R[illegible] OF THE TECHNICAL SUB-COMMITTEE OF THE INTERNATIONAL TRAWL FISHERY COMMITTEE

Appointed By

The Second Conference On Coordination

Of Fisheries Regulations Between

CANADA

and the

UNITED STATES

MINUTES OF THE FIFTH ANNUAL MEETING

JUNE 23-24 1964

MENLO PARK, CALIFORNIA

REPORT OF THE TECHNICAL SUB-COMMITTEE

OF THE

INTERNATIONAL TRAWL FISHERY COMMITTEE

Appointed By

The Second Conference on Coordination
of Fisheries Regulations Between

CANADA
and the
UNITED STATES

Minutes of the Fifth Annual Meeting
June 22 and 23, 1964
Menlo Park, California
Submitted October, 1964

TABLE OF CONTENTS

Report of the Technical Sub-Committee of the Trawl Fishery Committee appointed by the Second Conference on Coordination of Fisheries Regulations between Canada and the United States.

DATE: June 23 and 24, 1964

PLACE: California Department of Fish and Game, 411 Burgess Drive, Menlo Park, California

PARTICIPANTS:

CANADA - J. A. Thomson
C. R. Forrester

UNITED STATES - Washington - D. E. Kauffman - Chairman
E. K. Holmberg

Oregon - T. G. Kruse
A. R. Magill

California - E. A. Best
T. Jow
R. J. Nitsos
P. H. Reed
J. G. Smith

PMFC - L. A. Verhoeven (Observer)

The fifth annual meeting of the Technical Sub-committee was called to order by Chairman Kauffman under instructions set forth by the parent committee in 1959. The business of the meeting was guided by a prepared agenda which is included as Appendix A.

I. APPOINTMENT OF SECRETARY

J. Gary Smith, of California, was appointed to act as recording secretary for the meeting.

II. APPROVAL OF AGENDA

The agenda was amended by the addition of the following items:

Section III. Status reports

6. Dover sole

Section VIII. Other business

1. Discussion of seismic problems

The agenda was approved as amended and each item was discussed consecutively.

III. STATUS REPORTS

1. Total Catch and Effort of all Species by International Trawl Areas

The 1963 otter trawl fishery contributed approximately the same total production of groundfish (126.3 million pounds) from the waters of the northeastern Pacific as in 1962. The greatest fluctuation occurred in the animal food landing which declined 3.5 million pounds. Agencies suggested that the increased utilization of poultry products, price competition from the Gulf States and decreased mink production contributed to the Pacific Coast market declines.

Flatfish landings fluctuated in relation to the availability or demand for rockfish and Pacific cod, although petrale sole landings continued a downward trend.

Increased landings of demersal fishes other than animal food species tended to increase catch-per-unit of effort in most areas for other species.

The participating biologists agreed that market demands limited or directed the fishing pressure to particular demersal stocks.

Alaska Alaska's trawl fishery during 1963 continues to remain virtually unexploited by American fishermen. Two foreign countries are currently harvesting from Alaska offshore banks. The total trawl landings in 1963 by American fishermen amounted to 38,000 pounds. The

fish, predominantly starry flounder were taken in the Petersburg-Wrangell area and sent to Seattle for processing. No effort data were available.

Canada Canadian trawl fishermen landed approximately 22.5 million pounds of groundfish in 1963, about 2.5 million less than 1962. The mainstay of the 1963 fishery was Pacific cod. Petrale sole landings were the lowest since 1940 and lingcod landings declined 30 percent. The catch and success data of English sole in the Hecate Strait areas also indicate a continued downward trend. The potentials of a Pacific ocean perch fishery remain high, but at present landings are limited by market orders. The animal food landings decreased from 7.2 million pounds in 1962 to 3.7 million pounds in 1963.

Washington Washington groundfish landings increased to 39.9 million pounds in 1963. This represented a 1.3 percent increase over the 1962 landings of 39.4 million pounds. The Pacific cod fishery increased two to three times in most areas. New catch records followed increased availability and location of new fishing grounds for Pacific ocean perch. This was particularly noticeable in the Queen Charlotte Sound area where fishing success increased about 400 pounds per hour to the 1860 pounds per hour level. Petrale sole landings continued to decline due to market limits, decreased fishing success, and presence of huge dogfish shark populations on known petrale trawling ground. Landings during the winter season were abnormally low due to a price dispute.

Oregon Total landings were 30.0 million pounds compared to 31.7 million pounds in 1962 for a decrease of 5.4 percent. Decreased catches were noted in rockfish, petrale sole, rex sole, English sole,

animal food, and lingcod. Pacific ocean perch showed the largest increase, about 38 percent or 2.2 million pounds. Increases were also noted for sablefish, Pacific cod and Dover sole. The Dover sole landings reached a high of 5.4 million pounds in 1963 as new markets were realized.

Fishing success for Oregon trawlers was the highest in the past four years.

Following eight years of relatively stable landings, Oregon noted a substantial increase in the amount of fish landed for human consumption. Catch data show a 14 million pound increase in food fish landings from 1956 to 1963, represented by a decrease in animal food landings from 55 percent of the total otter trawl landings in 1956 to 18 percent in 1963.

California The California trawl fishery amounted to 34.5 million pounds in 1963, or a 10.6 percent increase over the 31.2 million pounds landed in 1962. Almost half of the total landing came from Area 1B. Dover sole continued as the most important single species landed. Rockfishes, as a group, ranked second in the landings.

All of California's major flatfish species showed increases during the year.

The small landings of Pacific ocean perch in California are caught in Oregon waters and delivered in Eureka.

The animal food landings continued to decline as only two southern California ports were active in this fishery.

2. Petrale Sole

A. Fisheries Research Board of Canada recruitment study.

As data tabulation on the effects of a winter closure on petrale

sole continues, a declining trend is evident. Age determination together with length-frequency data, suggest that the upward trend in catch per unit of effort shown for the stock during the years 1956 to 1962 will not be sustained. Catch per effort in 1963 appears to have been maintained chiefly by the 1957 and 1958 year-classes which constituted almost 50 percent of females and 60 percent of males (in numbers) in the Canadian samples in that year. Length-frequencies suggest that their immediate successors are weaker in strength and as a consequence a further reduction in catch per effort may be expected in 1964.

Both Canadian and Washington trawlers contribute joint effort on two known stocks during the summer. A limited winter fishery does exist but market and seasonal limitations restrict landings.

The "southern stock" as defined by Ketchen and Forrester, inhabits P.M.F.C. Area 3C during the summer, and the associated spawning deeps (probably Willapa, as shown by taggings conducted by the Washington Department of Fisheries, and possibly other unidentified deeps between Willapa and Estevan) during the winter, P.M.F.C. Area 2D-3A.

The present condition of these stocks is summarized in the following statement by Canadian and Washington researchers: "Recovery of these stocks is apt to be slow and stocks in the immediate future are not likely to be much greater than they are at the present. Length frequencies and age determinations suggest that the 1958 year class is the strongest in the past 20 years and preliminary data indicate that its successors are weaker. This being the case, it is probable that there will be some decline in catch-per-unit of effort. Canadian studies suggest that several strong year-classes in immediate succession are required to raise

these particular petrale sole stocks to levels found in the late 1940's.

"These conclusions apply only to the Washington and Canadian stocks. In order to obtain a coastwide picture of the petrale sole situation, it would be desireable for all agencies to intensify study of the species."

B. Fishing in 1963

Canada Canadian trawlers experienced their poorest petrale landings since 1940 on the southern stock, PMFC Area 3c. Age-growth data suggest that the upward trend in fishing success shown during 1956 through 1962 will not be sustained. These data also suggest their immediate successors are weaker in strength resulting in a lower catch-per-unit of effort in 1964.

Fishing success on the northern stock has increased during 1963, but preliminary data suggest the fishery will follow the same trend as the southern stock.

Washington Catches by Washington fishermen from the northern petrale stock represented the greatest poundage since 1957, but more effort was required which lowered the catch-per-hour.

Although total southern stock petrale landings declined, the fishery exhibited an increase in catch (pounds) per hour. This increase in catch-per-hour is a reversal of a trend that began in 1957. Recent fluctuation of petrale production have been inversely correlated with abundance of dogfish shark populations inhabiting the area.

Petrale landings off the northern Washington coast increased slightly in 1963, but the fisherman success measured in pounds-per-hour continued to decline from the peak year of 1961.

Oregon The total petrale catch in Oregon decreased about 10 percent in 1963. Marked decreases were noted in the north coast ports where fishing success has declined.

In central and south central Oregon, market demands have stepped up effort for petrale sole. The markets were encouraging fishermen to catch sole and rockfish concurrently to satisfy market requests.

Oregon trawlers concentrate their petrale sole effort in two areas. The Willapa, PMFC Area 3A-2D, production during the summer of 1963 declined while the Coos Bay fishery, PMFC Area 2B, became the heavy producer. Winter production was the highest since the winter closure was enacted and Fish Commission biologists suspected the landings were as much as 10 to 25 percent larger as dealers were accepting petrale sole under other names on market slips. The status of Oregon petrale stocks can be summarized by the following statement prepared by Oregon biologists:

PMFC Area 3A-2D The winter fishery from Willapa deep is restricted by the 6,000 pound trip limit; therefore, abundance data is hard to assess. Late spring and summer inshore fishery produced good fishing off Willapa. Stock condition appears good, however, further analysis is necessary before definite stock condition can be stated.

PMFC Area 2-C Landings by Oregon vessels indicate an apparent decline of availability on the flats NW of Newport. Further investigation into this problem is necessary to determine if this is a real decrease in abundance.

PMFC Area 2-B Fishing pressure by California vessels appears relatively light, or about 50 percent of that during the early 1950's. More pressure is being put on these stocks by Oregon vessels landing in Coos Bay, especially during the winter months.

California Petrale sole landings from California improved slightly over 1962 landings. The Eureka trawlers produced the majority of petrale landed. Good spring and summer catches, despite a price dispute during the winter fishery, supplemented the San Francisco area production to surpass 1962 landings. The only decrease in petrale landings occurred in the Pt. Sal stock. Predominantly a winter fishery for the past five years, the fishermen had little success in locating petrale concentrations on suspected spawning grounds. Preliminary figures for 1964, indicate a substantial spring fishery occurred on the inshore grounds in that area.

PMFC Area 1-C and 2-A There appears to be no noticeable decline in recent years as stocks are maintaining status quo. No overfishing problem exists at present levels of fishing; however, fishing pressure fluctuates with market demands for Dover sole. This report on the status of petrale sole stocks in PMFC Areas 1-C and 2-A was prepared jointly by California and Oregon.

California fishermen continue to fish three stocks. The status of the Eureka stock (PMFC Area 1-C and 2-A) has been outlined above. The central California stock near San Francisco, PMFC Area 1-B, contributed greater landings than in 1962 especially during the summer fishery. Fishing success on the southern Pt. Sal stock, PMFC Area 1-A, declined during 1963 winter fishery, but early landing figures for the spring indicate an increase over previous years.

3. Lingcod

Lingcod landings from the major production areas off the west coast of Vancouver Island were generally lower in 1963. Catches in Oregon continued to be incidental to other species while in California an increase was noted. The catches apparently fluctuate because of variations in lingcod availability on the trawling areas, market

demands, and availability of other species.

Canada announced an amendment of lingcod regulations from last year. The new regulation now defines the minimum size for dressed fish (heads off) as 3 pounds and/or a minimum size of 23 inches total length for all fisheries. This change was made for the convenience of both fishermen and enforcement officers.

Washington reviewed their recent studies on the size of lingcod taken by otter trawls. Preliminary data show that there are relatively few dead fish among the smaller lingcod taken in commercial fishing.

Canada The total Canadian trawl catch of lingcod in 1963 was about 1.4 million pounds, a 30 percent decrease from 1962 landings. The decrease was believed to be the result of a diversion of interest to Pacific cod in the Cape Scott-Goose Island bank area.

Although catch-per-hour increased from 476 pounds-per-hour in 1962 to 722 pounds-per-hour in 1963 an analysis of length frequencies from market samples of both years showed no change. It is felt that the fluctuations in fishing success are due to variations in recruitment and availability.

Washington Following heavy harvests during 1959, 1960, and 1961, lingcod landings have shown a decline in most areas. Fishing success has also declined. The northern Washington coast production was reduced to one-half of 1962 landings and the area along the West Coast of Vancouver Island produced only one-half of the annual average of 2 million pounds during 1963. The Queen Charlotte Sound area is the only area where effort for lingcod has increased, but fishing success has dropped 24 percent even though the landings are ahead of the 700,000 pound average landing

per year.

Oregon The lingcod fishery of Oregon trawlers remains an incidental one. Availability of the species near the grounds of more desirable market fish has been limited. Although landings have declined during 1963, they are still above the average of the past eight years.

California California's catch is slightly ahead of 1962 landings. Although the lingcod fishery is incidental statewide, the majority of the total catch is landed from the vicinity of San Francisco, PMFC Area I-B.

4. Pacific Cod

All areas within the range of the Pacific cod recorded substantial gains in landings and fishing success over 1962. Preliminary catch figures for first part of 1964 suggest even greater success. As heavy exploitation of Pacific cod stocks continues from Hecate Strait to the lower west coast of Vancouver Island by both Canadian and Washington fishermen, joint efforts are being made by these agencies to exchange data for recruitment studies.

Canada Pacific cod led all other trawl-caught species in Canada during 1963. Best catches were taken along the west coast of Vancouver Island and Hecate Strait. Early 1964 catches along the west coast of Vancouver Island indicate a 50 percent increase in landings over 1963. Length frequency analysis suggest good recruitment for 1964 cod stocks. As noted in 1962, a greater number of smaller fish (45 to 55 cm.) entered the catches.

Estimation of success of recruitment in the sotcks inhabiting Hecate Strait is hampered by the existance of market demands for

Pacific cod which have varied criteria depending upon the use the fish is put to. Pacific cod are utilized as a filleted product, for animal food, and, at Prince Rupert especially, as bait for halibut. These different uses have different requirements with respect to preferred size of fish.

Re-evaluation of effort analysis has been initiated because of changes in fleet composition and market practices. The previously used 25 percent qualification level with restrictions on vessel size, season, gear, and gross tonnage has become outdated.

Washington Fishing success as reported by landings and effort, increased in all areas fished by Washington fishermen. Cod catches doubled from areas around Hecate Strait and the northern Washington coast, almost doubled at the lower west coast of Vancouver Island and increased three-fold from the Queen Charlotte Sound area. Catch-per-hour figures indicate a similar pattern of increase.

Oregon Landings in Oregon increased from 18,500 pounds in 1962 to 67,000 pounds in 1963. Oregon trawlers fish the southern edge of the Pacific cod's range and catch this species only incidentally. All the Oregon poundage was caught from the Columbia River north to Vancouver Island and landed at Astoria.

California No commercial landings of Pacific cod are recorded from California fishing areas.

5. Pacific Ocean Perch

Catch per unit of effort for Pacific ocean perch continued to improve in 1963. Good markets encouraged ocean perch fishermen to explore new areas with good success. Fishing effort was concentrated on grounds between Cape Scott and Goose Island bank, forty mile bank, La Perouse Spit, Astoria Canyon, Coos Bay, and Siletz River. In the latter area, one vessel recorded a catch rate of 20,000 pounds-per-hour.

Canada Canadian fishing effort for Pacific ocean perch continued to be dependent on market limits. A new record catch per hour was recorded from the Cape Scott-Goose Island bank at 2,859 pounds, a 600 pound increase over 1962. Length frequency analysis suggests no significant changes in size composition.

Washington Washington fishermen experienced greater success in 1963 than any previous year. Exploration of new grounds, west of Vancouver Island, use of net bobbins, and Simrad all contributed to the capture of greater quantities of ocean perch with less effort. Washington fleets shared the catch success with the Canadians in the areas between Cape Scott and Goose Island.

Local fishing areas off the Washington coast continued to decline in 1963. Nearly equal effort produced catches approximatly one third less than the same grounds yielded in 1962. It is not known how much fishing pressure this stock will stand.

Oregon Good markets throughout the year resulted in a 30 percent increase in Pacific ocean perch landings during 1963. The trawlers utilized new grounds with good success. The best areas were south of the Astoria Canyon, northwest of Newport and off Coos Bay. A newly discovered area off the Siletz River produced an exceptional trip of 85,000 pounds caught at a rate of approximately 20,000 pounds per hour.

California California fishermen have been unable to catch concentrations of Pacific ocean perch from local waters. Scattered individuals appear sporadically in rockfish and animal food landings. The few thousand pounds landed in California during 1963 were captured in Oregon waters.

6. Dover Sole

Dover sole continued to lead California's trawl catch in 1963

and reached record proportions in Oregon during the year. In the northern areas, landings continued moderate to light as higher demands for other species prevailed.

Canada Canadians landed less than half a million pounds incidentally. Most of the catches were made in "going home tows" in the Strait of Juan de Fuca area. At the present time, Canadian markets "don't want" Dover sole.

Washington Washington's Dover sole production remained fairly stable although most of the trawler effort was for other species. The 16 inch (40 cm.) minimum market size limit eliminates most male fish from the landings.

Oregon A new record of 5.4 million pounds of Dover sole was landed in Oregon during 1963. The Coos Bay area added substantially to the total production. Oregon biologists expressed concern over stock conditions during the past few years as sampling records indicated a decrease in average size of fish landed and a decrease of male fish in their samples. Although the markets impose an 11 inch (35 cm.) minimum size restriction, biologists feel this should not be responsible for the apparent lesser number of male fish in the landings.

California Dover sole remained the most important trawl-caught species in the landings with a total of 9.8 million pounds landed in 1963. Despite heavy summer limits placed on the trawlers by the markets, an increase of a million pounds was noted over the 1962 catch. Eureka markets limit fish to 13-1/2 inches. The stocks appear to be in good shape and are capable of providing greater quantities of fish than the markets are currently able to utilize.

IV. EXCHANGE OF STATISTICS

1. Coordination of Catch-Effort Statistics

The coast-wide exchange of catch-effort statistics is now being accomplished through the Pacific Marine Fisheries Commission's "Data Series." This "Series" will provide measures of total effort. Because each agency uses different catch/effort indices, comparisons of effort by major species will have to be worked out by the agencies concerned. The Canadian biologists recommended that the exchange of data should include catch-per-effort by species and sampling data as well. They were particularly interested in the Washington trawler pressures for the lower Vancouver Island to Hecate Strait areas.

Washington agreed to provide catch-per-hour data for the major species sampled from fishing areas of mutual interest with Canada on a reciprocal basis. This will be maintained outside the committee activities.

