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DOCUMENTATION OF CALIFORNIA'S COMMERCIAL MARKET SAMPLING DATA ENTRY AND EXPANSION PROGRAMS

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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Fisheries Science Center

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ABSTRACT

This paper describes the data entry and expansion programs used by the California Department of Fish and Game for their Commercial Rockfish Fishery Management sampling program. The paper includes descriptions of how the programs work, error checking, and instructions for using the programs. Full descriptions of all data files are included as well as complete code lists.

This paper is designed for users of the data as well as for users of the programs. As with many data management systems, it is subject to change.

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INTRODUCTION

California's commercial rockfish fishery accounts for approximately 50% of the total groundfish landed in the state in most years (unpublished data). A total of 60 species (including two species of *Sebastolobus*) are landed by the three gear types deployed in the fishery. Management of the fishery relies heavily upon data collected by commercial market samplers. The sampling program is a cooperative program between the California Department of Fish and Game (CDF&G) and the National Marine Fisheries Service (NMFS). Sampling methodology is based on the work of Sen (1984) as interpreted by Erwin et al (1997). Sampling is stratified by port complex, gear, market category, and quarter (three-month interval).

There are 58 rockfish market categories, 11 port complexes, 3 general gear types (trawl, line, and set net), and 4 quarters. Due to gear restrictions, set net landings occur in only seven of the port complexes. Consequently, there are 6,728 possible strata to be sampled by 6-12 market samplers each year. Not all possible strata have produced landings in any year, and in fact, the most strata ever observed was in 1994 when 1,367 strata had positive landings. At the end of each year, the samples are expanded to the total landings using landing receipts.

Each sample is used for estimation of species composition, age composition, and length composition of the strata from which it was drawn. Typically, samples consist of two 50-lb clusters ($\pm$ 5 lbs). In recent years, sampling guidelines have been relaxed and it is permissible to take two 25-lb clusters, a single cluster of 25 or 50 pounds, or the entire landing can be sampled if it is less than 50 pounds. All fish are identified to species, measured, and sexed when possible. Otoliths for selected species are collected for aging.

In 1991, Sport Fish Restoration Act (SFRA) samples were included. These samples occasionally include additional data, which are not required by the cooperative sampling program. In addition, SFRA samplers have not always followed the sampling protocols used by the cooperative program. One difficulty with SFRA data is that some samples consist of one fish, and yet the sample is not the whole landing. Use of this type of sample would seriously bias the final expansions. The data entry and management programs include provisions for dealing with the SFRA samples.

Prior to 1994, data were entered, managed, and expanded using programs written by William Lenarz (National Marine Fisheries Service, Tiburon Laboratory). As the fishery increased in complexity, and as computers became more powerful, it was decided to replace the existing programs with new ones. This paper describes the data entry and expansion programs in current use.

The new programs were written in Microsoft QuickBasic by Donald Pearson (National Marine Fisheries Service, Tiburon, California). Design parameters were decided upon in collaboration with California Department of Fish and Game personnel. Testing of the final programs was conducted by CDF&G personnel. The guiding principles in the design of the new programs were:

1. ease of use,
2. automation of as many tasks as possible,
3. extensive error checking,
4. flexibility, and
5. continuity with the preexisting system

The data entry program (COMDAT) has been in use since 1994. Since then, a series of minor modifications have been made to correct bugs, increase ease of use, and to accommodate changes to sampling protocols.

The expansion program (COMEX) was completed in 1995 and has been used to re-expand the 1980-1994 landings. These data are now accepted as the best available data for California and are currently being used in stock assessments.

This document describes the programs including: how the programs work, and how to use them. A complete list of file formats and codes is also supplied to assist users of the data.

DATA ENTRY PROGRAM (COMDAT.EXE)

How COMDAT Works

COMDAT consists of a main program and two modules which are automatically accessed. COMDAT was designed as a data entry and management program. There are eight principle routines in COMDAT: Data Entry, Edit Data, List Data, Summarize Data, Make ASCII File, Enter Ages, Merge Files, and Outlier Data. Three of the routines are used exclusively by data managers and are accessible only via password. This section describes programming logic, and major error checks for each routine. All output files are documented in the appendices.

Data are collected, checked, and edited in various locations. Figure 1 illustrates what data are input and output by each routine in COMDAT. The first step is collection of the samples and data entry at the ports using the Data Entry Routine. The result is a raw data file called PORTpyyq.DAT where p=port complex, yy=year, and q=quarter. A NEARpyyq.DAT file is optionally created for SFRA samples. These files can be edited by the port samplers as needed. The PORTpyyq.DAT files are sent to CDF&G in Menlo Park. California Department of Fish and Game

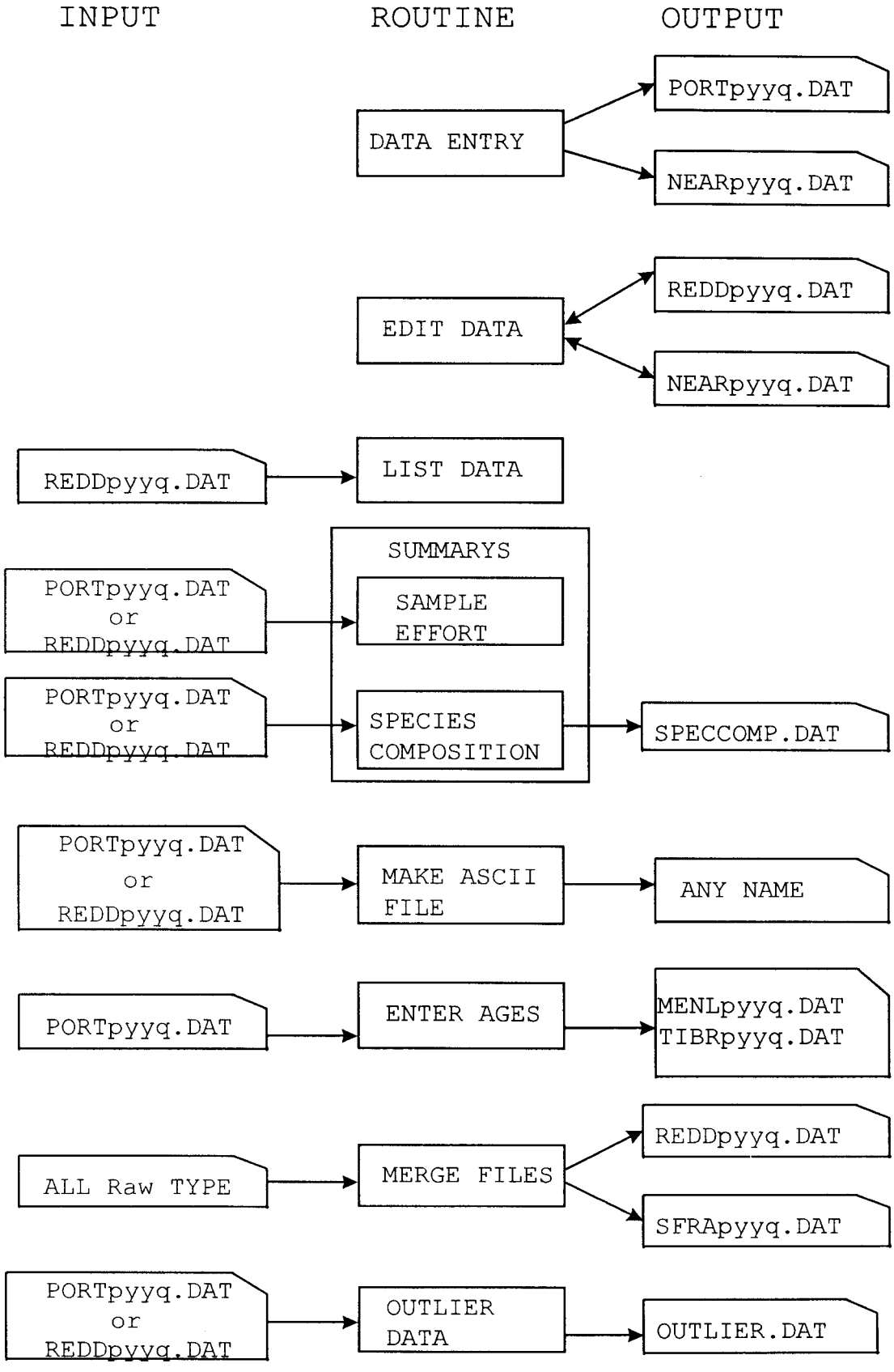

Figure 1. Data flow in the 8 subroutines of the COMDAT data entry program.

personnel in Menlo Park can respond to requests for raw sample data by running the Make ASCII File Routine. In addition, CDF&G personnel can check for errors in the PORTpyyq.DAT files by running the Outlier Data Routine. Effort and crude species composition summaries can be obtained by CDF&G personnel by running the Summary Routines. Ages are entered in PORTpyyq.DAT files which are renamed either TIBRpyyq.DAT or MENLpyyq.DAT, depending on whether the ages were entered in Tiburon or Menlo Park. Samples can be listed using the List Data Routine. At the end of each year, prior to performing year-end expansions, the Merge Files Routine is run to combine updated PORTpyyq.DAT, TIBRpyyq.DAT, MENLpyyq.DAT files into final REDDpyyq.DAT files. PORTpyyq.DAT, TIBRpyyq.DAT, MENLpyyq.DAT, and REDDpyyq.DAT files are structurally identical; however, only the REDDpyyq.DAT file contains all the data.

The data files use a series of standard codes. Individual species codes can be found in Appendix A. Gear codes can be found in Appendix B. Sex and Maturity codes can be found in Appendix C. Port codes can be found in Appendix D. Port complex codes can be found in Appendix E. Commercial Market Category codes can be found in Appendix F.

Data Entry

Data entry is accomplished in three phases: sample header data, cluster header data, and individual fish data. All data for a sample are stored in memory until the user indicates that it should be saved. The Data Entry Routine has numerous error checks. Some errors result in the user not being able to proceed, others generate a warning. In many cases, errors that generate a warning are detected in the Outlier Routine.

In the sample header section, the output file to be created or appended to is selected by the program based on port complex, year, and quarter. Created filenames are in the form PORTpyyq.DAT where p=port complex, yy=year, and q=quarter. The format of this file is found in Appendix G. If the user enters a line gear type, the program can optionally produce NEARpyyq.DAT file containing additional sample information for SFRA samples (the format is shown in Appendix H). The port code is checked against the port complex. The landing date is compared against year and quarter. The California Department of Fish and Game block (an optional field) is compared against port complex and a warning is issued if it is an unusual distance away.

The user indicates whether the sample is an SFRA sample. If it is not an SFRA sample, then a flag is set. If it is, the program asks if 25- or 50-pound clusters were sampled. If 25- or 50-pound clusters were taken, then the flag is set indicating an SFRA sample which can be used in expansions. If 25- or 50-pound

clusters were not taken, the program asks whether at least three fish were measured. If less than three fish were measured, then the flag is set indicating that the sample cannot be used in expansions; otherwise the flag is set to allow the sample to be used in expansions.

The cluster header section records cluster weight, species codes, number and weight of each species in the cluster. The program can take up to 14 species and 99 fish per cluster. A maximum of three clusters can be entered.

