

APPENDIX C

PROJECT DATABASE DOCUMENTATION

This document is intended to serve as a basic guideline for working with the Alaska/Arctic oil spill risk model database, which was constructed in Microsoft Access® 2010. This appendix contains the full list of tables and queries used in the calculation of relative risk scores, as well as a few supplementary tables and queries that provide additional results that may be of interest to the user. The goal of this document is to familiarize users with the data structures and variables contained in the model database. Additionally, this document provides users with a short guide on how to edit the database in order to update it with new or revised input data.

For the purposes of this Appendix, information for each table/query in the database is presented in the format below:

General Table/Query Grouping

Table or Query Name	
Field Name	Field description, including units where applicable. Query equations are not included; see main report for model algorithms.

DATA INPUT TABLES

General Information Tables

Table: AK Planning Regions	
AK_Region	Region name used in model analysis.
AK_Region_Code	Region code used in model analysis.
Orig_AK_Region	ADEC region each analysis region is contained within.
Orig_AK_Reg_Code	ADEC region code each analysis region is contained within.

Table: Periods	
Period ID	Period/season identification number used in model analysis.
Months Included	Months included within a given period/season ID.

Table: References	
Citation	Reference citation.
Reference_Code	Identifying code used within species abundance, impact, and recovery scoring tables. Allows for lookup of model data input references.

Oil Tables

Table: Oil_Class_Ranking	
Oil Type	The oil type being analyzed. Includes crude, distillate, heavy, and light.
Acute Toxicity	The acute toxicity score by oil type derived from the Washington Compensation Schedule (WCS). Scored on a 1 to 5 scale.
Mechanical Injury	The mechanical injury score by oil type derived from the WCS. Scored on a 1 to 5 scale.
Persistence	The oil persistence score by oil type derived from the WCS. Scored on a 1 to 5 scale.
Sum_Oil_Rank	An auto-calculated field summing the acute toxicity, mechanical injury, and oil persistence fields. This field is used in interim result (EVO) calculations. Potential scores range from 3 to 15.
Mean_Oil_Rank	An auto-calculated field determining the mean value of acute toxicity, mechanical injury, and persistence fields for each oil type. This result is not used in the model. Scores may range from 1 to 5.

Table: Oil_Spill_Rates_Frop	
Region	The Alaska region of model analysis. Incident rates are determined for each unique region/period/oil type.
Period Code	The region/season used in model analysis. Incident rates are determined for each unique region/period/oil type.
Oil Type	The oil type used in model analysis. Incident rates are determined for each unique region/period/oil type.
Frop	Current/historical incident frequency (# of incidents per year) by region/season/oil type.
Frop Future	Predicted 2025 incident frequency (# of incidents per year) by region/season/oil type.
Frop_1to5	An auto-calculated field that performs a 1 to 5 linear normalization on the Frop field.
Oil_Frop_1to5	A corrected version of the Frop_1to5 field. This field corrects the normalization for zero values. This field is used in model relative risk calculations.
Frop_Future_1to5	An auto-calculated field that performs a 1 to 5 linear normalization calculation on the Frop Future field.
Oil_Frop_Future_1to5	A corrected version of the Frop_Future_1to5 field. This field corrects the normalization calculation for zero values. This field is used in model future relative risk calculations.

Table: Oil_MMPD	
Region	The Alaska region of model analysis. Maximum Most Probable Discharge (MMPD) spill volumes are determined for each unique region/period/oil type.
Period Code	The region/season used in model analysis. MMPD spill volumes are determined for each unique region/period/oil type.
Oil Type	The oil type used in model analysis. MMPD spill volumes are determined for each unique region/period/oil type.
MMPD	Current/historical MMPD spill volume for each region, season, and oil type. Values presented in bbl.
MMPD_Future	The predicted 2025 MMPD spill volume for each region, season, oil type. Values presented in bbl.
MMPD_1to5	An auto-calculated field that performs a 1 to 5 linear normalization on the MMPD field.
Oil_MMPD_1to5	A corrected version of the MMPD_1to5 field. This field corrects the normalization for zero values. This field is used in model relative risk calculations.
MMPD_Future_1to5	An auto-calculated field that performs a 1 to 5 linear normalization on the MMPD_Future field.
Oil_MMPD_Future_1to5	A corrected version of the MMPD_Future_1to5 field. This field corrects the normalization for zero values. This field is used in model future relative risk calculations.

