1
Biological competition/predation by taape.....	1
Government not helping to develop markets outside HI....	1
Thrillcraft/divers conflict with shore fishing.....	1
II. OAHU	
Net fishing causing non-selective over-harvesting.....	16
Auction monopoly/limited marketing options: while overhead costs rise, ex-vessel prices are fixed and do not reflect retail price.....	14
Need to redefine "commercial fisherman": competition from unlicensed and part-time sellers.....	8
Not enough FADs, especially inshore.....	4
Habitat destruction by hurricane.....	4
Regulations not being enforced.....	4
Unstable market.....	3
Lack of education about conservation.....	2
Aku boats over-harvesting resource.....	2
Inadequate harbors, fuel, and docks.....	2
Biological competition from taape.....	2
NWHI regulations inadequate to protect resources.....	2
Not enough artificial reefs as sanctuaries.....	2
Should be limited entry...unlimited entry strains resources and lowers prices.....	1
Aerial spotting contributes to over-fishing.....	1
Porpoises scare fish, but we can't retaliate.....	1
Urbanization and filling of wetlands and estuaries.....	1
No cannery.....	1
Purse seiners over-harvesting resources.....	1
Uncontrolled theft of traps.....	1
Not enough kapu areas.....	1
Limited natural bottomfish habitat	1
Government and fishing interests have no initiative, only knee-jerk reactions.....	1
Too few regulations on fish size, and existing ones are too small.....	1

III. MOLOKAI

Price-fixing and unfair favoritism at auctions.....	1
Mullet kapu should be longer.....	1
Jackpot fishing is gambling, so should have \$10,000 organizers fee, going to enforcement.....	1

IV. LANAI

Nets causing non-specific over-fishing.....	2
Ex-vessel price fixing as overhead costs increase.....	1
Agricultural pollution impacting nearshore fishing.....	1
Plastic and other pollution impacting fishing.....	1
Competition from Maui and Molokai fishermen.....	1

V. MAUI

Biological competition from taape and other imports.....	7
Not enough FADs.....	3
Poor baiting conditions for aku boats.....	3
Foreign fishermen allowed in Hawaiian waters.....	2
Thrillcraft disrupting nearshore fishing.....	2
Nets causing over-harvesting.....	1
Unfair kapus: closures involve fishermen, but commercial users, e.g., thrillcraft not affected...	1
Biological competition from balloonfish.....	1
Agricultural runoff impacting nearshore fishing.....	1
Frozen imports allowed to be called "fresh" in market...	1
Hawaii has limited habitats and nutrients, therefore low carrying capacity and sparse fauna.....	1
Unregulated taking of black coral.....	1
Poor harbors and long waiting list for slips.....	1
Alaskan current disrupted fishing with cool water.....	1
Radiation from South Pacific testing impacting fish.....	1
Loss of loan money due to poor policing of loans.....	1

VI. HAWAII

Limited marketing options: overhead costs increasing, ex-vessel prices are fixed and do not reflect retail price.....	14
Should be limited entry.....	5
Too many tournaments.....	4
FADs disrupting normal fishing patterns.....	4
Foreign fishermen allowed in Hawaiian waters.....	3
Need to redefine "commercial fisherman": competition from recreational and part-timers.....	3
Lack of public education re: resources.....	2
Too many charter boats around FADs.....	2
FADs too far out or in non-productive areas.....	2
Not enough ramps.....	1

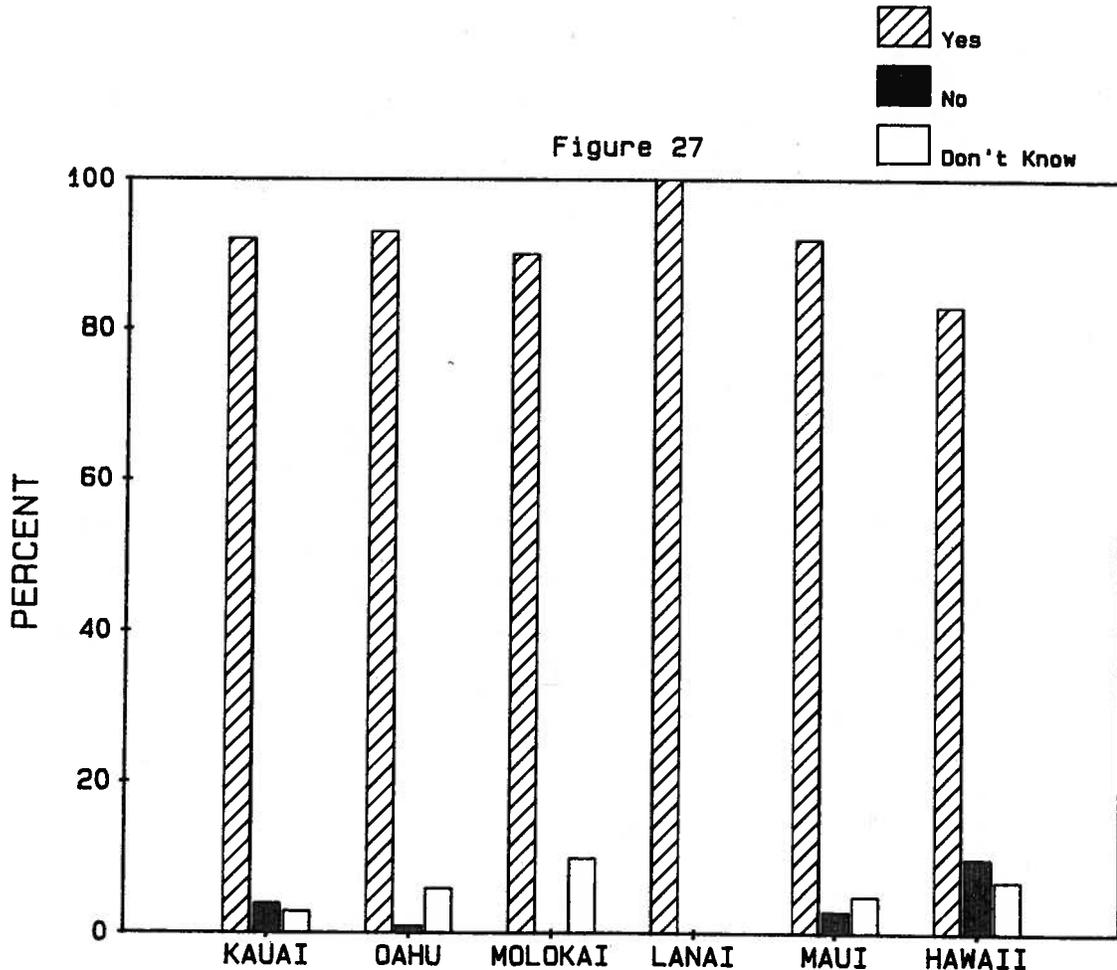
Ciguatera not being controlled.....	1
Blasting at Keahole Pt. causing ciguatera outbreak.....	1
Insurance costs too high.....	1
Nets causing over-fishing.....	1
Laws not being enforced.....	1
Too many small ahi being taken.....	1
Change in current patterns.....	1
Mismanagement of bait and nearshore fisheries.....	1
Too little effort by government to help small-scale fishermen, e.g. few offshore FADs, no attempts to educate public about BTS research, etc.....	1
Aku boats over-fishing FADs.....	1
1987 just a "bad year".....	1

Questions 14.a through 14.h are all responses to the question "Do you feel that the following State projects have helped Hawaii's fishermen?":

Question 14.a. **FAD buoys / trolling alley.** (Figure 27)

	Yes		No		Don't Know	
	Count	Percentage	Count	Percentage	Count	Percentage
Kauai	84	92%	4	4%	3	3%
Oahu	266	93%	3	1%	17	6%
Molokai	9	90%	-	-	1	10%
Lanai	8	100%	-	-	-	-
Maui	90	92%	3	3%	5	5%
Hawaii	185	83%	23	10%	15	7%

Most of the respondents felt that the State's fish aggregating device program has helped, perhaps reflecting the large scale and high profile of the program.



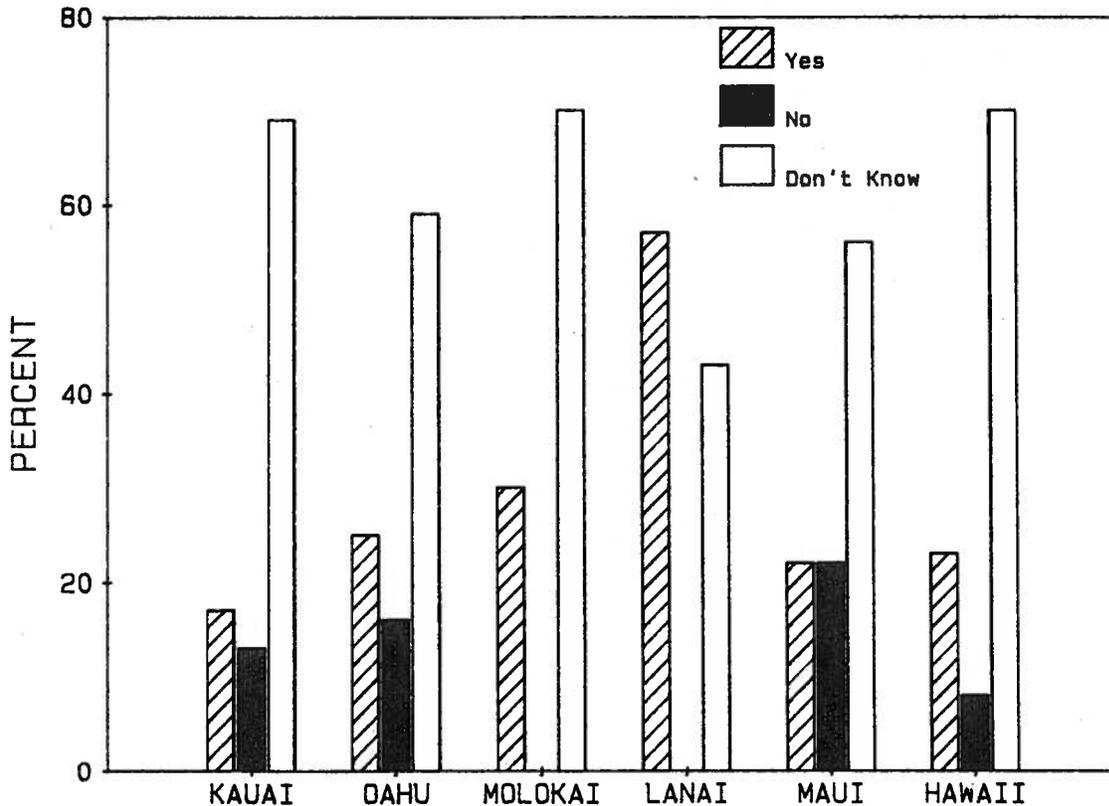
"Do you feel that the following State projects have helped Hawaii's fishermen?":

Question 14.b. **Non-nehu baitfish culturing.** (Figure 28)

	Yes		No		Don't Know	
	Count	Percentage	Count	Percentage	Count	Percentage
Kauai	13	17%	10	13%	52	69%
Oahu	63	25%	40	16%	147	59%
Molokai	3	30%	-	-	7	70%
Lanai	4	57%	-	-	3	43%
Maui	19	22%	19	22%	49	56%
Hawaii	42	83%	15	23%	130	70%

The large proportion of unsure responses reflects the nature of the program, which was conducted on a relatively small scale.

