**Federal Fishery Disaster assistance process**

Federal Fishery Disasters are declared and approved on a case-by-case basis by the U.S. Secretary of Commerce under the jurisdiction of sections 312(a) and 315 of the Magnuson-Stevens Fishery Conservation and Management Act (MSA; 16 U.S.C. §1861(a) and §1864,), as well as sections 308(b and d) of the Interjurisdictional Fisheries Act (IFA; 16 U.S.C. §4107). For a disaster request to be federally approved, three fundamental criteria must be met: (1) there must be an identified state, federal, or Native American fishery resource disaster associated with either species population decline or loss of fishing infrastructure, (2) it must have an “allowable cause” (*1*), and (3) there must be economic impact resulting from the disaster. If it is concluded that a Federal Fishery Disaster occurred, then the economic data are analyzed to determine whether the disaster led to a commercial fishery failure. Commercial fishery failures are declared if revenue losses are greater than 80% relative to the mean annual revenue over the most recent five-year period (*1, 2*). Revenue losses of less than 35% are generally not eligible for assistance, and losses between 35-80% receive further evaluation. An additional federal designation, a catastrophic regional fishery disaster, may also be declared if the following criteria are met: (1) if either a commercial fishery failure or fishery resource disaster are declared by the U.S. Secretary of Commerce, (2) if the event affects more than one state or fishery managed by a regional council or Interstate Fishery Commission (IFC), and (3) if the event results in economic losses to coastal or fishing communities (*1*). If a commercial fishery failure is determined, the U.S. Congress may appropriate assistance funds to the impacted states or communities. These groups must then create a spending plan that is reviewed by the National Oceanic and Atmospheric Administration (NOAA) before assistance is administered. Under the MSA, the federal government cannot allocate greater than 75% of the cost of assistance activities toward individual disaster assistance, with the remaining 25% typically covered by state or regional entities. The complexity of the process and administrative steps required often result in disbursement of funds occurring years after the disaster occurred (*1, 2*).

**Materials and methods**

We developed a U.S. Federal Fishery Disaster database using the NOAA Fishery Disaster Assistance online portal produced by the Office of Sustainable Fisheries (*3*). In this portal, fishery disaster determinations were listed with specific disaster information, including (when available) the assistance request letter, federal decision letter, press release, and funding authority. Most disaster records included the affected state(s), year(s), fishery(ies), federal management region, specific area, individual requestor(s), request date and letter, determination status, press release, determination authority and letter, funding authority, cause of the disaster, and appropriation amount. These records, combined with state and federal landings and revenue data, were used to examine trends in disaster frequency and impacts, causes of disasters, federal funding allocation, and direct revenue impacts.

We carried out all statistical analyses in the statistical software environment R, and all federally-declared fishery disaster data used in these analyses are available at https://www.fisheries.noaa.gov/national/funding-and-financial-services/fishery-disaster-determinations, and all fishery landings and revenue data are available via the NOAA Fisheries One Stop Shop (FOSS) website: https://foss.nmfs.noaa.gov. All data and code for the analyses are available in the following GitHub repository: https://github.com/vrsaccomanno/federal-fish-disasters.git.

We assessed evidence for change in Federal Fishery Disaster frequency across the 30 year time window represented in the database in two ways: 1) we assessed trends in the frequency of disaster determinations per year (each of which may specify multi-year disasters; e.g. a disaster declared in 2002 may specify disaster impact years 1999-2002), and 2) we assessed trends in the number of disasters per year. In both cases, we fit a Poisson regression (generalized linear model with a log link, and years as a fixed continuous effect) to model the count of disaster determinations or ongoing disasters per year. Given that the mean and variance for both response variables are approximately equivalent, we feel the assumption of Poisson distributed data is appropriate (we note, however, that findings from a negative binomial instance of the same models were essentially identical). It is possible that the frequency of disasters depends on the management zone (Alaska, Greater Atlantic, Pacific Islands, Southeast, West Coast). To address the potential for non-independence between zones, we also fit a Poisson generalized mixed models (GLMMs) with a fixed effect of year and random effects of management zones, using the *glmer* function in the R library *lme4* (*4, 5*).