Table: Oil_WCD	
Region	The Alaska region of model analysis. Worst Case Discharge (WCD) spill volumes determined for each unique region/period/oil type. See Section 5.2 for more details.
Period Code	The region/season used in model analysis. WCD spill volumes determined for each unique region/period/oil type.
Oil Type	The oil type used in model analysis. WCD spill volumes determined for each unique region/period/oil type.
WCD	Current/historical WCD spill volume for each region, season, and oil type. Values presented in bbl.
Future_WCD	Predicted 2025 WCD spill volume for each region, season, and oil type. Values presented in bbl.
WCD_1to5	An auto-calculated field that performs a 1 to 5 linear normalization on the WCD field.
Oil_WCD_1to5	A corrected version of the WCD_1to5 field. This field corrects the normalization for zero values. This field is used in model relative risk calculations.
WCD_Future_1to5	An auto-calculated field that performs a 1 to 5 linear normalization on the WCD_Future field.
Oil_WCD_Future_1to5	A corrected version of the WCD_Future_1to5 field. This field corrects the normalization for zero values. This field is used in model future relative risk calculations.

Habitat Tables

Table: Habitats Marine Master List	
Marine_Habitat	The marine habitat type assessed. Each habitat type is assessed for each region.
Habitat_SubCategory	The subcategory of the marine habitat type. Subcategories do not play an active role in the model. Marine habitat subcategories include bottom habitats, SAV habitats, and ice habitats.
Marine_Habitat_Code	The associated habitat code for each marine habitat type.
Acute_Toxicity	The acute toxicity effects of oil on a given marine habitat type.
Mechanical_Toxicity	The mechanical injury effects of oil on a given marine habitat type.
Persistent_Toxicity	The environmental persistence effects of oil in a given marine habitat type.
Summed_Toxicity	An auto-calculated field summing the acute toxicity, mechanical injury, and persistence by marine habitat type. This field is used in interim result (EVO) calculations. Potential scores range from 3 to 15.
Mean_Toxicity	An auto-calculated field determining the mean value of acute toxicity, mechanical injury, and oil persistence by marine habitat type. This result is not used in the model. Potential scores range from 1 to 5.

Table: Habitat Marine Areas	
AK_Region_Name	The Alaska region of model analysis.
AK_Region_Code	The associated region code.
Marine_Substrate_Type	The marine habitat type being analyzed. Each habitat type is assessed for every region.
Marine_Substrate_Area	The areal coverage (km ²) of a given substrate type within a region. This does not vary with season.
AK_Region_Marine_Area	The total marine area (km ²) of an analysis region.
Marine_Substrate_Proportion	The proportion coverage of a given marine habitat type (substrate type) within a region.
Marine_Substrate_%	The percentage cover of a given marine habitat type (substrate type) within a region.

Table: Habitat Ice Areas	
AK_Region	The Alaska region of model analysis.
Period	The region/season used in model analysis. Ice coverage/concentration is determined for each unique region and period.
Ice_habitat_Type	The ice habitat type being analyzed.
Ice Area	The areal coverage (km ²) of the ice habitat type for the region and season of analysis.
AK_Region_Marine_Area	The total marine area (km ²) of an analysis region.
Ice_%	The percentage cover of a given ice habitat type within a region.
Ice Proportion	The proportion coverage of a given ice habitat type within a region.

Table: Habitats Shoreline Master List	
Shoreline_Type	The shoreline type of analysis. Each shoreline type is assessed for each region. There are no seasonal changes in shoreline type lengths.
Shoreline_Code	The code assigned to a given shoreline type for the AK/Arctic relative risk model.
ESI_Shoreline_Name	The NOAA ESI shoreline type associated with each AK/Arctic shoreline type classification.
ESI_Shoreline_Code	The ESI shoreline code associated with the Alaska/Arctic shoreline type classification.
WCS_Shoreline_Name	The WCS shoreline type associated with each AK/Arctic shoreline type classification.
WCS_Shoreline_Code	The WCS shoreline code associated with the Alaska/Arctic shoreline type classification.
Acute_Toxicity	The acute toxicity effects of oil on a given shoreline habitat type.
Mechanical_Toxicity	The mechanical injury effects of oil on a given shoreline habitat type.
Persistent_Toxicity	The environmental persistence effects of oil in given shoreline habitat type.
Sum_Toxicity	An auto-calculated field summing the acute toxicity, mechanical injury, and oil persistence by marine habitat type. This field is used in interim result (EVO) calculations. Potential scores range from 3 to 15.
Mean_Toxicity	An auto-calculated field determining the mean value of acute toxicity, mechanical injury, and oil persistence by marine habitat type. This result is not used in the model. Potential scores range from 1 to 5.