Figure 28



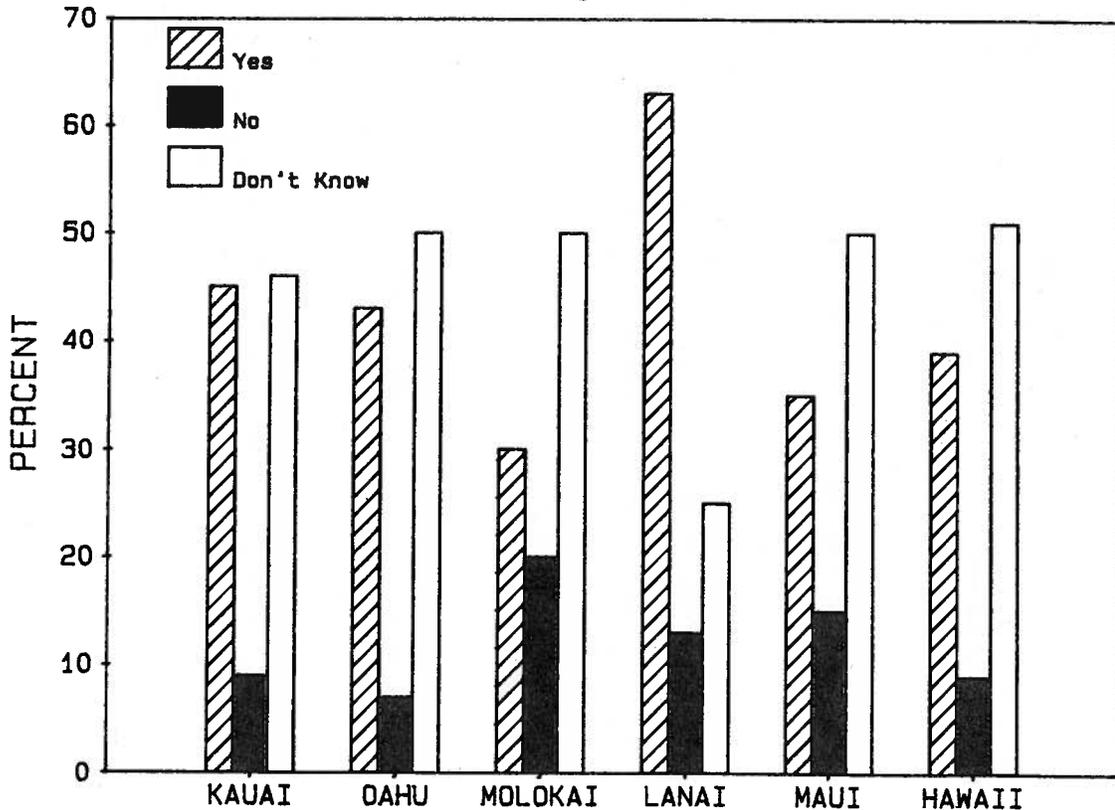
"Do you feel that the following State projects have helped Hawaii's fishermen?":

Question 14.c. **Development of ciguatera fish poison test kit. (Figure 29)**

	Yes		No		Don't Know	
	Count	Percentage	Count	Percentage	Count	Percentage
Kauai	35	45%	7	9%	36	46%
Oahu	112	43%	19	7%	130	50%
Molokai	3	30%	2	20%	5	50%
Lanai	5	63%	1	13%	2	25%
Maui	32	35%	14	15%	45	50%
Hawaii	765	39%	18	9%	99	51%

The large percentage of unsure responses reflects the fact that the test kit was still being researched and developed, and was not available to the public at the time of the survey.

Figure 29



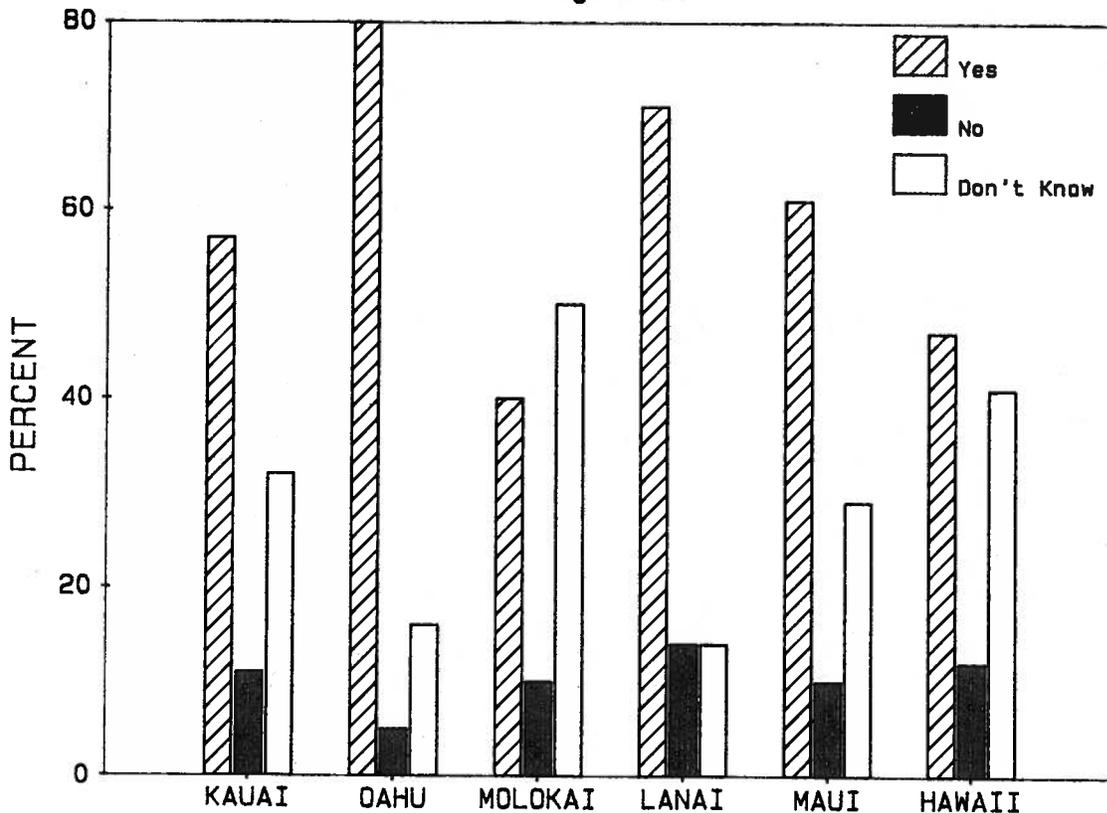
"Do you feel that the following State projects have helped Hawaii's fishermen?":

Question 14.d. **Building artificial reefs.** (Figure 30)

	Yes		No		Don't Know	
	Count	Percentage	Count	Percentage	Count	Percentage
Kauai	45	57%	9	11%	25	32%
Oahu	213	80%	12	5%	42	16%
Molokai	4	40%	1	10%	5	50%
Lanai	5	71%	1	14%	1	14%
Maui	54	61%	9	10%	26	29%
Hawaii	92	47%	24	12%	80	41%

Most respondents felt that artificial reefs had helped, especially on Oahu, where the artificial reef program had been active. The large proportion of unsure responses on the neighbor islands indicates the lack of artificial reef building activity there.

Figure 30



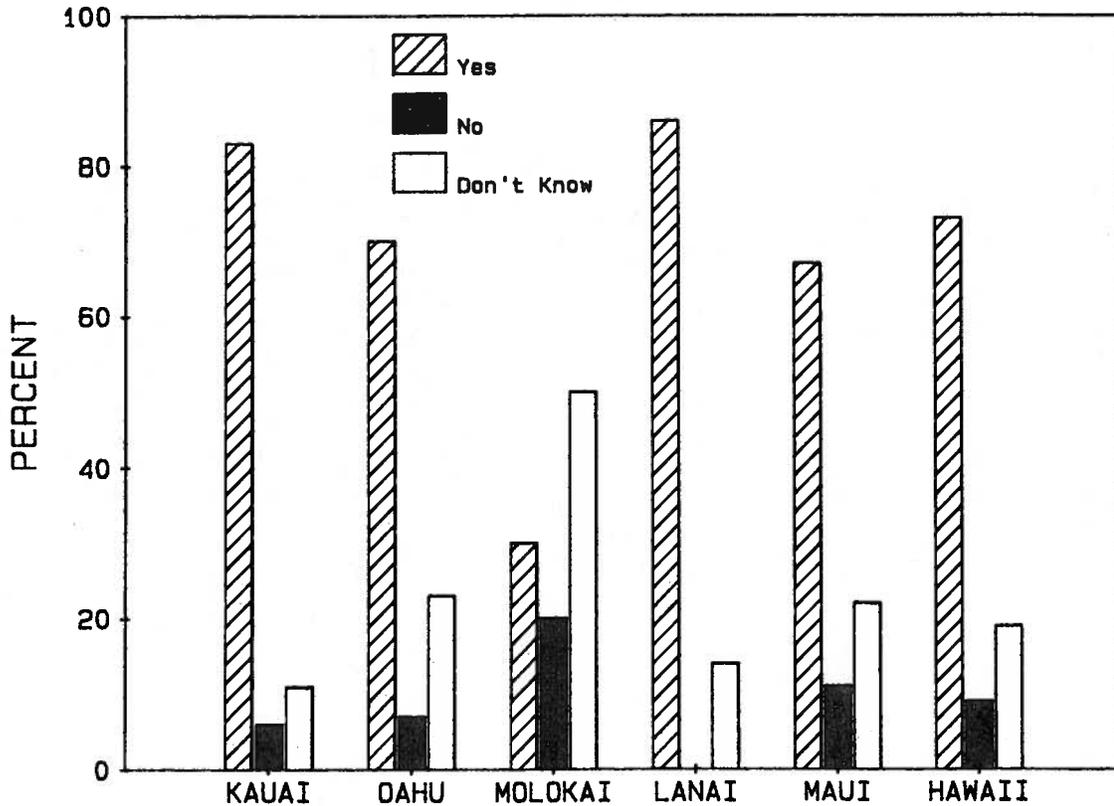
"Do you feel that the following State projects have helped Hawaii's fishermen?":

Question 14.e. "Burnt Tuna" research. (Figure 31)

	Yes		No		Don't Know	
	Count	Percentage	Count	Percentage	Count	Percentage
Kauai	68	83%	5	6%	9	11%
Oahu	183	70%	19	7%	61	23%
Molokai	3	30%	2	20%	5	50%
Lanai	6	86%	-	-	1	14%
Maui	60	67%	10	11%	20	22%
Hawaii	145	73%	18	9%	36	19%

Most of the respondents felt that research on Burnt Tuna Syndrome has helped.