The committee agreed that more refined data on catch and effort for major species should be collected. Furthermore, that a more intensified program of age data sampling should be included as a part of each agency's research program.

2. Status of P.M.F.C. Data Series

Leon Verhoeven, P.M.F.C. Executive Director, stated that the statistical data series in his charge would be ready for distribution by this summer. The data series will contain three sections of catch and effort data through 1962: bottomfish, shellfish (shrimp and crab), and albacore. An addendum of 1963 data will also be included. Canada suggested including length frequency information in the data report series.

3. Review of Computer Techniques

All agencies agreed that computer program techniques are becoming a necessity and should be used wherever possible.

Canada outlined their program of data processing using the IBM 1401 high speed typewriters with multichannel adders. Interview data, market receipts or volunteer log data are punched on an eighty column IBM card and can be sorted to fit specific programs upon request.

Washington uses the Bio-Med series programmed by the University of California at Los Angeles. Some 30 programs are available and each is explained in publications available through UCLA. Washington processes length frequencies and age data with programs available from the Fisheries Research Institute at the University of Washington.

Oregon data reports are tabulated at a data processing center at Portland.

California compiles statistical reports at their Biostatistical section, Terminal Island. IBM key punch tabulators, sorters and verifiers are available to all projects. The services of the Western Data Processing Center at UCLA and the Service Bureau Corporation are also available for special computer programming.

V. REVIEW OF CURRENT AND PROPOSED TRAWL RESEARCH PROGRAMS

Aside from the continual analysis of catch statistics, each agency diverts time and effort to increasing biological knowledge about various commercial fishes in their charge. The species under consideration varies from state to state with the relative importance in the landings.

Canada The Fisheries Research Board of Canada is continuing the detailed analysis of petrale sole stocks, rock sole stocks in northern Hecate Strait, and Pacific cod populations both in Hecate Strait and

off the west coast of Vancouver Island. Increased tagging effort has been directed towards Pacific cod in the northern areas. Rewards for the return of Pacific cod tags have been increased in an attempt to gain more information, especially with respect to growth of male and female fish. A watching brief is maintained on all other species.

A program is continuing on the age-growth of Pacific ocean perch and its winter availability in local areas. Age determinations of juvenile ocean perch from areas of high trawler effort are also being conducted.

The Fisheries Research Board awarded a contract to the University of British Columbia to study the life history of six important commercial fishes.

Washington Washington continued trawler interviews and hopes to publish the results of a ten-year program. Biologists intend to intensify biological studies of commercial stocks and expand aging studies on Pacific ocean perch in the Cape Flattery area, petrale sole around lower Vancouver Island and English sole and Pacific cod in Puget Sound. The introduction of bobbin gear provides new fish stocks for study in areas that were formerly not accessible.

Future research plans also include tagging petrale and English soles and Pacific cod in the La Perouse Spit area.

Oregon Oregon continued tag return analysis of Dover sole and sablefish from past years tagging. Plans for the coming year include increased weekly market sampling of major flatfish species and Pacific ocean perch at selected ports. Estimates of animal food landing will also be continued. Oregon biologists plan to have the results of a 1959 English sole tagging study in press during 1964. Under consideration is a study of rex sole in Oregon landings.

California Continued market sampling of major flatfish species and animal food is forecast for California ports this year. Rockfish sampling was terminated in December 1963 and a report is presently being prepared for presentation at PMFC this fall. A growth analysis initiated in 1963 will continue during the coming year on juvenile English sole, in the Monterey Bay area. Biologists are currently combining age data for the major flatfish species to construct growth curves to aid in market sampling analysis. Petrale sole from the Pt. Sal, PMFC Area I-A, stock were tagged November 1963, and fish from the Pt. Montara stock, PMFC Area I-B, will be tagged this summer along their migratory route. English sole tag analysis will also be completed this year. Data are to include results of tagging studies beginning in 1938. This study to be completed by July 1, 1965.

1. Buoyancy of Pleuronectid eggs

In March 1964, Canada obtained ripe male and female petrale sole from the Estevan deep for the determination of the specific gravity of the fertilized egg. The single experiment yielded a result of 1.0247 compared to 1.025 for the usual specific gravity of the water of the area which suggests that the eggs of petrale sole would be buoyant. Further work is needed and anticipated.

2. Summary of Tagging Results In past years, agencies of the United States and Canada have been handling tagging results within their own fishing boundaries. At the suggestion of Canadian biologsts, the committee members agreed that an interchange of data would be advantageous to all agencies. This has been stated as a recommendation and appears under that section of this report.

3. Market Sampling Techniques There was little discussion of this topic, as all agencies agreed that individual techniques were acceptable provided a discription of methods accompanied any exchange of data.

VI. RESULTS OF 1963 SUBCOMMITTEE RECOMMENDATIONS

1. All Participants approved Oregon's suggestion that the exchange of tagging cruise data be accomplished at the completion of each cruise. It will be the responsibility of individual agencies to distribute the data.

The committee also agreed to continue the exchange of catch and effort statistics by species, month, and area. All agencies expressed approval of the forms provided by Canada and will continue to use them.

Canada also suggested that each agency include their method of catch-per-effort determination with each status report.

VII. NEW PROPOSALS FOR TRAWL REGULATIONS

There were no proposals for new trawl regulations during this session.

VIII. OTHER BUSINESS

1. Seismic Problems

This subject was raised by Washington in the interest of reviewing the control methods now in use on the Pacific Coast. They indicated further that some fishermen are withholding interview data due to their views on the seismic damage.

Recent publicity by the fishing industry, suggesting harmful effects by seismic activities on sea fisheries, is recognized by the sub-committee. As a result, the committee has drafted a statement

which appears under recommendations.

All agencies handle the seismic requests in a similar manner. Formal requests are made by oil companies to conduct activities in specific areas during a given period of time. If requests are granted observers are provided by the specific fishery agency to observe the effects of the blasts on marine life. The observers have the power to temporarily stop operations in areas of heavy fish concentration.

Canadian fishermen registered only a general grievance in sympathy with United States fishermen. However, intensive surveying has not begun in their area.

The Executive Director of P. M. F. C. indicated that because of seismic activities, the long range effects on fish stocks should be monitered particularly during early life history stages.

2. Mesh Size

Oregon expressed concern over the lack of mesh size standardization by all agencies for otter trawls. Oregon trawlers had complained about Washington trawlers taking many small fish with their 3-1/2 inch mesh nets. Oregon boats are required to use larger mesh. Washington stated that they were considering a 4-1/2 inch mesh regulation inside Puget Sound where Pacific ocean perch were not heavily fished.

Canada noted with satisfaction Washington's intended recommendation in the near future for a 4-1/2 inch mesh in Area 4-A. They added that this regulation would aid in the conservation of English sole stocks and would not hinder the Pacific cod fishery in that area.

California expressed no opposition as their 4-1/2 inch mesh regulation, currently in force, is considered adequate.

3. Recommendations

The technical sub-committee recommended the following proposals

during their annual meeting, 1964.

Regarding petrale sole:

a) The Technical Sub-committee recommends that the current restrictions on petrale sole remain unchanged until full assessment of their effectiveness can be made. Present tolerance limits are felt to be adequate to allow retention of incidentally caught petrale sole.

They also reaffirm that analysis of the effects of the winter restrictions will be made following the 1966-67 winter fishery as requested by the parent Committee at the 1964 annual meeting. At the same time California will provide an analysis of the unrestricted segment of the petrale sole fishery.

With reference to the exchange of statistical data between agencies:

b) The Technical Sub-committee recommends that because of the overlapping areas of interest between states and provinces, more attention be given to joint or cooperative research projects, analysis of data, and publications. The members of the Sub-committee feel strongly that only such cooperative measures can provide the solutions for some of the far ranging problems currently facing demersal fishes. As an example and possible first venture into this procedure, a coast-wide analysis of data presently on hand derived from English sole tagging experiments is suggested. This project should be given high priority by all agencies during 1964-65.

[illegible] seismic:

c) The Technical Sub-Committee recognizes that the present state of knowledge of the basic life history of the demersal fishes is limited. Because of the importance of such knowledge in the assessment of the effects of seismic activities on fish stocks, we strongly urge that the collection of such data be continued and expanded.

strongly urge the collection of such data be continued and expanded.

IX. ELECTION OF NEW CHAIRMAN

John A. Thomson, Fisheries Research Board of Canada, was elected next year's chairman. He suggested the meeting be held in Seattle, Washington. The date has been tentatively set for June, 1965.

X. ADJOURNMENT

The meeting was adjourned at 3:52 p.m., June 24, 1964.

Appendix A

TENTATIVE AGENDA
FIFTH MEETING OF THE TECHNICAL SUB-COMMITTEE
OF THE
INTERNATIONAL TRAWL FISHERY COMMITTEE
June 23-24, 1964

I. Appointment of secretary.

II. Approval of agenda.

III. Discussion of status reports by each agency to include current biological data as well as catch analysis data.
   1. Total catch and effort on all species by International trawl fishery areas. Current data from each agency in the format of the report presented in 1963 by FRBC entitled "A Summary of Total Effort and Catch" by the trawl fishery along the West Coast of the United States and Canada.
   2. Petrale sole:
      a. FRBC recruitment study
      b. Results of winter fishery Area 3C and 3D
   3. Lingcod:
      a. Recommendations for regulation
   4. Pacific cod:
      a. Emphasis on combined U. S. and Canadian data Areas 3C and 5D
   5. Ocean perch:
      a. Emphasis Areas 3C, 3D, and 5A

IV. Review and exchange of information on techniques of data analysis and processing.
   1. Progress in co-ordinating exchange-of-effort statistics (New methods or ideas on how this can be accomplished)
   2. PMFC data record series - report on present status.
   3. Review of computer techniques in use by agencies.

V. Review of current and proposed trawl research programs.
   1. Report by FRBC on studies of the buoyancy of petrale sole eggs.
   2. Summary of tagging results.
   3. Further discussion toward uniformity in market sampling techniques. (Review of each agency's methods shows lack of uniformity. Is complete uniformity necessary?)(For example: measurements to nearest cm, nearest mm, nearest lower centimeter?)

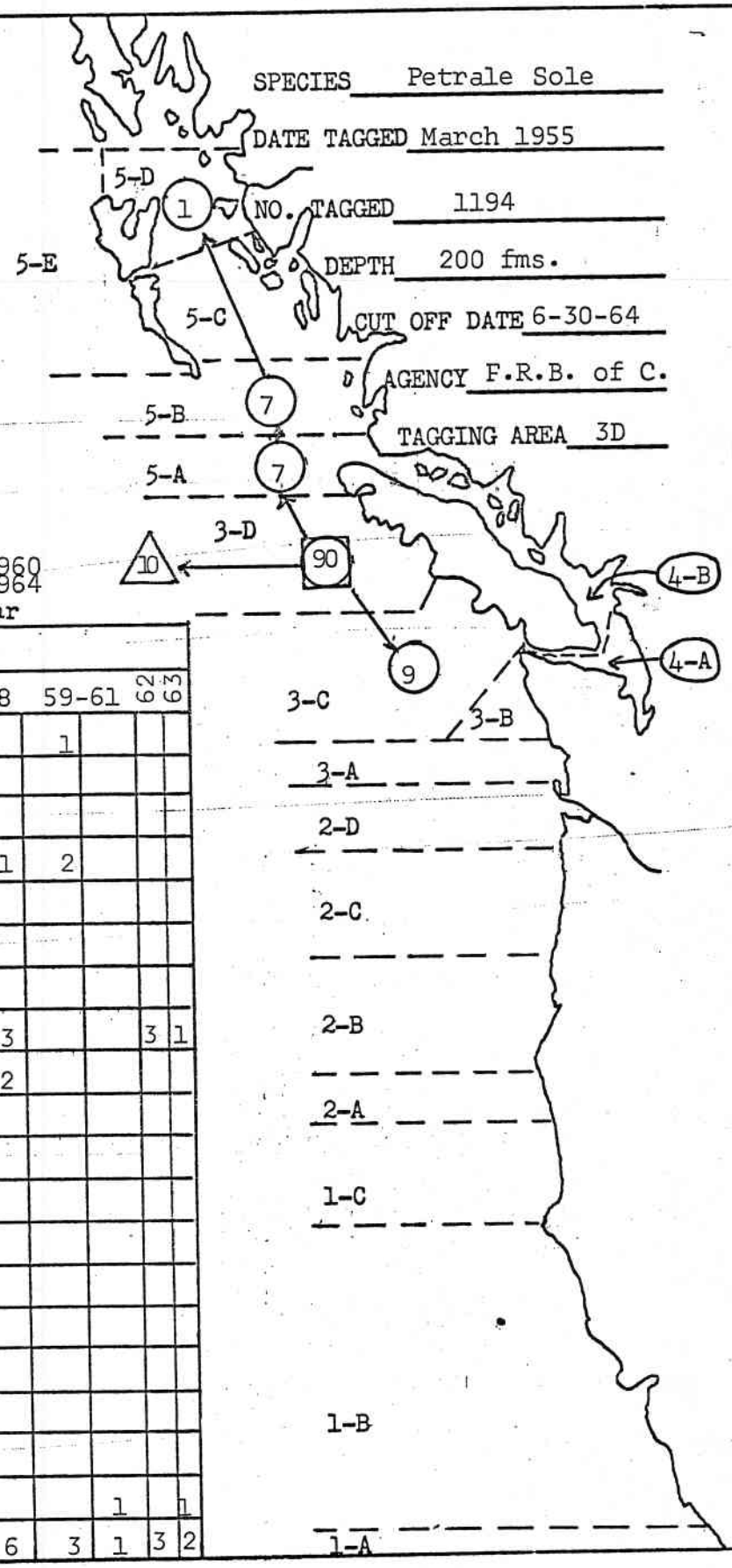
VI. Results of 1963 Subcommittee recommendations.
   1. Progress of exchange of tagging data as agreed.(See page 21 of 1963 Technical Committee Report.)

VII. New proposals for trawl regulations.

IX. Other business.

X. Election of new chairman.

Dispersion of Tagged Fish by P.M.F.C. Area



No recoveries in 1960
1964

Recoveries by Year

P.M.F.C. Area	Year 55	56	57	58	59-61	62	63
5-E					1		
5-D							
5-C							
5-B	3		1	1	2		
5-A	2	4	1				
4-B							
4-A							
3-D	28	17	38	3		3	1
3-C	2	4	1	2			
3-B							
3-A							
2-D							
2-C							
2-B							
2-A							
1-C							
1-B							
1-A							
UNK.	2	3	3			1	1
Total	37	28	44	6	3	1	3	2

Dispersion of Tagged Fish by P.M.F.C. Area

SPECIES Petrale Sole

DATE TAGGED Nov.-Dec. 1958

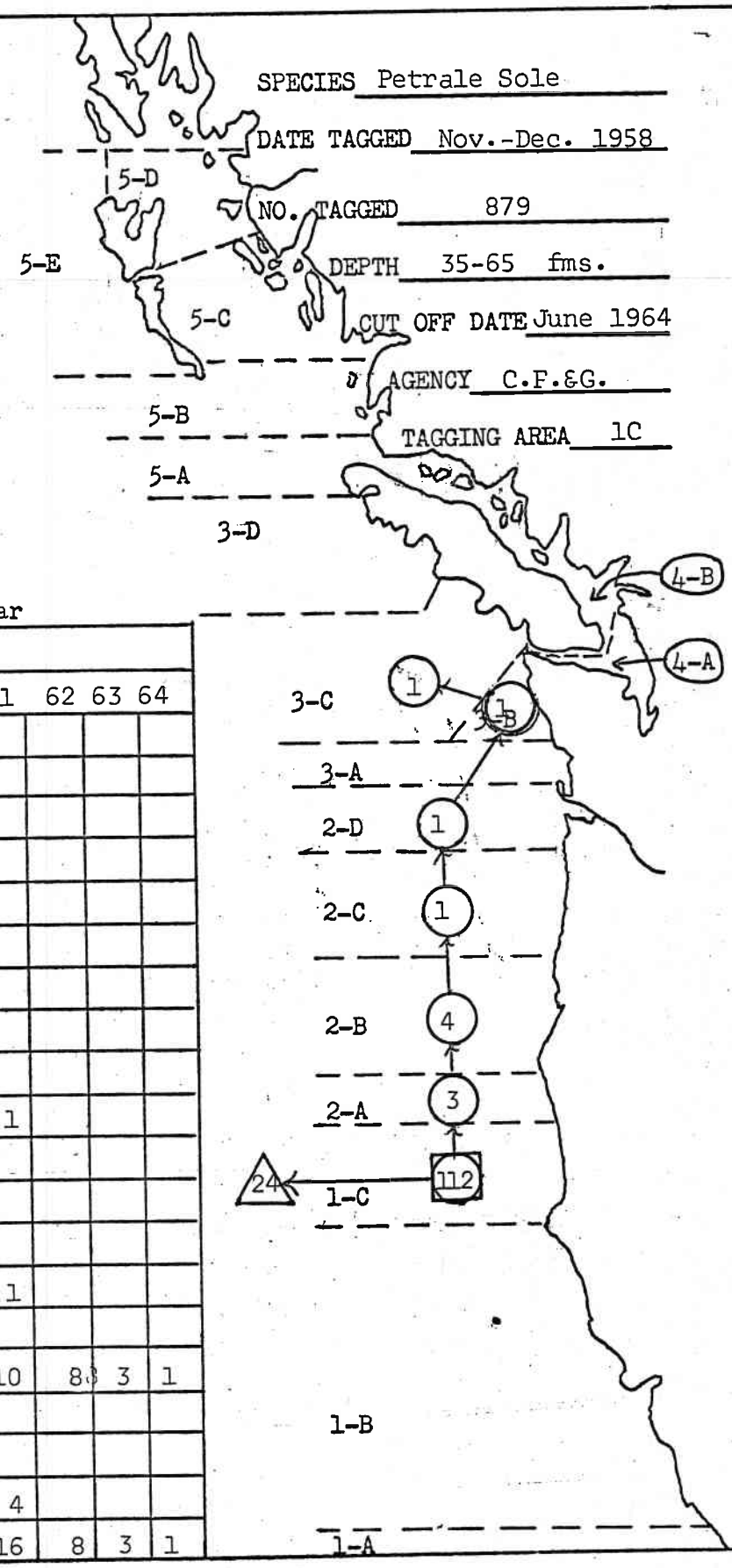
NO. TAGGED 879

DEPTH 35-65 fms.

CUT OFF DATE June 1964

AGENCY C.F.&G.