Federal Fishery Disaster causes were assigned based on information provided in formal federal declarations, request letters, determination letters, press releases, and/or primary literature sources. These causes, such as Harmful Algal Blooms (HABs), hurricanes, warming events, or oil spills, were then condensed into three ordered categories: environmental, combination of environmental and anthropogenic, and anthropogenic. Disasters resulting from hurricanes or HABs were labeled as environmental, but disasters resulting from overfishing or oil spills were labeled as anthropogenic. Some disasters, such as several associated with West Coast salmon fisheries, resulted from a combination of both environmental (e.g., drought or warming) and anthropogenic (e.g., overfishing, habitat loss, fish passage barriers) factors. Disaster records were then separated by cause, year, and management region to highlight not only reasons why disasters are occurring, but also whether these reasons are changing over time and space. To assess trends in the frequency of these categorical assignment through time, we performed an ordinal logistic regression with the category of each disaster as the response, and year as a fixed continuous effect. As above, we also fit a mixed effects ordinal logistic regression with fixed effect of year and random effects of management zone. We fit the fixed effects model using the *polr* function in the R library MASS (*6*), and the mixed effect model using the *clmm2* function in the R library ordinal (*7*).

Economic impact was measured using the federal assistance amount allocated by Congress, as well as estimates of the direct fishing revenue impact. All dollar amounts were converted from nominal to real dollars (2019 USD) using an inflation multiplier from the Bureau of Labor Statistics CPI inflation Calculator for the year in which the disaster occurred (*8*). The federal assistance amount was sourced from the online portal, although Federal Fishery Disaster number 19 had an allocation amount that was not reported. The request letter for this particular disaster cited economic impacts of $53.8-94.2M in 2019 USD, and given government policy that the federal share cannot exceed 75% of a disaster request, this request equates to a maximum federal allocation of approximately $40.4-70.7M. Therefore, to estimate the total dollar amount allocated by Congress from 1994-2020, we combined the federal allocation amounts from the 65 known cases reported on the portal, the overall amount that was Congressionally approved for all disasters in aggregate in 2019 and 2020, and the estimate from the single unknown case (disaster number 19).

To estimate direct revenue impact – defined as revenue loss associated only with changes in landings and not throughout the supply chain – landings and nominal revenue data were collected for each disaster using the NOAA Fisheries One-Stop Shop (FOSS) online database when possible(*9*). When an approved disaster required finer spatial resolution landings and revenue data (e.g., if the fishery/area affected was smaller than the state-level scale), state landings sources were used to isolate regional-level data when possible. There were several disasters where landings and revenue data for the appropriate spatial scale (e.g., a regional bay) and/or management entity (e.g., tribal) were not obtainable; in these instances, the next best viable data source was used when available and the revenue impact estimate of the disaster was assigned a confidence level (i.e., low, medium, high) based on how well the landings and revenue data reflected the spatial scale of - and management entity impacted by - the disaster (Table S4). There were eight disasters in which viable data were completely unobtainable; these disasters are demarcated with “N/A” in the Net Revenue Change column in Table S4.

The difference in revenue of the impacted fishery during the disaster year(s) relative to the previous five-year average was then calculated to produce revenue loss estimates. Direct revenue data were obtainable for 63 of the 71 approved Federal Fishery Disasters and changes in revenue in multi-year disasters – as reported on NOAA’s online portal (*9*)– were evaluated on an annual basis relative to the corresponding previous five-year average; while direct revenue data were obtainable for 63 disasters, calculating revenue loss for each disaster year resulted in more than 63 disaster years (n=79). Non-parametric bootstrapping techniques were used to estimate the sampling distribution of the median direct revenue impact and associated measures of uncertainty because the obtained revenue impact estimates were non-normally distributed (a Shapiro-Wilk test showed a significant departure form normality, W= 0.71, p<0.001) . For each sample statistic, 100,000 replications were performed using the “Boot” package in R programming language (*10, 11*). The R code for this analysis is available on the GitHub repository: https://github.com/vrsaccomanno/federal-fish-disasters.git