Figure 31



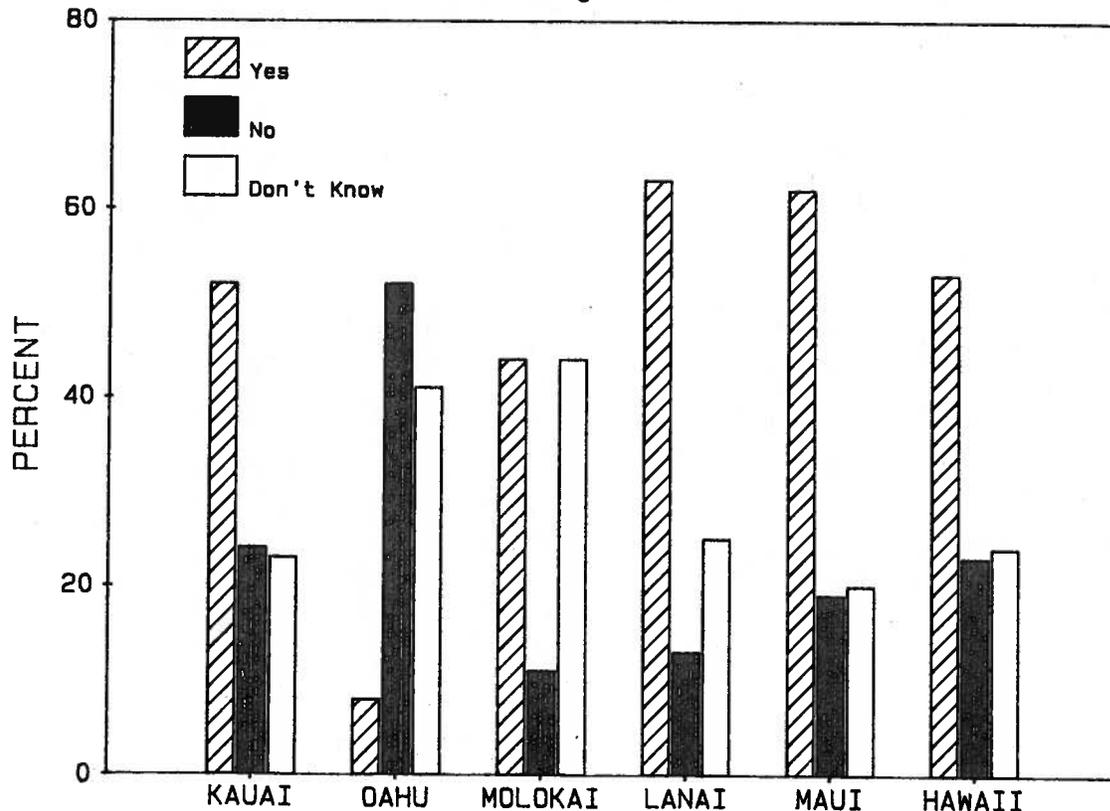
"Do you feel that the following State projects have helped Hawaii's fishermen?":

Question 14.f. **Monthly fish catch reports.** (Figure 32)

	Yes		No		Don't Know	
	Count	Percentage	Count	Percentage	Count	Percentage
Kauai	43	52%	20	24%	19	23%
Oahu	12	8%	79	52%	62	41%
Molokai	4	44%	1	11%	4	44%
Lanai	5	63%	1	13%	2	25%
Maui	56	62%	17	19%	18	20%
Hawaii	104	53%	46	23%	47	24%

Although there was widespread support for the monthly fish catch reports, the percentage of negative and unsure responses approximately equalled the positive ones, except on Oahu, where the positive responses were only a small percentage of the total. Several of the respondents stated that, although they were required to submit the reports, they weren't receiving anything in return and would like some sort of summary or other feedback from the reports.

Figure 32



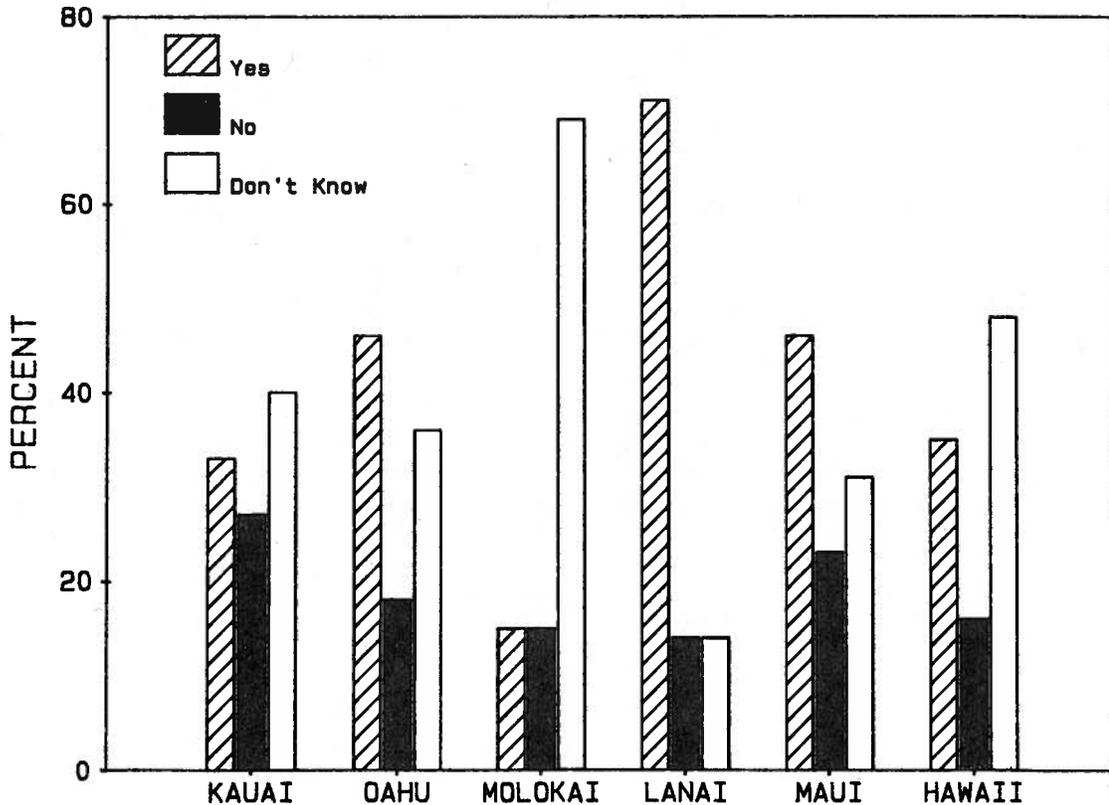
"Do you feel that the following State projects have helped Hawaii's fishermen?":

Question 14.g. Market development for taape. (Figure 33)

	Yes		No		Don't Know	
	Count	Percentage	Count	Percentage	Count	Percentage
Kauai	25	33%	20	27%	30	40%
Oahu	118	46%	47	18%	91	36%
Molokai	2	15%	2	15%	9	69%
Lanai	5	71%	1	14%	1	14%
Maui	42	46%	21	23%	28	31%
Hawaii	67	35%	31	16%	92	48%

The large proportion of unsure and negative responses probably reflects the low-profile and localized activity of the project, as well as the continuing negative attitude toward taape.

Figure 33

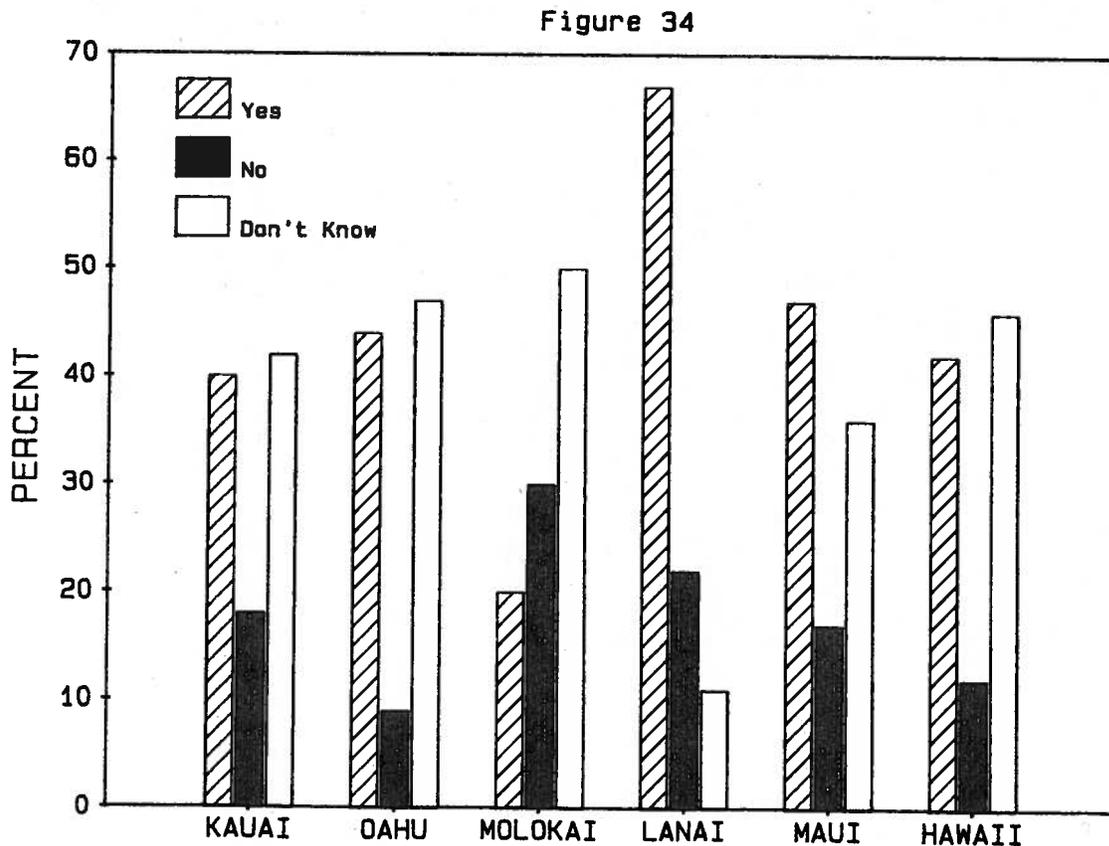


"Do you feel that the following State projects have helped Hawaii's fishermen?":