The biological data entry section has many error checks, not all of which are described here. Using weight/length relationships, the estimated weight of all fish in the cluster is calculated. If the expected weight deviates from the stated cluster weight by more than 10%, a warning is issued. The program automatically numbers each fish and records the species code based on the values entered in the cluster header data. The length of each fish is compared to the maximum reported length for the species, and a warning is issued if it exceed the maximum reported length. Fish with lengths less than 100 mm are not allowed. Ages cannot be entered in this routine since samplers do not obtain ages.

Edit Data

Editing employs the same error checks as data entry. The routine allows four types of editing: entire sample, logbook, pink ticket, and NEARpyyq.DAT files. Samples can be deleted. Any values except cluster header data can be edited in this routine.

List Data

The List Sample Routine is used to allow the user to examine a list of all samples or examine all of the data in a sample. There are options which allow either a single sample, range of samples, or all samples within the file. Samples can be viewed on the screen or printed. This routine can be called from the Edit Sample Routine. This routine expects samples to be sorted in ascending order which is done automatically by the program in the Edit and Data Entry Routines. NEARpyyq.DAT files cannot be listed.

Summarize Data

There are two types of summaries available: Sample Effort Summary and Species Composition Summary. The Sample Effort Summary Subroutine is used to show how many valid samples have

been taken for different strata. The Species Composition Summary allows the user to generate crude species compositions from the sample data.

Sample Effort Summary

This routine is used to summarize the samples in all data files present in the current directory. The data files (PORTpyyq.DAT or REDDpyyq.DAT) are accessed sequentially, and sample frequency for selected market categories by gear, quarter and port complex are stored into an array. The contents of the array are formatted and displayed. Samples without a gear, or landing weight, are not recorded since they would not be used in expansions. An example of a typical report is shown in Figure 2.

Figure 2. Example of a Sample Effort Summary report produced by the Sample Effort Summary Subroutine of the COMDAT data entry program. The values indicate the number of samples collected.

SAMPLE EFFORT SUMMARY FOR 1990

PORT	GEAR	MCAT	Q1	Q2	Q3	Q4
1	1-9	250	1			1
1	50	250	10	13	13	13
1	50	262	3	1		1
1	50	957-962		1	4	
1	50	OTHER			1	1
1	60	250	2	3	2	1
1	60	OTHER		1		
2	1-9	250	5	1	2	2
2	1-9	957-962			3	

Species Composition Summary

This routine is used to obtain a crude estimate of species composition. It allows compositions to be estimated across a variety of gears, ports, vessels, months, and market categories. This routine weights the species composition by sampled landings, but not total landings. When the user specifies gears, market categories, months, and vessel numbers to use, a series of flags are set. If the user concatenates a series of data files, it is possible to obtain species compositions combined over a series of ports, quarters, and years. It will not use samples for which there is no landed weight. An example of a typical report is shown in Figure 3.

The compositions are derived by summing the weight of each species in a sample (from the cluster header) to an array. These values are then weighted by the sample landed weight and the value stored in the array. When all samples have been processed, the final composition is calculated. This is done by dividing the weight of each species by the sum of the weights of all species. The report is formatted and sent to either the printer or a file.

Figure 3. Example of a typical Species Composition Report produced by the Species Composition Summary Subroutine of the COMDAT data entry program.

SPECIES COMPOSITION REPORT

FILENAME = REDD1802.DAT

GEAR = ALL
MARKET CATEGORY = ALL
MONTH = ALL

NUMBER OF SAMPLES USED: 16

SPECIES	LBS	PERCENT
GREENSPOTTED ROCKFISH	474	0
GREENSTRIPED ROCKFISH	1824	1
WIDOW ROCKFISH	4852	3
CHILIPEPPER ROCKFISH	36059	23
VERMILION ROCKFISH	6139	4
BOCACCIO	91894	58
CANARY ROCKFISH	637	0
BANK ROCKFISH	2628	2

Make ASCII File

The Make ASCII File Routine generates an ASCII data file meeting user specified conditions. This routine allows ready access to the raw sample data in an easy-to-use format. Due to confidentiality, it was necessary to provide an option to exclude vessel number. The user can filter by species, sex, market category, port, gear, or vessel. Since any file can be specified for input, it is possible to use a concatenated file of samples and rapidly get data from a large number of sample files. Since the routine appends to a file if it exists, it is possible to run the routine repeatedly and get data sorted by species, sex, etc. The file format is described in Appendix I.

Enter Ages

This routine accepts year-class data. If a fish is in a year class earlier than 1940, a warning is issued. The routine will not allow a year class later than the sample year. Age data are stored in either an MENLpyyq.DAT or TIBRpyyq.DAT file. If one does not exist, it will be automatically created from the PORTpyyq.DAT (or REDDpyyq.DAT) file. Creation of the TIBRpyyq.DAT or MENLpyyq.DAT file is simply done by copying the entire contents of the input file to the new file.

Age entry is done by locating the sample to be updated, storing the remaining samples in a scratch file, and storing the required sample in memory. Ages are entered into memory, and then the sample with ages is appended to the scratch file. The scratch file then overwrites the TIBRpyyq.DAT or MENLpyyq.DAT file.

Merge Files

This routine was designed to create master REDDpyyq.DAT files from the other file types. Merging begins with PORTpyyq.DAT files that are used as the basis. Any sample coded as an SFRA sample is stored in an SFRApyyq.DAT file. If the SFRA sample is coded as being useable in an expansion, it is also included in the REDDpyyq.DAT file. Ages cannot be in PORTpyyq.DAT type files; therefore, if any were added using a text editor, they would be ignored. The REDDpyyq.DAT file is initially a mirror image of the PORTpyyq.DAT file, with the exception that SFRA samples, which could not be used in an expansion, are not present. If a TIBRpyyq.DAT and/or MENLpyyq.DAT type file exist, then ages only are taken from these files.

The situation is somewhat more complex if a REDDpyyq.DAT file already exists. The first step would be to determine if new samples have been added to the PORTpyyq.DAT file. If so, the new samples are appended. The next step is to determine if updates have been made to header data in the PORTpyyq.DAT file. If so, these are inserted. Samples present in the REDDpyyq.DAT files that are not present in the PORTpyyq.DAT files are left intact.

Outlier Data

This routine was created to allow data managers to quickly sort through all of the samples looking for the following 14 problems: missing vessel number, missing gear code, missing market category, missing landing weight, missing CDF&G block, missing depth, unlikely CDF&G block, unlikely depth, landing weight > 25,000 pounds, landing weight not equal to subsampled

weight, unusual cluster weights, multiple cluster weights not within 4 pounds of each other in the same sample, unusually small fish, unusually large fish (based on maximum recorded length for species). These problems would have generated a warning message to the port sampler during data entry. The routine will check all possible data files in the subdirectory including REDDpyyq.DAT, PORTpyyq.DAT, TIBRpyyq.DAT, and MENLpyyq.DAT. If the optional output file is specified (Appendix J), it is possible to read the data into Dbase or other software packages and manipulate it.

COMDAT Usage Instructions

The COMDAT.EXE program is started from DOS by typing COMDAT in the subdirectory in which it is located. The program will immediately ask for the date in YYMMDD format (eg...940131). The main menu will then appear with a list of all choices available to the user. If a password is entered at the date prompt, additional options will be displayed. The user then selects the desired option. Pressing "*" at most prompts will ultimately return the user to the main menu. In some cases the * character will need to be pressed more than once.

Data Entry

Sample data in this routine is stored in a PORTpyyq.DAT file (Appendix G) where p=port complex, yy=year, and q=quarter. The first part of the Data Entry Routine involves entering sample header data. .The port complex, quarter, and year are entered first. Other sample header data include sample number, three-digit port code, vessel number, landing date, gear type, market category, landing weight, CDF&G Block number, depth, sampled weight, number of clusters in the sample, whether it is an SFRA sample, and whether any otoliths were collected in the sample.

All letters are converted to uppercase. Market category, landing weight and/or sampled weight, block, and depth are the only items that may be left blank during data entry.

Sampled weight is rarely used and is set equal to the landing weight by the program unless the user enters a value. Sampled weight is used only when a single landing is sorted by species but is recorded as a single market category on the landing receipt.

Before leaving the sample header section, the user can make changes. It is essential that the user insure that the number of sampled clusters is correct since this cannot be edited later.

An auxiliary data section has been included in this routine to allow entry of additional data from the SFRA hook and line fishery samples. These data are used by other researchers. If the gear is a type of line gear, the user is given the option of entering auxiliary data. The routine will ask for the required information and then store the data in a space-delimited ASCII file called NEARpyyq.DAT (Appendix H).

After entering sample header data, cluster header data are entered. The routine first requests the cluster weight and the number of species in the first cluster. The routine will then request the four-digit species code, weight and number of fish for each species in the cluster. The data are displayed on the screen as it is entered. After entering the data, the user can make changes. It should be noted that cluster header data cannot be edited after leaving this screen. If there is an error, the sample should not be saved, or if it is, it must be deleted and reentered.

After entering cluster header data, the user is asked whether lengths were obtained (most samples will have length data). If there are no length data, the routine will request information for the next cluster (if sampled). If length data have been collected, then the routine proceeds to the biological data entry section.

The fish number and species are automatically displayed on the screen based on the values input in the cluster header part of the routine.

Sex, gonad maturity, and forklength are then entered for each fish. Length is entered in millimeters and must be greater than 99 mm. If sex=9 (unknown), the program will only allow gonad maturity code=9 (unknown).

A default or "ditto" key is available for entering maturity and sex codes. When entering the first fish of the cluster, the user can press <ENTER> to insert the default value ("9" for both fields). After the user enters a value for either field, using the <ENTER> key will duplicate the value in the same field for each subsequent fish. Values for the length field must be entered manually for each fish. An unknown length is coded as 999.

Edit Data

After the user selects the Edit Routine, the program asks for the name of the file to edit. This file must be located in the same subdirectory in which COMDAT.EXE resides. The user should enter PORTpyyq or NEARpyyq where p=Port, yy=Year, and q=Quarter (ie. PORT7941). The routine will let the user see a directory of the samples in the data file which was selected.

When the user enters the filename NEARpyyq.DAT, all of the fields in the NEARpyyq.DAT file can be edited. When a PORTpyyq.DAT file is selected, there are three types of editing which can be done: Entire Sample, Logbook Data, or Pink Ticket Data.

Editing the entire sample allows the user to edit everything in the data set except nearshore auxiliary data, number of clusters and cluster-species data. The program first asks for the sample number, and then the Header data are shown on the screen. The program prompts the user to correct the data or continue to the biological data. If the user needs to correct the landing weight and there are sort groups, they must be edited using the Entire Sample option. The user may delete a sample by changing the sample number to "9999", and then saving the changes. The program deletes any samples that have a sample number of "9999". If "*" is pressed, the routine will safely be exited **without** saving the changes made since the last save. Pressing the <ENTER> key (possibly several times) will ultimately save any changes made.

Logbook editing allows changes to be made to the depth and block fields only. These data are obtained/verified from the CDF&G trawl logbooks. Pressing "*" will only work at the filename and sample number entries. If the user does not enter another value and presses the <ENTER> key at either block or depth, the original value is kept. Any changes made will be automatically saved.

Pink ticket (Landing Receipt) editing works the same as logbook editing; however, the values edited are Vessel, Market Category, Gear Code, and Landing Weight. If landing weight is changed, then the program asks for sampled weight.