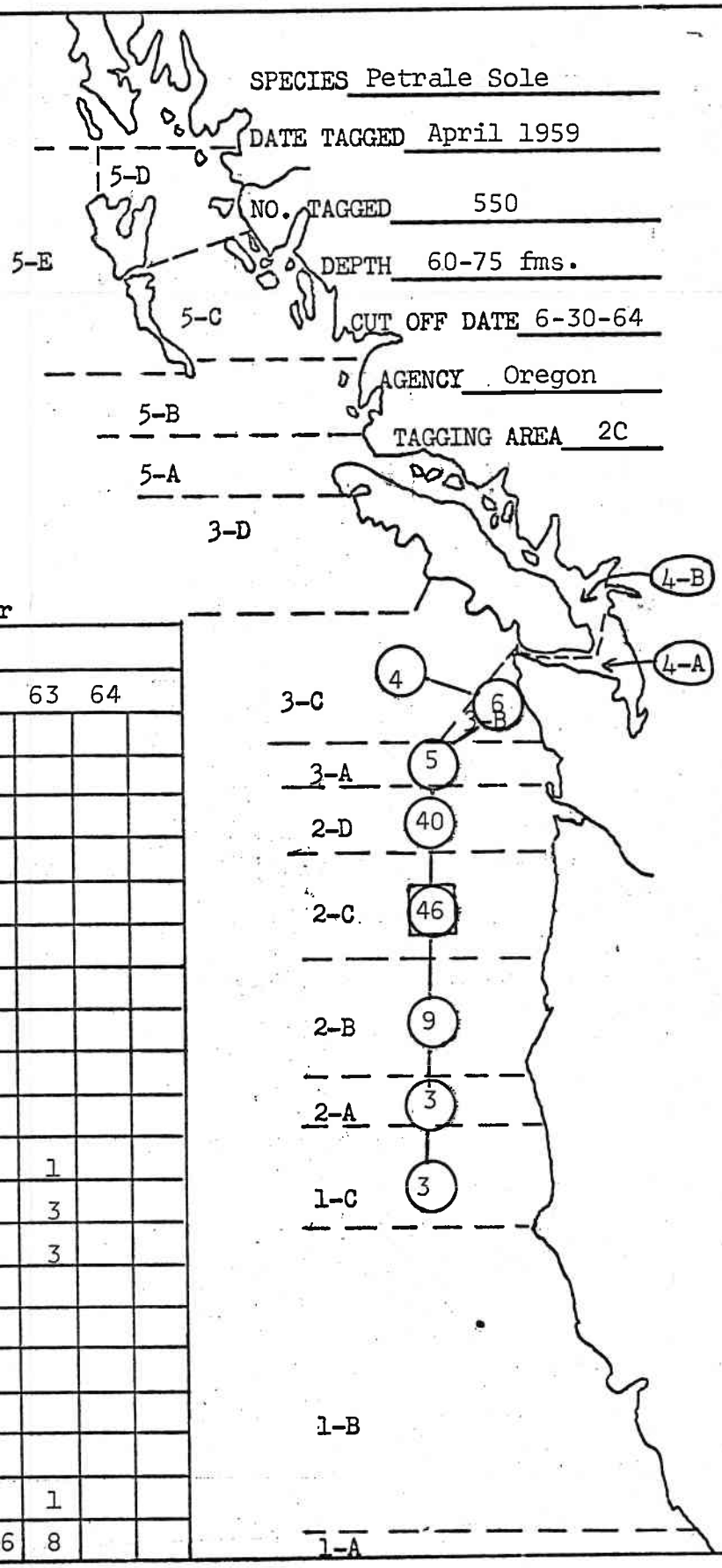
TAGGING AREA 1C



Recoveries by Year

P.M.F.C. Area	Year 58	59	60	61	62	63	64
5-E							
5-D							
5-C							
5-B							
5-A							
4-B							
4-A							
3-D							
3-C		1					
3-B				1			
3-A							
2-D			1				
2-C		1					
2-B		3		1			
2-A		3					
1-C		80	10	10	8	3	1
1-B							
1-A							
UNK.		13	7	4			
Total		101	18	16	8	3	1

Dispersion of Tagged Fish by P.M.F.C. Area



Recoveries by Year

P.M.F.C. Area	Year 59	60	61	62	63	64	
5-E							
5-D							
5-C							
5-B							
5-A							
4-B							
4-A							
3-D							
3-C	3	1					
3-B	1	2	2	1			
3-A		2	1	1	1		
2-D	5	14	11	7	3		
2-C	7	18	14	4	3		
2-B		3	3	3			
2-A	2	1					
1-C	1		2				
1-B							
1-A							
UNK.					1		
Total	19	41	33	16	8		

Dispersion of Tagged Fish by P.M.F.C. Area

SPECIES Petrale Sole

DATE TAGGED February 1960

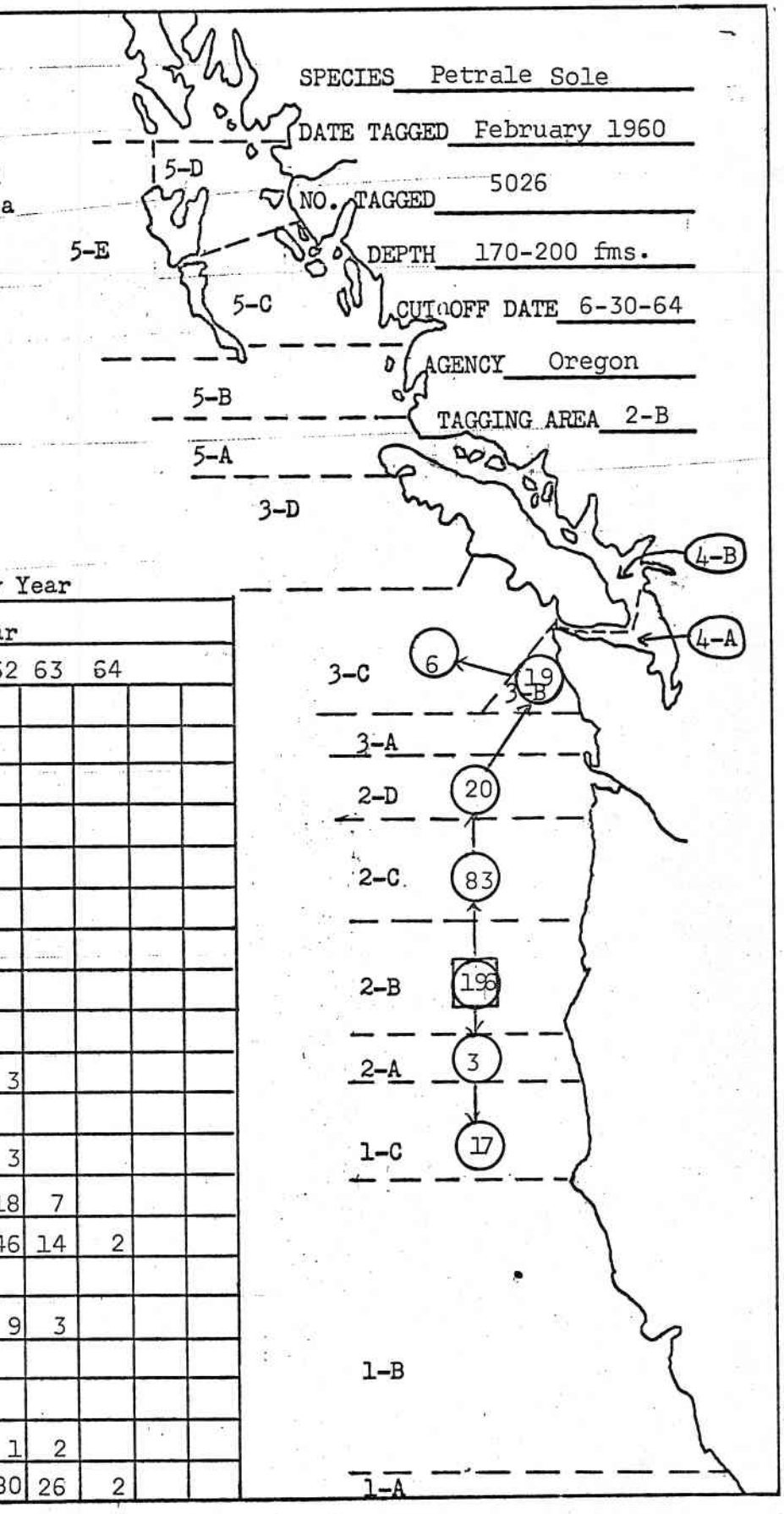
NO. TAGGED 5026

DEPTH 170-200 fms.

CUTOFF DATE 6-30-64

AGENCY Oregon

TAGGING AREA 2-B



Recoveries by Year

P.M.F.C. Area	Year 60	61	62	63	64		
5-E							
5-D							
5-C							
5-B							
5-A							
4-B							
4-A							
3-D							
3-C	5	1					
3-B	5	11	3				
3-A							
2-D	8	9	3				
2-C	27	21	18	7			
2-B	104	30	46	14	2		
2-A	1	2					
1-C	1	4	9	3			
1-B							
1-A							
UNK.	4		1	2			
Total	155	78	80	26	2		

Dispersion of Tagged Fish by P.M.F.C. Area

SPECIES Petrale Sole

DATE TAGGED June July 1960

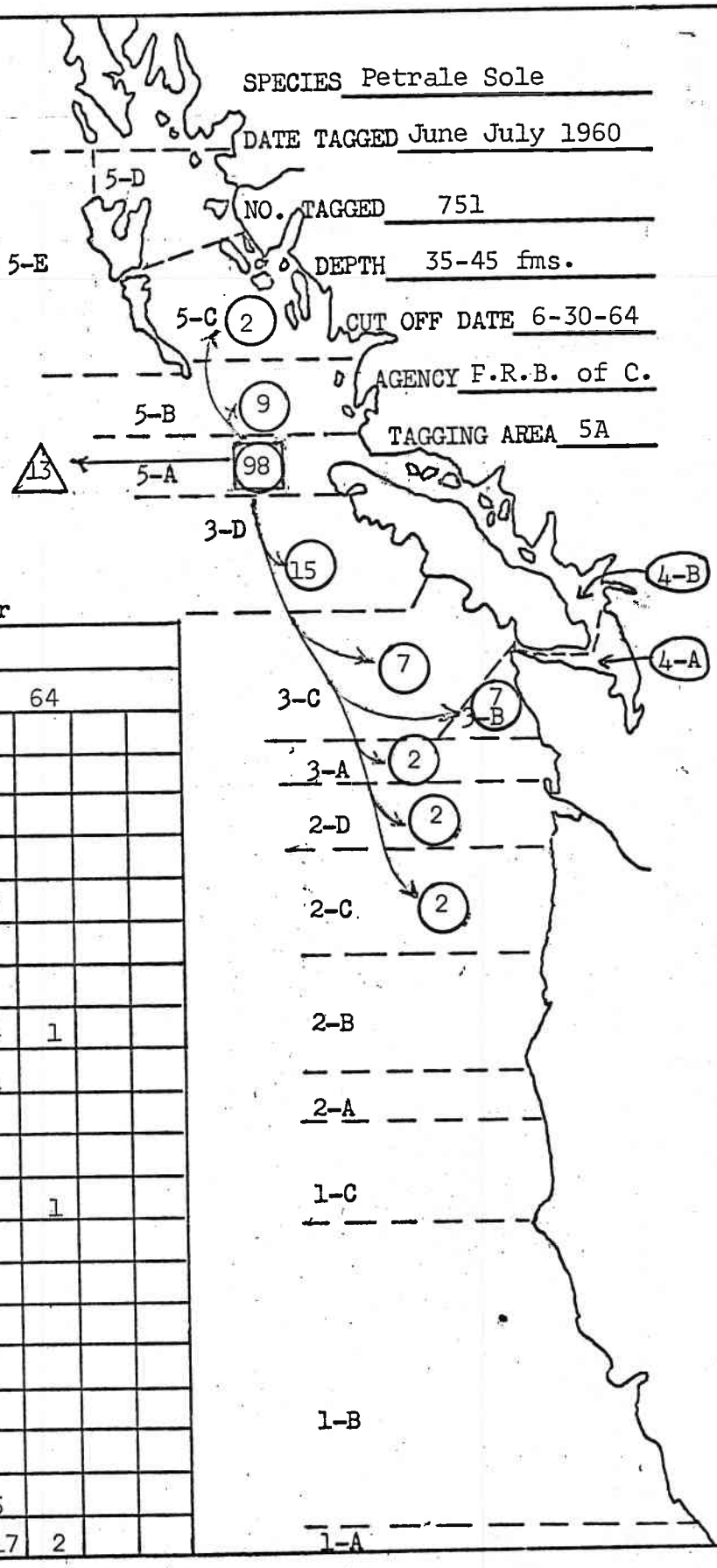
NO. TAGGED 751

DEPTH 35-45 fms.

CUT OFF DATE 6-30-64

AGENCY F.R.B. of C.

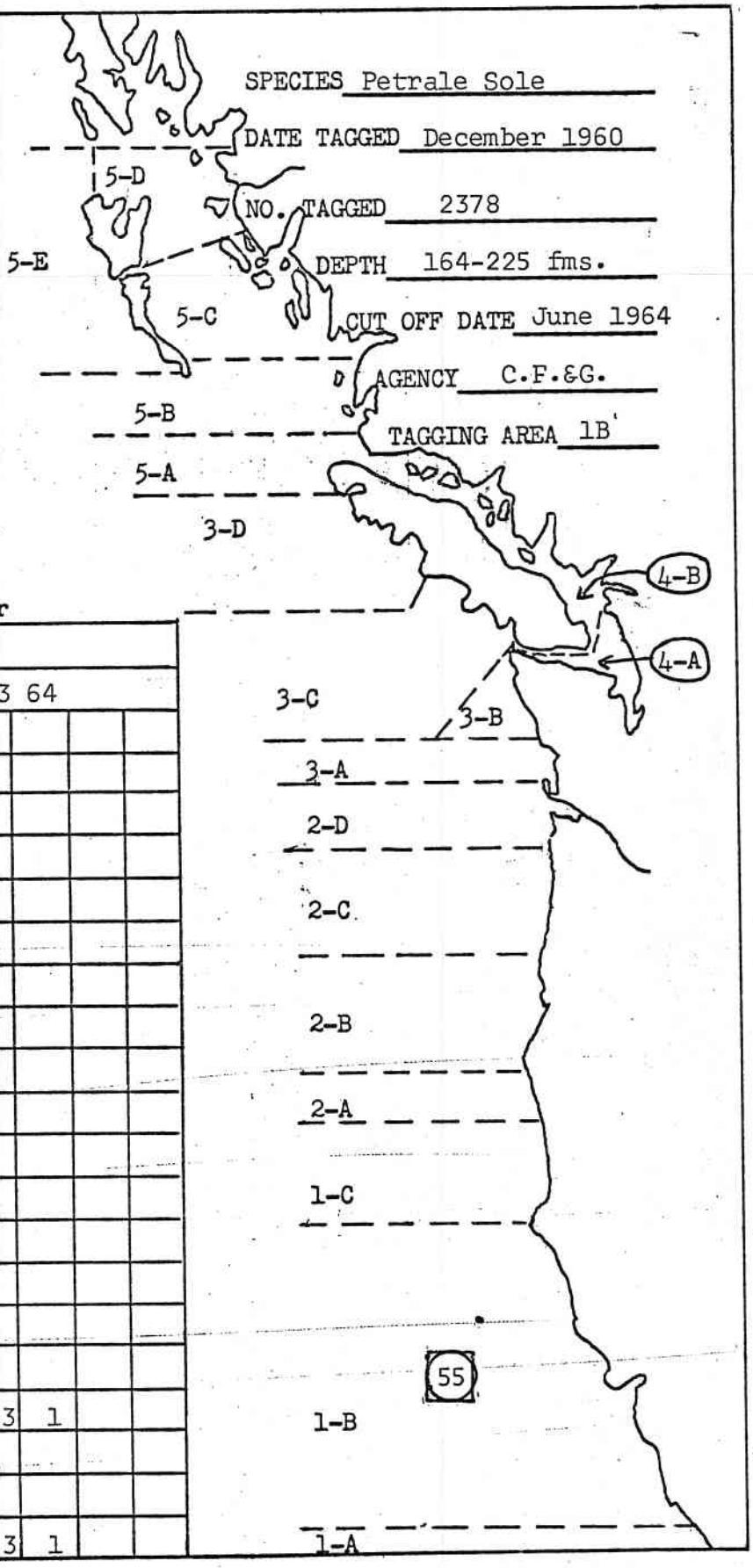
TAGGING AREA 5A



Recoveries by Year

P.M.F.C. Area	Year 60	61	62	63	64		
5-E							
5-D							
5-C	2						
5-B	1	8	1				
5-A	29	33	29	7			
4-B							
4-A							
3-D		5	5	4	1		
3-C		4	2	1			
3-B		3	4				
3-A			2				
2-D		1			1		
2-C			2				
2-B							
2-A							
1-C							
1-B							
1-A							
UNK.		5	3	5			
Total	32	59	48	17	2		

Dispersion of Tagged Fish by P.M.F.C. Area



Recoveries by Year

P.M.F.C. Area	Year 60	61	62	63	64		
5-E							
5-D							
5-C							
5-B							
5-A							
4-B							
4-A							
3-D							
3-C							
3-B							
3-A							
2-D							
2-C							
2-B							
2-A							
1-C							
1-B	5	28	18	3	1		
1-A							
UNK.							
Total	5	28	18	3	1		