**Results**

There were 96 Federal Fishery Disaster assistance requests filed in the U.S. since 1994 (as of Aug 2020), spanning the impact period from 1989-2019, during which time 71 disasters were federally approved (Table S4). Congressional allocations and direct revenue loss data were available for 65 and 63 of the 71 approved disasters, respectively. The available data allowed estimates of the missing Congressional allocation values and subsequent analyses of economic impact. Federal Fishery Disaster records also allowed analyses of disaster frequency and causes of disasters.

*Economic impact*

For the purposes of this study, all economic estimates are reflected in 2019 USD because the most recently approved disaster occurred in 2019, but the database is populated through August 2020 (all 2020 assistance requests are still pending). The total amount allocated by Congress throughout the entire federal disaster assistance program from 1994-2020 was over $1.99B (Table S1). This does not include six approved disasters with unreported federal assistance amounts, and it also does not include amounts that are still being determined for five disasters that were approved in 2019, as well as seven disaster requests from 2019 and 2020 that have not yet been approved. However, a total of $165M was Congressionally appropriated for the 2019 fiscal year. In 2020, U.S. Congress used the Coronavirus Aid, Relief, and Economic Security Act (CARES Act: https://www.fisheries.noaa.gov/national/noaa-fisheries-coronavirus-covid-19-update) to approve the allocation of an additional $300M for fisheries as a result of the ongoing COVID-19 pandemic.

Total assistance allocations were highly variable across space and time (i.e., no apparent trend), and ranged from $0-$300M annually (mean of $73.8M ± $96.1M SD). The Southeast Region (www.fisheries.noaa.gov/regions) obtained the most assistance since the inception of the program ($574M, 36.4% of overall determined funding), followed by the West Coast ($460M, 29.2%), Alaska ($332M, 21.0%), Greater Atlantic ($211M, 13.4%), and Pacific Islands ($1M, 0.1%). Overall, the entire western U.S. (Alaska, West Coast, and Pacific Islands combined) accounted for 50.3% of all approved U.S. disaster allocations (excluding pending disasters), while the Southeast and Greater Atlantic Regions accounted for 49.7% of allocations (Table S1).

We generated direct revenue loss estimates – defined as revenue loss associated only with changes in landings – for 63 of the 71 approved Federal Fishery Disasters, which amounted to over $3.2B in revenue loss from 1994-2019, with additional significant revenue losses anticipated in 2020 due to the ongoing COVID-19 pandemic. These estimates were non-normally distributed, motivating the use of non-parametric statistical techniques. The median percent change in revenue during a disaster relative to the mean annual revenue over the preceding five-year period was -38.3 (IQR range = -70.4 – -1.3) across the 63 disasters for which data were attainable (Table S4). We also found that 12 of the 63 disasters showed a net *increase* in revenue in the year(s) of the disaster reported on the online portal. Omitting these 12 cases (to reflect total revenue losses that occurred) results in a median percent change in revenue of -60.6 (IQR range = -74.1 – -24.8). The median revenue loss in a disaster year was -$3.5M (n = 79), with a bootstrapped 95% confidence interval of [-$5.6 M – $4.8 M] (n = 100,000 bootstrap samples) across the 63 disasters for which data were attainable. Omitting the 12 cases where revenue increased results in a median revenue loss in a disaster year of -$11.6M (n = 62), with a bootstrapped 95% confidence interval of [-$18.7 M – -$7.6 M] (n = 100,000 bootstrap samples). The Alaska Region accounted for 66.2% of the revenue impact overall, followed by the West Coast Region (18.1%), Southeast Region (10.7%), Greater Atlantic (5.1%), and Pacific Islands (< 0.01%) (see GitHub repository for code specific to revenue loss estimates: https://github.com/vrsaccomanno/federal-fish-disasters.git).