Table: Habitat Shoreline Lengths	
Region	The Alaska region of model analysis.
Shoreline	The code assigned to a given shoreline type for the AK/Arctic relative risk model.
Total Length (km)	The length (km) of a given shoreline with a region.
Region Total Length (km)	The total length (km) of shoreline within a region. This length is based on the total analyzed shoreline length of a given region.
Perc_of_Total_Region	The percentage a given shoreline type comprises of the total shoreline length of a region.

Table: Habitats Protected Areas	
AK_Region	The Alaska region of model analysis.
Region_Area	The total marine area (km ²) of an analysis region.
Region_Shoreline_Length	The total length (km) of shoreline within a region. This length is based on the total analyzed shoreline length of a given region (which does not include the length of areas with no shoreline data).
Protected_Area	The areal coverage (km ²) of protected areas within a region.
Protected_Shoreline_Length	The length (km) of protected shoreline within a region.
Protected_Area_Proportion	The proportion a protected area comprises of the total marine area of a region.
Protected_Area_%	The percentage a protected area comprises of the total marine area of a region.
Protected_Shoreline_Proportion	The proportion a protected shoreline comprises of the total shoreline length of a region.
Protected_Shoreline_%	The percentage a protected shoreline comprises of the total shoreline length of a region.

Table: Habitat_EFH	
Alaska_Region	The Alaska region of model analysis.
Alaska_Region_Code	The associated region code.
Species_EFH_2005	The total number of species with EFH present (for non-Arctic areas) within a region.
Stage_EFH_2005	The total number of species life stages with EFH present (for non-Arctic areas) within a region.
Species_Arctic_EA	The total number of species with EFH present (for Arctic areas) within a region.
Stage_Arctic_EA	The total number of species life stages with EFH present (for Arctic areas) within a region.
Total_Species	The sum of species EFH and Arctic species EFH by region.
Total_Life_Stages	The sum of species life stages for Arctic and non-Arctic areas. This value is carried forward to compute the EFH modifier used in the model.
EFH_Modifier	Auto-calculated field that determines the EFH modifier for the model algorithms.

Species Tables

Table: Species_Master_List	
Common_Name	The common name of species being assessed in the model.
Scientific_Name	Scientific name of species analyzed in the model.
Taxonomic_Group	The analysis grouping of the species. This is the grouping at which impact analyses and species interim results are completed. Taxonomic groups include 'fish and invertebrates', 'marine mammals and sea turtles', and 'birds.'
Taxonomic_Subgroup	The species selection grouping of the species. This is the grouping at which the initial species selection occurred.
Order	The taxonomic order of a species.
Family	The taxonomic family of a species.
Genus	The taxonomic genus of a species.
Species	The taxonomic species of a species.
Count	Not used in the current iteration of the model.

Table: Species_Abundance	
Common_Name	Species common name.
AK_Region	The region for which species abundance is being assessed.
AK_Region_Code	The associated region code.
Season	The season for which the species abundance is being assessed .
Abundance	The abundance score for a species in a given region and season. Abundance is scored from 0 (absent) to 1 (greatest relative abundance) in 0.2 intervals.
References	The references (coded) used in decision making for the abundance metric. See the References table within the database for the full references citations. Reference codes also available in Appendix D (Table 53).

Table: Species_Impact_B	
Common_Name	Bird species common name.
Night_Roosting	The 1 to 5 score assigned for the night roosting impact metric. Greater scores indicate greater species vulnerability.
Avoidance_Attraction	The 1 to 5 score assigned for the avoidance/attraction impact metric. Greater scores indicate greater species vulnerability.
Feeding_Method	The 1 to 5 score assigned for the feeding method impact metric. Greater scores indicate greater species vulnerability.
Site_Fidelity	The 1 to 5 score assigned for the site fidelity impact metric. Greater scores indicate greater species vulnerability.
Flocking	The 1 to 5 score assigned for the flocking impact metric. Greater scores indicate greater species vulnerability.
Nesting_Concentration	The 1 to 5 score assigned for the nesting concentration impact metric. Greater scores indicate greater species vulnerability.
Feeding_Specialization	The 1 to 5 score assigned for the feeding specialization impact metric. Greater scores indicate greater species vulnerability.
Sum_of_Bird_Impact_Scores	The sum of bird impact score parameters for the species being assessed. Used in calculation of final impact score. This is an auto-calculated field.
Final_Impact_Score	Bird impact score used in calculation of SVS metric. This is an auto-calculated field.