Summarize Data

There are two types of summaries available: a sample effort summary and a species composition summary. The printer must be on to run this routine.

The Sample Effort Routine will perform an effort summary for all files in the subdirectory for the year specified. The effort summary will summarize the number of samples collected for each quarter, gear group, and market category. It will print only the results for which there is at least one valid sample for the year.

The species composition report is created using the single specified file. This report can be printed out directly or written to a text file called SPECCOMP.DAT (a hard copy is printed out also). In the species composition report the user

clean. There is a Help Routine which provides some general help for using the program. COMEX is meant to be used by data managers exclusively.

Most of the routines rely on each other and must be run in a specific sequence. The only exception to this rule is the Inseason Expansion Routine which can be run at any time. In Figure 4 the input and output files are shown. Landing receipts are used by the Gear Recovery Routine. The output file from that routine is used by both the Landing Receipt Summary Routines. The Sample Summary Routine also requires sample data in the form Of REDDpyyq.DAT files. The Landing Receipt Summary requires the SAMPLEyy.DAT file produced by the Sample Summary Routine. The Species Composition Expansion Routine requires the MCADISyy.DAT file produced by the Landing Receipt Summary Routine as well as the REDDpyyq.DAT files. The Age/Length Expansion Routine requires the YEARSPyy.DAT file produced by the Species Composition Routine as well as the MCADISyy.DAT and REDDpyyq.DAT files. The PacFIN Data Feed Routine requires the YEARSPyy.DAT file and a code translation file (SPECIES.INT).

This program is also used to generate age/length expansions for Dover sole. Dover sole expansions are done separately from rockfish expansions because the measurements are in total length, there are fewer landed strata, and the data reside in files with a DOVR prefix. Differences between rockfish expansion methodology and Dover sole methodology are noted in the text.

The Inseason Expansion Routine is used to generate inseason species compositions, typically used for reports to the Pacific Fisheries Management Council. The Landing Receipt Gear Recovery Routine is used to assign gear codes to landing receipts which have been coded as having unknown gear type. The Landing Receipt and Sample Summary Routines are used as preliminary steps in the expansion process. They also provide useful information for managers in allocation of sampling effort. The Age/Length and Species Composition Expansion Routines provide the final year-end estimates for the fishery.

A typical year-end sequence of events would be as follows:

1. Run the Merge Routine in COMDAT.
2. Edit the REDDpyyq.dat files.
3. Place all data files into a common subdirectory.
4. Run the Gear Recovery Routine.
5. Run the Sample Summary Routine.
6. Run the Landing Receipt Summary Routine.
7. Run the Species Composition Routine.
8. Run the Age/Length Expansion Routine.
9. Run the PacFIN Data Feed Routine.

Inseason Expansion

This routine begins by summarizing the target strata (specified by the user) which have been sampled. Then it summarizes the total landed weights to an array with a flag indicating whether the strata have been sampled. These data are then printed so the user can determine what to do about unsampled strata. The program then determines whether samples can be borrowed from a different quarter. Landings from a stratum that has been sampled or which can borrow samples from a different quarter are stored in a scratch file along with the strata to use for the expansion. Landings that were not sampled and which can't borrow from a different quarter are presented to the user. The user then decides whether to ignore the stratum or tells the program which stratum to use (port, gear, quarter, market category). This is then stored to the scratch file.

The scratch file is then stepped through and the appropriate samples are read from the REDDpyyq.DAT files. Species weights (from the cluster header data) are summed into an array. After all samples have been read in, the total weight of all sampled species is calculated. Then the total sampled weight for each species is divided by the total sampled weight for all species, and this result is multiplied by the total landed weight for the stratum. This value is stored to a scratch file. After all strata have been expanded, the scratch file is summarized to INSEssss.DAT files (where ssss is the four digit species code). The format of the INSEssss.DAT file can be found in Appendix K.

Landing Receipt Recovery

This routine is used to assign gear codes to landing receipts coded as unknown gear type. The routine is conservative and only assigns a gear type when a vessel has fished a single gear type throughout the year. The final data file FINPNKyy.DAT is used by the subsequent expansion routines.

The first operation the routine does is to step through the raw landing receipt file sorting records with valid gears into the FINPNKyy.DAT file and appending "Actual" to each record. Records without a valid gear are then checked to determine whether they have a valid vessel number. Records with a valid vessel number are stored in a scratch file called ZEROyy.DAT. Records lacking a vessel number are stored in a file called STZEROyy.DAT since there is no way to assign a gear type to those records. An array stores a list of all distinct vessel numbers in the ZEROyy.DAT file.

The next step in the process is to step through the array of vessel numbers. For each vessel, the landing receipt file is checked. If a record is found for the vessel, then the gear

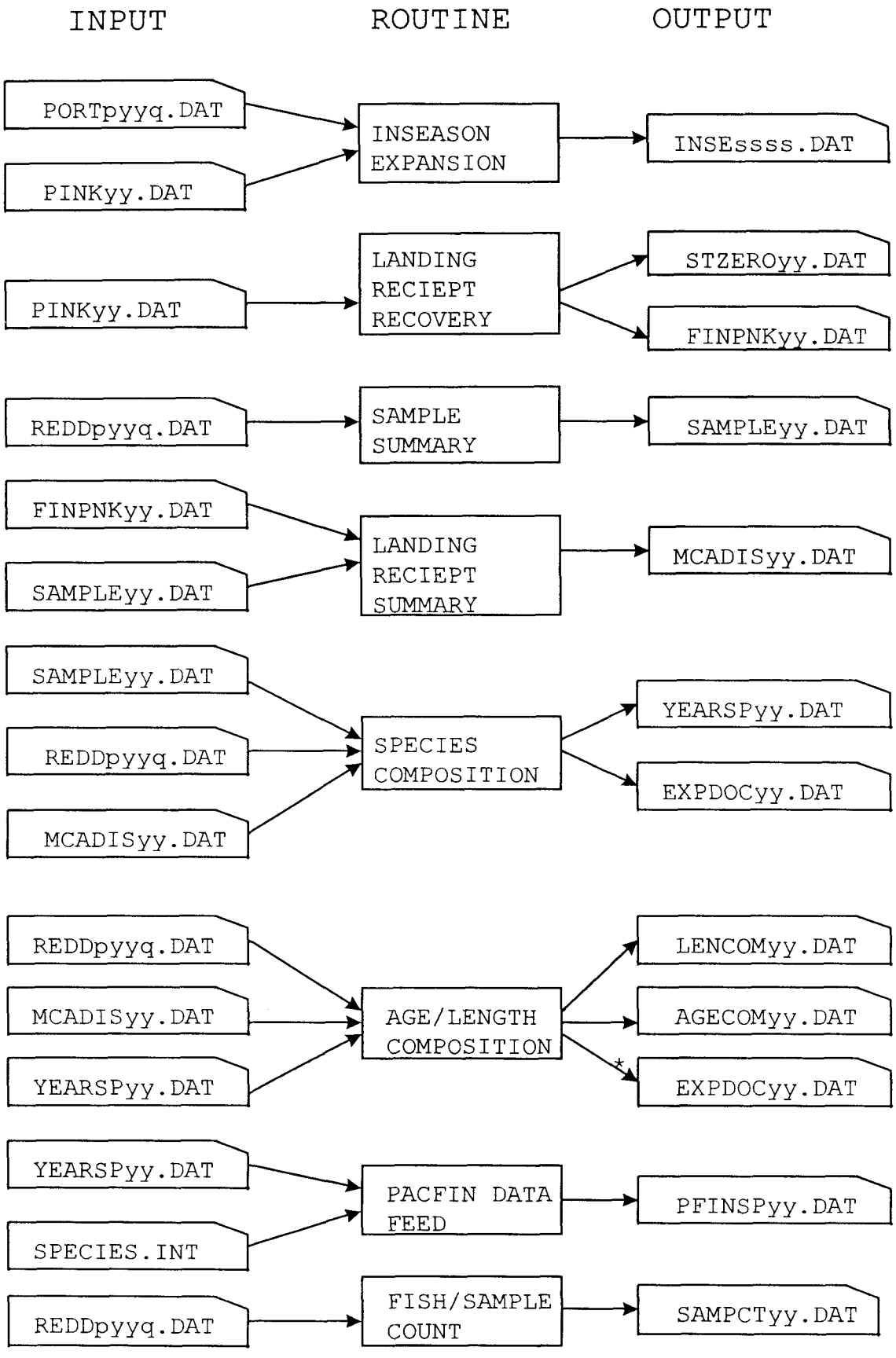

Figure 4. Data flow in the 8 routines of the COMEX port sample data expansion program.
* This file is appended to.

group (trawl, set net, or line gear) is determined. The gear group is then associated with the vessel. If a subsequent record has a different gear group, then the vessel number is erased from the array. In other words, if a vessel has made landings with more than one gear type, then landings without a gear type cannot be assigned.

The final step in the process is to step through the vessel number array, locate all records in the ZEROyy.DAT file for the vessel, append "RECOVERED" to the records and store them in the FINPNKyy.DAT file. Records which could not be assigned are stored in the STZEROyy.DAT file.

This approach is considered to be extremely conservative. It can also be extremely time consuming since the landing receipt files are quite large (up to 18 megabytes). In addition, in some years, there have been as many as 2,000 vessels with unidentified gears.

Sample Summary

Samples are summarized by automatically stepping through all REDDpyyq.DAT files. The header data for each sample are first decoded. Samples which have unknown values for gear, date, landing weight, or market category are ignored since they would not be used in an expansion. Sample number, gear group, port complex, quarter, market category, and landing weight are stored in a scratch file. The scratch file is then stepped through, summing landing weights and sample frequency for each stratum into a series of arrays. The arrays are formatted and then dumped into a SAMPLEyy.DAT file (Appendix L).

Landing Receipt Summary

This routine creates a MCADISyy.DAT file used by the expansion routines. It requires the SAMPLEyy.DAT file created by the Sample Summary Routine. The created file holds information about landed and sampled strata.

The landing receipts are summarized by stepping through the FINPNKyy.DAT file (created by the Gear Recovery Routine), and assigning each record to a market category, gear group, quarter, port complex. Only rockfish and Dover sole market categories are used. The landings are summed in an array, which is formatted and dumped into a MCADISyy.DAT file where yy=year (Appendix M).

Species Composition

The Species Composition Expansion Routine begins by summarizing landings and sampled strata, then it gets user inputs

for unsampled strata, and finally it does the expansion and outputs some documentation information. The user name and date is input for purposes of documenting the expansion. Then the program loads default species codes into an array for use when a market category is expanded as Nominal. A list of market categories and species assignments appears in Appendix F.

The next step in the process is to step through the individual strata in the MCADISyy.DAT file (created by the Landing Receipt Summary Routine). For each landed stratum (port, gear, market category, quarter), the REDDpyyq.DAT files are accessed and the landed weights for the samples are summed and stored in a scratch file along with the total landed weight for the stratum. A report is then printed showing the total landings for each stratum and whether it has been sampled. This report is used by the operator to help determine how to borrow species compositions.