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*Disaster frequency and impacts*

Federal Fishery Disasters impacted every federal fisheries management region, and every coastal state in the U.S., as well as the U.S. Virgin Islands, Puerto Rico, and American Samoa. Impacts were largely to commercial and recreational groundfish, commercial nearshore invertebrates, and commercial and Native American salmon fisheries, although several assistance requests and determinations simply stated only that “multiple fisheries” were impacted. Regional trends in disaster frequency showed a distinct shift from disasters across all regions between 1994-2015 to disasters occurring almost entirely in the West Coast and Southeast management regions from 2017-2019. The West Coast management region had the highest share of approved disasters (28/71), followed by the Southeast (18/71), Alaska (14/71), Greater Atlantic (10/41), and Pacific Islands (1/71) regions. Overall, the entire western U.S. (including one approved disaster in the Pacific Islands) accounted for 60.6% of all approved U.S. disasters, while the Gulf Coast and east coast accounted for 39.4% of approved disasters.

All statistical models (GitHub repository: https://github.com/vrsaccomanno/federal-fish-disasters.git) strongly indicate that disasters are increasing over time (i.e. that the number of disaster declarations and number of disasters per year have both increased; Table S3), even with seven disasters during the 2017-2020 period that are still pending review (as of Aug 2020). The mixed effects models converged but with much larger AIC scores than counterpart fixed effects only models, indicating a poor model fit (Table S3). Moreover, the similarity in the estimated fixed year effect coefficients in both the mixed and fixed effects models (Table S3) suggests the mixed effects formulation is inconsequential to our findings.

*Disaster causes*

Since the 1990s, the predominant cause of Federal Fisheries Disasters has shifted from anthropogenic to environmental in nature, with extreme environmental events reflecting 95.3% of the revenue loss during the most recent five-year period (2014-2019), increasing from 38.5% during the first five years (1994-1998). Disaster causes were aggregated into three condensed categories: anthropogenic, environmental, or a combination of both. Marine heatwaves accounted for the most disasters overall, followed by hurricanes, overfishing, low returns (multiple Pacific salmon species), and HABs. Disasters caused by “low returns” in salmon fisheries were typically due to a combination of anthropogenic and environmental factors. Both the fixed and random effects logistic regression models performed similarly in terms of AIC scores (Table S3), with both showing significant time trends in the cause of disasters. Regionally, marine heatwaves and HABs were often attributed to disasters in the both the West Coast and the New England / Greater Atlantic Regions, while hurricanes represented the primary cause of disasters in the Southeast Region. The majority of disasters with Congressional allocations were attributed to environmental causes ($894M, 56.6% of total determined allocations), followed by a combination of both ($431M, 27.3%), and lastly, anthropogenic causes ($254M, 16.1%; Table S1). There were no apparent trends in Congressional allocations by cause or region, although extreme environmental events were either partially or fully attributed to 84% of all Congressional allocations. In terms of revenue loss to fisheries, anthropogenic causes led to $1.8B (56.4%) in losses, although this was almost entirely driven by overfishing in the Alaska snow crab fishery (four approved disasters in total). Environmental causes resulted in an additional $900M (27.9%) in losses, and $505M (15.7%) in losses were attributed to a combination of anthropogenic and environmental causes (Table S2).