Table: Species_Impact_FandI	
Common_Name	Fish and invertebrate species common name.
Egg_Location	The 1 to 5 score assigned for the egg location impact metric. Greater scores indicate greater species vulnerability.
Larval_Location	The 1 to 5 score assigned for the larval location impact metric. Greater scores indicate greater species vulnerability.
Juvenile/Adult_Location	The 1 to 5 score assigned for the juvenile/adult location impact metric. Greater scores indicate greater species vulnerability.
Feeding_Method	The 1 to 5 score assigned for the feeding method impact metric. Greater scores indicate greater species vulnerability.
Movements	The 1 to 5 score assigned for the movement impact metric. Greater scores indicate greater species vulnerability.
Site_Fidelity	The 1 to 5 score assigned for the site fidelity impact metric. Greater scores indicate greater species vulnerability.
Feeding_Specialization	The 1 to 5 score assigned for the feeding specialization impact metric. Greater scores indicate greater species vulnerability.
Aggregation	The 1 to 5 score assigned for the aggregation impact metric. Greater scores indicate greater species vulnerability.
Sum_of_Fish_and_Invert_Impact_Scores	The sum of fish and invertebrate impact score parameters for the species being assessed. Used in calculation of final impact score. This is an auto-calculated field.
Final_Impact_Score	Fish and invertebrate impact score used in calculation of SVS metric. This is an auto-calculated field.

Table: Species_Impact_MandT	
Common_Name	Marine mammal and sea turtle species common name.
Habitat_Use_in_AK	The 1 to 5 score assigned for the habitat use impact metric. Greater scores indicate greater species vulnerability.
Site_Fidelity	The 1 to 5 score assigned for the site fidelity impact metric. Greater scores indicate greater species vulnerability.
Feeding_Method	The 1 to 5 score assigned for the feeding method impact metric. Greater scores indicate greater species vulnerability.
Avoidance_Attraction	The 1 to 5 score assigned for the avoidance/attraction impact metric. Greater scores indicate greater species vulnerability.
Fur_Bearing	The 1 to 5 score assigned for the fur bearing impact metric. Greater scores indicate greater species vulnerability.
Aggregation	The 1 to 5 score assigned for the aggregation impact metric. Greater scores indicate greater species vulnerability.
Feeding+Specialization	The 1 to 5 score assigned for the feeding specialization impact metric. Greater scores indicate greater species vulnerability.
Sum_Of_Mammal_and_Turtle_Impact_Scores	The sum of mammal and turtle impact score parameters for the species being assessed. Used in calculation of final impact score. This is an auto-calculated field.
Final_Impact_Score	Mammal and turtle impact score used in calculation of SVS metric. This is an auto-calculated field.

Table: Species_Recovery	
Common_Name	Species common name.
Conservation/Population_Status	The 1 to 5 score assigned for the conservation/population status recovery metric. Greater scores indicate greater species vulnerability.
Reproductive_Potential	The 1 to 5 score assigned for the reproductive potential recovery metric. Greater scores indicate greater species vulnerability.
Range	The 1 to 5 score assigned for the range recovery metric. Greater scores indicate greater species vulnerability.
Total_Species_Recovery_Score	The sum of recovery score parameters for the species being assessed. Used in calculation of final recovery score modifier. This is an auto-calculated field.
Recovery_Modifier_Score	Recovery modifier score used in calculation of SVS metric. This is an auto-calculated field.

Supplementary Tables (Not Used as Inputs to Model Calculations)

Table: Habitat_ESI_AllCodes	
Region	The Alaska region of model analysis.
ESI Class	The ESI code of shoreline assessed. ESI codes broken into all available ESI codes.
ESI Kilometers	The length (km) of an ESI class shoreline with the analysis region.
Region Shoreline Length	The total length (km) of shoreline within a region. This length is based on the total analyzed shoreline length of a given region ((which does not include the length of areas with no shoreline data).
ESI Percentage	The percentage a given ESI shoreline type comprises of the total shoreline length of a region.

Table: Habitat_ESI_General_Codes	
Region	The Alaska region of model analysis.
ESI Code	The ESI code of shoreline assessed. ESI codes generalized into overarching shoreline types (e.g., 1A, 1B, and 1C all wrapped into code 1).
ESI Length	The length (km) of an ESI class shoreline with the analysis region.
Region Length	The total length (km) of shoreline within a region. This length is based on the total analyzed shoreline length of a given region.
ESI Percentage	The percentage a given ESI shoreline type comprises of the total shoreline length of a region.