Question 14.h. New fishing grounds exploration.
(Figure 34)

	Yes		No		Don't Know	
	Count	Percentage	Count	Percentage	Count	Percentage
Kauai	31	40%	14	18%	32	42%
Oahu	113	44%	24	9%	122	47%
Molokai	2	20%	3	30%	5	50%
Lanai	6	67%	2	22%	1	11%
Maui	41	47%	15	17%	32	36%
Hawaii	79	42%	22	12%	86	46%

The large percentage of unsure responses reflects the small scale of the project. Several of the negative responses included statements that this type of project should be left to the fishermen.



"Do you feel that the following State projects have helped Hawaii's fishermen?":

Question 14.i. Comments on the effect of other state projects:

<u>Response:</u>	<u>Effect:</u>	<u>Number Responses:</u>
I. KAUAI		
Sea Grant program.....	helped.....	1
II. OAHU		
Introduction of taape and tilapia.....	not helped.....	1
Kapu on lobsters and other species during spawning season.....	helped.....	1
Kapu areas.....	helped.....	1
Marine Option Program baseline surveys for future reference.....	helped.....	1
III. MOLOKAI		
None		
IV. LANAI		
Low interest boat loans.....	helped.....	1
V. MAUI		
Lack of state boat loans for new boats..	not helped.....	1
State activities have little or no effect on fishing.....		1
Introduction of taape.....	not helped.....	1
VI. HAWAII		
Importation of taape.....	not helped.....	1
Aquaculture.....	helped.....	1
Lack of launching ramp maintenance.....	not helped.....	1
Slow development of ciguatera test.....	not helped.....	1
Mandatory catch reports.....	not helped.....	1
Burnt tuna research helpful, but need to follow up with education.....		1

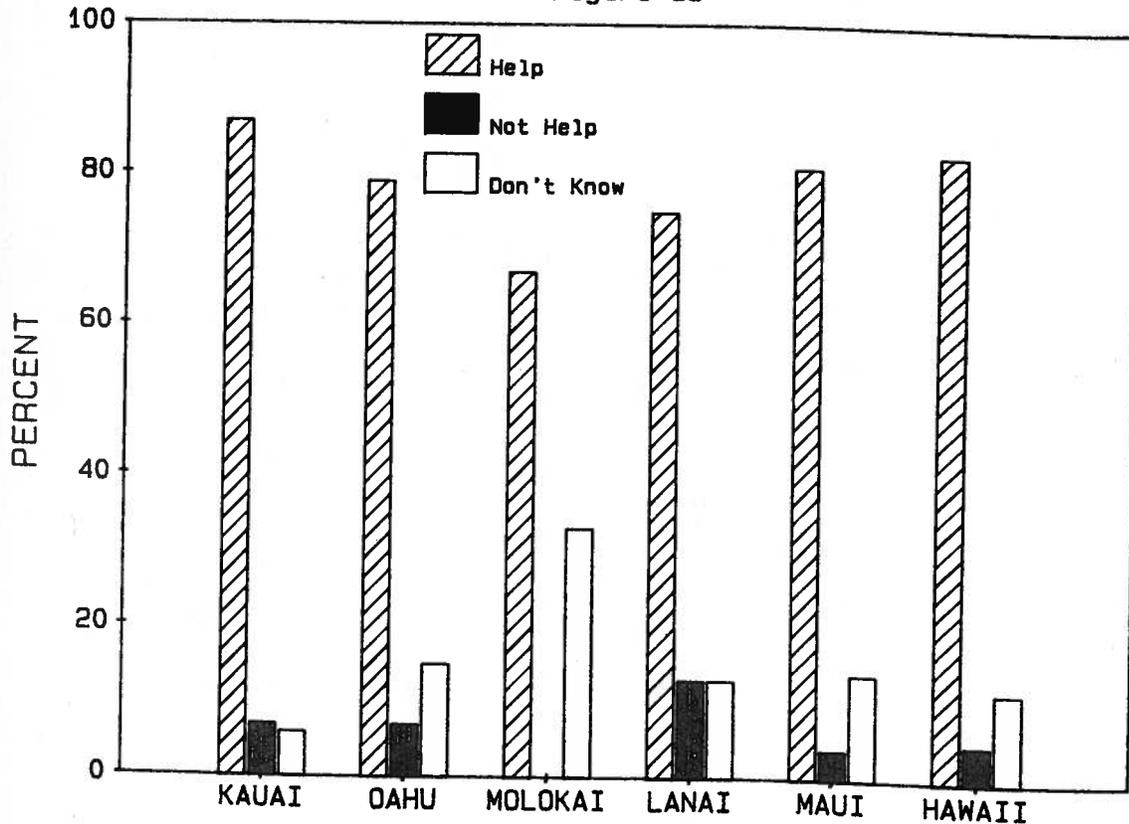
Questions 15.a through 15.h are all responses to the question "In your opinion, how would the following projects affect fishing in Hawaii?":

Question 15.a. Studies of ahi movement. (Figure 35)

	Would Help		Would Not Help		Don't Know	
Kauai	71	87%	6	7%	5	6%
Oahu	211	79%	18	7%	39	15%
Molokai	6	67%	-	-	3	33%
Lanai	6	75%	1	13%	1	13%
Maui	74	81%	4	4%	13	14%
Hawaii	175	83%	11	5%	25	12%

Most of the respondents indicated that such studies would help.

Figure 35



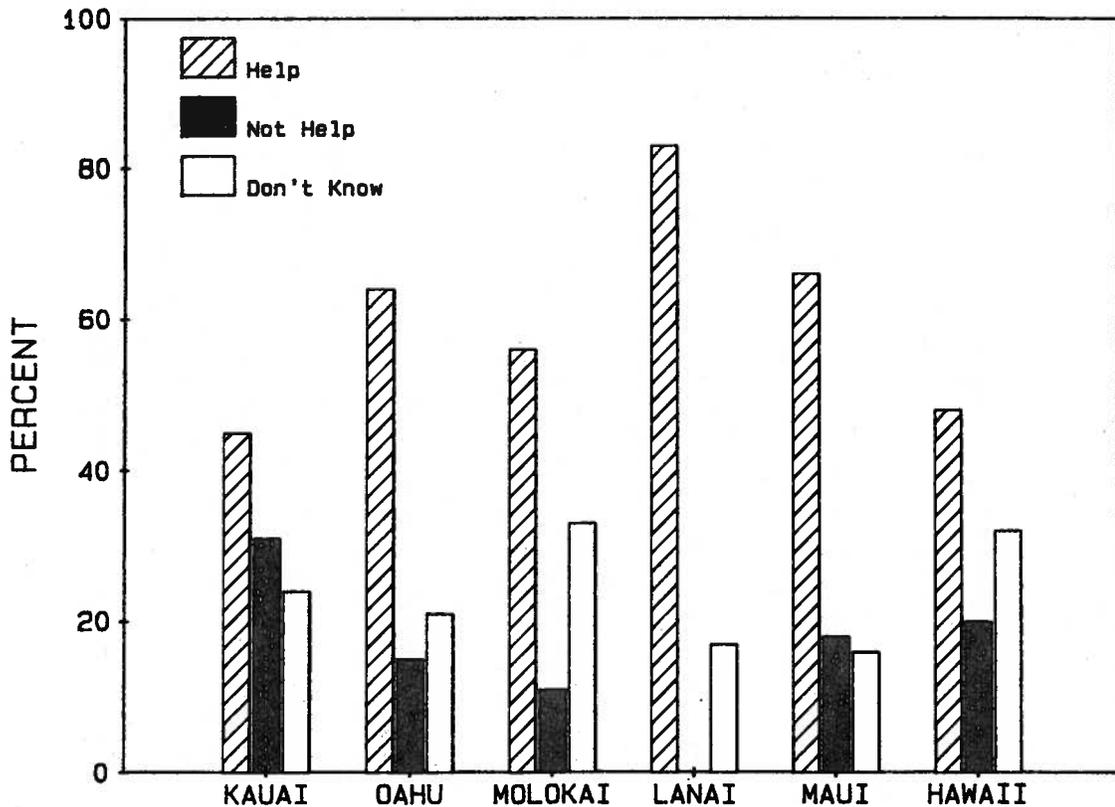
"In your opinion, how would the following projects affect fishing in Hawaii?":

Question 15.b. More protected (regulated or no-fishing "kapu") areas. (Figure 36)

	Would Help		Would Not Help		Don't Know	
	Count	Percentage	Count	Percentage	Count	Percentage
Kauai	37	45%	25	31%	20	24%
Oahu	170	64%	40	15%	55	21%
Molokai	5	56%	1	11%	3	33%
Lanai	5	83%	-	-	1	17%
Maui	59	66%	16	18%	14	16%
Hawaii	94	48%	40	20%	62	32%

The responses were mixed, but many respondents thought that more regulated areas would help, supporting the results of Question 12.d, which indicated that most respondents felt that there weren't enough of these areas.