*Federal timelines*

The average time to fully process a disaster declaration was approximately 2.1 years (± 1.4 years SD), with a maximum total process time of six years, and one disaster request from 2005 that remains undetermined. The time period from the disaster occurrence to the formal request filing averaged 6.4 months (± 12.0 months SD), with 66.2% of requests being filed within 1 year after the disaster, and 87.7% filed within 2 years after the disaster. Once the request was filed, determination time (time between steps 2 and 3 of the 6-step process) lasted as long as 4.0 years (mean of 8.3 ± 8.7 months SD). One disaster approval occurred 92 days before the request was formally filed (disaster number 29: Hurricane Katrina).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Cause | Alaska | Greater Atlantic | Pacific Islands | Southeast | West Coast | To be determined | Total |
| Anthropogenic | $82,000,000 | $132,996,669 |  | $30,940,000 | $7,600,000 |  | $253,536,669 |
| Environmental | $174,292,189 | $41,572,622 | $1,140,000 | $505,938,343 | $170,723,211 |  | $893,666,365 |
| Combination of Both | $75,588,349 | $36,600,000 |  | $37,098,200 | $281,802,589 |  | $431,089,138 |
| To be determined |  |  |  |  |  | $414,103,069 | $414,103,069 |
| Total | $331,880,538 | $211,169,291 | $1,140,000 | $573,976,543 | $460,125,800 | $414,103,069 | $1,992,395,241 |

**Table S1.** Total U.S. Congressional fishery disaster assistance (2019 USD) by cause and by federal fisheries management region. One additional disaster had an allocation amount that was not reported, but the request letter cited economic impacts of $53.8-94.2M. Anthropogenic causes include pollution and overfishing; environmental causes include marine heatwaves, harmful algal blooms, hurricanes, extreme drought, etc.; and a combination often includes multiple causes, such as overfishing, pollution, flooding, marine heatwaves, and low salmon returns.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Cause | Alaska | Greater Atlantic | Pacific Island | Southeast | West Coast | Total |
| Anthropogenic | $1,629,023,913 | $156,252,205 |  | $19,344,227 | $16,669,638 | $1,821,289,983 |
| Environmental | $460,804,419 | $7,525,113 | $244,000 | $319,003,223 | $112,420,965 | $899,997,721 |
| Combination of Both | $46,055,192 |  |  | $5,326,946 | $453,935,310 | $505,317,448 |
| Total | $2,135,883,525 | $163,777,318 | $244,000 | $343,674,396 | $583,025,913 | $3,226,605,152 |

**Table S2.** Total revenue losses (2019 USD) by cause and by federal fisheries management region during disaster years.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Response | Model Method | Model Formulation | Intercept(s) | Year Effect | RE Variance | AIC |
| Disaster Determinations | Poisson GLMM | ~ Determination.Year + (1|Management.Zone) | -0.36 (0.14) | 0.42 (0.12), p<0.0008 | 0.014 | 226.4 |
| Disaster Determinations | Poisson GLM | ~ Determination.Year | 0.94 (0.13) | 0.38 (0.13), p<0.003 | NA | 113.7 |
| Ongoing Disasters | Poisson GLMM | ~ Impact.Year + (1|Management.Zone) | -0.36 (0.14) | 0.26 (0.10), p<0.01 | 0.01 | 259.2 |
| Ongoing Disasters | Poisson GLM | ~ Impact.Year | 0.94 (0.13) | 0.38 (0.11), p<0.0003 | NA | 121.3 |
| Disaster Cause | Ordinal logistic GLMM | ~ Determination.Year + (1|Management.Zone) | NAnthropogenic|Combination of Both: -2.1 (0.54) Combination of Both|Environmental: -0.28 (0.45) | 0.94 (0.27), p<0.0006 | 0.51 | 130.1 |
| Disaster Cause | Ordinal logistic GLM | ~ Determination.Year | Anthropogenic|Combination of Both: -1.94 (0.36) Combination of Both|Environmental: -0.281 (0.26) | 0.87 (0.25), p<0.0004 | NA | 130.5 |

**Table S3.** Mixed and fixed effects formulations and parameter estimates for models of disaster occurrence and causes across years. The model formulation column reflects model specification in the R programming environment. In each of the parameter columns (Intercept and Year Effect) we report mean first, and standard error in parentheses. For the Year Effect parameter (parameter of interest) we report p-values. The RE Variance column reports the model estimated random effects variance, when appropriate. The final column reports Akaike information criterion (AIC) values for each model instance.