Dispersion of Tagged Fish by P.M.F.C. Area

SPECIES Petrale Sole

DATE TAGGED February 1962

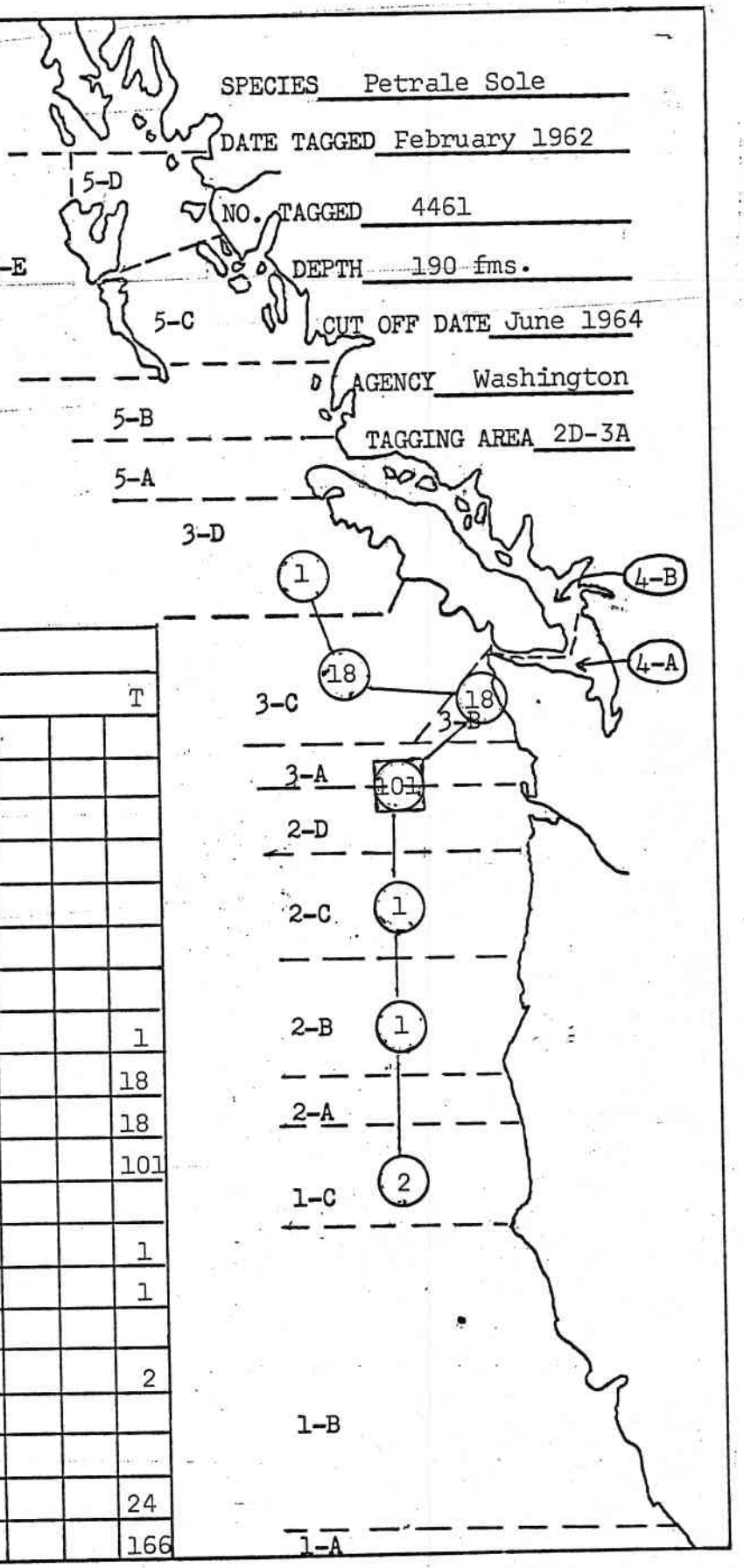
NO. TAGGED 4461

DEPTH 190 fms.

CUT OFF DATE June 1964

AGENCY Washington

TAGGING AREA 2D-3A



Recoveries by Year

P.M.F.C. Area	Year 62	63	64				T
5-E							
5-D							
5-C							
5-B							
5-A							
4-B							
4-A							
3-D		1					1
3-C	10	4	4				18
3-B	14	4					18
3-A	38	54	9				101
2-D							
2-C		1					1
2-B	1						1
2-A							
1-C		1	1				2
1-B							
1-A							
UNK.	17	6	1				24
Total	80	71	15				166

Dispersion of Tagged Fish by P.M.F.C. Area

SPECIES Petrale Sole

DATE TAGGED April 1962

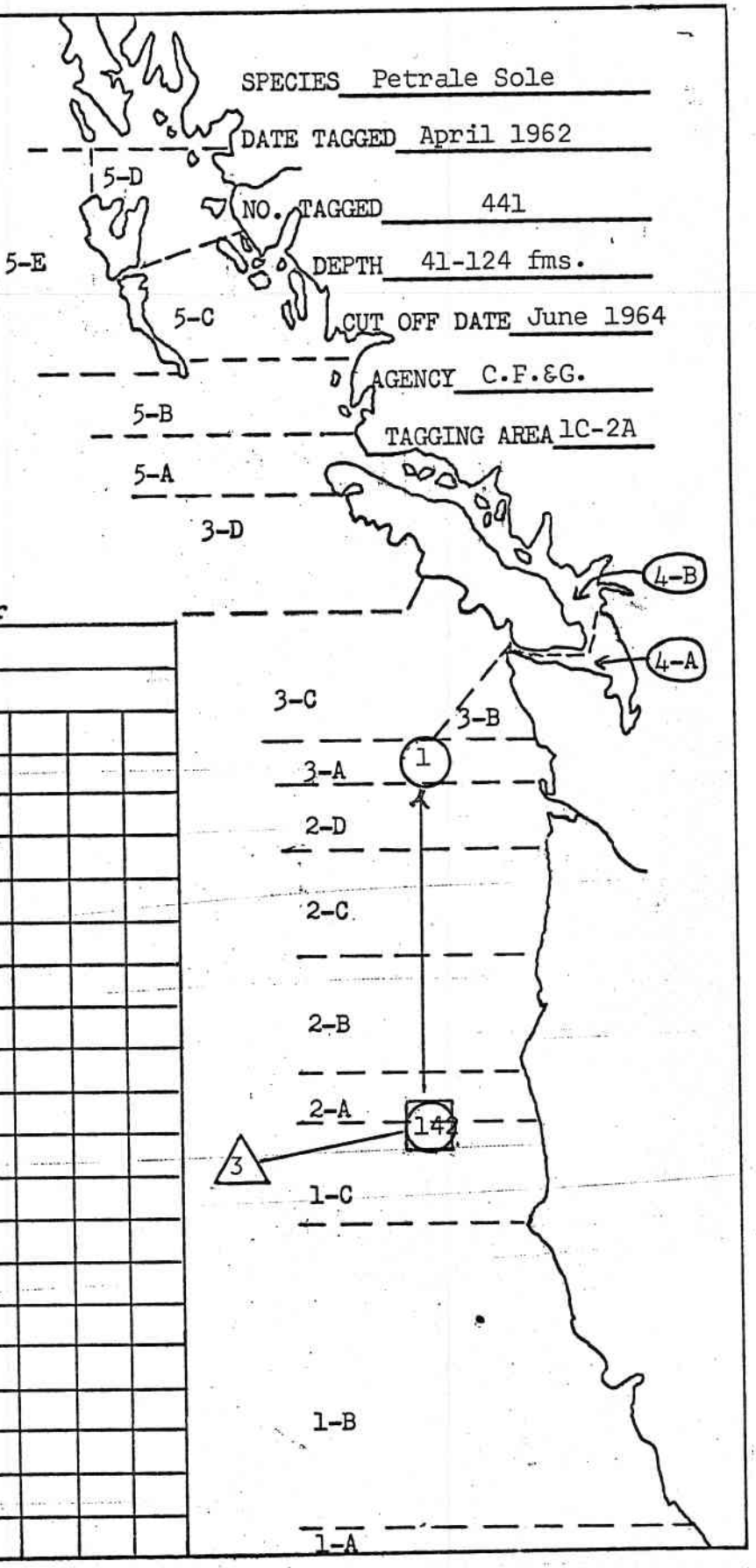
NO. TAGGED 441

DEPTH 41-124 fms.

CUT OFF DATE June 1964

AGENCY C.F.&G.

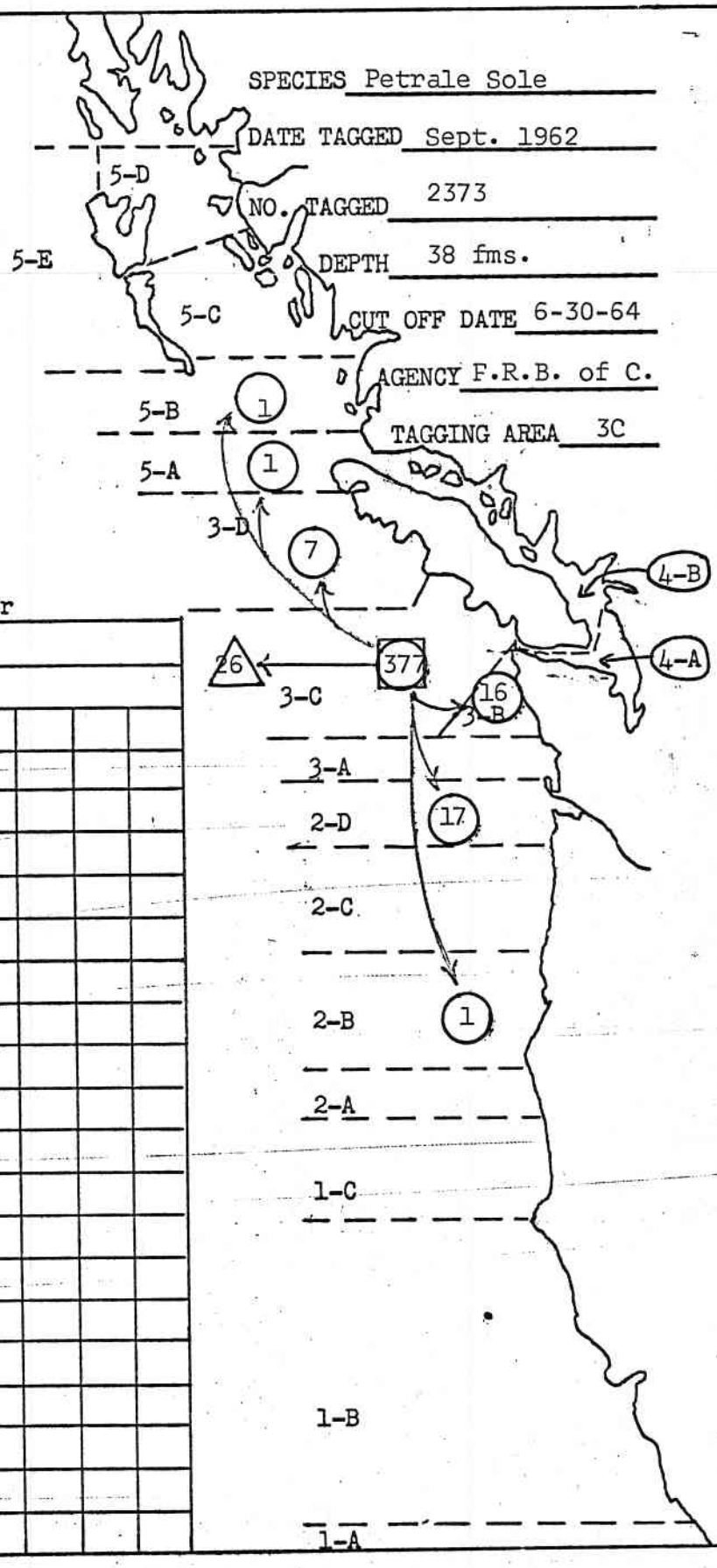
TAGGING AREA 1C-2A



Recoveries by Year

P.M.F.C. Area	Year 62	63	64				
5-E							
5-D							
5-C							
5-B							
5-A							
4-B							
4-A							
3-D							
3-C							
3-B							
3-A			1				
2-D							
2-C							
2-B							
2-A	3		2				
1-C	74	23	40				
1-B							
1-A							
UNK.			3				
Total	77	23	46				

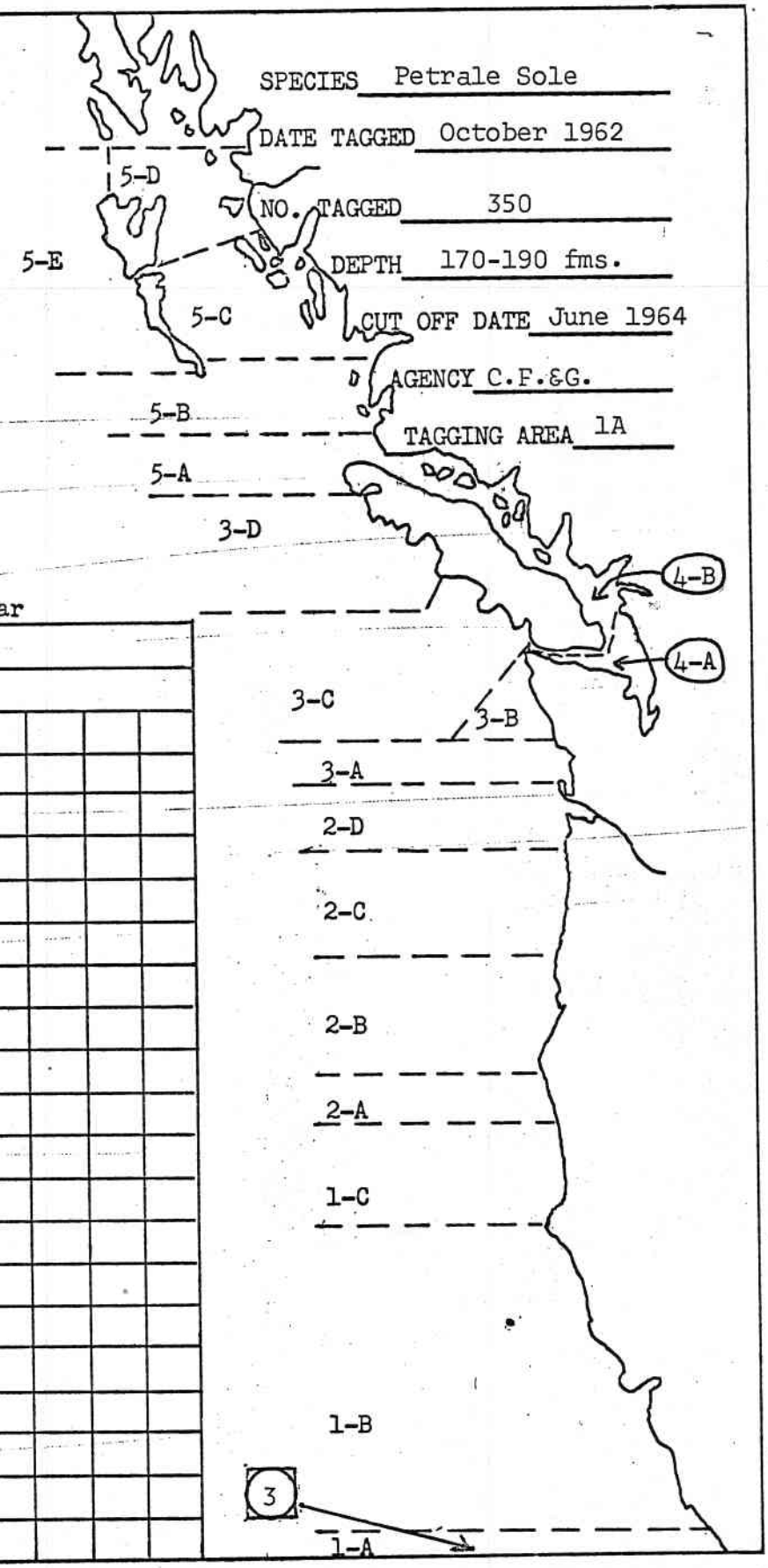
Dispersion of Tagged Fish by P.M.F.C. Area



Recoveries by Year

P.M.F.C. Area	Year 62	63	64				
5-E							
5-D							
5-C							
5-B		1					
5-A		1					
4-B							
4-A							
3-D	1	5	1				
3-C	61	294	22				
3-B		8	8				
3-A							
2-D		10	7				
2-C							
2-B		1					
2-A							
1-C							
1-B							
1-A							
UNK.	1	23	2				
Total	63	343	40				

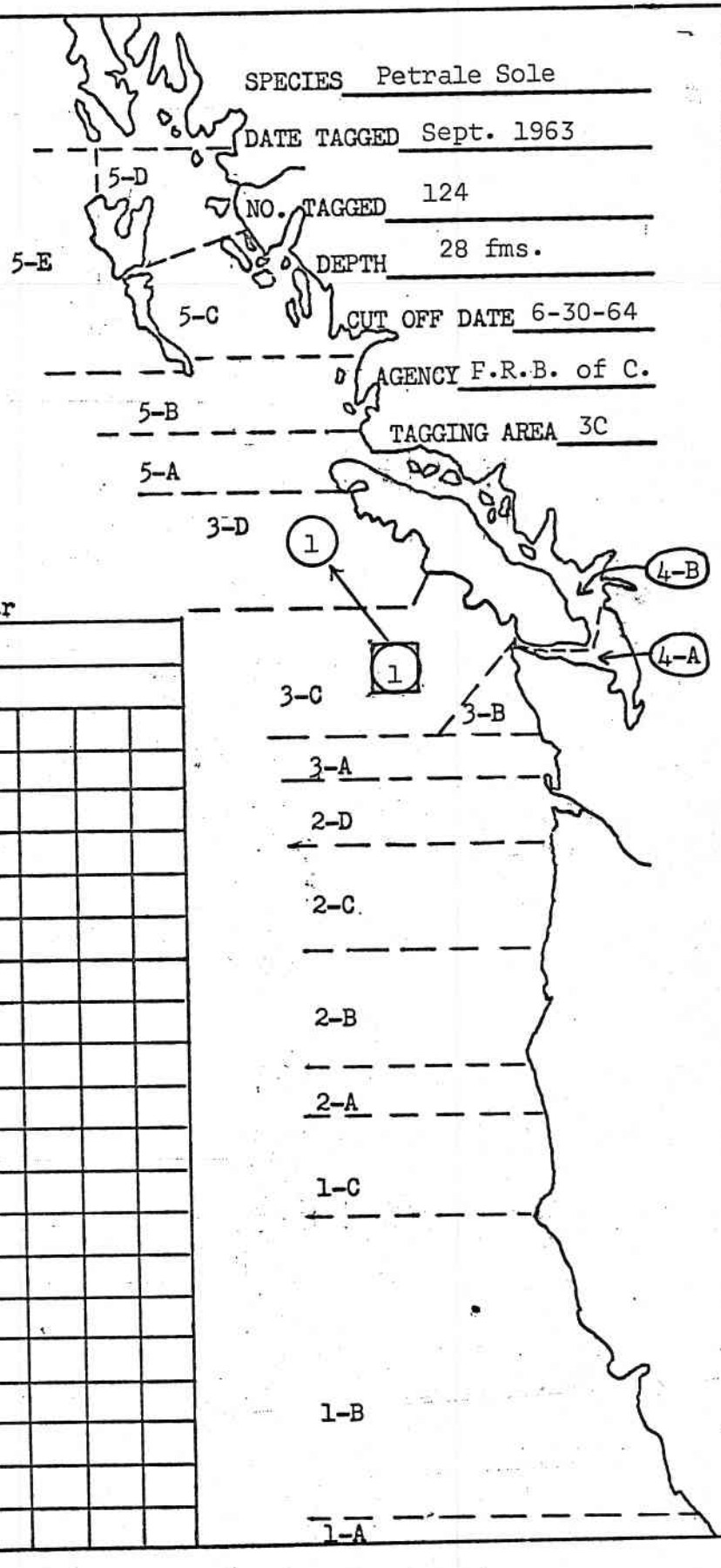
Dispersion of Tagged Fish by P.M.F.C. Area