The next step in the process is to determine what to do with each landed stratum. If a stratum has been sampled, then the stratum is coded as Actual and stored in a scratch file. If the stratum has been sampled in a different quarter, then the program determines which quarter to use. The program looks at the nearest quarter and selects the one with the most samples. This is recorded and the stratum is coded as Actual and stored in the scratch file. If the landed weight for the stratum is less than one metric tonne (2,204 pounds) and there are no samples for the year, then the stratum is automatically coded as Nominal and stored in the scratch file. Any strata remaining are presented to the operator one at a time. The user then determines whether to Ignore the stratum (its value is then stored in the UNEXPyy.DAT file), code it as Nominal, or Borrow samples from a different stratum. If the user chooses Nominal, then the stratum is coded that way and it is stored in the stratum usage file for later processing. If the user indicates that borrowing is to be used, they must enter the port, gear, market category and quarter to use. The landing is then coded as Borrowed, the stratum to borrow from is recorded, and the information is stored in the scratch file. The user is given the opportunity to edit their input after they have finished.

At this point the program performs the expansion. First the program steps through the strata usage file. If a landed stratum has been coded as Nominal, then a Market Category-Species Code array is used. For some market categories, the default species code is 2398, indicating unidentified rockfish. The entire landing is treated as the species corresponding to the market category (Appendix F shows Market Category-Species Assignments). The landed values are stored in the final output file (YEARSPyy.DAT) (Appendix N) and coded as Nominal.

If the stratum is coded as Actual or Borrowed then the appropriate REDDpyyq.DAT file and correct samples are accessed. As each sample is read, the sampled weight of each species is summed. The total sampled weight is determined by adding the weights of all species in the sample. Then the weight for each species in the sample is divided by the sum of the cluster weights and multiplied by the landing weight of the sample producing the expanded-to-sampled-landing weight. Next, the landed weight of all samples is summed. The expanded-to-sampled-landing weight for each species is then summed across samples. The total stratum landing weight for the stratum is then divided by the sum of the sampled landing weights to obtain an expansion factor. The expansion factor is then multiplied by the sum of the expanded-to-sampled-landing weight to obtain the final estimate of landing weight for each species. The following example shows how the expansion works. The example assumes only two samples were taken in the stratum and that only three species were sampled.

Stratum Landing Weight: 50,000

Sample #1: 1,000 lbs

Cl#1	Species A:	10 lbs
	Species B:	20 lbs
	Species C:	20 lbs
Cl#2	Species A:	25 lbs
	Species B:	25 lbs

Sample #2: 2,000 lbs

Cl#1	Species A:	30 lbs
	Species B:	15 lbs
Cl#2	Species A:	45 lbs

Calculations:

1. Sample #1: Species A: 10+25 = 35
   Species B: 20+25 = 45
   Species C: 20

   Sample #2: Species A: 30+45 = 75
   Species B: 15

   Sum of Cluster Weights

   Sample #1: 10+25+20+25+20 = 100
   Sample #2: 30+45+15 = 90

Expanded-to-sampled-landing weights

Sample #1:	Species A:	(35/100)*1000 = 350
	Species B:	(45/100)*1000 = 450
	Species C:	(20/100)*1000 = 200
Sample #2:	Species A:	(75/90)*2000 = 1666.7
	Species B:	(15/90)*2000 = 333.3

2. Sum of sampled landings = 1,000+2,000 = 3,000

3. Sum of expanded-to-sampled-landing weights

Species A:	350+1666.7 = 2016.7
Species B:	450+ 333.3 = 783.3
Species C:	200.0

4. Expansion Factor: 50,000/3,000 = 16.67

5. Expansion to stratum provides final estimate of landings

Species A:	2016.7*16.67 = 33618.4
Species B:	783.3*16.67 = 13057.6
Species C:	200.0*16.67 = 3334.0

After the samples have been expanded for all of the strata, the landings are stored in the YEARSPyy.DAT file. Information on how the expansions were done is stored in the EXPDOCyy.DAT file. It should be noted that the final estimates of species specific landings could underestimate the true landings since some landings are coded as unspecified rockfish.

Age/Length Composition

The age and length compositions run simultaneously; however, there is an option to age only expansions. The user name and date are entered for inclusion in the EXPDOCyy.DAT file which documents when, who, and how the expansions were done. The first task performed by the routine is to determine which strata each species has been landed in by examining the YEARSPyy.DAT file (produced by the Species Composition Routine). For Dover sole the landings are obtained from the MCADISyy.DAT file since the Species Composition Routine is not run on Dover sole. The quarterly landings are summed to yearly values for each species. The number of fish measured (or aged) are then determined for each stratum which the species has been landed in by examining the REDDpyyq.DAT files. For Dover sole expansions, the DOVRpyyq.DAT files are used which are structurally identical to the REDDpyyq.DAT files. A scratch file for each species is created which indicates the stratum, landed weight, and number of fish measured (or aged).

A stratum usage file is then created for each species. If ten or more fish have been measured, then the stratum is saved to the file and coded as Actual, indicating the expansion will be based on actual samples. Only species which the user has specified for age expansions are kept, even if there are ages for other species. The stratum usage files are formatted to a report which can be printed to assist the user in determining what stratum to borrow compositions from.

Any stratum in which the species has been landed, but for which there are not at least ten measurements, is then presented to the user. The user can choose to Ignore the stratum or Borrow a composition from a different stratum. If the user chooses the Ignore option, then the stratum and the pounds for the stratum are stored in a scratch file and then included in the EXPDOCyy.DAT file, listed as NOT USED. If the user chooses to borrow a composition they are asked what port and market category to use. The user cannot borrow from a different gear, and, as previously noted, age/length compositions are not stratified by quarter. The rule is that age/length compositions can be borrowed only from adjacent ports. The user is free to borrow from different
market categories based on port biologist input and personal experience.

After the strata have been assigned, the user can print them out. The user can also edit the strata files. The user can stop at this point and resume later, or the user can continue. At this point, no further user input is required, and the actual expansion will run until completed.

Age and length expansions run simultaneously and are performed in an identical manner except for one step. All fish have lengths; however, not all fish in a sample have to have ages. This requires an additional expansion factor to account for the ratio of aged fish to total fish.

The first step in the expansion process is to determine how many fish that each fish in the sample represents in the actual landing. This is done by dividing the landing weight of each sample by the total weight of all clusters in the sample. The next step is to calculate the expanded-to-sampled-landing weight of each species by dividing the weight of each species by the total weight of all clusters in the sample and multiplying by the landed weight of the sample. The next step adjusts for the unaged fish by dividing the number of fish in the sample by the number of aged fish and multiplying the result by the number of fish represented by each fish in the sample from the first step. Next, the number of fish represented by each measured fish in the sample are multiplied by the total weight of the species in the stratum divided by the total expanded-to-sampled-landing weight. This gives an estimate of the number of fish represented by each

sampled fish in the stratum. The counts are summed in an array by sex and age (or length). An example of the process used to expand ages is shown below. The example assumes only two samples with three species were present. For brevity, the individual fish are not shown.

Landed weight for Species A: 20,000 lbs
Landed weight for Species B: 15,000 lbs
Landed weight for Species C: 10,000 lbs

Sample #1: 1,000 lbs

Cluster 1: Species A: 10 fish, 30 lbs, 5 fish aged
Species B: 10 fish, 20 lbs, 10 fish aged

Cluster 2: Species A: 5 fish, 10 lbs, 0 fish aged
Species B: 10 fish, 20 lbs, 10 fish aged
Species C: 5 fish, 20 lbs, 3 fish aged

Sample #2: 4,000 lbs

Cluster 1: Species A: 20 fish, 45 lbs, 10 fish aged
Cluster 2: Species A: 15 fish, 30 lbs, 10 fish aged
Species B: 10 fish, 20 lbs, 10 fish aged

Calculations:

1. Determine how many fish each sampled fish represents

Sample #1: 1,000/(30+20+10+20+20) = 10.0
Sample #2: 4,000/(45+30+20) = 42.1

2. Calculate lbs of each species in each sample

Sample #1: Species A: (40/100)*1,000 = 400
Species B: (40/100)*1,000 = 400
Species C: (20/100)*1,000 = 200

Sample #2: Species A: (75/95)*4,000 = 3157.9
Species B: (20/95)*4,000 = 842.1

3. Adjust for unaged fish

Sample #1: Species A: (15/5)*10 = 30
Species B: (20/20)*10 = 10
Species C: (5/3)*10 = 16.7

Sample #2: Species A: (35/20)*42.1 = 73.7
Species B: (10/10)*42.1 = 42.1

4. Determine how many fish are represented by each sampled fish

```
Sample #1:  Species A: 30*(20,000/(500+3157.9)) = 164.04
            Species B: 10*(15,000/(400+842.1)) = 120.76
            Species C: 16.7*(10,000/100) = 1,670
Sample #2:  Species A: 73.7*(20,000/(500+3157.9)) = 402.99
            Species B: 42.1*(15,000/(400+842.1)) = 508.40
```

The final result for each species for each sample represents how many fish each sampled fish represents. These are summed to an array by age and sex.

The next step in the expansion is to apportion unsexed fish to either male or female. Apportioning of the unsexed fish is done for each age (or length) group. This is done by first summing the number of males and females in the age/length group. The fraction of males and females is then calculated. The unknown sex fish are apportioned among the two sexes. If no males or females have been aged (or measured) for the group, the program searches up one age (or length) group and down one age (or length) group. The combined fraction of males and females is then calculated and these fractions are used to apportion the unsexed fish. If there still are no sexed fish, the routine continues searching in larger, one-step increments, until it is able to apportion the unsexed fish.

The values in the arrays are then dumped to the final output file AGECOMyy.DAT (Appendix P) and LENCOMyy.DAT (Appendix Q). The EXPDOCyy.DAT file has the user name and date appended to it for documentation purposes. The final step is to store the source of all expansions to the EXPDOCyy.DAT file and a listing of all strata and the landed weights which could not be expanded are appended to the file.

It should be noted that the estimates produced are not always the total number of fish caught. This is because some strata are not expanded. The degree of underestimation is highly variable.

PacFIN Data Feed

This routine generates year-end data feeds for the Pacific Fisheries Information Network (PacFIN). Rather than providing actual landings, it presents percentages of the strata for each species (up to a maximum of 16 species). The output file (PFINSPyy.DAT) (Appendix R) incorporates non-standard market categories and port codes. In addition, it stores line gear as gear codes 1, 5, and 8; and trawl as gear codes 54 and 56. The percentages add up to 100%. The routine uses two files, SPECIES.INT and the YEARSPyy.DAT file, produced by the year-end Species Composition Routine. The SPECIES.INT file lists all standard market categories and their converted values.

The routine sums the landings for all species within the stratum and calculates a rounded percentage for each species. If more than 16 species are present in the stratum, then only the 16 species with the largest landings are used. The program converts the market categories and port codes, and creates a string for output. If the stratum is for line gear, it outputs a line for gear types 1, 5, and 8. If the stratum is for trawl gear, then it outputs a line for gear types 54 and 56. If it is for gill net, then it outputs a line for gear type 66. The last month of each quarter (3, 6, 9, 12) is used to identify the time period.

Fish/Sample Count

This routine works by examining all species, gears, port complexes and market categories in the REDDpyyq.DAT files and counting the number of fish and number of samples. Separate counts are maintained for aged fish and fish with lengths. The results are stored in an ASCII file called SAMPCTyy.DAT (Appendix S).