Figure 36



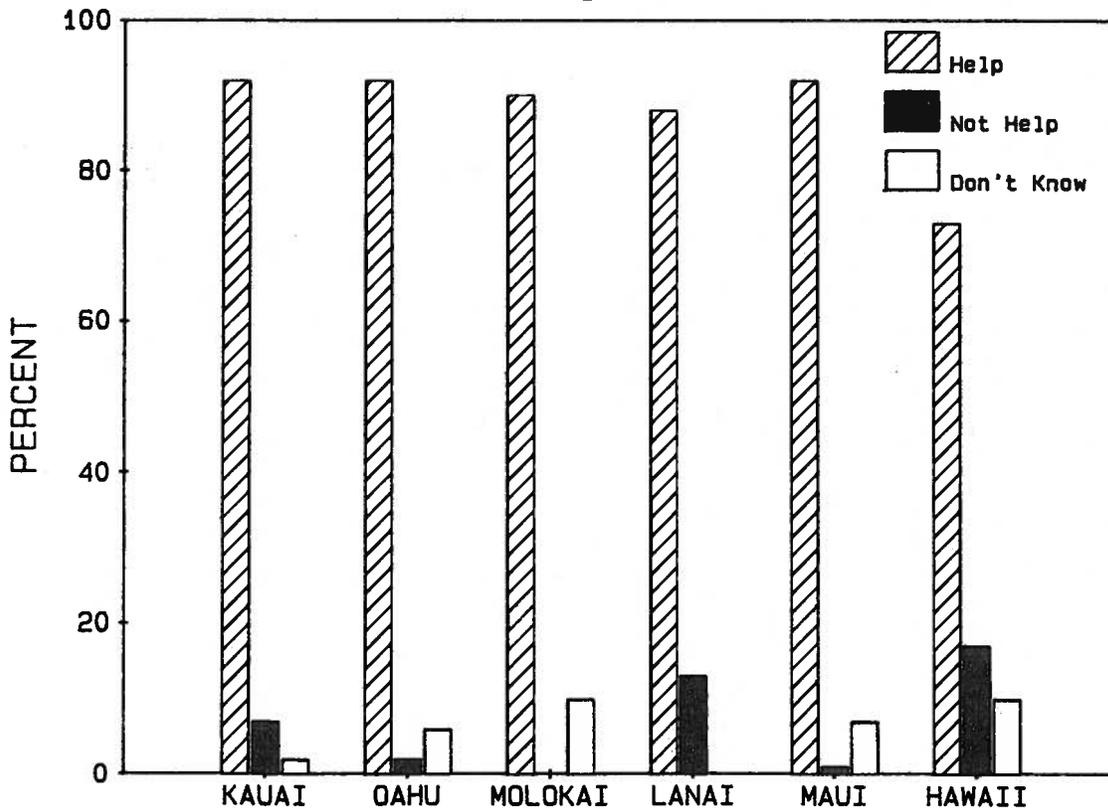
"In your opinion, how would the following projects affect fishing in Hawaii?":

Question 15.c. **More FAD buoys.** (Figure 37)

	Would Help		Would Not Help		Don't Know	
Kauai	81	92%	6	7%	2	2%
Oahu	252	92%	6	2%	16	6%
Molokai	9	90%	-	-	1	10%
Lanai	7	88%	1	13%	-	-
Maui	90	92%	1	1%	7	7%
Hawaii	156	73%	36	17%	21	21%

Most respondents felt that more fish aggregating devices (FAD buoys) would help, supporting the results of Question 14.a, which showed widespread support for the FAD program.

Figure 37



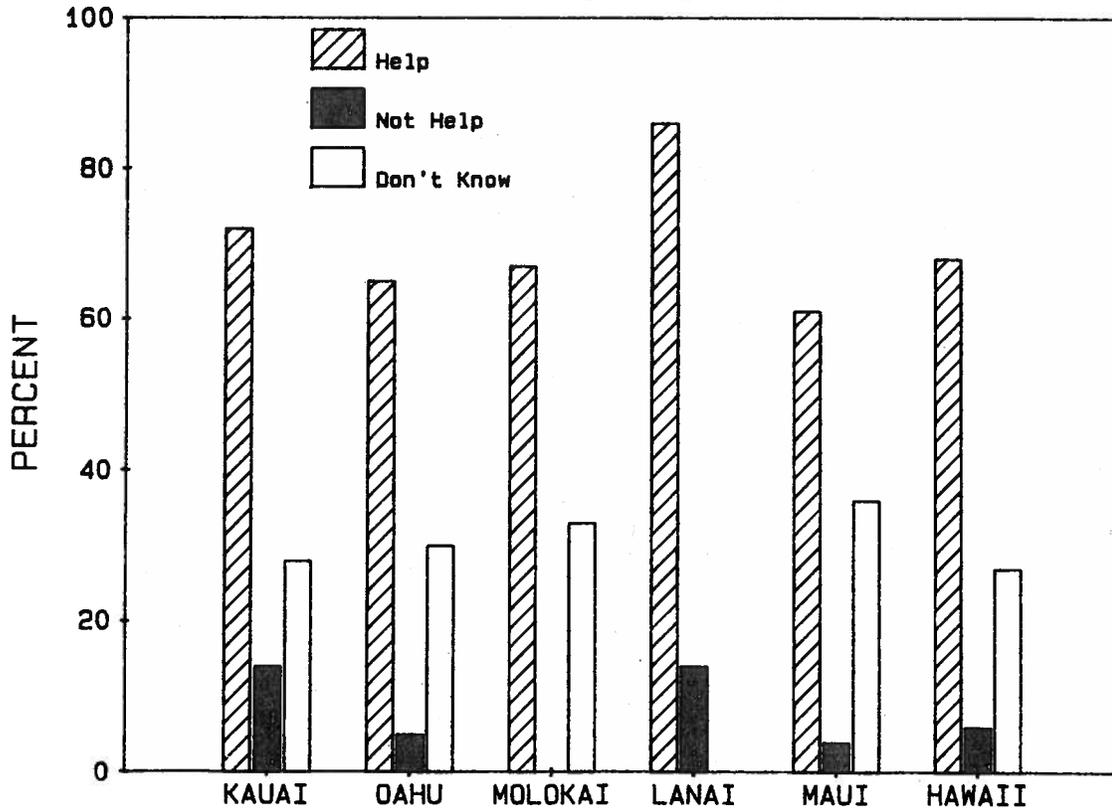
"In your opinion, how would the following projects affect fishing in Hawaii?":

Question 15.d. **Studies relating fishing to oceanography.**
(Figure 38)

	Would Help		Would Not Help		Don't Know	
Kauai	52	72%	10	14%	20	28%
Oahu	168	65%	14	5%	76	30%
Molokai	6	67%	-	-	3	33%
Lanai	6	86%	1	14%	-	-
Maui	51	61%	3	4%	30	36%
Hawaii	133	68%	11	6%	53	27%

Most of the respondents felt that more studies of fisheries oceanography would help.

Figure 38

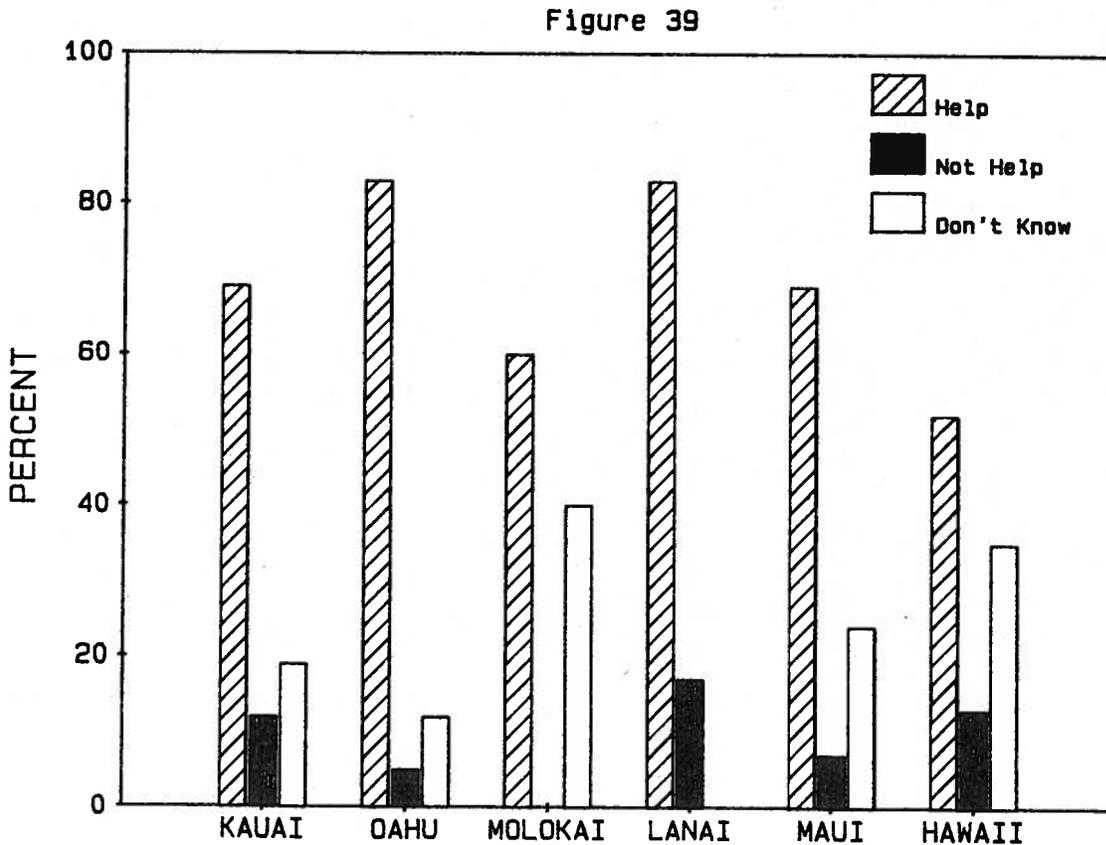


"In your opinion, how would the following projects affect fishing in Hawaii?":

Question 15.e. **More artificial reefs.** (Figure 39)

	Would Help		Would Not Help		Don't Know	
	-----	-----	-----	-----	-----	-----
Kauai	57	69%	10	12%	16	19%
Oahu	223	83%	14	5%	32	12%
Molokai	6	60%	-	-	4	40%
Lanai	5	83%	1	17%	-	-
Maui	63	69%	6	7%	22	24%
Hawaii	101	52%	25	13%	69	35%

Most of the respondents felt that more artificial reefs would help, corroborating the results of Question 14.d, in which most felt that the reefs had helped fishing.