Recoveries by Year

P.M.F.C. Area	Year 63	64					
5-E							
5-D							
5-C							
5-B							
5-A							
4-B							
4-A							
3-D							
3-C							
3-B							
3-A							
2-D							
2-C							
2-B							
2-A							
1-C							
1-B							
1-A	3						
UNK.							
Total	3						

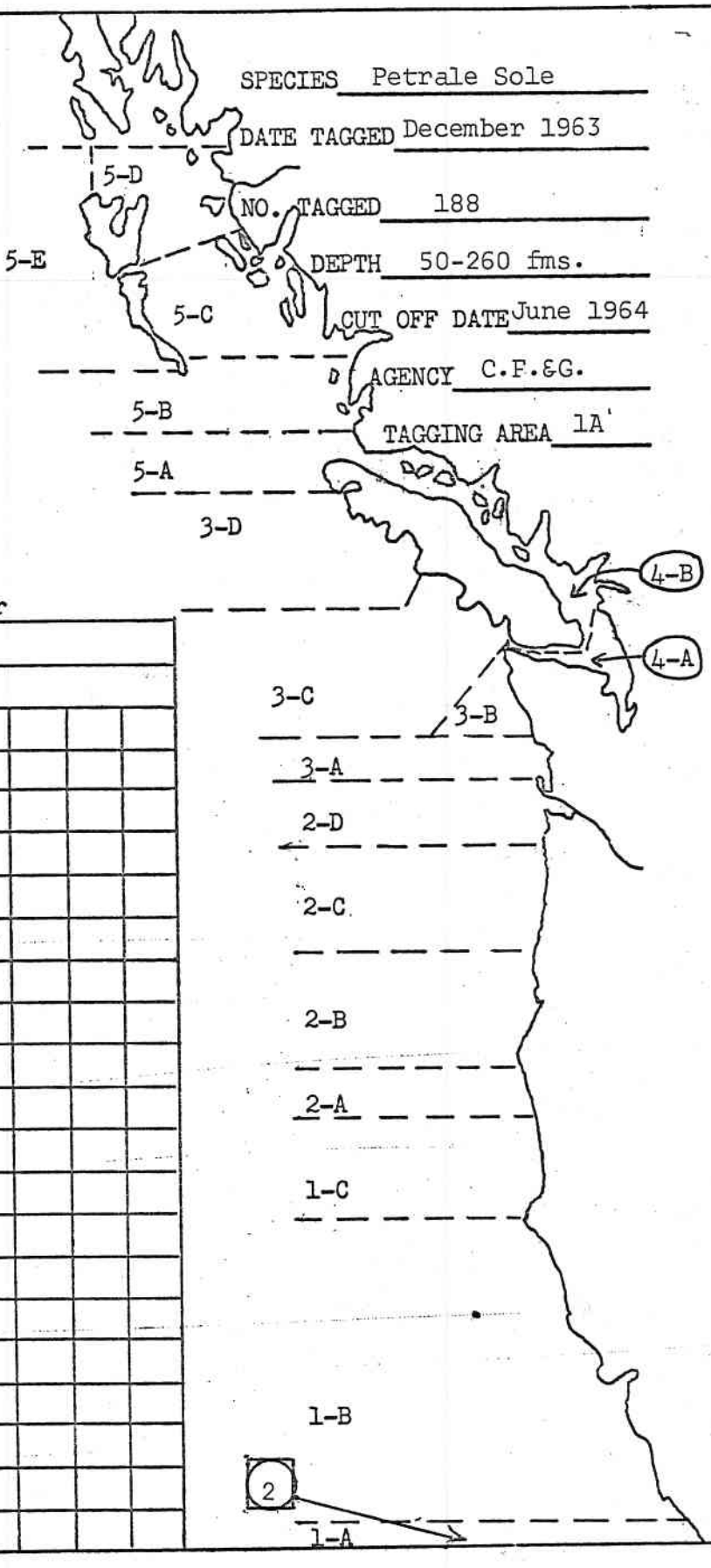
Dispersion of Tagged Fish by P.M.F.C. Area



Recoveries by Year

P.M.F.C. Area	Year 63	64					
5-E							
5-D							
5-C							
5-B							
5-A							
4-B							
4-A							
3-D		1					
3-C		1					
3-B							
3-A							
2-D							
2-C							
2-B							
2-A							
1-C							
1-B							
1-A							
UNK.							
Total		2					

Dispersion of Tagged Fish by P.M.F.C. Area



Recoveries by Year

P.M.F.C. Area	Year 64
5-E	
5-D	
5-C	
5-B	
5-A	
4-B	
4-A	
3-D	
3-C	
3-B	
3-A	
2-D	
2-C	
2-B	
2-A	
1-C	
1-B	
1-A	2
UNK.	
Total	2

Dispersion of Tagged Fish by P.M.F.C. Area

SPECIES English Sole

DATE TAGGED Nov.-Dec. 1958

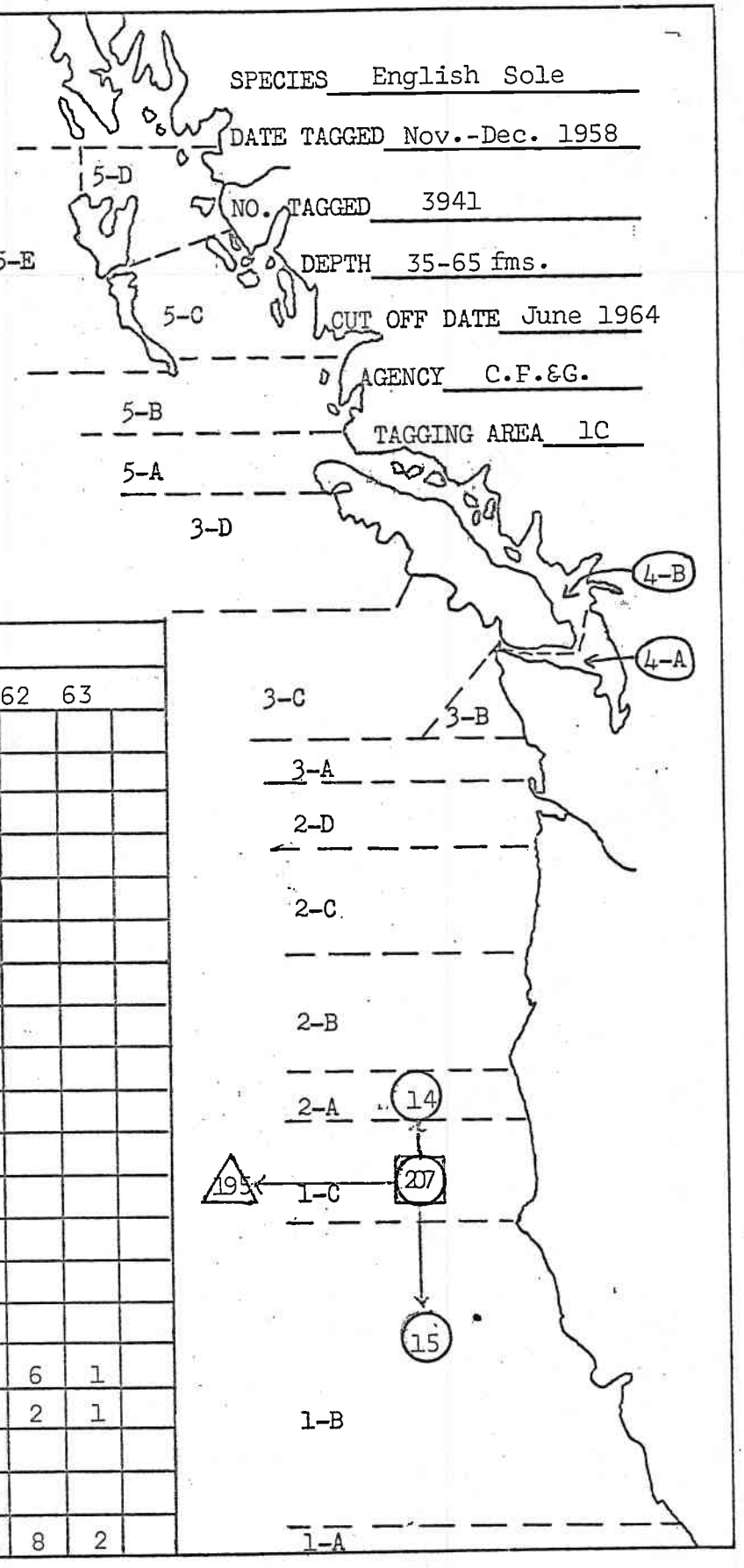
NO. TAGGED 3941

DEPTH 35-65 fms.

CUT OFF DATE June 1964

AGENCY C.F.&G.

TAGGING AREA 1C



Recoveries by Year

P.M.F.C. Area	Year 58	59	60	61	62	63	
5-E							
5-D							
5-C							
5-B							
5-A							
4-B							
4-A							
3-D							
3-C							
3-B							
3-A							
2-D							
2-C							
2-B							
2-A		11	1	2			
1-C	19	45	92	44	6	1	
1-B		8	1	3	2	1	
1-A							
UNK.		169	19	7			
Total	19	233	113	56	8	2	

Dispersion of Tagged Fish by P.M.F.C. Area

SPECIES English Sole

DATE TAGGED March 1959

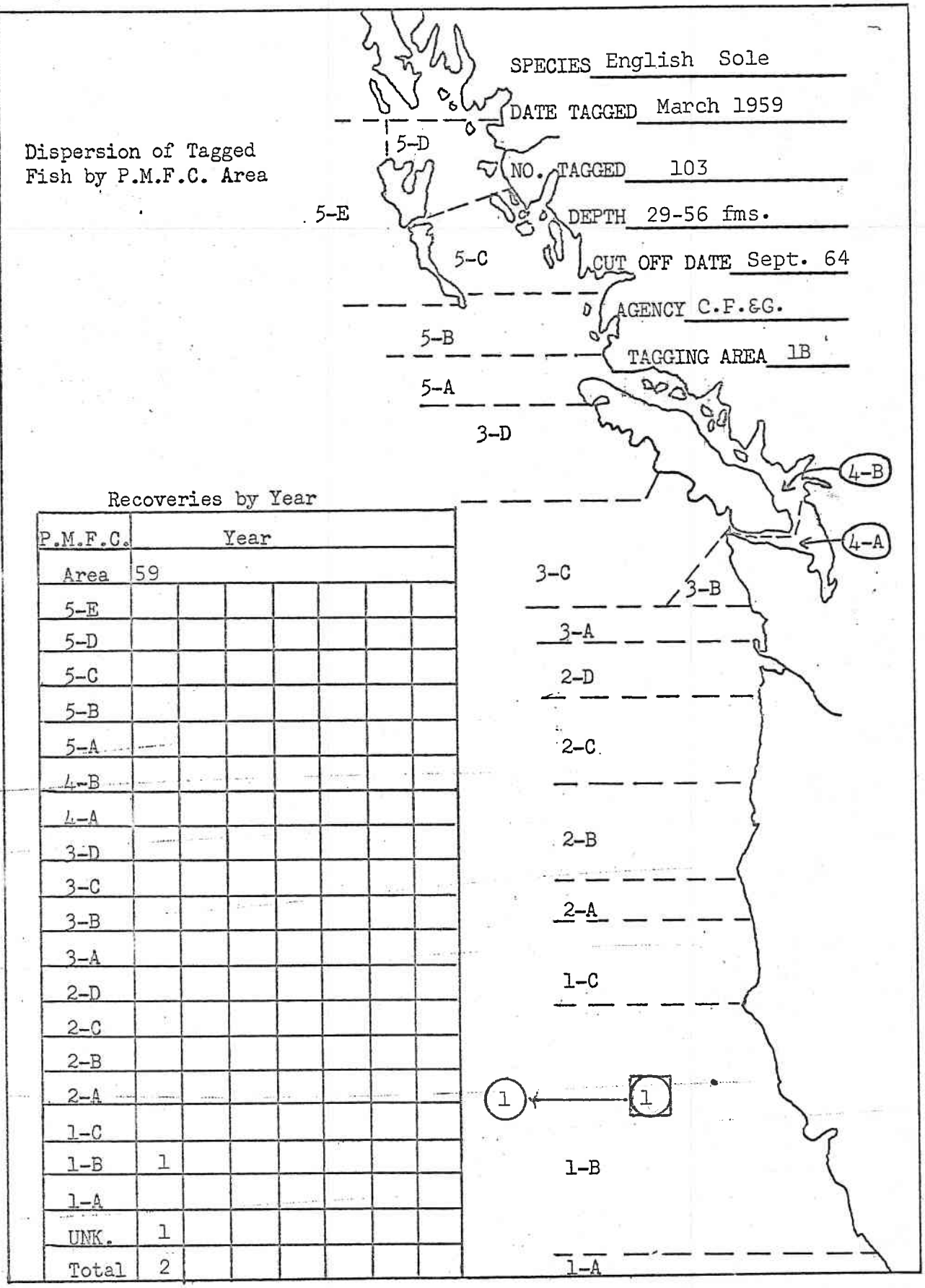
NO. TAGGED 103

DEPTH 29-56 fms.

CUT OFF DATE Sept. 64

AGENCY C.F.&G.

TAGGING AREA 1B



Recoveries by Year

P.M.F.C. Area	Year 59						
5-E							
5-D							
5-C							
5-B							
5-A							
4-B							
4-A							
3-D							
3-C							
3-B							
3-A							
2-D							
2-C							
2-B							
2-A							
1-C							
1-B	1						
1-A							
UNK.	1						
Total	2						

Dispersion of Tagged Fish by P.M.F.C. Area

SPECIES English Sole

DATE TAGGED April 1959

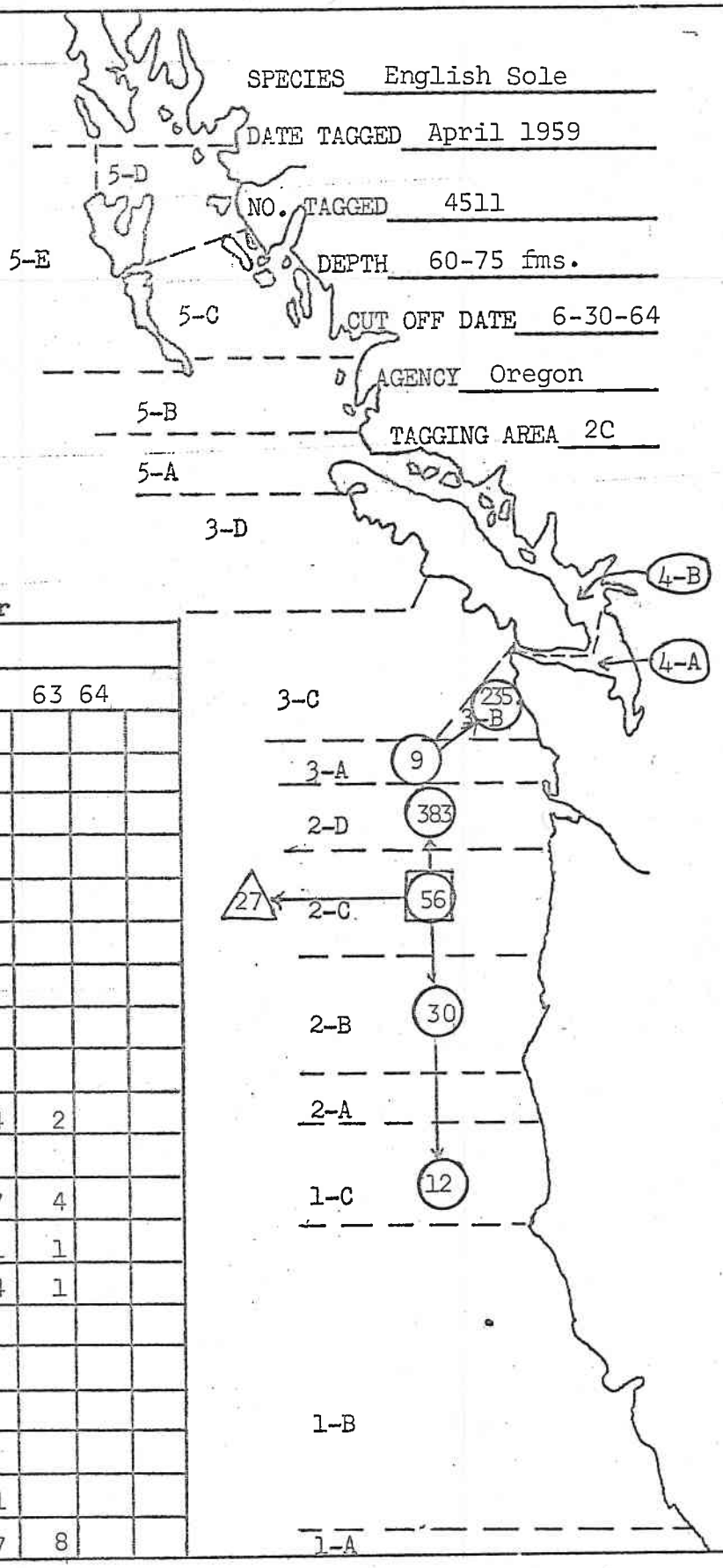
NO. TAGGED 4511

DEPTH 60-75 fms.