COMEX Usage Instructions

Inseason Expansion

The Inseason Expansion Routine should not be used as a substitute for the year-end Species Composition Expansion Routine. Its chief advantage over the year-end routine is the ability to restrict the expansion to selected market categories. To run this routine, a landing receipt file must be available and either PORTpyyq.DAT or REDDpyyq.DAT type files must be present. Only samples with gear, market category and landing weights are used.

When the program asks for the name of the landing receipt file, a path can be specified. The sample files must be present in the same subdirectory in which COMEX.EXE resides. The user can specify up to ten market categories to expand. The program will print a list of sampled and landed strata and ask whether to Ignore or Borrow compositions for each unsampled stratum. After the last unsampled stratum has been presented, the routine runs until it is complete without further user input.

Year-End Expansion Instructions

At the end of each year, when the landing receipt are determined to be complete, an expansion can be done. The expansion should be done in the following sequence:

1. Run the Gear Recovery Routine.
2. Run the Sample Summary Routine.
3. Run the Landing Receipt Summary Routine.
4. Provide the landing and sample summary data to port biologists to get their advice on how to treat unsampled strata.
5. Run the Species Composition Expansion Routine.
6. Run the Age/Length Expansion Routine.
7. Add optional text comments to the EXPDOCyy.DAT file.
8. Run the PacFIN data Routine.
9. Run the Fish/Sample Count Routine.

Landing Receipt Recovery

Any landing receipt filename can be used for the input file. A path can be used as part of the landing receipt filename. The output file (FINPNKyy.DAT) will be placed in the program subdirectory. The routine can take several hours to run.

Sample Summary

This routine will use all REDDpyyq.DAT files in the program subdirectory. The only user input is the sample year.

Landing Receipt Summary

The user can supply any filename (with a path) for the input file; however, the FINPNKyy.DAT file is typically used. The only other user input is the sample year.

Species Composition

This routine creates many scratch files (which it ultimately deletes). Because of this, it is suggested that the computer have at least ten megabytes of disk space available. This routine requires substantial user input. It is possible to stop part way through the program and resume later. The routine requires the MCADISyy.DAT file (from the Landing Receipt Summary Routine) and that all REDDpyyq.DAT files be present in the program subdirectory.

The program begins by asking for year. After some processing, the routine prints out a list of landed strata and the number of samples for each. The user is then prompted for what to do with each of the unsampled strata: Ignore, treat as Nominal, or Borrow a composition from a different stratum.

The Ignore option should only be used if the port biologist has indicated that the stratum was actually an error and was not truly a rockfish category. The Nominal option is used when either the landing is fairly small, or there is good reason to believe that it is pretty much a single species stratum, or if there are no reasonable strata to borrow from. If the Borrow option is selected, the user is prompted for the port, gear, market category, and quarter to use.

After all of the unsampled strata have been assigned, the user can stop or edit the stratum usage file. If the user stops, he/she can resume later at the point of editing. If the user decides to edit the files, he/she can obtain a printout. If the user wishes to continue, the expansion will run without further user input.

Age/Length Composition

The Age/Length Composition Routine has many options. The user can do a full expansion (both ages and lengths), expand only ages, restart an existing expansion, or do a Dover sole expansion. The user can select up to ten species to perform an age expansion on. If a full expansion is done, the age and length expansions are done simultaneously. The general procedures for the age expansion are identical for the length expansion. In all cases, the MCADISyy.DAT, YEARSPyy.DAT, REDDpyyq.DAT (or DOVRpyyq.DAT), and EXPDOCyy.DAT files must be present in the program subdirectory. Documentation of all expansions is appended to the EXPDOCyy.DAT files.

The Dover sole expansion requires the raw sample files to be named DOVRpyyq.DAT. The Dover sole expansion is a simplified version of the rockfish expansion with the final output files being called AGEDOVyy.DAT and LENDOVyy.DAT. The Dover sole expansions typically rely on few strata and Crescent City samples are always combined with Eureka samples.

The routine begins by asking for the year and what type of expansion is desired. For ages, the user specifies which species to expand. Then the program does some processing. The program then allows the user to print out all sampled strata files. The user will need this printout to allocate unsampled strata. The user can also print out the entire landed and sampled strata files; however, this is not typically useful to the user.

In the next step, the operator is prompted to decide what to do about unsampled strata. Unlike the Species Composition Expansion, the user does not specify quarter, nor can borrowing from different gear types be performed. Also, unlike the Species Composition Expansion Routine, there are many cases in which the user will choose the Ignore strata option. The user should never

select a port complex to borrow from which is more than one port complex away.

After all length and age strata have been assigned, the user can stop or edit the usage files. If the user wishes to continue, the program will run without further user intervention until it is done.

After this step is completed, the user may wish to use a text editor to add comments to the end of the EXPDOCyy.DAT file. Be sure the file is saved as an ASCII text file. The comments should be kept to a minimum.

PacFIN Data Feed

This is the final step in the year-end expansion process. The SPECIES.INT and YEARSPyy.DAT file must be present in the program subdirectory. The routine will ask for the sample year and then will create the PFINSPyy.DAT file for submission to PacFIN. The routine executes quickly.

Fish/Sample Count

This routine only requires the year to operate on to be supplied by the user. The REDDpyyq.DAT files must be present in the current subdirectory. It may take a few hours to run.

HOW TO GET MORE INFORMATION

Data can be obtained by contacting the Groundfish Coordinating Unit at California Department of Fish and Game's Menlo Park Office (415)688-6340. Landings can also be obtained from PacFIN in Seattle, Washington (206) 526-4072, Will_Daspit@noaa.gov. In addition, an Oracle database is currently available at the National Marine Fisheries Service's Tiburon Laboratory, California (415) 435-3149 ext 237 don.pearson@noaa.gov. The user should be aware that issues of confidentiality may apply to some of the data.

Listings of the programs can be obtained by contacting the authors. Copies of the functional programs can be obtained by contacting Donald Pearson.

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APPENDIX A.--California Species Codes for Rockfish

Code	Scientific Name	Common Name
2301	*Sebastes aleutianus*	rougheye rockfish
2302	*Sebastes alutus*	Pac. Oc. Perch
2303	*Sebastes atrovirens*	kelp rockfish
2304	*Sebastes auriculatus*	brown rockfish
2305	*Sebastes aurora*	aurora rockfish
2306	*Sebastes brevispinus*	silvergray rockfish
2307	*Sebastes carnatus*	gopher rockfish
2308	*Sebastes caurinus*	copper rockfish
2309	*Sebastes chlorostictus*	greenspotted rockfish
2310	*Sebastes chrysomelas*	black and yellow rockfish
2311	*Sebastes constellatus*	starry rockfish
2312	*Sebastes crameri*	darkblotched rockfish
2313	*Sebastes dallii*	calico rockfish
2314	*Sebastes diploproa*	splitnose rockfish
2315	*Sebastes elongatus*	greenstriped rockfish
2316	*Sebastes entomelas*	widow rockfish
2317	*Sebastes eos*	pink rockfish
2318	*Sebastes flavidus*	yellowtail rockfish
2319	*Sebastes gilli*	bronzespotted rockfish
2320	*Sebastes goodei*	chilipepper rockfish
2321	*Sebastes helvomaculatus*	rosethorn rockfish
2322	*Sebastes hopkinsi*	squarespot rockfish
2323	*Sebastes jordani*	shortbelly rockfish
2324	*Sebastes levis*	cowcod
2325	*Sebastes macdonaldi*	Mexican rockfish
2326	*Sebastes maliger*	quillback rockfish
2327	*Sebastes melanops*	black rockfish
2328	*Sebastes melanostomus*	blackgill rockfish
2329	*Sebastes miniatus*	vermillion rockfish
2330	*Sebastes mystinus*	blue rockfish
2331	*Sebastes nebulosus*	China rockfish
2332	*Sebastes nigrocinctus*	tiger rockfish
2333	*Sebastes ovalis*	speckled rockfish
2334	*Sebastes paucispinis*	bocaccio
2335	*Sebastes pinniger*	canary rockfish
2336	*Sebastes proriger*	redstripe rockfish
2337	*Sebastes rastrelliger*	grass rockfish
2338	*Sebastes ensifer*	swordspine rockfish
2339	*Sebastes rosaceus*	rosy rockfish
2340	*Sebastes ruberrimus*	yelloweye rockfish
2341	*Sebastes rubrivinctus*	flag rockfish
2342	*Sebastes saxicola*	stripetail rockfish
2343	*Sebastes semicinctus*	halfbanded rockfish

APPENDIX A.--Continued.

Code	Scientific Name	Common Name
2344	*Sebastes serranoides*	olive rockfish
2345	*Sebastes serriceps*	treefish
2346	*Sebastes umbrosus*	honeycomb rockfish
2347	*Sebastes vexillaris*	aka copper rockfish
2348	*Sebastes wilsoni*	pygmy rockfish
2349	*Sebastes zacentrus*	sharpchin rockfish
2350	*Sebastolobus* spp.	thornyhead
2351	*Sebastolobus alascanus*	shortspine thornyhead
2352	*Sebastolobus altivelis*	longspine thornyhead
2361	*Sebastes simulator*	pinkrose rockfish
2362	*Sebastes lentiginosus*	freckled rockfish
2363	*Sebastes rosenblatti*	greenblotched rockfish
2364	*Sebastes babcocki*	redbanded rockfish
2365	*Sebastes phillipsi*	chameleon rockfish
2366	*Sebastes rufianus*	dwarf-red rockfish
2367	*Sebastes borealis*	shortraker rockfish
2368	*Sebastes rufus*	bank rockfish
2369	*Sebastes reedi*	yellowmouth rockfish
2398	*Sebastes* spp.	rockfish

APPENDIX B.--California Commercial Gear Codes

Code	Description
0	Unknown
1	Hook and line
3	Vertical hook and line
4	Mooching (salmon)
5	Set longline
6	Jig/Bait (albacore)
7	Troll (albacore)
8	Troll (groundfish or other fish)
9	Troll (salmon)
12	Harpoon
18	Diving
20	Trap - Type Unknown
21	Fish trap
22	Prawn trap
27	Crab or Lobster Trap
35	Danish/Scottish seine
40	Brail
50	Trawl - Type unknown
53	Pair trawl
54	Midwater trawl
55	Beam trawl
56	Bottom trawl
58	Single-rigged trawl
59	Double-rigged trawl
60	Gill Net - Type unknown
65	Drift gill net
66	Set gill net
70	Other - Unspecified
71	Purse seine
73	Drum seine
74	Lampara net
78	Beach seine

APPENDIX C.--Commercial Sample Sex and Maturity Codes

Males = 1
Females = 2
Unknown = 9

Sex	Maturity Code	Description
FEMALE	1.0	Immature
FEMALE	2.0	Early yolk
FEMALE	3.0	Late yolk
FEMALE	4.0	Eyed Larvae
FEMALE	5.0	Spent
FEMALE	8.0	Unknown
FEMALE	9.0	Not examined
MALE	1.0	Immature
MALE	2.0	Early maturity
MALE	3.0	Late maturity
MALE	8.0	Unknown
MALE	9.0	Not checked

APPENDIX D.-- California Commercial Port Codes

Code	Description
0	East of California (home port)
2	Eureka
3	Upper San Francisco Bay & Sacramento River
5	Monterey
6	Santa Barbara
7	Los Angeles
100	North of California (home port)
200	Eureka area
201	Crescent City
202	Requa
203	Smith River
204	Orick
205	Yreka
206	Chester
207	Centerville
208	Blue Lake
209	Crannell
210	Llamath
211	Albion
212	Arcata
213	Point Arena
214	Ferndale
215	Shelter Cove
216	Fieldbrook
217	Fields Landing
218	Scotia
219	Humboldt
220	Eureka
221	Fortuna
222	Elk
223	Fort Bragg
224	Loleta
225	Ruth
226	Caspar
227	Little River
228	Mendocino
229	Fort Dick
230	Garberville
231	Trinidad
232	Miranda
234	McKinleyville
235	Moonstone Beach
236	Bayside
237	Weott
238	Thorn
239	Petrolia
240	Almanor

APPENDIX D.--Continued.