**Table S4.** Summary table of Federal Fishery Disaster economic impact findings for approved disasters; “Confidence in Revenue Data” describes how well the landings and revenue data obtained for each disaster fits both the spatial scale of the disaster, as well as the management entity impacted by the disaster. Disasters 88 and 91-96 are not shown because they are still pending (as of Aug 21, 2020).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Disaster Number | Fishery/ (ies) | Management Zone | Determination Year | Disaster Cause | Appropriation (2019 USD) | Net Revenue Change (2019 USD) | Confidence in Revenue Data | Revenue Data Source(s)/ Notes\* |
| 90 | Pacific Sardine | West Coast | 2019 | Envr | $2,263,282 | ($1,687,134) | Medium | NOAA FOSS; no 2018 or 2019 data |
| 89 | Multi spp | Southeast | 2019 | Envr |  | N/A |  |  |
| 87 | Red Sea Urchin | West Coast | 2019 | Envr | $3,395,930 | ($4,020,219) | High | CDFW, PacFIN |
| 86 | Chinook Salmon | West Coast | 2019 | Combo | $2,270,589 | N/A |  |  |
| 85 | Sockeye Salmon | Alaska | 2019 | Combo | $10,533,580 | ($12,785,858) | Medium | Request letter; data is thorough |
| 84 | Multi spp | Southeast | 2018 | Envr | $8,037,120 | ($17,602,000) | Medium | 2018 data not available through NOAA FOSS; data is from NCDMF |
| 83 | Multi spp | Southeast | 2018 | Envr | $8,124,480 | ($13,478,043) | High | FFWCC |
| 82 | Penaeid Shrimp (Multi spp) | Southeast | 2019 | Envr | $7,528,781 | ($392,817) | High | GDNR and NCDENR |
| 81 | Pacific Cod | Alaska | 2019 | Combo | $24,904,769 | ($1,265,553) | High | ADFG for only the gulf |
| 80 | Coho and Chinook | West Coast | 2018 | Envr | $1,720,160 | ($1,702,615) | Low | Request letter |
| 79 | Multi spp | Southeast | 2018 | Envr | $14,503,074 | $8,567,582 | High | NOAA FOSS; revenue increase |
| 78 | Coho Salmon | West Coast | 2018 | Envr | $1,008,800 | ($450,486) | Low | Determination letter; unclear if "economic loss" is only landings |
| 77 | Multi spp | Southeast | 2018 | Envr | $69,407,687 | ($112,360,000) | High | NOAA press release |
| 75 | Pacific Sardine | West Coast | 2018 | Envr | $1,705,600 | ($6,857,471) | High | NOAA FOSS |
| 74 | Chinook Salmon | West Coast | 2018 | Envr | $9,241,440 | ($24,689,000) | Low | OR and CA request letter; no tribal data |
| 73 | Coho and Pink Salmon | West Coast | 2018 | Envr | $4,010,240 | ($1,736,733) | Low | Data taken from 3 out of 7 request letters and extrapolated out |
| 72 | Pink Salmon | Alaska | 2017 | Envr | $59,743,012 | ($121,986,123) | Medium | NOAA FOSS; includes the Yukon management area |
| 71 | Ocean Salmon Troll | West Coast | 2017 | Envr | $884,465 | ($1,092,398) | High | PFMC 2018 Review of Ocean Salmon Fisheries |
| 70 | Chinook Salmon | West Coast | 2017 | Envr | $4,096,798 | N/A |  |  |
| 69 | Dungeness Crab | West Coast | 2017 | Envr | $1,570,071 | ($3,300,000) | Low | Request letter; did not provide 5-year revenue, but did specify direct revenue loss |