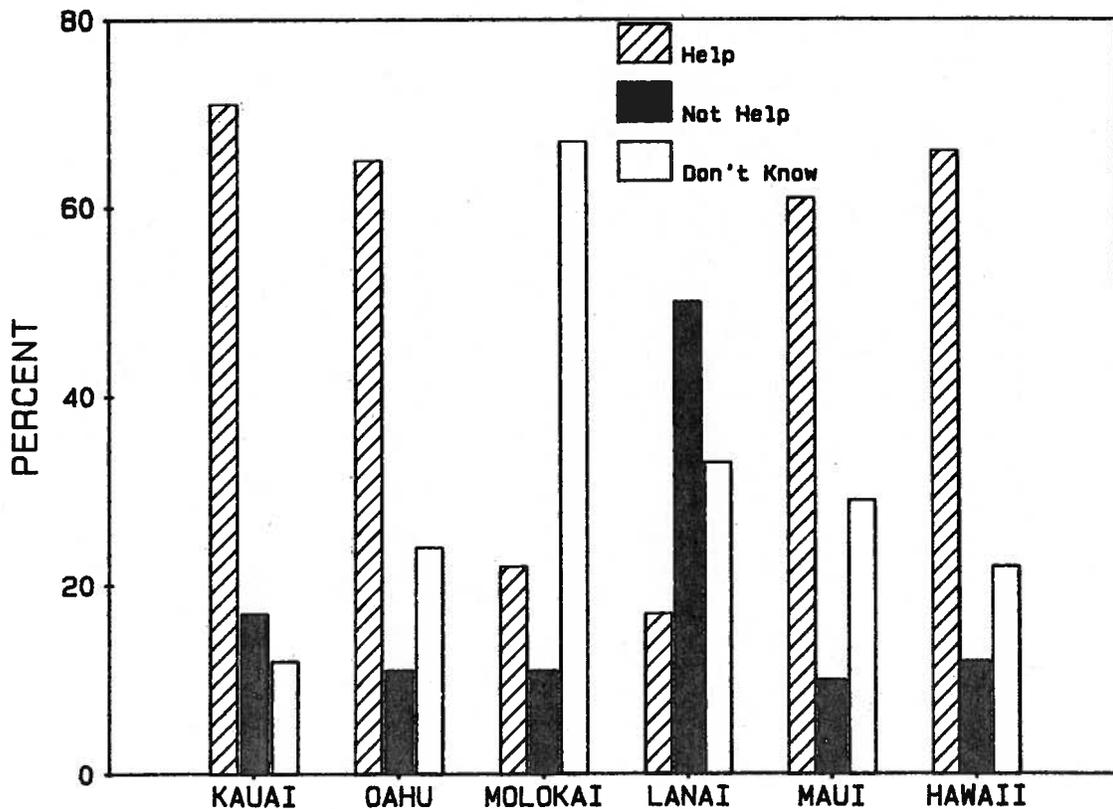
"In your opinion, how would the following projects affect fishing in Hawaii?":

Question 15.f. More studies on "Burnt Tuna". (Figure 40)

	Would Help		Would Not Help		Don't Know	
Kauai	59	71%	14	17%	10	12%
Oahu	170	65%	29	11%	64	24%
Molokai	2	22%	1	11%	6	67%
Lanai	1	17%	3	50%	2	33%
Maui	53	61%	9	10%	25	29%
Hawaii	132	66%	25	12%	44	22%

The general positive response indicates the need for this type of research, but the large proportion of unsure responses demonstrates the low-profile and slow dissemination of results from previous work.

Figure 40



"In your opinion, how would the following projects affect fishing in Hawaii?":

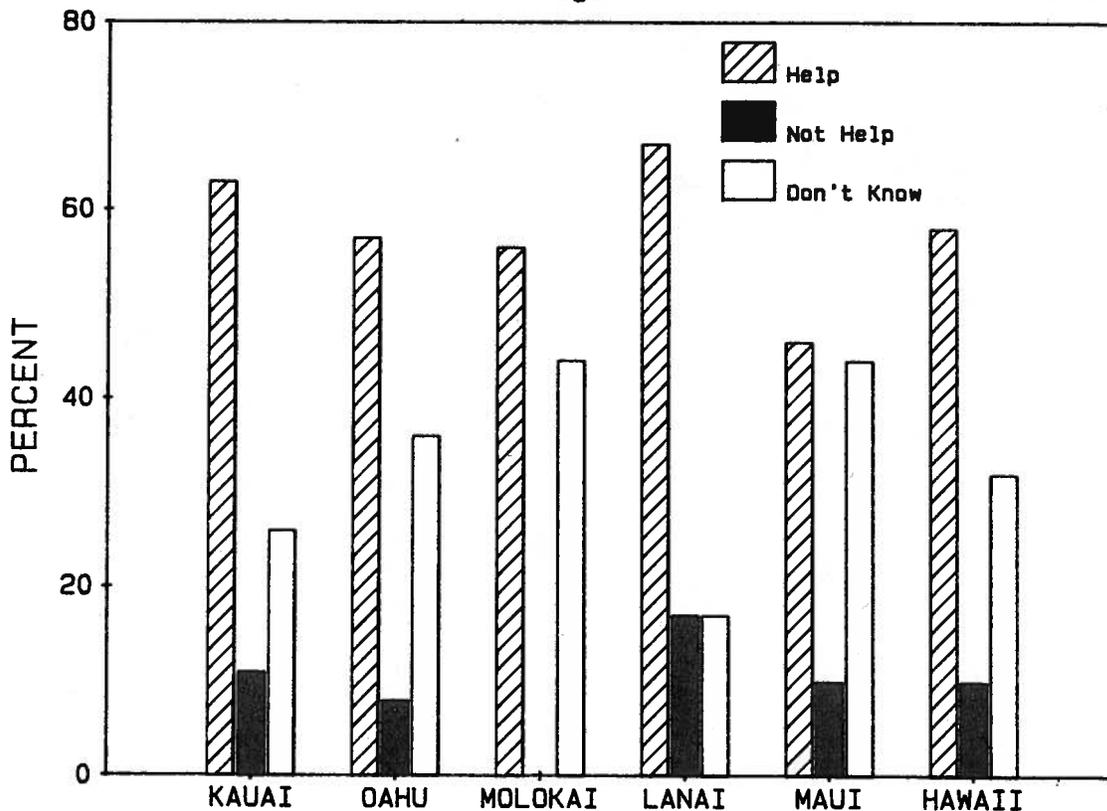
Question 15.g.

Ciguatera fish poison test kit.
(Figure 41)

	Would Help		Would Not Help		Don't Know	
Kauai	50	63%	9	11%	21	26%
Oahu	147	57%	20	8%	93	36%
Molokai	5	56%	-	-	4	44%
Lanai	4	67%	1	17%	1	17%
Maui	39	46%	8	10%	37	44%
Hawaii	115	58%	19	10%	63	32%

Most of the responses were positive, indicating the need for this research, but the large proportion of unsure responses demonstrates the lack of results from previous and current work.

Figure 41



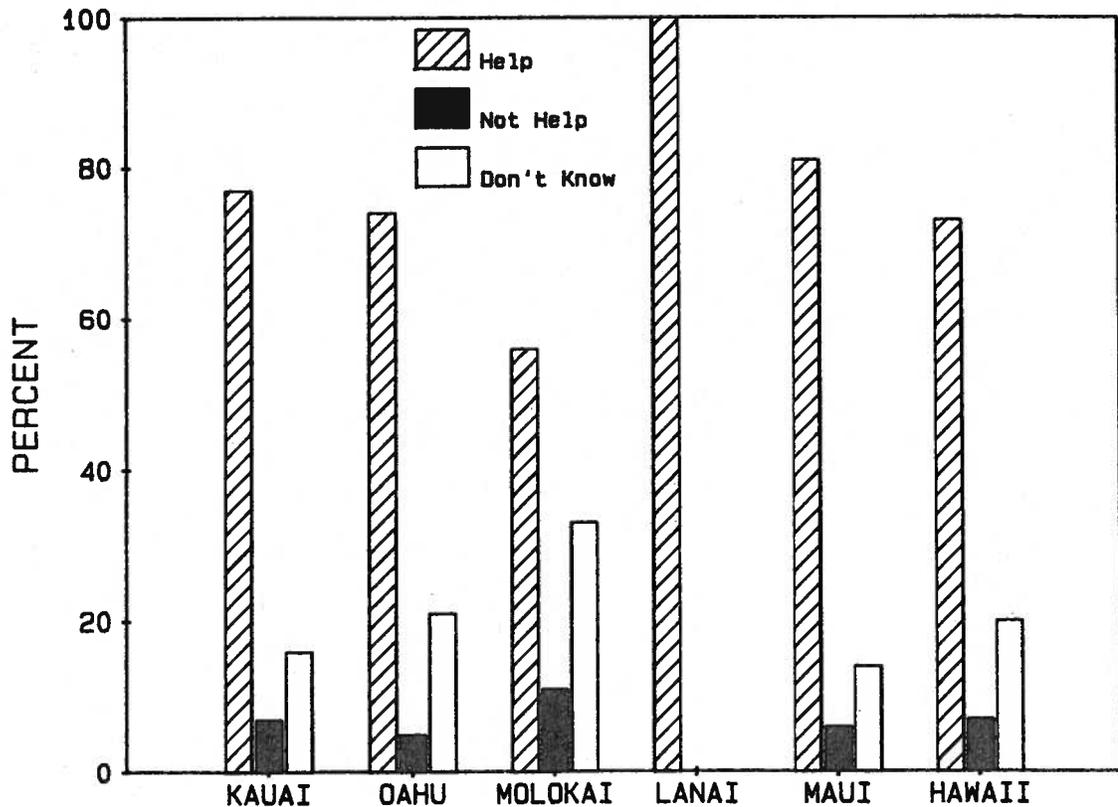
"In your opinion, how would the following projects affect fishing in Hawaii?":

Question 15.h. **Improved information and education about Hawaii's resources. (Figure 42)**

	Would Help		Would Not Help		Don't Know	
	-----		-----		-----	
Kauai	64	77%	6	7%	13	16%
Oahu	196	74%	14	5%	54	21%
Molokai	5	56%	1	11%	3	33%
Lanai	7	100%	-	-	-	-
Maui	70	81%	5	6%	12	14%
Hawaii	143	73%	13	7%	40	20%

Most respondents felt that improved education and information would help.