CUT OFF DATE 6-30-64

AGENCY Oregon

TAGGING AREA 2C



Recoveries by Year

P.M.F.C. Area	Year 59	60	61	62	63	64	
5-E							
5-D							
5-C							
5-B							
5-A							
4-B							
4-A							
3-D							
3-C							
3-B	35	138	56	4	2		
3-A	6	3					
2-D	189	132	41	17	4		
2-C	22	23	9	1	1		
2-B	10	13	2	4	1		
2-A							
1-C	2	6	4				
1-B							
1-A							
UNK.	4	20	2	1			
Total	268	335	114	27	8		

Dispersion of Tagged Fish by P.M.F.C. Area

SPECIES English Sole

DATE TAGGED April 1960

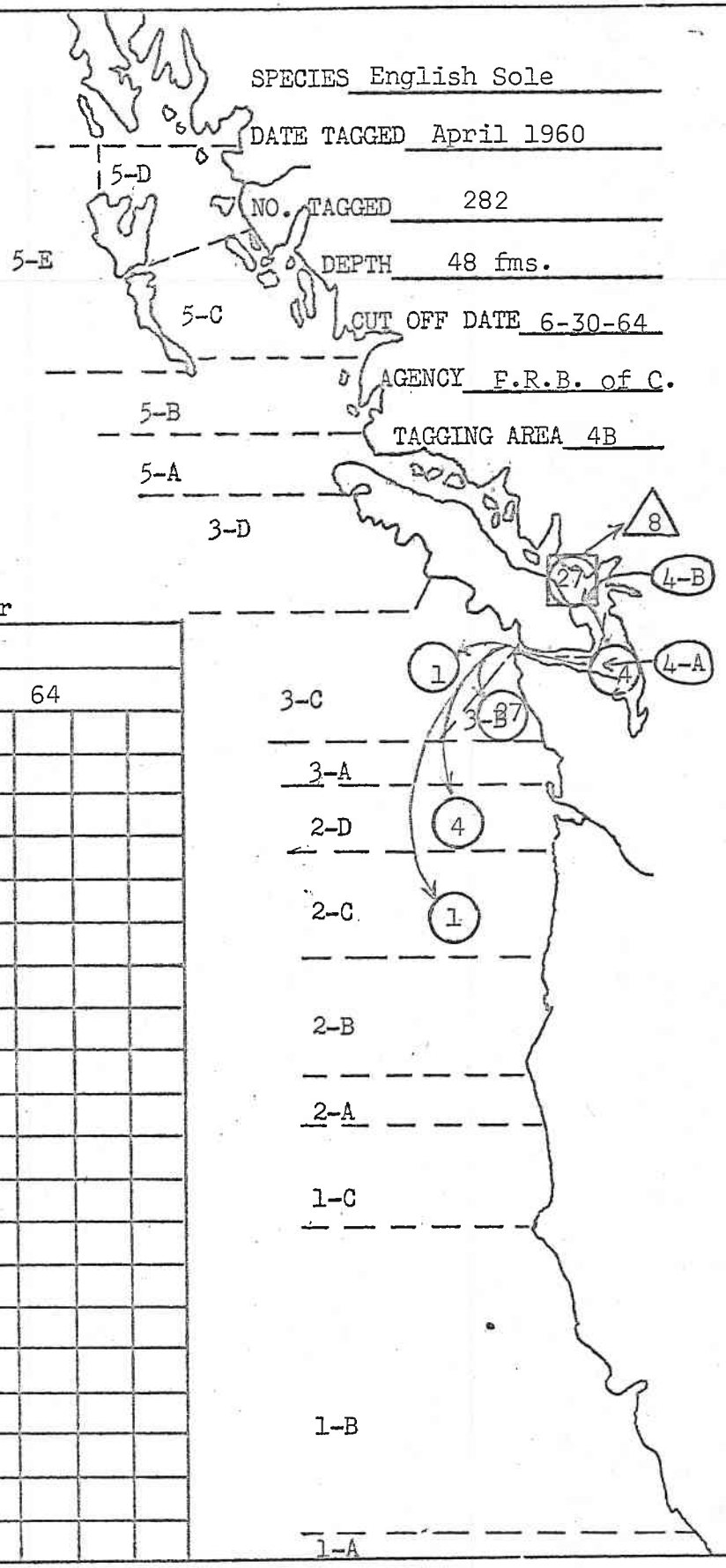
NO. TAGGED 282

DEPTH 48 fms.

CUT OFF DATE 6-30-64

AGENCY F.R.B. of C.

TAGGING AREA 4B



Recoveries by Year

P.M.F.C. Area	Year 60	61	62	63	64		
5-E							
5-D							
5-C							
5-B							
5-A							
4-B	26		1				
4-A	2	2					
3-D							
3-C			1				
3-B	7	13	5	2			
3-A							
2-D	2	2					
2-C			1				
2-B							
2-A							
1-C							
1-B							
1-A							
UNK.	2	4	2				
Total	39	21	10	2			

Dispersion of Tagged Fish by P.M.F.C. Area

SPECIES Dover Sole

DATE TAGGED April 1955

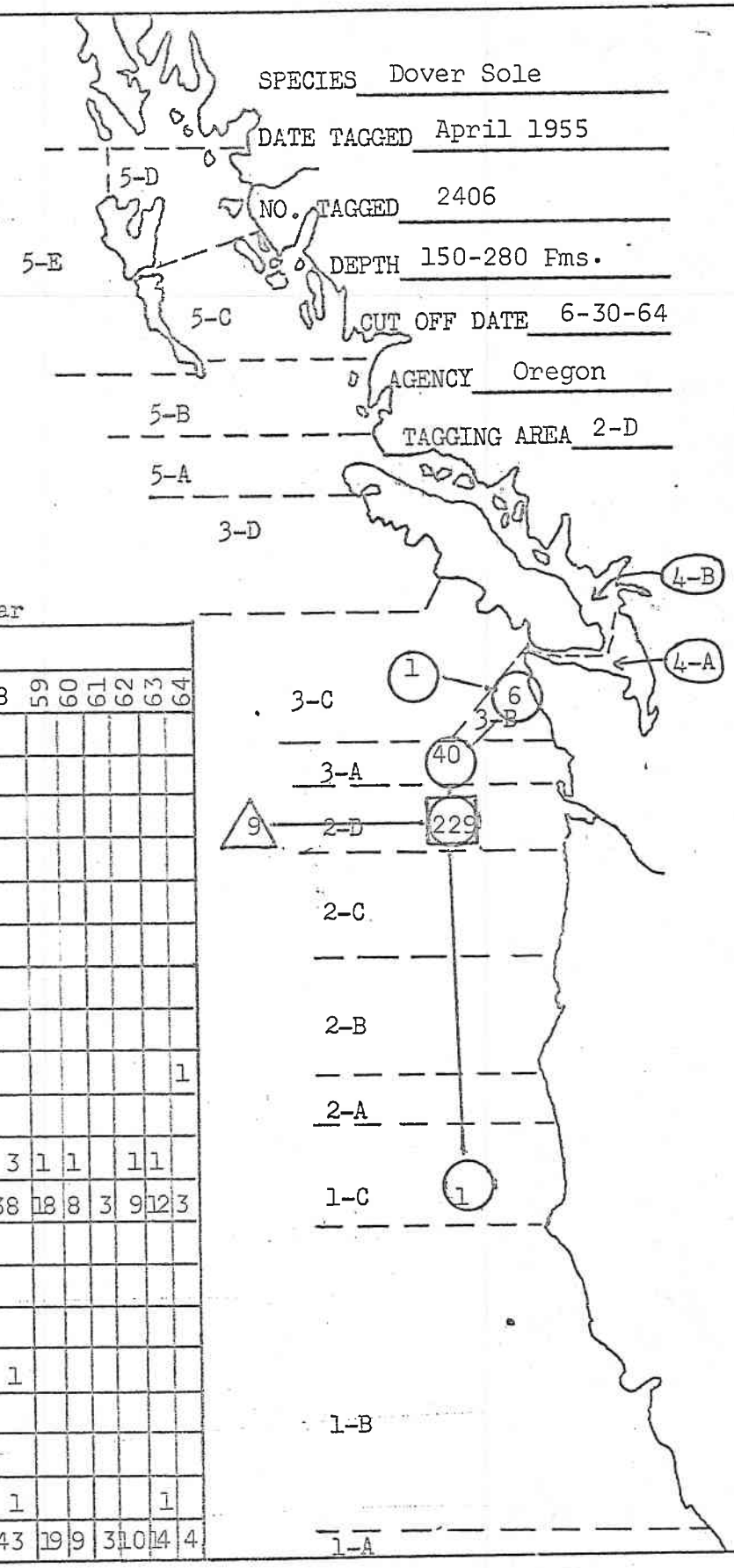
NO. TAGGED 2406

DEPTH 150-280 Fms.

CUT OFF DATE 6-30-64

AGENCY Oregon

TAGGING AREA 2-D



Recoveries by Year

P.M.F.C. Area	Year 55	56	57	58	59	60	61	62	63	64
5-E										
5-D										
5-C										
5-B										
5-A										
4-B										
4-A										
3-D										
3-C	1									1
3-B	1	4	1							
3-A	17	10	6	3	1	1		1	1	
2-D	13	51	73	38	18	8	3	9	12	3
2-C										
2-B										
2-A										
1-C				1						
1-B										
1-A										
UNK.	2	4	1	1					1	
Total	34	69	81	43	19	9	3	10	14	4

Dispersion of Tagged Fish by P.M.F.C. Area

SPECIES Dover Sole

DATE TAGGED May 1961

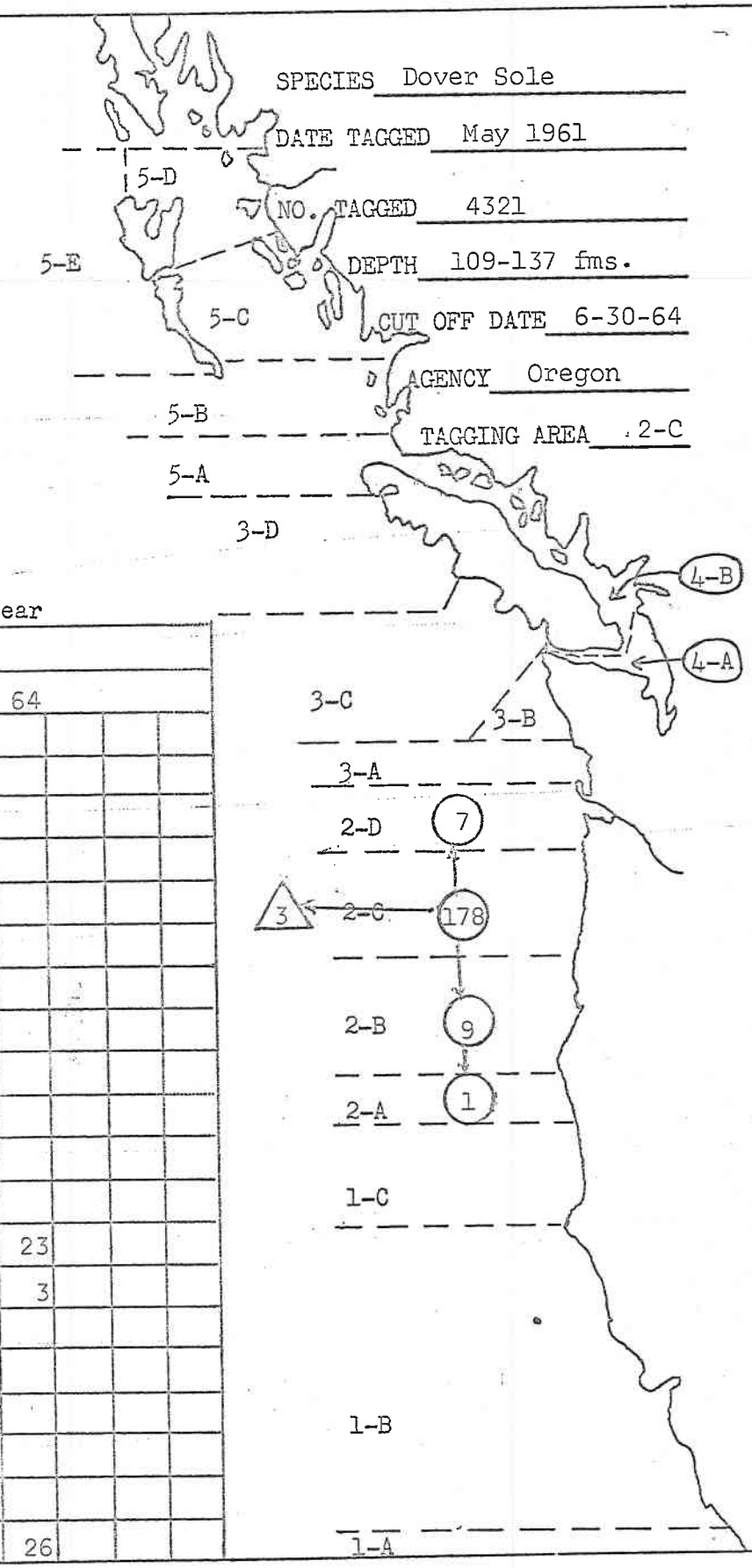
NO. TAGGED 4321

DEPTH 109-137 fms.

CUT OFF DATE 6-30-64

AGENCY Oregon

TAGGING AREA 2-C



Recoveries by Year

P.M.F.C. Area	Year 61	62	63	64			
5-E							
5-D							
5-C							
5-B							
5-A							
4-B							
4-A							
3-D							
3-C							
3-B							
3-A							
2-D		2	5				
2-C	12	76	67	23			
2-B		3	3	3			
2-A			1				
1-C							
1-B							
1-A							
UNK.		2	1				
Total	12	83	77	26			

Dispersion of Tagged Fish by P.M.F.C. Area

SPECIES Dover Sole

DATE TAGGED April 1962

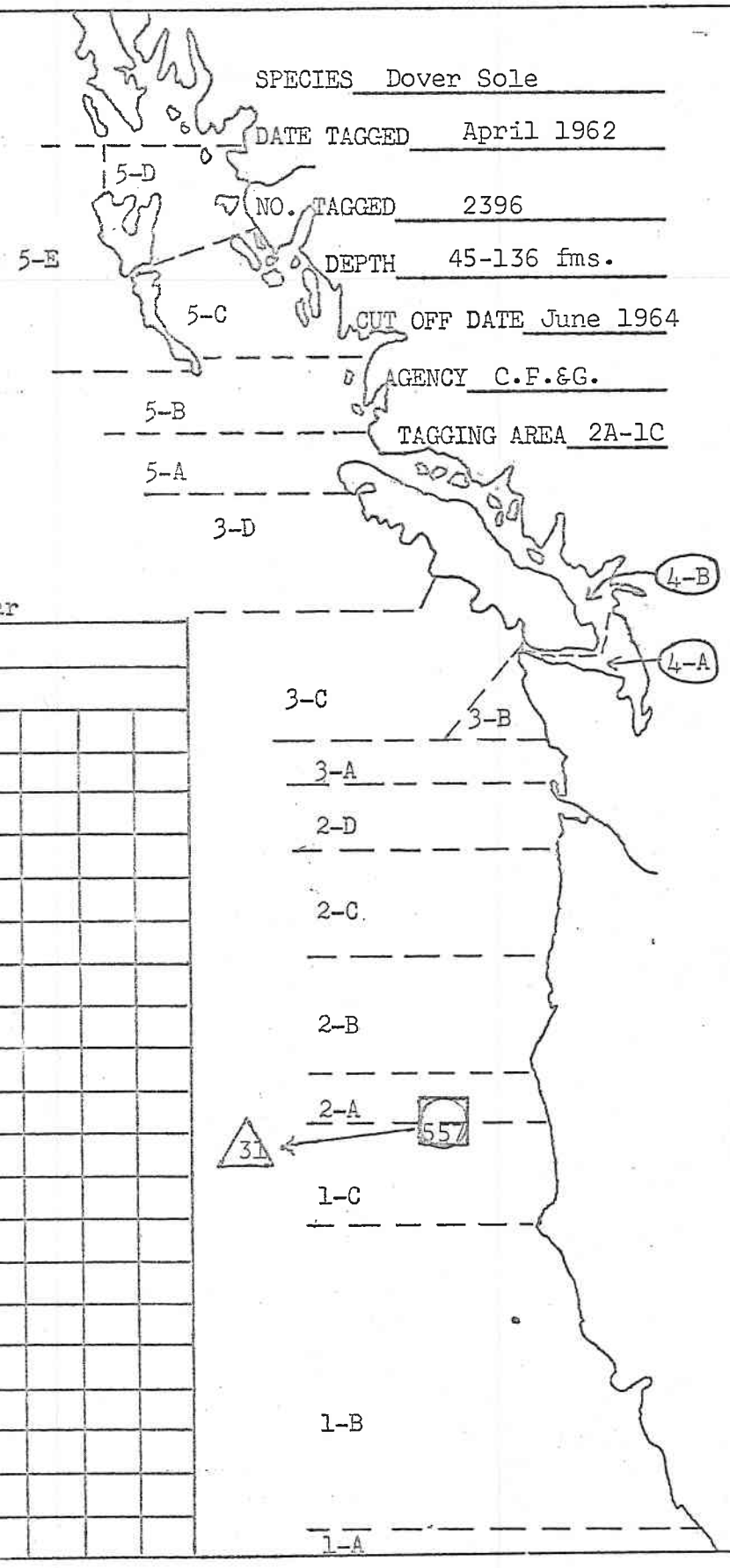
NO. TAGGED 2396

DEPTH 45-136 fms.

CUT OFF DATE June 1964

AGENCY C.F.&G.