| 68 | Coho, Chinook, Chum Salmon | West Coast | 2017 | Envr | $14,355,181 | ($743,741) | Low | Request letter; no economic estimate from Squaxin or Nisqually; estimate from Port Gamble or S'Klallam |
| 67 | Dungeness and Rock Crab | West Coast | 2017 | Envr | $27,345,104 | ($38,543,341) | High | CDFW and value from PacFIN |
| 66 | Salmon (Multi spp) | West Coast | 2017 | Envr | $15,483,355 | ($5,521,606) | Low | NOAA FOSS; data does not isolate Willapa and Grays; no tribal estimate |
| 65 | Sockeye Salmon | West Coast | 2017 | Envr | $2,997,584 | N/A |  |  |
| 64 | White Shrimp | Southeast | 2015 | Combo | $1,168,200 | ($4,402,333) | High | NOAA FOSS |
| 63 | Sockeye Salmon | West Coast | 2014 | Envr | $2,125,200 | ($4,463,200) | High | NOAA press release |
| 61 | Multi spp | Greater Atlantic | 2012 | Envr | $8,944,622 | $18,876,191 | High | NOAA FOSS; revenue increase |
| 59 | Oyster | Southeast | 2013 | Envr | $7,074,517 | $3,380,401 | High | FFWCC; Commercial Fisheries Landings Summaries report creator. Revenue increase. |
| 58 | Chinook Salmon | Alaska | 2012 | Envr | $23,709,177 | ($3,552,073) | Medium | ADFG; isolated by region but not tribal |
| 56 | Groundfish (Multi spp) | Greater Atlantic | 2012 | Anthro | $37,446,669 | ($12,464,203) | Medium | NOAA FOSS; in-house species selection |
| 55 | Multi spp | Southeast | 2012 | Envr | $12,473,684 | $9,499,690 | High | NOAA FOSS; revenue increase |
| 53 | Salmon (Multi spp) | West Coast | 2011 | Combo |  | ($548,565) | Medium | ODFW for all ports south of Cape Falcon |
| 51 | Multi spp | Pacific Island | 2012 | Envr | $1,140,000 | ($244,000) | High | Federal Register |
| 50 | Salmon (Multi spp) | West Coast | 2010 | Combo |  | N/A |  |  |
| 49 | Multi spp | Southeast | 2010 | Anthro | $30,940,000 | ($19,344,227) | High | NOAA FOSS |
| 47 | Sockeye Salmon | West Coast | 2011 | Combo | $2,340,000 | N/A |  |  |
| 46 | Shellfish (Multi spp) | Greater Atlantic | 2010 | Envr |  | ($5,798,530) | Medium | NOAA FOSS; in-house species selection |
| 45 | Chinook Salmon | Alaska | 2010 | Combo | $5,950,000 | ($1,536,772) | High | ADFG; isolated by region |
| 43 | Salmon (Multi spp) | West Coast | 2009 | Combo |  | ($15,479,882) | High | NOAA FOSS |
| 40 | Shellfish (Multi spp) | Greater Atlantic | 2008 | Envr | $6,100,000 | $6,239,125 | Medium | NOAA FOSS; in-house species selection |
| 39 | Multi spp | Southeast | 2008 | Envr | $57,340,000 | $21,304,713 | High | NOAA FOSS |
| 38 | Sockeye Salmon | West Coast | 2008 | Combo | $2,440,000 | N/A |  |  |
| 37 | Blue Crab | Greater Atlantic | 2008 | Combo | $36,600,000 | $14,827,134 | Medium | NOAA FOSS; does not isolate Chesapeake Bay |
| 36 | Salmon (Multi spp) | West Coast | 2008 | Combo | $207,400,000 | ($11,888,830) | Medium | NOAA FOSS; "rainbow trout" for steelhead. Did not isolate tribal |
| 33 | Snow Crab | Alaska | 2011 | Anthro | $11,700,000 | $73,954,209 | Medium | ADFG; does not isolate just Bering Sea |