Table: Species_Abundance_Rationales	
Species	The species for which abundance rationale is described.
Abundance Rationale	A short description of the rationale used in assigning abundance scores to a species. Describes general seasonal and regional trends in species movements and abundances. Does not describe the reasoning for every exact region and season combination.
References	The references (coded) used in decision making for abundance metric. See the References table within the database for references the codes refer to. Reference codes also available in Appendix D (Table 53).

INTERIM RESULTS QUERIES*Species Queries*

Query: Bird Species Vulnerability	
Bird Vulnerability	Auto-calculation of each bird species vulnerability based on abundance, impact score, and recovery score.
Query: Bird Region Season Vulnerability	
SumOfBird_Vulnerability	Sums bird vulnerability scores by each region. All bird vulnerability scores within a single region/season combination are summed.
Query: BVS_Max	
MaxOfSumOfBird_Vulnerability	Determines maximum value of any region and season in SumOfBird_Vulnerability.
Query: BVS	
BVS	Normalizes SumOfBird_Vulnerability to a 0 to 1 scale.
Query: Fish and Invert Species Vulnerability	
FandI_Vulnerability	Auto-calculation of each fish and invertebrate species vulnerability based on abundance, impact score, and recovery score.
Query: Fish and Invert Region Season Vulnerability	
SumOfFandI_Vulnerability	Sums fish and invertebrate vulnerability scores by each region. All fish and invertebrate vulnerability scores within a single region/season combination are summed.
Query: FVS_Max	
MaxOfSumOfFandI_Vulnerability	Determines maximum value of any region season in SumOfFandI_Vulnerability.
Query: FVS	
FVS	Normalizes SumOfFandI_Vulnerability to a 0 to 1 scale.
Query: Mammal and Turtle Vulnerability	
MandT_Vulnerability	Auto-calculation of each mammal and turtle species vulnerability based on abundance, impact score, and recovery score.
Query: Mammal and Turtle Region Season Vulnerability	
SumOfMand T_Vulnerability	Sums mammal and turtle vulnerability scores by each region. All mammal and turtle vulnerability scores within a single region/season combination are summed.
Query: MTVS_Max	
MaxOfSumOfMandT_Vulnerability	Determines maximum value of any region season in query SumOfMandT_Vulnerability.
Query: MTVS	
MTVS	Normalizes SumOfMandT_Vulnerability to a 0 to 1 scale.

Habitat Queries

Query: Bottom Habitat Vulnerabilities	
Bottom_Habitat_Vulnerability	Calculates the bottom habitat vulnerability of each marine habitat type within each region.
Query: Summed Bottom Habitat Vulnerabilities	
SumOfBottom_Habitat_Vulnerability	Sums bottom habitat vulnerability scores by each region. All bottom habitat vulnerability scores within a single region are summed.
Query: Shoreline Vulnerability	
Sum_Shoreline_Tox	Calculates the shoreline habitat vulnerability of each marine habitat type within each region.
Query: Summed Shoreline Vulnerabilities	
SumOfSum_Shoreline_Tox	Sums shoreline habitat vulnerability scores by each region. All shoreline habitat vulnerability scores within a single region are summed.
Query: Ice Vulnerabilities	
ICE_Vulnerability	Calculates the ice habitat vulnerability of each marine habitat type within each region.
Summed Ice Vulnerabilities	
SumOfICE_Vulnerability	Sums ice habitat vulnerability scores by each region and season. All ice habitat vulnerability scores within a single region/season combination are summed.
Query: HVS	
HVS	Calculates the raw habitat vulnerability score based on marine habitats, shoreline habitats, ice habitats, and protected areas for each region/season combination.
Query: HVS_Max	
MaxOfHVS	Calculates the maximum region/season HVS score from the HVS query.

Environmental Vulnerability Results Queries

Query: EV	
EV	Calculates Environmental Vulnerability (EV) from HVS, MTVS, BVS, and FVS.

Query: EVO	
EVO	Calculates oil-type-modified environmental vulnerability (EVO) from EV and Sum_Oil_Rank.

Query: EVO_1to5	
EVO_1to5	A hard coded calculation that performs a 1 to 5 linear normalization on EVO.