TAGGING AREA 2A-1C



Recoveries by Year

P.M.F.C. Area	Year 62	63	64				
5-E							
5-D							
5-C							
5-B							
5-A							
4-B							
4-A							
3-D							
3-C							
3-B							
3-A							
2-D							
2-C							
2-B							
2-A	4		3				
1-C	227	86	237				
1-B							
1-A							
UNK.			31				
Total	231	86	271				

Dispersion of Tagged Fish by P.M.F.C. Area

SPECIES Dover Sole

DATE TAGGED 5/61 - 5/64

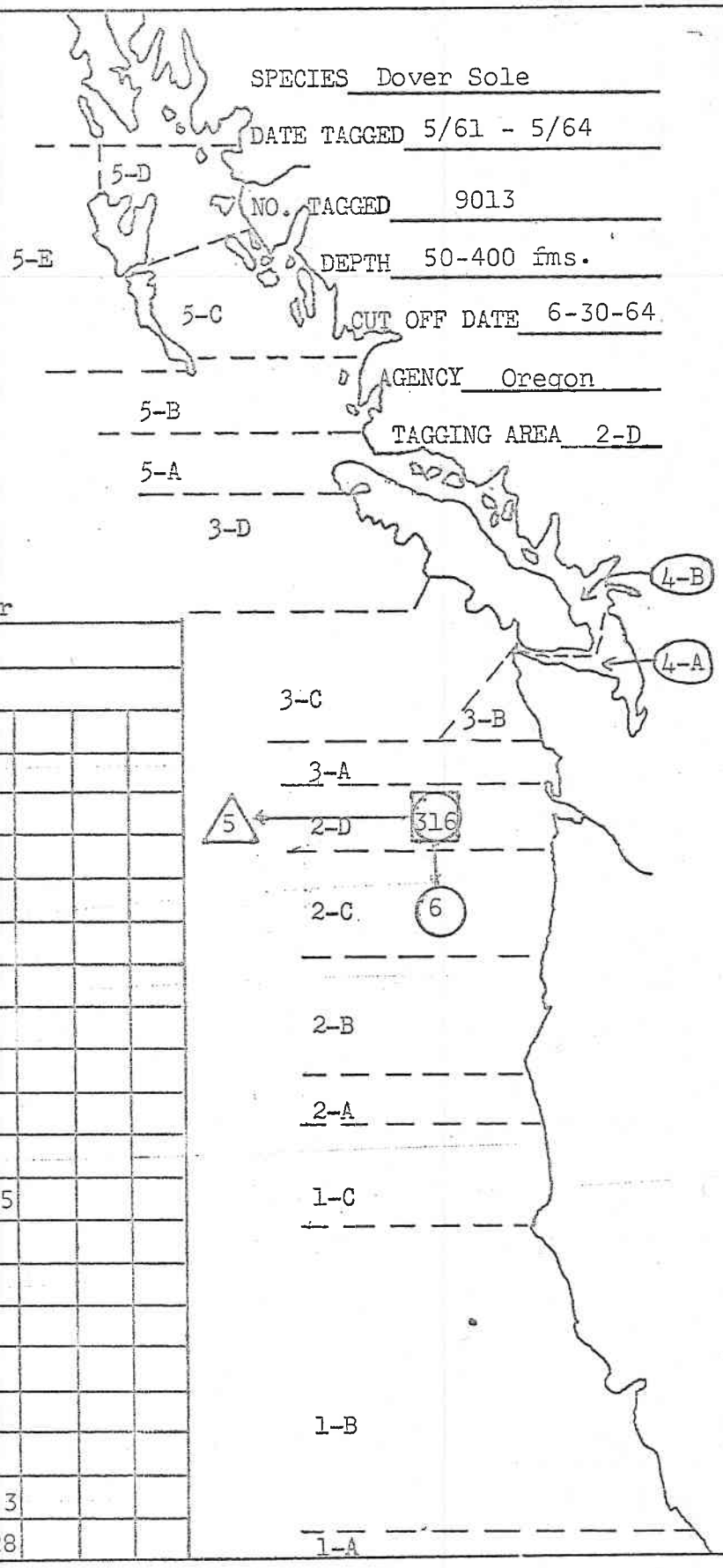
NO. TAGGED 9013

DEPTH 50-400 fms.

CUT OFF DATE 6-30-64

AGENCY Oregon

TAGGING AREA 2-D



Recoveries by Year

P.M.F.C. Area	Year 61	62	63	64			
5-E							
5-D							
5-C							
5-B							
5-A							
4-B							
4-A							
3-D							
3-C							
3-B							
3-A							
2-D	7	71	113	125			
2-C		5	1				
2-B							
2-A							
1-C							
1-B							
1-A							
UNK.			2	3			
Total	7	76	116	128			

Dispersion of Tagged Fish by P.M.F.C. Area

SPECIES Rock Sole

DATE TAGGED June July 1960

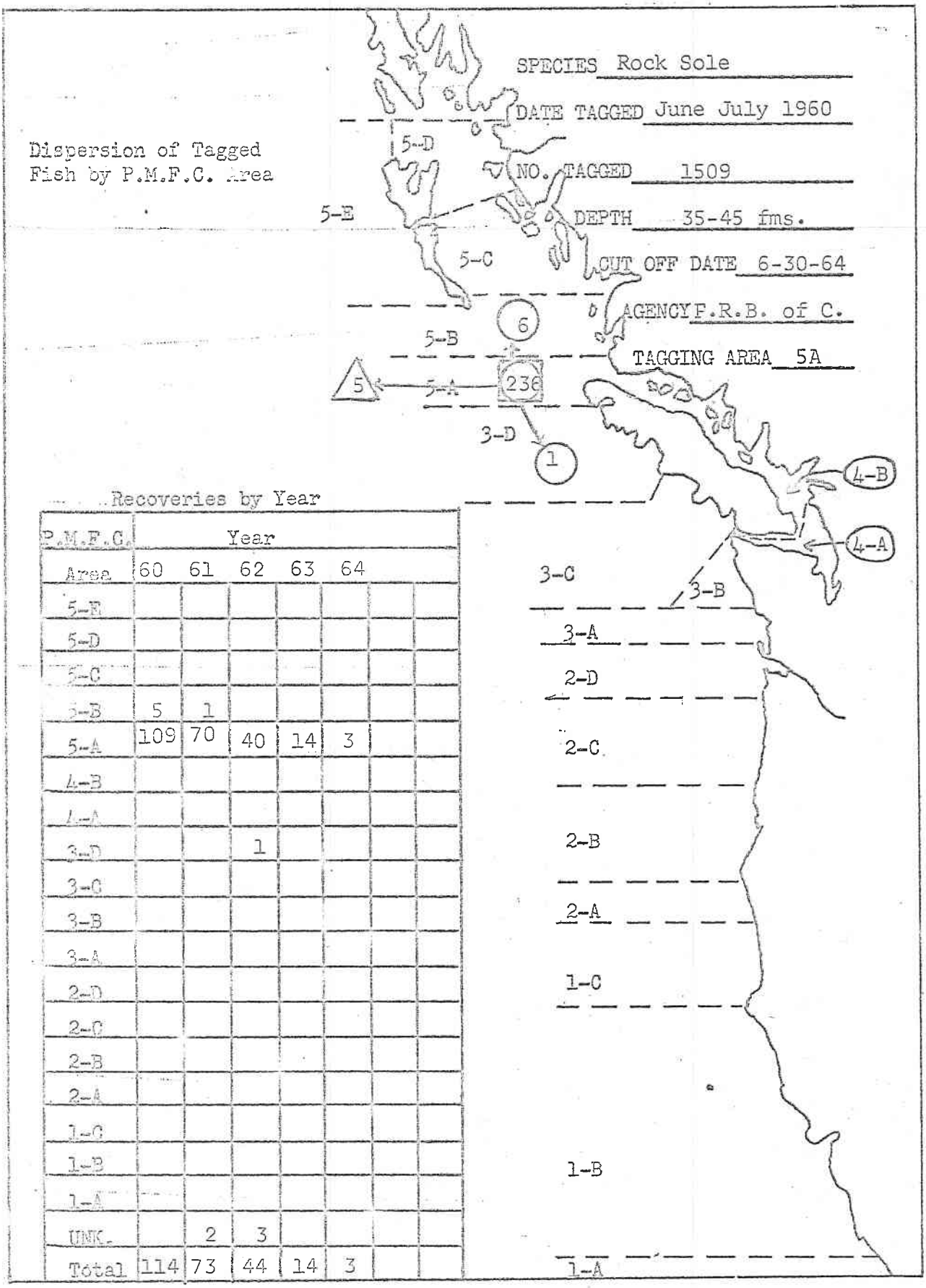
NO. TAGGED 1509

DEPTH 35-45 fms.

CUT OFF DATE 6-30-64

AGENCY F.R.B. of C.

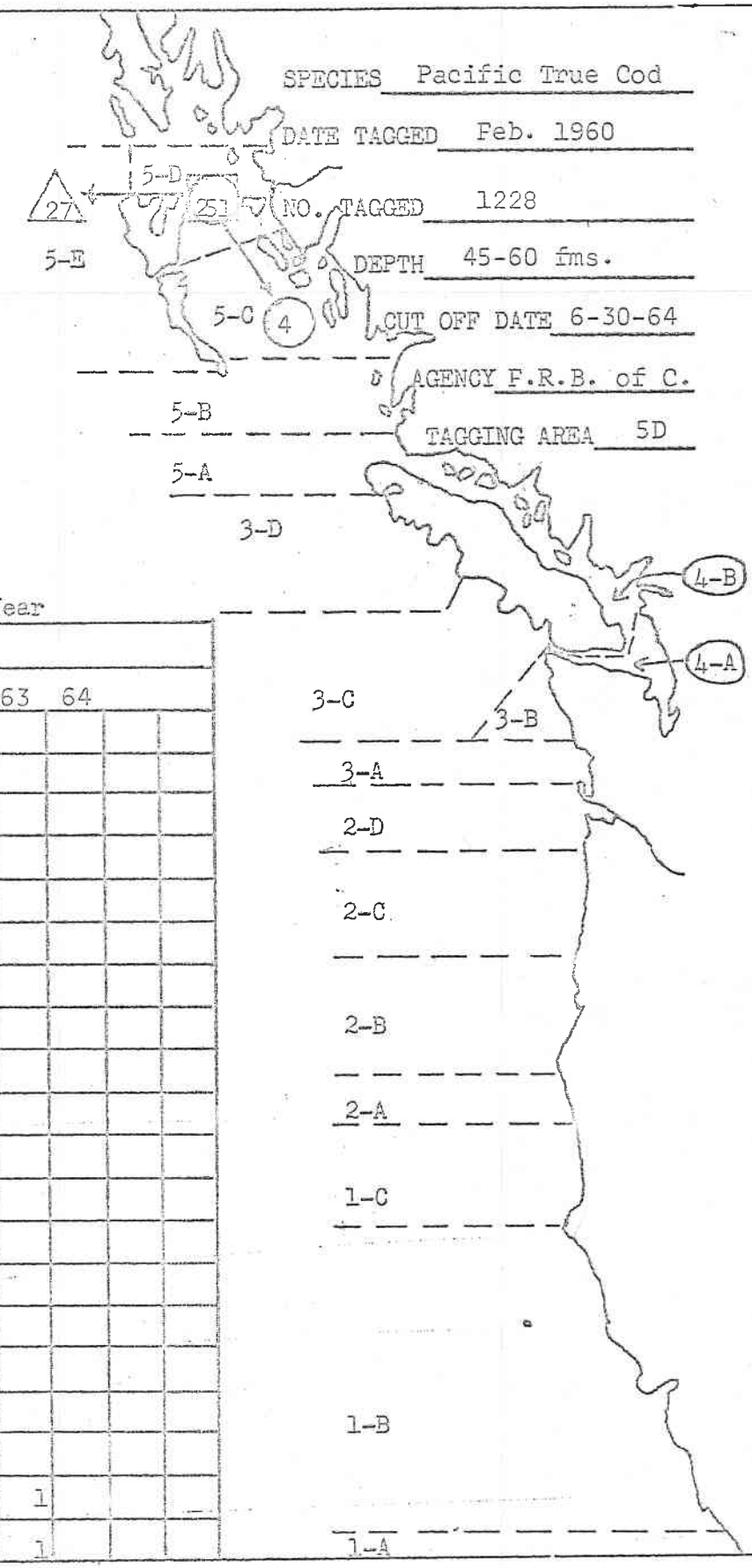
TAGGING AREA 5A



Recoveries by Year

P.M.F.C. Area	Year 60	61	62	63	64		
5-E							
5-D							
5-C							
5-B	5	1					
5-A	109	70	40	14	3		
4-B							
4-A							
3-D			1				
3-C							
3-B							
3-A							
2-D							
2-C							
2-B							
2-A							
1-C							
1-B							
1-A							
UNK.		2	3				
Total	114	73	44	14	3		

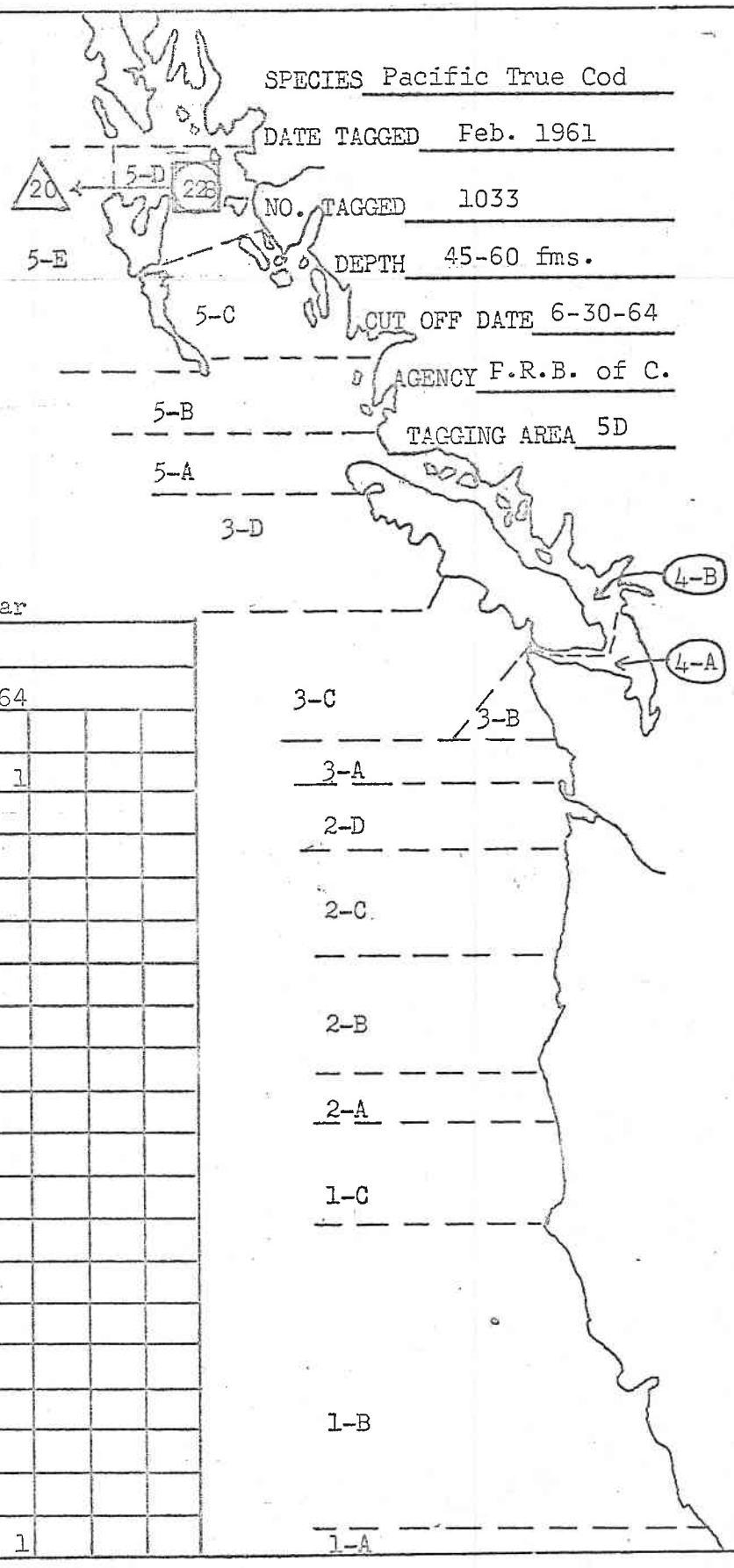
Dispersion of Tagged Fish by P.M.F.C. Area



Recoveries by Year

P.M.F.C. Area	Year 60	61	62	63	64		
5-E							
5-D	225	24	2				
5-C	4						
5-B							
5-A							
4-B							
4-A							
3-D							
3-C							
3-B							
3-A							
2-D							
2-C							
2-B							
2-A							
1-C							
1-B							
1-A							
UNK.	20	5	1	1			
Total	249	29	3	1			

Dispersion of Tagged Fish by P.M.F.C. Area



Recoveries by Year

P.M.F.C. Area	Year 61	62	63	64			
5-E							
5-D	201	25	1	1			
5-C							
5-B							
5-A							
4-B							
4-A							
3-D							
3-C							
3-B							
3-A							
2-D							
2-C							
2-B							
2-A							
1-C							
1-B							
1-A							
UNK.	18	2					
Total	219	27	1	1			

Dispersion of Tagged Fish by P.M.F.C. Area

SPECIES Pacific True Cod

DATE TAGGED May-June 1961

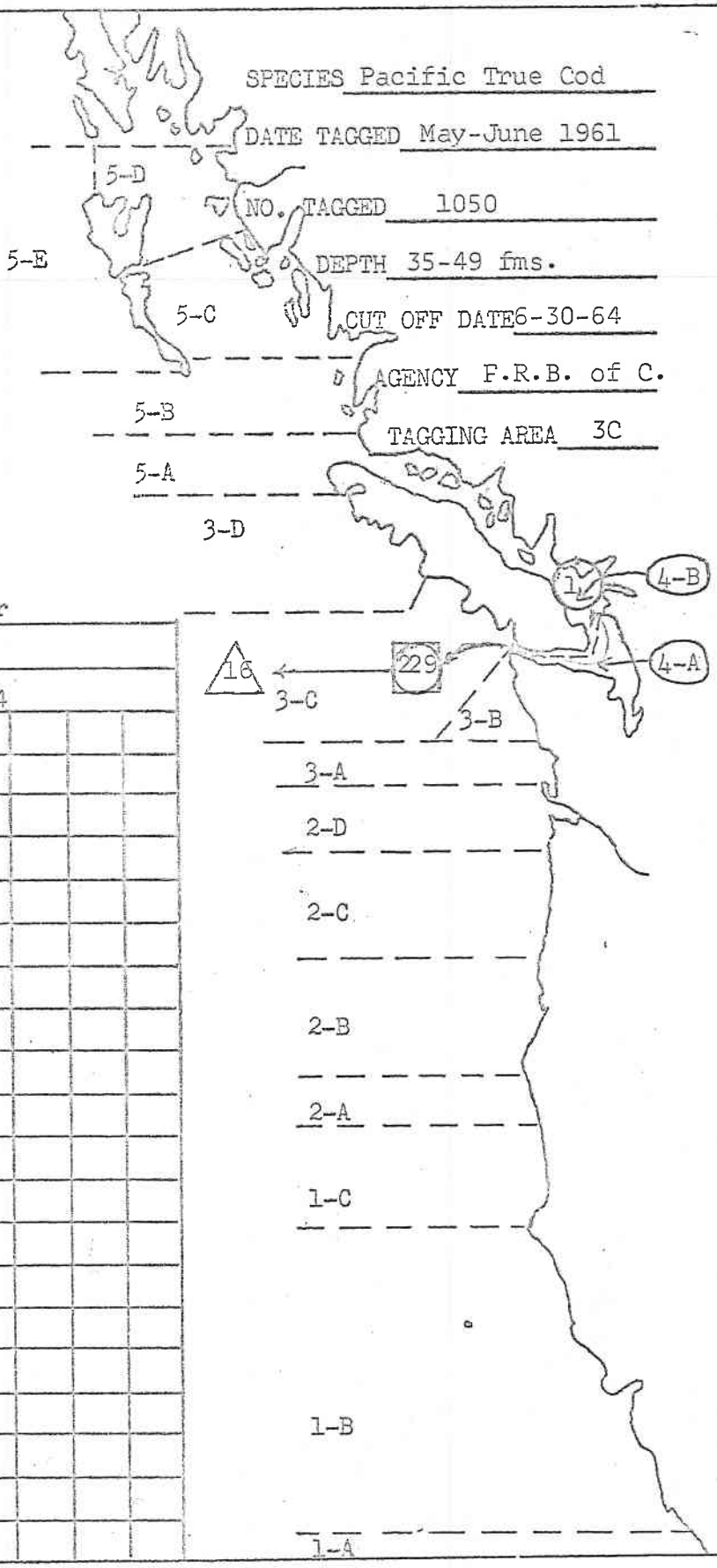
NO. TAGGED 1050

DEPTH 35-49 fms.