Code	Description
243	Ukiah
244	Redding
245	Red Bluff
246	King Salmon
247	Cloverdale
249	Bieber
250	McCloud
251	Fall River Mills
252	Cottonwood
253	Rough & Ready
254	Tahoe Keys
255	Carlotta
256	Orangevale
257	Oroville
258	Citrus Heights
259	Concord
260	Auburn
261	Occidental
262	Vacaville
263	Whitehorn
264	Los Molinos
265	Roseville
266	Fairfield
267	Galt
268	Freedom
269	Corning
270	Weaverville
271	Orland
272	Weed
273	Willows
274	Honeydew
275	Willits
276	Arbuckle
277	Happy Camp
278	Douglas City
300	Sacramento area
301	Sonora
302	Dixon
303	Camp Connell
304	Danville
305	West Sacramento
306	Placerville
307	Pleasant Hill
308	Pleasanton
309	Smartsville
310	Olivehurst
311	Gustine

APPENDIX D.--Continued.

Code	Description
312	Tahoe City
313	Glenn
314	Walnut Creek
315	Marysville
316	Ripon
317	Fair Oaks
318	Byron
319	Davis
320	Turlock
321	Snelling
322	Freeport
323	Brentwood
324	Bethel Island
325	Suisun City
326	Montezuma Slough
327	Nice
328	Denverton
329	Birds Landing
330	Sacramento
331	Three Mile Slough
332	Steamboat Slough
337	Woodbridge
338	Lathrop
339	Old River
341	Benicia
342	Collinsville
343	Courtland
345	Pittsburg
346	Locke
347	Lodi
348	Martinez
349	Isleton
350	Bryte
351	Rio Vista
352	Stockton
354	Walnut Grove
356	Antioch
357	Crockett
358	Lakeport
359	Acampo
360	Antioch bridge
361	Clear Lake
362	Broderick
363	Clarksburg
364	Elk Grove
365	Colusa
366	Knights Landing

APPENDIX D.--Continued.

Code	Description
367	Port Costa
368	Hood
369	Verona
370	Patterson
371	Lucerne
372	Middle River
373	Gridley
374	Yuba City
376	Modesto
377	Upper Lake
378	Tracy
379	Manteca
387	Oakley
388	Truckee
390	Woodland
391	Mono Lake
393	Rio Linda
394	Lee Vining
395	Nicolaus
396	El Dorado Hills
397	Yolo
398	Cordelia
400	San Francisco area
401	Fremont
402	Alamo
403	Los Gatos
404	Forrest Knolls
405	Saint Helena
406	Monte Vista
407	Rohnert Park
408	Greenbrae
409	Foster City
410	Burlingame
411	Los Altos
412	Glen Cove
413	Livermore
414	San Bruno
415	Nicasio
416	Yountville
419	Sonoma
420	Guerneville
422	El Sobrante
423	Muir Beach
424	Timber Cove
425	Emeryville
426	Kentfield
427	Anchor Bay

APPENDIX D.--Continued.

Code	Description
428	El Cerrito
429	Napa
430	San Leandro
431	Mill Valley
432	Lafayette
434	Mountain View
435	Healdsburg
436	Hayward
437	Drakes Bay
438	Sunnyvale
439	Pacifica
440	San Francisco
441	Dillon Beach
442	Redwood City
443	Moss Beach
444	San Carlos
445	Martins Beach
446	Campbell
447	Stewarts Point
448	Daly City
449	Alviso
450	Pinole
451	Rodeo
452	Princeton
453	Vallejo
454	San Jose
455	China Camp
457	Novato
458	Pedro Valley
459	Petaluma
462	Marshall
463	McNears Point
464	Oakland
465	San Mateo
466	San Quentin
468	San Rafael
469	Sausalito
470	South San Francisco
471	Alameda
472	Berkeley
473	Bodega Bay
474	Inverness
475	Santa Rosa
476	Point Reyes
477	Tomales Bay
478	Richmond
479	Pigeon Point

APPENDIX D.--Continued.

Code	Description
481	Point Montara
482	Pescadero
483	Point San Pedro
484	Albany
485	Farallone Islands
486	Millerton
487	Bolinas
488	Marconi Cove
489	Jenner
490	Hamlet
491	Corte Madera
492	Sebastopol
494	Palo Alto
495	California City
496	Tiburon
497	Stinson Beach
498	Rockaway Beach
499	Windsor
500	Monterey area
501	Ceres
502	Soquel
503	Kingsburg
504	Clovis
505	Los Banos
506	Felton
507	San Juan Bautista
508	Visalia
509	Lindsay
510	Oakhurst
511	Big Sur
512	San Miguel
513	Paso Robles
514	Coalinga
549	Fort Ord
550	Monterey
551	Kerman
552	Gilroy
553	Morgan Hill
556	Pixley
557	Madera
558	Fresno
559	Chowchilla
560	Dos Palos
581	Hollister
584	Lucia
585	Pebble Beach
586	Point Lobos

APPENDIX D.--Continued.

Code	Description
587	Pacific Grove
588	Seaside
589	Carmel
590	Salinas
591	Capitola
592	Moss Landing
593	Santa Cruz
594	Watsonville
596	Davenport
598	Marina
599	Aptos
600	Santa Barbara area
601	Arroyo Grande
602	Avila
603	Cayucos
604	Gaviota
605	Port Hueneme
606	Morro Bay
607	Oceano
608	Oxnard
609	San Luis Obispo
610	Pismo Beach
611	Santa Barbara
612	Santa Maria
613	Ventura
614	Goleta
615	San Simeon
616	Summerland
618	Guadalupe
619	Conception
620	Point Arguello
621	Surf
623	Santa Cruz Island
628	Point Mugu
629	Shell Beach
630	Rincon
631	Nipomo
632	Cambria
634	Solimar
635	Carpenteria
638	Grover City
639	Lompoc
640	Simi Valley
641	Porterville
642	Delano
643	Bakersfield
644	Kernville

APPENDIX D.--Continued.

Code	Description
645	Solvang
646	Tulare
647	Shafter
648	Baywood Park
649	Oildale
650	Ojai
651	Westlake Village
652	Lake Isabella
653	Atascadero
654	Ridgecrest
655	Santa Paula
656	Taft
657	Mojave
700	Los Angeles area
701	Glendale
702	South Gate
703	Lancaster
704	Fountain Valley
705	Granada Hills
706	Rancho Palos Verdes
707	Westminister
708	Covina
709	El Segundo
710	Hawaiian Gardens
711	Carson
712	Mission Viejo
721	Anaheim
724	Bell Gardens
726	Orange
727	Whittier
728	Norwalk
729	Malibu
730	Torrance
733	Catalina Island
734	San Clemente Island
736	Los Alamitos
738	Pacific Palisades
739	Sunset Beach
741	Avalon
742	Redondo Beach
743	Long Beach
744	Los Angeles
745	Terminal Island
746	Wilmington
747	Santa Monica
748	Newport Beach
749	Laguna

APPENDIX D.--Continued.

Code	Description
750	West Los Angeles
751	Topanga Canyon
752	Ocean Park
753	Venice
754	Elsinore
755	Norco
756	Hermosa Beach
757	Point Dume
759	Costa Mesa
760	Seal Beach
762	Manhattan Beach
763	Alhambra
764	Balboa
765	Corona Del Mar
766	San Clemente
767	Dana Point
768	Huntington Beach
769	Riverside
770	San Pedro
771	Santa Ana
772	Capistrano
773	Gardena
774	Inglewood
775	Beaumont
776	Playa Del Rey
777	Lynwood
778	Paramount
779	Harbor City
780	Fullerton
781	Walnut
782	Victorville
783	Bishop
784	San Bernardino
785	Vernon
787	Camarillo
788	Newberry Springs
789	Upland
790	Irvine
791	Yucca Valley
792	Bloomington
794	La Canada
796	Pasadena
799	Lake Crowley
800	San Diego area
801	Thousand Oaks
802	Newhall
803	Reseda

APPENDIX D.--Continued.

Code	Description
804	Ontario
805	Chatsworth
852	Poway
853	Earp
854	Hemet
855	Thermal
856	Palm Springs
857	Tecopa
858	Palo Verde
859	Valley Center
860	Santee
861	Fallbrook
862	San Marcos
863	North Shore
864	Bonita
865	Spring Valley
866	Imperial
867	Leucadia
868	Imperial Beach
869	Mission Bay
870	San Ysidro
872	Winterhaven
873	Salton Sea
874	Palm City
875	Niland
877	Lemon Grove
878	El Centro
879	El Cajon
880	San Diego
881	Point Loma
882	National City
883	Oceanside
884	Coronado
885	Ocean Beach
886	Mission Beach
888	La Jolla
889	Chula Vista
890	Del Mar
891	Carlsbad
893	Cardiff
894	Encinitas
895	Solana Beach
897	Vista
898	La Mesa
899	Escondido
900	South of California (home port)

APPENDIX E.--California Commercial Port Complex Codes

Code	Description
1	Morro Bay
2	Monterey
3	Princeton
4	San Francisco
5	Bodega
6	Fort Bragg
7	Eureka
8	Crescent City
a	Santa barbara
b	Ventura
c	Long Beach
d	San Diego

APPENDIX F.--California Commercial Market Category Codes and Associated Default Species Codes

Mar Cat	Common Name	Default Species
245	Rockfish, cowcod	2324
246	Rockfish, copper (whitebelly)	2308
247	Rockfish, canary	2335
249	Rockfish, vermilion	2329
250	Rockfish, unspecified	2398
251	Rockfish, black-and-yellow	2310
252	Rockfish, black	2327
253	Rockfish, bocaccio	2334
254	Rockfish, chilipepper	2320
255	Rockfish, greenspotted	2309
256	Rockfish, starry	2311
257	Rockfish, darkblotched	2312
258	Rockfish, China	2331
259	Rockfish, yellowtail	2318
262	Thornyheads	2350
263	Rockfish, gopher	2307
264	Rockfish, pinkrose	2361
265	Rockfish, yelloweye	2340
267	Rockfish, brown	2304
268	Rockfish, rosy	2339
269	Rockfish, widow	2316
270	Rockfish, splitnose	2314
271	Rockfish, Pacific ocean perch	2302
651	Rockfish, olive	2344
652	Rockfish, grass	2337
653	Rockfish, pink	2317
654	Rockfish, greenstriped	2315
655	Rockfish, copper	2308
657	Rockfish, flag	2341
658	Rockfish, treefish	2398
659	Rockfish, kelp	2303
660	Rockfish, honeycomb	2346
661	Rockfish, greenblotched	2363
662	Rockfish, bronzespotted	2319
663	Rockfish, bank	2368
664	Rockfish, rosethorn	2321
665	Rockfish, blue	2330
666	Rockfish, squarespot	2322
667	Rockfish, blackgill	2328
668	Rockfish, stripetail	2342
669	Rockfish, speckled	2333
670	Rockfish, swordspine	2338
671	Rockfish, calico	2398
673	Rockfish, chameleon	2365
674	Rockfish, aurora	2305
675	Rockfish, redbanded	2364

APPENDIX F.--Continued.