Figure 42



Question 16. Which of these sources have helped you learn about fishing and Hawaii's marine life? (you may check more than one):

	<u>Kauai</u> (Fig. 43.a)		<u>Oahu</u> (Fig. 43.b)		<u>Molokai</u> (Fig. 43.c)	
Television/Radio	47	22%	151	21%	4	15%
Fishing supply store	31	15%	118	16%	4	15%
Newspapers/Magazines	56	27%	202	27%	8	31%
Public/private schools	5	2%	20	3%	1	4%
State of Hawaii--						
Division of Aquatic						
Resources	36	17%	97	13%	7	27%
Federal--National Marine						
Fisheries Service	13	6%	63	9%	1	4%
University/Sea Grant						
Program/Waikiki						
Aquarium	23	11%	85	12%	1	4%
	<u>Lanai</u> (Fig. 43.d)		<u>Maui</u> (Fig. 43.e)		<u>Hawaii</u> (Fig. 43.f)	
Television/Radio	4	19%	54	21%	107	21%
Fishing supply store	2	10%	48	19%	122	24%
Newspapers/Magazines	6	29%	64	25%	132	26%
Public/private schools ...	-	-	6	2%	8	2%
State of Hawaii--						
Division of Aquatic						
Resources	4	19%	43	17%	72	14%
Federal--National Marine						
Fisheries Service ...	3	12%	18	7%	30	6%
University/Sea Grant						
Program/Waikiki						
Aquarium	2	10%	21	8%	35	7%

These results suggest that the most efficient ways to disseminate information might be through newspapers, magazines, electronic media, and fishing supply stores. They also demonstrate the need for better marine education in Hawaii's school systems.

Figure 43.a
KAUAI

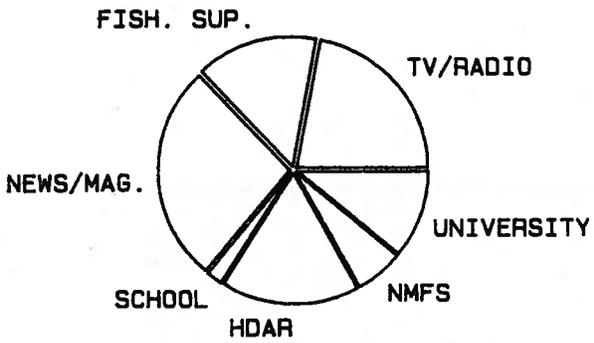


Figure 43.b
OAHU

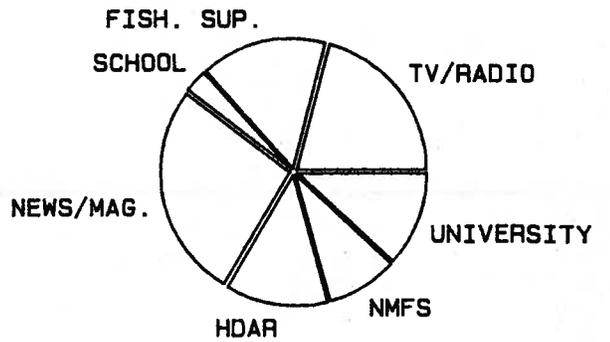


Figure 43.c
MOLOKAI

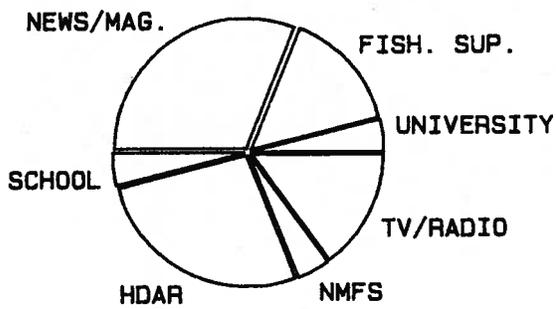


Figure 43.d
LANAI

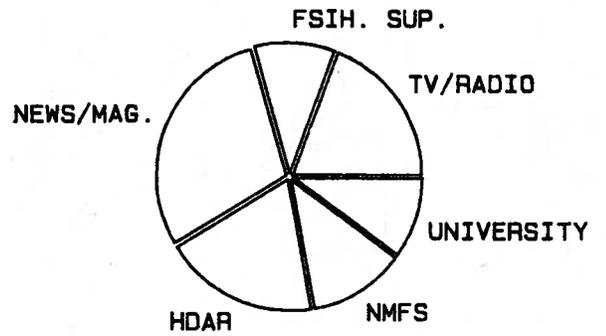


Figure 43.e
MAUI

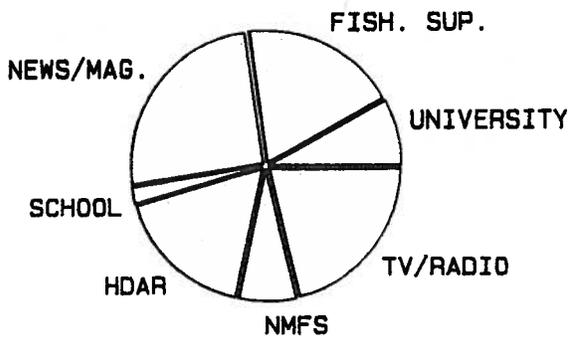
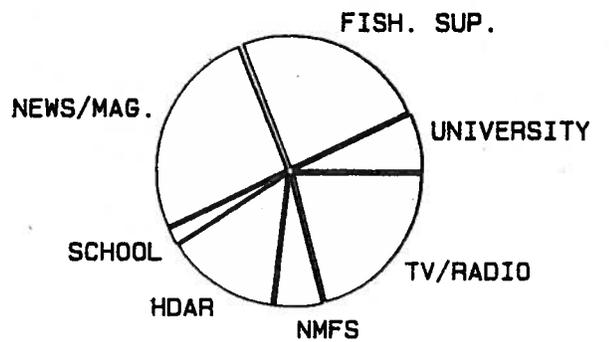


Figure 43.f
HAWAII



Question 17. Please suggest a State activity or project that you think would help fishermen in Hawaii:

Suggestion: Number Responses:

I. KAUAI

FADs:

More, unspecified.....17
 Better maintenance and faster replacement.....8
 Relocation of unproductive buoys.....3
 More, farther out (1000 fm line).....1
 More, N. Kauai.....1
 More, W. Kauai.....1
 More, closer to ramps.....1
 Remove them.....1
 Bigger and longer-lasting buoys.....1
 Research on FAD effects and placement.....1
 Trolling alley in area where charter boats fish.....1

Small Boat Harbors, Ramps and Facilities:

Improve ramps, channels, facilities (fuel, ice, supplies, etc.), roads, and safety.....8
 Improve Kekaha, Kapaa, Nawiliwili, Kukuiula, Koloa, and Pt. Allen.....(one response each)...6
 Dry dock facilities on all outer islands.....1

Information:

Periodic newsletter re: fishing techniques, market contacts, recent catches, research, law changes, and conservation efforts and theory.....7
 Workshops on fishing techniques, marketing, use of electronic navigational aids, etc.....3
 Periodic questionnaires re: conditions and suggestions..1

Miscellaneous:

Redefine "commercial", and limit selling to them.....5
 Better enforcement, esp. sales by unlicensed fishermen..5
 Ban inshore netting.....4
 More artificial reefs.....4
 Financial aid for qualified and responsible fishermen...3
 More research on burnt tuna syndrome.....2
 Ban aerial spotting.....1
 Kapu area/artificial reef at Anini.....1
 Kapu area/artificial reef at Kapaa.....1
 Develop Hanalei River oopu conservation area.....1

Ban netting of akule during April-June for spawning.....	1
Build State wholesale fish storage and marketing facility.....	1
Study ways of detaining migratory fish longer.....	1
Keep commercial operations off launching ramps.....	1
Better weather forecasting and real-time broadcasts.....	1
Lift moi regulations.....	1
Develop Hawaiian and distant markets.....	1
Develop wholesale markets on neighbor islands.....	1
Implement recreational fishing license.....	1
Develop ice facilities.....	1
Eradicate taape.....	1
Deploy current direction indicating buoys (like Japan).....	1
Build rescue facility.....	1
Limit catches for non-commercial fishermen.....	1

II. OAHU

FADs:

More, unspecified.....	24
Faster replacement and better maintenance.....	13
More, N Oahu.....	5
More, farther from shore.....	5
More, closer to shore.....	4
Greater durability.....	3
More, SE Oahu.....	3
More, off Barbers Pt.	2
More, off Kaena Pt.	2
Do not replace buoys lost from non-productive areas.....	2
Better planning and consultation with fishermen before installation.....	2
More, SW Oahu.....	2
Study FAD and trolling alley productivity and effects on the food web.....	2
Trolling alley for N Oahu.....	1
Keep aku boats from over-fishing the FADs.....	1
Move unproductive "NN" FAD.....	1

Nets:

Restrict or ban net fishing.....	22
Moratorium (e.g. 2, 3, or 5 yr.) on net fishing, examine the results, then decide on a ban.....	3
Ban nets in Kaneohe Bay.....	2
Ban small mesh nets, except for baiting.....	1
Ban netting at FADs: defeats purpose of buoy.....	1
Instate buy-back bounty for nets, then ban them.....	1
Ban aerial spotting/netting combination.....	1
Restrict akule nets.....	1

Small Boat Harbors, Ramps and Facilities:

Improve safety, facilities (e.g., restrooms, washdown area, channel markers, ice, fuel, etc.).....	17
Provide more slips and moorings for fish boats.....	6
Realign breakwater at Waianae.....	5
Build ramp at Barbers Pt.	3
Improve Kahana Bay ramp.....	2
Have harbor police enforce rules.....	1
Clean restrooms and dumpsters more frequently.....	1
Improve night security at Waianae.....	1
Build restrooms at Kewalo.....	1
Build cheap, simple ramp at Ewa.....	1
Improve ramp at Haleiwa.....	1
Washdown area at Hawaii Kai.....	1
More trailer parking at Heeia Kea.....	1
Clean up Hawaii Kai area.....	1

Miscellaneous:

Stricter enforcement of laws with convictions.....	28
More artificial reefs.....	21
Culturing and restocking of depleted species.....	8
Marine recreational license, fees going to enforcement, not the general fund.....	7
More rotating kapu areas.....	7
Workshops and seminars on: fish quality, marketing without the auction, marine safety, measuring currents and temperature, public access, etc.	6
Size limits for pelagics (e.g., aku 5#, ahi 5#, mahi 12-15#).....	5
Periodic report or newsletter with: noteworthy catches, research activities, law changes, etc.	5
Control runoff siltation and stream pollution.....	5
Baitfish culturing.....	5
Help eliminate auction monopoly and price-fixing by finding alternative markets.....	5
Stop sales by unlicensed fishermen.....	4
More deep artificial reefs.....	4
Provide charts of ocean currents and bathymetry.....	4
Limited entry to all fisheries.....	3
Kapu areas in all harbors and bays, esp. Waimea Bay.....	3
Kapu season on akule and opelu.....	2
Mandatory classes for all boat operators.....	2
Educate public on why conservation laws exist, how they work, etc.	2
Increase commercial fees, use money for FADs, etc.	2
Eradicate taape and tilapia.....	2
Make catch reports available to fishermen.....	2
Introduce new species, with careful studies of their potential impact beforehand.....	2

More accurate weather forecasting and real-time broadcasts.....	2
Redefine "commercial" and restrict selling by others....	2
Publicize arrests of poachers.....	1
Restrict nearshore commercial activities.....	1
Ban palu fishing for 2 years to study effects.....	1
HVB promotion of Hawaiian fish.....	1
Retail marketing requirements for fish showing origin, date caught and shipped, etc.	1
Raise non-resident shoreline user fees.....	1
State loans for fishermen.....	1
Processing plant for aku.....	1
Studies of Japanese longline fishery, esp. relating catches to oceanography.....	1
More burnt tuna research.....	1
Bag limits for pelagics.....	1
Open West Loch for baiting.....	1
Get ciguatera test kit to public.....	1
Studies of pelagic species' migration.....	1
Studies relating fish recruitment to oceanography.....	1
More pole-and-line Fishery Management Areas	1
Provide accurate bathymetry maps of MHI.....	1
Ban "green stick" fishing.....	1
Develop market for unwanted predators (shark, eel).....	1
Increase commercial fees, money to FAD program.....	1
Pay our marine biologists higher salary, and have them conduct more environmental studies.....	1
Increase efforts to align Native Hawaiian fishing rights with other Native Americans.....	1
Artificial reefs as kapu areas.....	1
Install a permanent offshore fishing/research platform..	1
Do quality research on akule/opelu spawning & feeding...	1
Study impact of aquarium trade on reef populations.....	1
Install weigh scales at ramps for non-tournament use....	1
Conduct a complete fisheries resource inventory within 30 nm of the MHI.....	1
Fertilize the ocean.....	1
Provide summaries of previous year's catch with commercial licenses renewal.....	1

III. MOLOKAI

Help build launching ramp on E Molokai.....	2
Help build launching ramp on W Molokai.....	2
Kapu seasons for limu, netting and akule.....	1
Install FAD off Kaunakakai.....	1
Redefine "commercial" fishing, charge higher fees for it, and restrict selling by others.....	1
Prohibit building anything makai of roads to prevent runoff.....	1
More and better enforcement.....	1

Help fishermen get fishing supplies at lower prices.....	1
Establish kapu areas with enforcement stations in area..	1
Operate mahimahi hatchery to reduce larval mortality and create jobs.....	1
Cooperate with weather people to provide real-time tide, current and weather reports.....	1
Workshops on the business aspects of fishing.....	1

IV. LANAI

Put Lanai FAD where it was before, present location is inadequate.....	1
Make shipping containers for fish available in cost-effective quantity.....	1
Workshops on maintaining catch quality.....	1
Establish management policies based on biological data, not politics or economics.....	1
Establish rotating kapu areas.....	1
Control runoff siltation.....	1
Ban nets for non-Hawaiians.....	1
Ban all types of non-biodegradable plastic products, including 6-pack rings and fish traps.....	1
Require identification tags on all nets.....	1
Build more artificial reefs.....	1

V. MAUI

FADs:

More, unspecified.....	16
Faster replacement and better maintenance.....	10
More, closer to harbors.....	2
Careful studies and fisherman consultation before installation.....	2
More, farther out.....	2
Discontinue non-productive buoys.....	1
More off W Maui.....	1
Move "Q" buoy out to 1000 fm.....	1
More off S Maui.....	1
Replace "GG" buoy.....	1
Remove all FADs and let ecosystem return to nature.....	1

Small Boat Harbors, Ramps, and Facilities:

Improve ramp safety and facilities (e.g., channel markers, loading piers, range lights, etc.), esp. at Kahului, Kihei, Maalaea, and Maliko.....	19
More ramps and harbor space.....	3
Improve Maalaea breakwater and add slips.....	1
Bring in fresh water to Kahului and Maliko.....	1
Follow up on promises of ramp improvements.....	1

Post self-policing "courtesy" rules at ramps.....	1
Educate harbor police in human relations, esp. at Kahului.....	1

Miscellaneous:

Restrict or ban net fishing.....	4
Enforce the laws.....	4
Workshops and seminars on fishing, conservation, boating rules, etc.	4
Designate areas for various user groups and set up discussions between them so everyone can get along.....	4
Focused management and enforcement of nearshore commercial recreation activities, rather than closing areas to fishermen alone.....	3
Implement rotating kapu system.....	3
Study current uses of nehu, the reasons for its decline, and perhaps stop non-commercial uses.....	2
Study movements and distribution of bottomfish.....	2
Provide some feedback from catch reports.....	2
Have baitfish facility open on weekends and closed a couple of days during the week.....	1
Clean up the beaches and use junk cars for reefs.....	1
Culture and restock mahimahi and ono fry.....	1
Keep commercial operations out of marine preserves.....	1
Set limits on commercial catches.....	1
Ban aerial spotting/net combinations.....	1
Restrict foreign boats in Hawaiian waters.....	1
Restrict commercial squid harvesters from ahi koas.....	1
Ban roadside sales of coral by "reef rapers".....	1
Publicize and remedy large discrepancy between ex-vessel prices and retail prices.....	1
Form state insurance group for fishermen.....	1
Artificial reefs for Maui.....	1
Continue present State projects.....	1
Keep commercial recreation boats away from fishing boats while they are fishing.....	1
Study management programs of the Gulf Coast and Northwest and learn something.....	1
Eradicate the taape.....	1
Find a real (not just HI) market for taape.....	1
Keep pleasure activities away from traditional nehu baiting areas.....	1
More size limits and regulation of small fish catch.....	1
Stop pollution from sugar and pineapple dumping.....	1
Educate the public about conservation and pollution.....	1
Develop alternative markets, esp. during peak.....	1
Monitor and improve shore fish habitats.....	1
Require licenses for all fishermen, fees to resources restoration.....	1

VI. HAWAII

Small Boat Harbors, Ramps, and Facilities:

More ramps and dock space.....	13
Improve safety, supplies, facilities, etc.	13
Restrict non-launching activities around ramps.....	2
Implement ramp user fees: go to marine programs.....	1
More boat storage.....	1

FADs:

More, unspecified.....	8
More, farther out (as far S as 14°N) to prevent drawing fish off ledges and to stop open ocean fish.....	4
More, E and SE Hawaii.....	4
More, closer in.....	3
Remove them to restore natural patterns.....	2
More, NE Hawaii.....	2
Redesign FADs to be like the old OTEC buoy.....	2
Rotate placement and removal on one-year cycle.....	1
More, evenly distributed around Hawaii.....	1
Experiment with distant offshore FADs to stop the runs we miss with current FADs.....	1
More, off Hamakua, close to shore.....	1
Study how FADs affect koas.....	1
Faster replacement.....	1
More durable design.....	1
Consult fishermen before deciding on location.....	1
Put FAD 2 nm off Red Hill.....	1

Marketing:

Develop alternative marketing options (incl. exports)...	8
Seminars or publications on marketing-quality guidelines, how prices change so radically from boat to retail, etc.	3
Develop "farmer's" fish market for direct sales from boat to consumer.....	1
Use Nakamura's info to set up quality guidelines for exported tuna.....	1

Miscellaneous:

Set and enforce minimum sizes for pelagics that are sold (ahi: 7#, 10#, aku: 4#, 5#, mahimahi).....	14
Have workshops and seminars on research findings, fishing techniques, boating safety, problems, etc..	7
Enforce regulations.....	7
Study movements of ahi and other fish by tagging and tracking.....	6
Promote tag-and-release of billfish and other fish.....	5

Produce timely newsletters or radio broadcasts of catches, prices, and other activities.....	4
Limit number of tournaments and charter boats.....	4
Develop and enforce more realistic and biologically- meaningful size regulations.....	4
More burnt tuna studies.....	3
Set and enforce bag limits for pelagics.....	3
More kapu areas.....	2
Rotating kapu areas.....	2
Open tuna-packing plant and other processing facilities.	2
Stop ocean mining.....	2
Provide better weather forecasting.....	2
Eradicate taape and tilapia.....	2
Develop an acceptable way of discouraging <u>Steno</u> from stealing bait	2
Stricter pollution controls.....	2
Provide enforcement officers with a boat; shore enforcement is inadequate.....	1
Ban halalu sales.....	1
Implement limited entry.....	1
More State and federal PBS educational programs.....	1
Improve public education programs.....	1
Improve water quality.....	1
More aquaculture programs.....	1
Examine the effects of Keahole blasting.....	1
Promote tours of NELH, so people can learn about aquaculture.....	1
Provide wind gauges for Hilo area fishermen.....	1
More Sea Grant funding.....	1
Limit Kona submarine operations to less-productive fishing areas S of Kailua pier.....	1
Set up local fishing council made up of recognized community fishermen.....	1
Discourage "smallest fish" trophies at tournaments.....	1
Study migration and marketing of crustaceans.....	1
Eliminate costly studies and stupid surveys which increase costs and do nothing to help.....	1
Build artificial reefs.....	1
More fishing tournaments for children.....	1
More studies on urchin roe and ciguatera.....	1
Recreational fishing license with fees going to marine programs.....	1
Study comparing cost-to-earning ratios between various fisheries.....	1
Research on long-term effects of El Nino/Southern Oscillation on fishing.....	1
Raise commercial fees to eliminate competition from part-timers.....	2
Study effects of sewage on reefs and reef fish.....	1
Help reduce insurance rates.....	1

Mandatory boat-handling classes.....	1
Provide detailed bathymetry maps of Hawaii, esp. west...	1
Study of fish freezing.....	1
Learn fishing Hawaiians.....	1
More conservation efforts.....	1
Develop more fishing supplies on Hawaii.....	1
Provide opportunity for fishermen to accompany research vessels utilizing modern navigational and fish-finding electronics and fishing gear.....	1
Provide the option of submitting catch reports to local office instead of mailing.....	1