CUT OFF DATE 6-30-64

AGENCY F.R.B. of C.

TAGGING AREA 3C



Recoveries by Year

P.M.F.C. Area	Year 61	62	63	64			
5-E							
5-D							
5-C							
5-B							
5-A							
4-B		1					
4-A							
3-D							
3-C	201	27	1				
3-B							
3-A							
2-D							
2-C							
2-B							
2-A							
1-C							
1-B							
1-A							
UNK.	10	3	3				
Total	211	31	4				

Dispersion of Tagged Fish by P.M.F.C. Area

SPECIES Pacific True Cod

DATE TAGGED June 1962

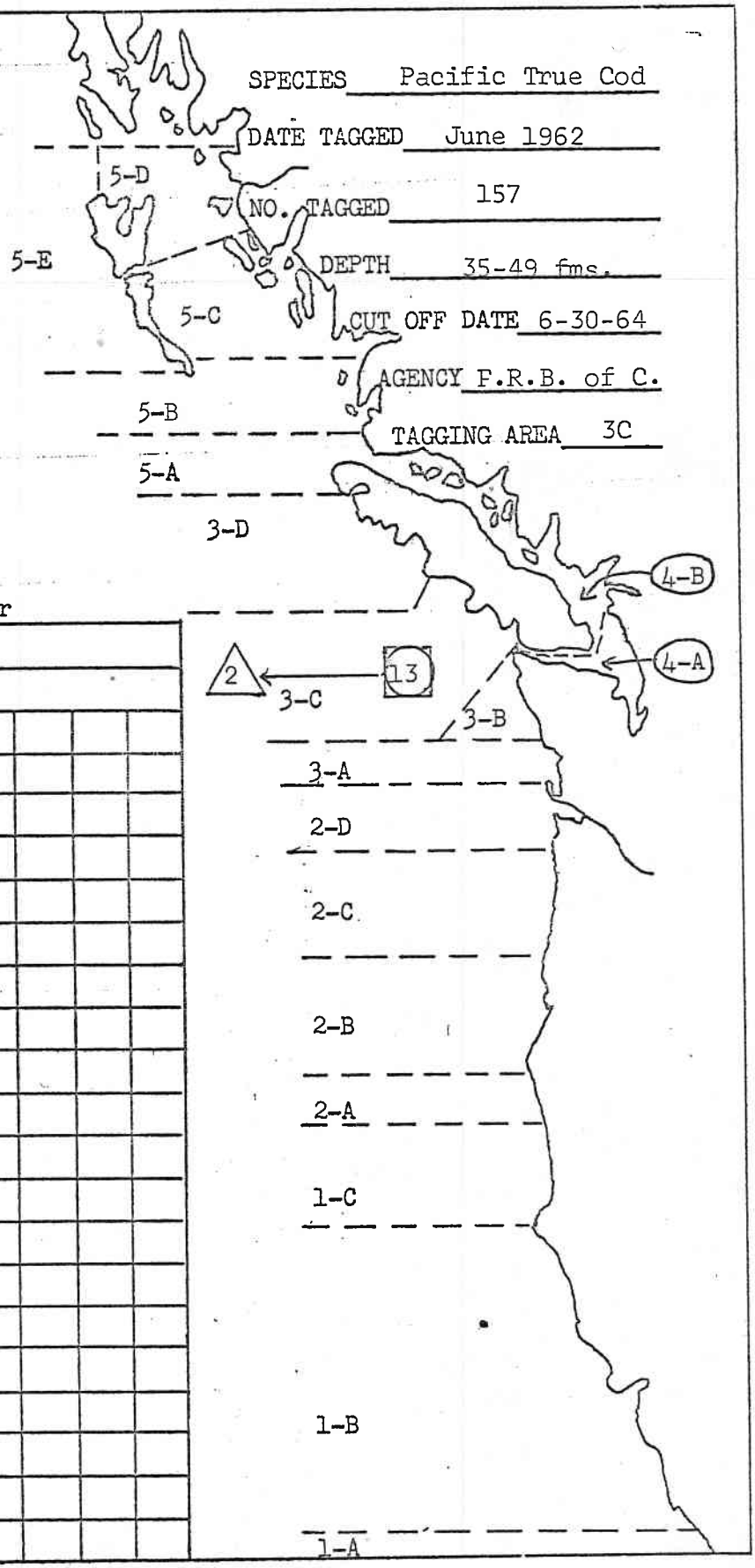
NO. TAGGED 157

DEPTH 35-49 fms.

CUT OFF DATE 6-30-64

AGENCY F.R.B. of C.

TAGGING AREA 3C



Recoveries by Year

P.M.F.C. Area	Year 62	63	64				
5-E							
5-D							
5-C							
5-B							
5-A							
4-B							
4-A							
3-D							
3-C	12		1				
3-B							
3-A							
2-D							
2-C							
2-B							
2-A							
1-C							
1-B							
1-A							
UNK.		2					
Total	12	2	1				

Dispersion of Tagged Fish by P.M.F.C. Area

SPECIES Pacific True Cod

DATE TAGGED Sept. 1962

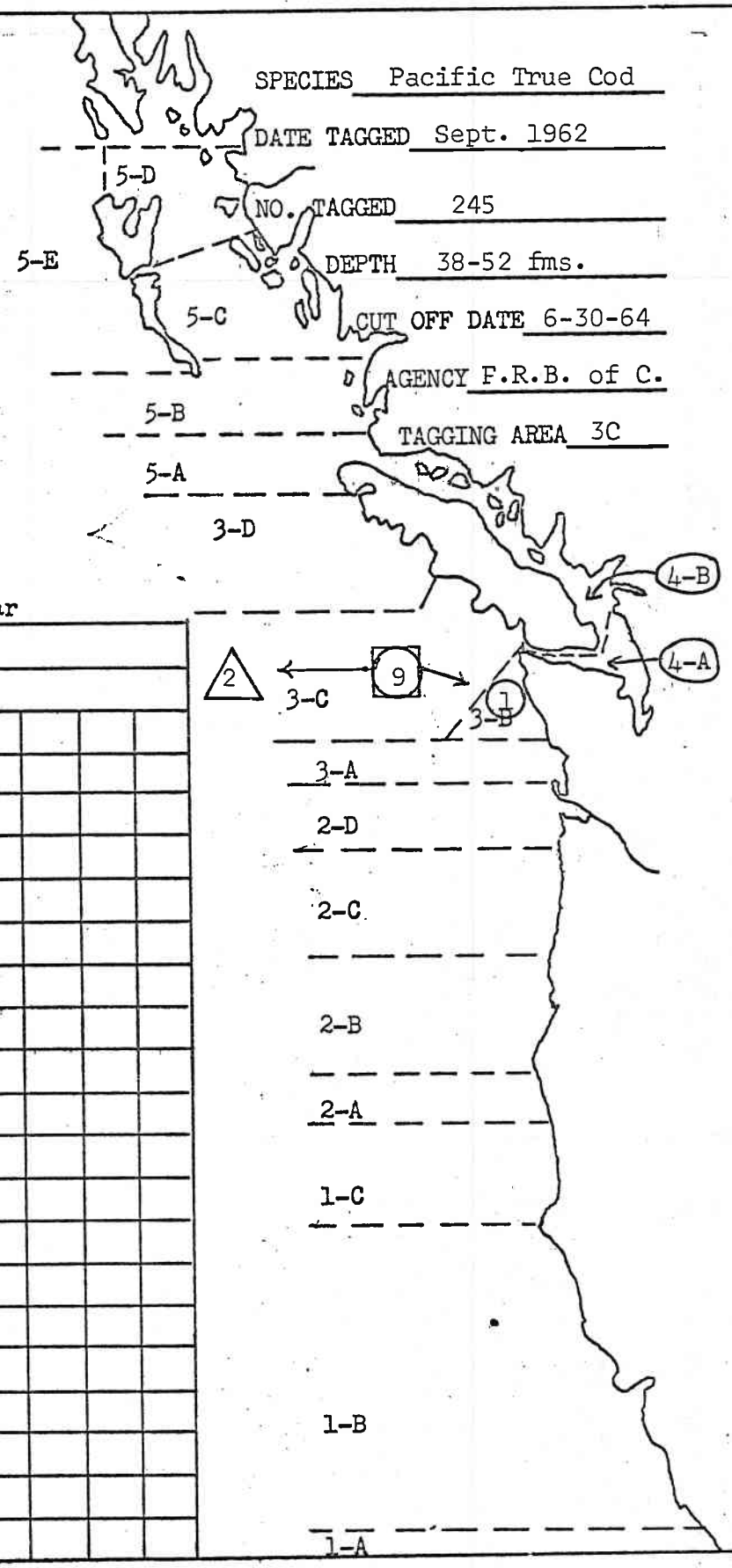
NO. TAGGED 245

DEPTH 38-52 fms.

CUT OFF DATE 6-30-64

AGENCY F.R.B. of C.

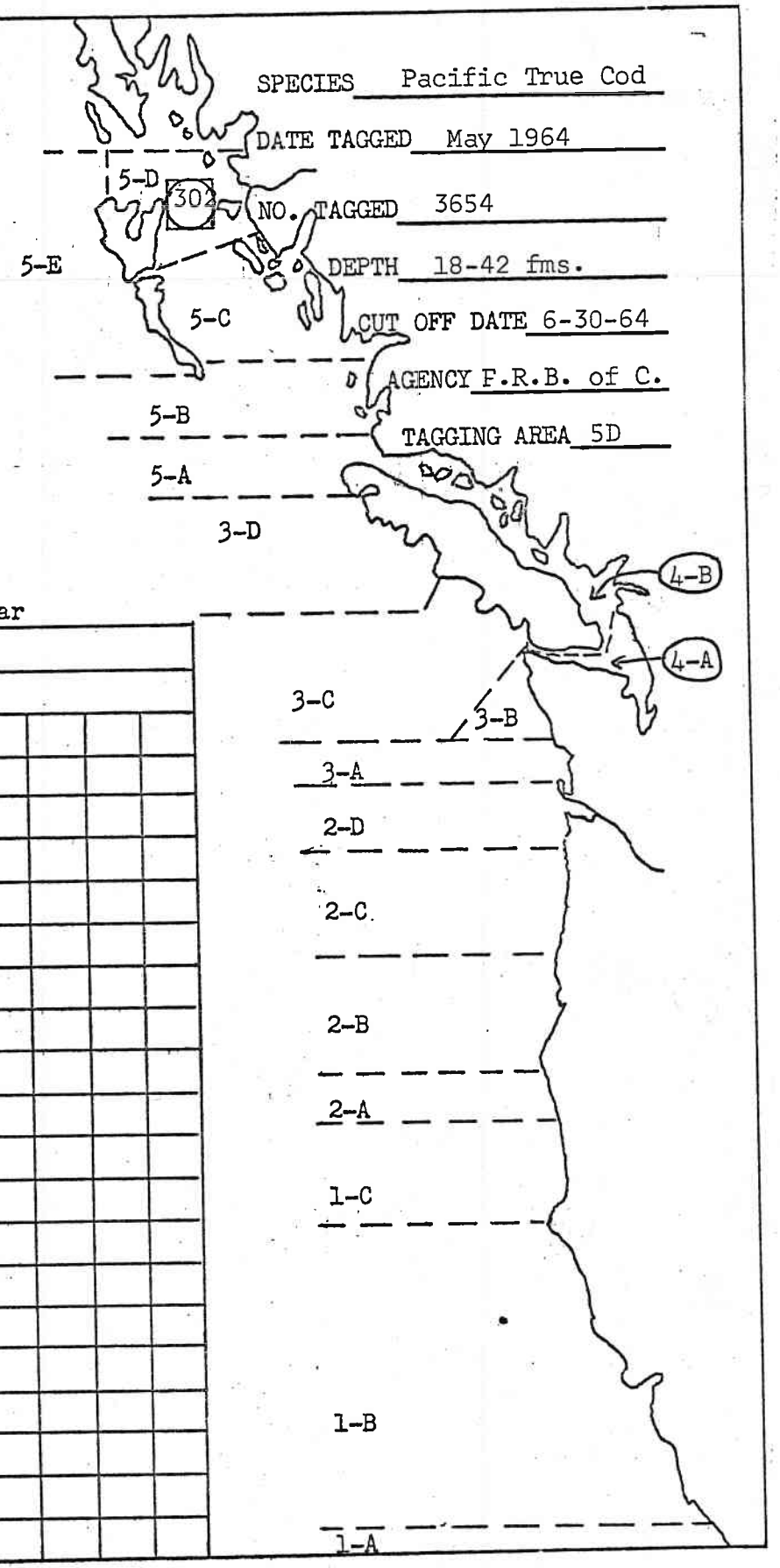
TAGGING AREA 3C



Recoveries by Year

P.M.F.C. Area	Year 62	63	64				
5-E							
5-D							
5-C							
5-B							
5-A							
4-B							
4-A							
3-D							
3-C	1	4	4				
3-B			1				
3-A							
2-D							
2-C							
2-B							
2-A							
1-C							
1-B							
1-A							
UNK.		2					
Total	1	6	5				

Dispersion of Tagged Fish by P.M.F.C. Area

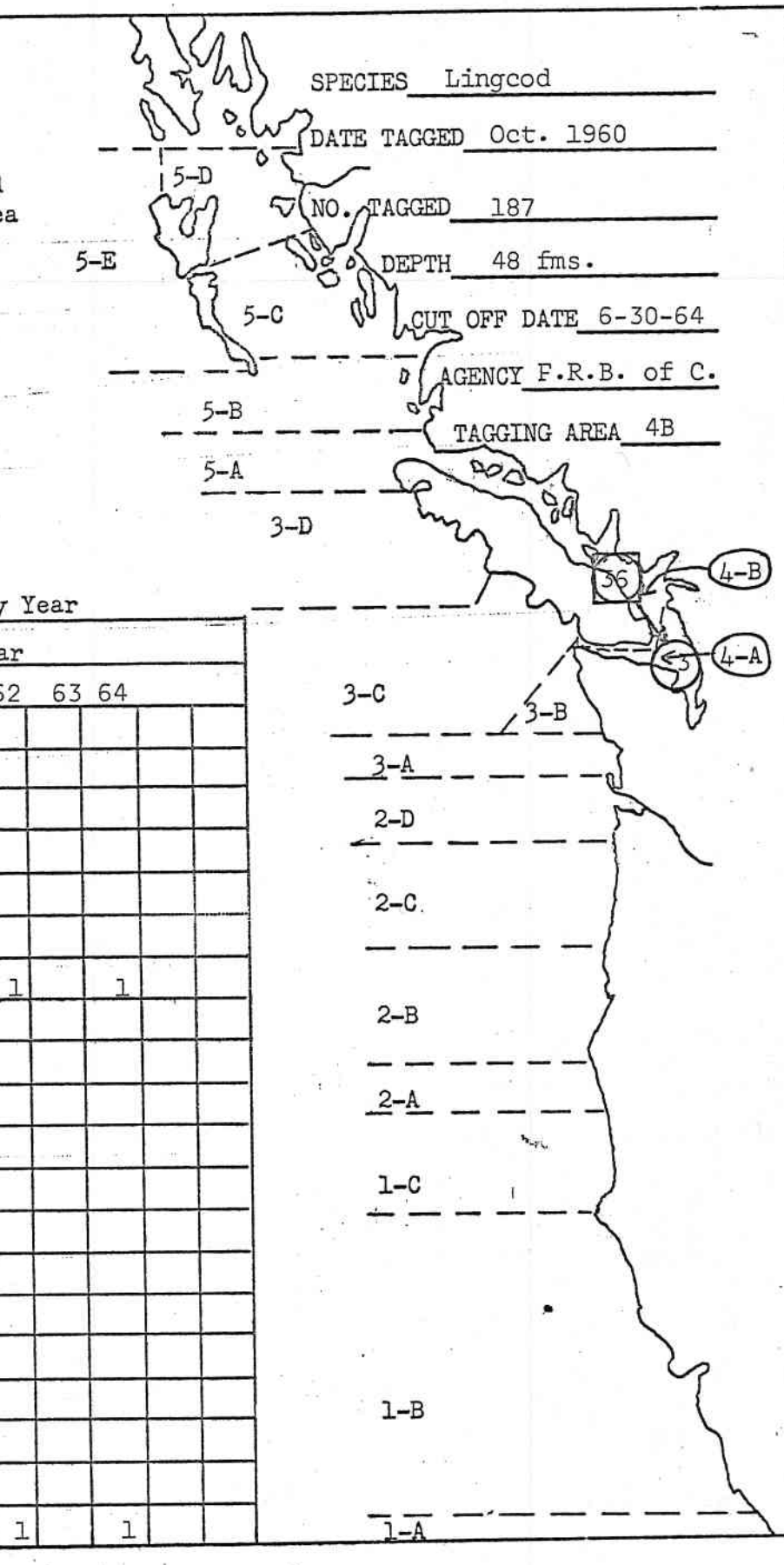


Recoveries by Year

P.M.F.C. Area	Year 64						
5-E							
5-D	302						
5-C							
5-B							
5-A							
4-B							
4-A							
3-D							
3-C							
3-B							
3-A							
2-D							
2-C							
2-B							
2-A							
1-C							
1-B							
1-A							
UNK.							
Total	302						

302

Dispersion of Tagged Fish by P.M.F.C. Area



Recoveries by Year

P.M.F.C. Area	Year 60	61	62	63	64		
5-E							
5-D							
5-C							
5-B							
5-A							
4-B	22	14					
4-A		1	1		1		
3-D							
3-C							
3-B							
3-A							
2-D							
2-C							
2-B							
2-A							
1-C							
1-B							
1-A							
UNK.							
Total	22	15	1		1		