Mar Cat	Common Name	Default Species
678	Thornyhead, longspine	2352
679	Thornyhead, shortspine	2351
956	Rockfish, group bocaccio/chili	2398
957	Rockfish, group bolina	2398
958	Rockfish, group deepwater reds	2398
959	Rockfish, group red	2398
960	Rockfish, group small	2398
961	Rockfish, group rosefish	2398
962	Rockfish, group gopher	2398
970	Rockfish, quillback	2326
971	Rockfish, group canary/vermili	2398
972	Rockfish, group black/blue	2398

APPENDIX G.--REDDpyyq.DAT File Format

General Description:

This type of file is identical in structure to PORTpyyq.DAT, MENLpyyq.DAT, and TIBRpyyq.DAT files. These files contain port sample data. They are stored as ASCII text files. Each sample is composed of three line types: line type 1 - sample header data, line type 2 - cluster header data, line type 3 - individual fish data. Each sample has one line type 1, one or more line type 2, and one or more line type 3 for each line type 2.

FORMAT:

	Position	Contents
Line Code 1	1-2	line code
	3-6	sample number
	7-9	port code
	10-15	vessel number
	17-22	date (yymmdd)
	23-24	gear
	25-27	market category
	28-33	landing weight (lbs)
	35-38	CDF&G block #
	39-42	depth (fathoms)
	43-48	subsampled weight (lbs)
	50-53	sorted species code 1
	54-59	sorted species 1 weight
	60	SFRA sample
	61-64	sorted species code 2
	65-70	sorted species 2 weight
	71	otolith collection flag
	72-75	sorted species code 3
	76-81	sorted species 3 weight
	84	number of clusters
Line Code 2	1-2	line code
	3-6	sample number
	7-8	cluster number
	9-10	number of species
	11-13	number of fish in cluster
	14-17	species code 1
	18-19	species 1 weight
	20-21	species 1 count
	22-125	species 2-14 data

APPENDIX G.--Continued.

	Position	Contents
Line Code 3	1-2	line code
	3-6	sample number
	7-8	cluster number
	9-11	fish number
	12-15	species code
	16	sex
	17	maturity
	18-21	forklength (mm)
	22-23	year class

Sample of file structure:

```
 1 818606 25376.80 4 156250   630. 602 100   630B   0      0Y   0
  0.   0     0. 1
 2 818 1 3 17233412 8232023 72309 3 2   0 0 0   0 0 0   0 0 0   0
0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0
 3 818 1  12334299 51972
 3 818 1  22320299 44269
 3 818 1  32320299 48170
 3 818 1  42320299 45470
 3 818 1  52320299 46570
 3 818 1  62334299 38977
....
 2 818 2 2 202320 8 423341116   0 0 0   0 0 0   0 0 0   0 0 0   0
0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0
 3 818 2  12320299 44966
 3 818 2  22320199 30272
 3 818 2  32320299 42371
....
```

APPENDIX H.--NEARpyyq.DAT File Structure

General Description:

The NEARpyyq.DAT file is an optional auxiliary data file created by the Data Entry Routine of COMDAT. It contains extra data for some SFRA samples.

FORMAT:

Column	Contents
1-4	sample number
6	live fish flag
8-14	ticket number
15-17	microblock
21-24	number of hooks
26-27	number of sets
29	number of days fished
31-36	total ticket weight

Sample Output:

```
1234 Y   a1234 234    56  3 2  12345
1235 N   S1222 321    12  1 7    567
1236 N   S1224 333     1  2 1     12
```

APPENDIX I.--Format of Make ASCII File

General Information:

The Make ASCII Routine in COMDAT creates an ASCII file with raw biological data. The file can be named anything the user desires. The user has a number of options about which data to include. Vessel number can optionally be included in the file (the provision to exclude is for confidentiality).

FORMAT:

Column	Contents
1-4	sample number
7	cluster number
10-11	fish number
13-15	port code
17-22	sample date (yymmdd)
24-25	gear code
27-29	market category
31-36	landing weight
38-41	species code
43	sex
45	maturity
48-50	forklength (mm)
52-53	year class
55-57	depth (fathoms)
59-62	CDF&G block number
64	SFRA flag .=No B=Both S=SFRA only
66-70	Vessel number
73	Otolith flag

Sample Output:

```
12345678901234567890123456789012345678901234567890123456789012345
67890123
 818  1   1 606 800401 56 250    630 2334 2 9  519 72 100  602 .
25376  Y
 818  1   2 606 800401 56 250    630 2320 2 9  442 69 100  602 .
25376  Y
 818  1   3 606 800401 56 250    630 2320 2 9  481 70 100  602 .
25376  Y
 818  1   4 606 800401 56 250    630 2320 2 9  454 70 100  602 .
25376  Y
 818  1   5 606 800401 56 250    630 2320 2 9  465 70 100  602 .
25376  Y
 818  1   6 606 800401 56 250    630 2334 2 9  389 77 100  602 .
25376  Y
```

APPENDIX J.--Format of OUTLIER.DAT File

General Information:

This file is produced by the Outlier Routine in COMDAT. It contains the results of error checks performed on REDDpyyq.DAT and PORTpyyq.DAT data files. Some error types result in extra information. This appears in the additional information columns.

FORMAT:

Column	Contents
1-2	error code (see list below)
4-15	filename
18-20	sample number
22-55	additional information if required

Sample output:

```
11 REDD1802.DAT  818    630 100  602  1 38 00 2334  999
11 REDD1802.DAT  819   3500 130  639  1 19 00 2334  379
 8 REDD1802.DAT  820   5315 999 9999  1 00 00 2334  421
 8 REDD1802.DAT  821  10800 999 9999  1 00 00 2320  468
11 REDD1802.DAT  821  10800 999 9999  1 41 00 2320  468
```

ERROR CODES

ERROR CODE	MEANING	SPECIAL VALUES
1	Missing vessel #	
2	Missing gear code	
3	Missing market category	
4	Missing landing weight	
5	Missing block	
6	Missing depth	
7	Unlikely block	Block and port
8	Unlikely depth	Depth
9	Landing weight > 25000	Landing weight
10	Landing wt <>subsampled wt	Both weights
11	Unusual cluster weight	Cluster weight
12	Unequal cluster weight (± 4 lbs)	Both cluster weights
13	Species length small	Species, length
14	Fish larger than record	Species, length

APPENDIX K.--Format of the INSEssss.DAT Files

General Description:

This type of file is produced by the Inseason Expansion Routine of the COMEX program. Each file contains the landings for the species identified in the ssss component of the filename. The expansions are for user specified market categories.

FORMAT:

Column	Contents
1-2	year
5	port complex
8-9	gear group
12	quarter
15-17	market category
21-24	species
34-42	estimated landing weight

Sample Output:

80	1	1	1	250	2334	20937
80	1	1	2	250	2334	10158
80	1	1	3	250	2334	7588
80	1	1	4	250	2334	10930
80	1	50	1	250	2334	109612
80	1	50	2	250	2334	121718
80	1	50	3	250	2334	295876
80	1	50	4	250	2334	49016

APPENDIX L.--Format of the SAMPLEyy.DAT File

General Information:

The SAMPLEyy.DAT file contains sample summary data produced by the Sample Summary Routine in the COMEX program.

FORMAT:

Column	Contents
1-2	gear group (1=hook and line, 50=trawl, 60=net)
6	port complex
10-12	market category
14-21	1st quarter sampled landing weight
23-25	1st quarter number of samples
29-36	2nd quarter sampled landing weight
38-40	2nd quarter number of samples
44-51	3rd quarter sampled landing weight
53-55	3rd quarter number of samples
59-66	4th quarter sampled landing weight
68-70	4th quarter number of samples

Sample Output:

1	B	245	757	1	0	0	0	0	0	0
1	1	250	0	0	0	0	0	0	125944	2
1	2	250	0	0	0	0	1860	1	0	0
1	4	250	4327	4	174	1	0	0	0	0
1	B	250	13282	10	2007	3	4499	5	1304	3
1	C	250	991	1	2845	3	0	0	0	0
1	D	250	0	0	45534	24	54129	40	18147	24
1	B	253	2135	1	0	0	0	0	0	0
1	C	269	0	0	1622	1	0	0	0	0
1	D	269	0	0	0	0	1627	1	0	0
1	D	657	0	0	14296	1	0	0	0	0
1	B	667	39907	13	71513	12	3469	2	9732	6
1	C	667	10863	9	28699	9	11888	8	7182	6
1	D	667	0	0	26367	8	25218	12	3232	4
1	A	956	0	0	400	1	0	0	0	0

APPENDIX M.--Format of the MCADISyy.DAT File

General Description:

The MCADISyy.DAT file is created by the Landing Receipt Summary Routine of COMEX. It contains quarterly landings and the number of samples taken for all rockfish strata. It is used by the expansion routines.

FORMAT:

Column	Contents
1-2	gear code
6	port complex
10-12	market category
14-20	1st quarter landings
22-23	number of samples
25-32	2nd quarter landings
34-35	number of samples
36-44	3rd quarter landings
46-47	number of samples
49-56	4th quarter landings
58-59	number of samples

Sample Output:

1	1	250	191464	92895	69451	99965(2)
1	2	250	134385	62151	82075(1)	59652
1	4	250	52708(4)	49769(1)	58071	30610
1	5	250	580	1166	18570	2357
1	6	250	10782	11769	68172	20780
1	7	250	5384	15915	26860	12668
1	8	250	32513	140982	104285	30248
1	A	250	24983	19952	33074	37406
1	B	250	159372(10)	87864(3)	103353(5)	92438(3)
1	C	250	122763(1)	123811(3)	101908	147208
1	D	250	93257	79192(24)	82672(40)	93014(24)
50	1	250	167609	186121(10)	432206(7)	255040(2)
50	2	250	622882	586397(15)	422259(15)	661978(2)
50	4	250	139438(4)	73033(1)	166827(3)	315509(1)

APPENDIX N.--Format of the YEARSPyy.DAT File

General Description:

This file contains the final landings for all rockfish as estimated by the Species Composition Expansion Routine of COMEX.