| 31 | Snow Crab | Alaska | 2007 | Anthro | $12,700,000 | ($1,126,347) | Medium | ADFG; does not isolate just Bering Sea |
| 30 | Salmon (Multi spp) | West Coast | 2006 | Envr | $78,520,000 | ($541,845) | High | SWFSC technical report on the Klamath |
| 29 | Multi spp | Southeast | 2005 | Envr | $287,550,000 | ($169,681,222) | High | NOAA FOSS |
| 27 | Shellfish (Multi spp) | Greater Atlantic | 2005 | Envr | $2,700,000 | ($1,378,229) | Medium | NOAA FOSS; in-house species selection |
| 26 | Shellfish (Multi spp) | Greater Atlantic | 2005 | Envr | $2,700,000 | $20,118,331 | Medium | NOAA FOSS; in-house species selection |
| 25 | Snow Crab | Alaska | 2005 | Anthro | $13,500,000 | ($787,346,805) | Medium | ADFG; does not isolate just Bering Sea |
| 23 | Blue Crab | Southeast | 2003 | Combo | $7,100,000 | ($924,613) | High | NOAA FOSS |
| 22 | Snow Crab | Alaska | 2003 | Anthro | $14,200,000 | ($239,347,664) | Medium | ADFG FOSS; does not isolate just Bering Sea |
| 21 | Snow Crab | Alaska | 2001 | Anthro | $14,700,000 | ($289,342,969) | Medium | ADFG FOSS; does not isolate just Bering Sea |
| 19 | Sockeye Salmon | West Coast | 2002 | Combo |  | ($14,130,000) | Low | Request letter - specifies loss as "direct benefits"; assumed total over multi-year period |
| 18 | Salmon (Multi spp) | Alaska | 2000 | Combo | $34,200,000 | ($30,467,010) |  |  |
| 17 | Snow Crab | Alaska | 2000 | Anthro | $15,200,000 | ($300,618,829) | High | ADFG |
| 15 | Multi spp | Southeast | 1999 | Envr | $9,263,000 | $10,067,473 | Medium | NOAA FOSS; in-house species selection |
| 14 | American Lobster | Greater Atlantic | 2000 | Envr | $21,128,000 | ($348,354) | High | NOAA FOSS |
| 13 | Groundfish (Multi spp) | West Coast | 2000 | Anthro | $7,600,000 | ($16,669,638) | Medium | PacFIN Commercial Groundfish Catch Report for All Gear Types and All Areas |
| 12 | Spiny Lobster and Stone Crab | Southeast | 1999 | Envr | $7,536,000 | ($5,489,142) | High | FFWCC |
| 11 | Salmon (Multi spp) | Alaska | 1998 | Envr | $79,500,000 | ($143,208,616) | High | ADFG |
| 10 | Salmon (Multi spp) | West Coast | 1998 | Combo | $17,490,000 | ($19,862,009) | High | NOAA FOSS |
| 9 | Brown Shrimp | Southeast | 1998 | Combo | $3,180,000 | $45,284,096 | High | NOAA FOSS |
| 7 | Salmon (Multi spp) | Alaska | 1997 | Envr | $11,340,000 | ($192,057,608) | High | ADFG |
| 6 | Salmon (Multi spp) | West Coast | 1995 | Combo | $22,230,000 | ($30,668,064) | High | NOAA FOSS |
| 5 | Groundfish (Multi spp) | Greater Atlantic | 1995 | Anthro | $42,750,000 | ($74,261,441) | Medium | NOAA FOSS; no American Plaice |
| 4 | Multi spp | Southeast | 1995 | Combo | $25,650,000 | $139,911,239 | High | NOAA FOSS |
| 3 | Salmon (Multi spp) | West Coast | 1994 | Combo | $27,632,000 | ($361,357,960) | High | NOAA FOSS |
| 2 | Groundfish (Multi spp) | Greater Atlantic | 1994 | Anthro | $52,800,000 | ($58,047,168) | Medium | NOAA FOSS; no American Plaice |
| 1 | Multi spp | Southeast | 1995 | Envr | $17,100,000 | N/A |  |  |

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