FORMAT:

Column	Contents
1-2	year
7	port complex
11-12	gear group
15	quarter (1-4)
18-20	market category
24-27	species code
32-45	landing weight (pounds)
47-56	source (ACTUAL, BORROWED, NOMINAL)

Sample Output:

80	1	1	3	246	2308	278	NOMINAL
80	1	1	4	246	2308	186	NOMINAL
80	1	60	2	246	2308	16	NOMINAL
80	1	60	4	246	2308	9	NOMINAL
80	4	50	4	247	2335	230	NOMINAL
80	1	1	1	249	2329	2848	NOMINAL
80	2	1	2	249	2329	26	NOMINAL
80	6	1	1	249	2329	10	NOMINAL
80	7	1	2	249	2329	36	NOMINAL
80	B	1	2	249	2329	68	NOMINAL
80	1	1	1	250	2316	20134	ACTUAL
80	1	1	1	250	2318	113431	ACTUAL
80	1	1	1	250	2320	36241	ACTUAL
80	1	1	1	250	2334	20937	ACTUAL
80	1	1	1	250	2368	724	ACTUAL
80	1	1	2	250	2316	9769	ACTUAL
80	1	1	2	250	2318	55035	ACTUAL
80	1	1	2	250	2320	17584	ACTUAL
80	1	1	2	250	2334	10159	ACTUAL
80	1	1	2	250	2368	351	ACTUAL
80	1	1	3	250	2316	7304	ACTUAL
80	1	1	3	250	2318	41146	ACTUAL
80	1	1	3	250	2320	13146	ACTUAL
80	4	1	3	250	2304	40650	ACTUAL
80	4	1	3	250	2308	17422	ACTUAL
80	4	1	4	250	2304	21427	ACTUAL
80	4	1	4	250	2308	9183	ACTUAL
80	5	1	1	250	2398	580	NOMINAL
80	5	1	2	250	2398	1166	NOMINAL
80	5	1	3	250	2309	73	BORROWED

APPENDIX O.--Format of the EXPDOCyy.DAT File

General Description:

This file produces useful information regarding the expansions (both species and age/length). It is produced and appended to by both the Species Composition and Age/length Expansion Routines of COMEX. It is typically composed of five sections: Species Composition Data, Source of Length Composition Expansion Data, Landings Not Used in the Length Expansion, Source of Age Composition Data, and Landings Not Used in the Age Expansions.

OPERATOR Brenda Erwin
DATE OF EXPANSION 11/14/96

ACTUAL STRATA				STRATA TO USE					
PT	GR	Q	MCAT	PT	GR	Q	MCAT	YR	SRC
1	1	1	245	1	1	1	245	80	N
1	1	2	245	1	1	2	245	80	N
1	1	4	245	1	1	4	245	80	N
2	1	2	245	2	1	2	245	80	N
5	1	2	245	5	1	2	245	80	N
A	1	1	245	A	1	1	245	80	N
A	1	2	245	A	1	2	245	80	N
A	1	3	245	A	1	3	245	80	N
C	1	3	245	C	1	3	245	80	N
C	1	4	245	C	1	4	245	80	N
4	1	2	960	4	1	2	960	80	N
C	1	4	960	C	1	4	960	80	N
1	60	2	960	1	60	2	960	80	N
1	60	3	960	1	60	3	960	80	N
1	60	4	960	1	60	4	960	80	N

AGE-LENGTH EXPANSION DONE ON 11/14/96
BY Brenda Erwin
LENGTH USAGE

2302	6	50	250	7737	17	6	50	250
2302	7	50	250	3525	7	7	50	250
2302	8	50	250	2277	10	8	50	250
2302	D	60	250	39	2	D	60	250
2302	7	50	271	18667	0	7	50	250
2302	8	50	271	8092	0	8	50	250
2304	4	1	250	100296	7	4	1	250
2304	D	1	250	27	8	D	1	250
2304	1	50	250	157456	12	1	50	250

APPENDIX O.--Continued.

NOT USED IN LENGTH EXPANSION

2302	7	1	250	35
2302	8	1	250	836
2302	D	60	250	39
2302	4	1	271	58
2302	1	50	271	950
2302	4	50	271	10
2304	4	1	250	96916
2304	D	1	250	27
2304	6	50	250	1676
2304	1	1	267	3380
2304	2	1	267	7921
2304	4	1	267	51072
2304	A	1	267	100
2304	C	1	267	90
2368	D	60	250	17160
2368	A	50	253	129
2368	2	1	663	80
2368	B	1	959	14

AGE USE

2316	1	50	250	31650	7	2	50	250
2316	2	50	250	143974	49	2	50	250
2316	6	50	250	72548	36	6	50	250
2316	7	50	250	10723512	535	7	50	250
2316	8	50	250	213068	31	8	50	250
2316	1	50	253	153003	20	1	50	253
2316	2	50	253	35032	4	2	50	250
2316	4	50	253	388885	9	2	50	250
2316	6	50	269	14130	0	6	50	250
2318	1	1	250	268835	12	1	1	250
2318	1	50	250	3034	2	1	50	250
2334	5	50	253	16523	0	4	50	253
2334	6	50	253	160153	21	6	50	253
2334	1	1	959	5919	2	1	1	959

NOT USED IN AGE EXPANSION

2316	C	60	245	153
2316	1	1	250	47719
2316	7	1	250	57138
2316	8	1	250	91702
2316	D	1	250	53
2316	1	60	250	2975
2316	B	60	250	911

APPENDIX O.--Continued.

2316	D	60	250	275
2316	5	50	253	685
2316	A	50	253	3686
2316	2	60	253	926
2316	1	1	269	22
2316	2	1	269	60
2316	7	50	269	1211
2316	B	1	959	4
2316	C	1	959	1
2318	2	1	250	26022
2318	7	1	250	382

APPENDIX P.--Format of the AGECOMyy.DAT File

General Description:

This file contains the expanded age compositions for all species. It is produced by the Age/Length Expansion Routine of COMEX.

FORMAT:

Column	Contents
1-4	species code
7-8	gear group
10	port complex
12-14	market category
17-18	age (years)
21-29	number of male fish
32-40	number of female fish
42-49	source (ACTUAL OR BORROWED)

Sample Output:

2316	50	1	250	5	18	17 BORROWED
2316	50	1	250	6	58	53 BORROWED
2316	50	1	250	7	93	46 BORROWED
2316	50	1	250	8	52	0 BORROWED
2316	50	1	250	9	135	148 BORROWED
2316	50	1	250	10	168	269 BORROWED
2316	50	1	250	11	78	174 BORROWED
2316	50	1	250	12	23	120 BORROWED
2316	50	1	250	13	48	35 BORROWED
2316	50	1	250	14	0	52 BORROWED
2316	50	1	250	15	43	0 BORROWED
2316	50	1	250	16	27	0 BORROWED
2316	50	2	250	5	83	76 ACTUAL
2316	50	2	250	6	260	238 ACTUAL
2316	50	2	250	7	419	207 ACTUAL
2316	50	2	250	8	238	0 ACTUAL

APPENDIX Q.--Format of the LENCOMyy.DAT File

General Description:

This file contains the expanded length compositions for all species. It is produced by the Age/Length Expansion Routine of COMEX.

FORMAT:

Column	Contents
1-4	species code
7-8	gear group
10	port complex
12-14	market category
17-18	age (years)
21-29	number of male fish
32-40	number of female fish
42-49	source (ACTUAL OR BORROWED)

Sample Output:

2302	50	6	250	25	0	4 ACTUAL
2302	50	6	250	26	0	4 ACTUAL
2302	50	6	250	27	0	11 ACTUAL
2302	50	6	250	28	0	4 ACTUAL
2302	50	6	250	41	0	1 ACTUAL
2302	50	8	250	33	1	0 ACTUAL
2302	50	8	250	36	0	3 ACTUAL
2302	50	8	250	37	0	1 ACTUAL
2302	50	8	250	40	0	1 ACTUAL
2302	50	8	250	49	0	1 ACTUAL
2302	50	7	271	25	0	10 BORROWED
2302	50	7	271	26	0	10 BORROWED
2302	50	7	271	27	0	29 BORROWED
2302	50	7	271	28	0	10 BORROWED

APPENDIX R.--Format of PFINSPyy.DAT File

General Description:

This type of file is produced by the PacFIN Data Feed Routine of the COMEX program. It is used to produce year-end data feeds to PacFIN to update the landing estimates. Actual landings are not produced; instead, a proportion of the stratum for each species is produced. This type of file uses non-standard codes.

FORMAT:

Column	Contents
1-2	year
3-4	last month of the quarter
5	modified port complex code (NOTE: not standard)
6-7	gear code
8-10	modified market category code
12-15	species code #1
16-18	percent of stratum for species 1
19-124	species codes and percentages for up to 15 species

Sample Output:

```
81 3B6610912324100
81 6B6610912324100
81 9B6610912324100
8112B6610912324100
81 3C6610912314  12316  72320  72334 84
81 6C6610912319 362324 64
81 9C6610912319 362324 64
8112C6610912319 362324 64
81 3D6610912317  22319 202324 752335  12340  2
81 6D6610912319 602324 40
81 9D6610912319 222324 762335  2
8112D6610912319 292324 622329  42335  6
81 66 111012308100
81 66 511012308100
81 66 811012308100
```

APPENDIX S.--Format of SAMPCTyy.DAT File

General Description:

This type of file is produced by the Fish/Sample Count Routine of the COMEX program. It contains the number of fish aged and measured for all species, gears, ports, and market categories as well as the number of samples they occurred in.

FORMAT:

Column	Contents
1-2	year
4	port complex
6-7	gear code
9-11	market category
13-16	species code
18-22	number of samples with lengths
24-28	number of fish measured
30-34	number of samples with ages
36-40	number of fish aged

Sample Output:

94	7	1	250	2301	1	11	0	0
88	A	1	959	2301	1	1	1	1
92	7	1	959	2301	1	15	0	0
93	1	1	962	2301	1	3	0	0
85	6	50	250	2301	1	1	0	0
87	7	50	250	2301	1	1	0	0
90	7	50	250	2301	1	1	0	0
91	5	50	250	2301	1	1	0	0
91	8	50	250	2301	1	1	0	0
92	6	50	250	2301	1	1	0	0
94	6	50	250	2301	1	1	0	0

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(August 1996)

231 Coastal upwelling indices, west coast of America 1946-1995.
F.B. SCHWING, M. O'FARRELL, J. STEGER, and K. BLATZ
(September 1996)

232 The physical oceanography off the central California coast during May-June 1995: A summary of CTD data from pelagic juvenile rockfish surveys.
K.M. SAKUMA, F.B. SCHWING, K. BALTZ, D. ROBERTS, H.A. PARKER, and S. RALSTON
(September 1996)

233 Abundance of cetaceans in California waters based on 1991 and 1993 ship surveys.
J. BARLOW and T. GERRODETTE
(September 1996)

234 Fixed costs and joint cost allocation in the management of Pacific Whiting.
J. TERRY, G. SYLVIA, D. SQUIRES, W. SILVERTHORNE, J. SEGER, G. MONRO, R. MARASCO, D. LARSON, J. GAUVIN, A.B. GAUTAM, S. FREESE, and R. BALDWIN
(September 1996)

235 Ichthyoplankton vertical distributions near Oahu, Hawai'i, 1985-1986: Data Report.
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(December 1996)

236 Application of acoustic and archival tags to assess estuarine, nearshore, and offshore habitat utilization and movement by salmonids.
G.W. BOEHLERT
(March 1997)

237 Status of the pacific sardine *(Sardinops sagax)* resource in 1996.
J.T. BARNES, M. YAREMKO, L. JACOBSON, N.C.H. LO, and J. STEHLY
(April 1997)

238 Manual for OTO 3.0 and OPS programs for reading daily increments.
J. BUTLER and E. MOKSNESS
(April 1997)

239 Changing Oceans and Changing Fisheries: Environmental Data for Fisheries Research and Management. A Workshop.
G. BOEHLERT and J.D. SCHUMACHER, (Editors)
(April 1997)