FINAL RELATIVE RISK RESULTS QUERIES

Key Results Queries

Query: Risk_MMPD_Calcs	
Risk	Calculates MMPD relative risk based on oil spill volume, oil spill rates, and EVO. Risk is calculated for each region, season and oil type combination.

Query: Risk_MMPD_Summed	
Risk	Sums MMPD relative risk from 'Risk_MMPD_Calcs' by region and season.

Query: Risk_MMPD_Region_Means	
Risk	Calculates mean MMPD relative risk from 'Risk_MMPD_Summed' by region across all periods.

Query: Risk_WCD_Calcs	
Risk	Calculates WCD relative risk based on oil spill volume, oil spill rates, and EVO. Risk is calculated for each region, season and oil type combination.

Query: Risk_WCD_Summed	
Risk	Sums WCD risk from 'Risk_WCD_Calcs' by region and season.

Query: Risk_WCD_Region_Means	
Risk	Calculates mean WCD risk from 'Risk_WCD_Summed' by region across all periods.

Additional Results Queries

Query: Final Species Vulnerabilities	
Common_Name	Species analyzed for a given region/season.
AK_Region	Region for which species vulnerability is calculated.
Season	Season/period for which species vulnerability is calculated.
Abundance	The abundance score for the species in a given region/season combination.
Final_Impact_Score	Impact score for the species analyzed.
Recovery_Modifier_Score	Recovery score for the species analyzed.
Species_Vulnerability	Calculated vulnerability for a species in a given region/season.
SpeciesRecovery_Impact	The product of a species impact and recovery scores. This is an assessment of species vulnerability without abundance. Therefore it does not change by season.

Query: Risk_No_Rates_Calcs	
MMPD Risk	Calculates relative risk based on MMPD oil spill volume and EVO (no incident rates are included). Oil spill rates are omitted from this calculation. Risk is calculated for each region, season and oil type combination.
WCD Risk	Calculates relative risk based on WCD oil spill volume and EVO (no incident rates are included). Oil spill rates are omitted from this calculation. Risk is calculated for each region, season and oil type combination.

Query: Risk_No_Rates_Summed	
SumOfMMPD Risk	Sums relative risk from 'MMPD Risk' from Risk_No_Rates_Calcs query by region and season. Risk scores are independent of incident rate.
SumOfWCD Risk	Sums relative risk from 'WCD Risk' from Risk_No_Rates_Calcs query by region and season. Risk scores are independent of incident rate.

Query: Risk_No_Rates_Region_Means	
AvgOfSumOfMMPD Risk	Calculates mean relative risk from 'SumOfMMPD Risk ' by region across all periods. Risk scores are independent of incident rate.
AvgOfSumOfWCD_Risk	Calculates mean relative risk from 'SumOfWCD Risk ' by region across all periods. Risk scores are independent of incident rate.

Query: Risk_No_Volume_Calcs	
Risk	Calculates relative risk based on spill incident rates and EVO. Oil spill volumes are omitted from this calculation. Risk is calculated for each region, season and oil type combination.

Query: Risk_No_Volume_Summed	
Risk	Sums relative risk from 'Risk' from Risk_No_Volume_Calcs query by region and season. Risk scores are independent of spill volumes.

Query: Risk_No_Volume_Region_Means	
Risk	Calculates mean relative risk from 'Risk' field of Risk_No_Volume_Summed query by region across all periods. Risk scores are independent of spill volumes.

EDITING DATA INPUT TABLES

All updates to the Alaska/Arctic relative risk model database are made to the data input tables (the above section). The update/edit of a value in a table does not require the "rerunning" of related queries. Simply opening the result queries in either the database or the Alaska Spill Risk Calculator tool will display the newly updated interim and/or final results.

Addition of new parameters to the model (such as additional species, regions, habitat types, etc.) requires manual inputs to several related/inter-connected tables. Model queries will not operate properly if data input tables are not all synchronized. While the addition of some parameters (e.g., habitat type) will require only the update of a few inter-connected tables, other more entwined parameters (e.g., region, season) will require the update many data input tables. Table 1 below lists the inter-connected database tables that must be updated when varying types of model parameters are added. When a model parameter is added, all fields within the "tables requiring addition/editing" column must be updated for the newly added parameter. Seasonally-differentiated tables (e.g., Habitat_Marine_Areas, Species_Abundance) must be updated for all seasons for an added model parameter.

Table 1. Model parameter edit requirements. When a model parameter (Column 1) is updated or added in the model database, various inter-related data input tables (Column 2) must be edited for the model to work properly. For instance, if a region is added to the model, that new region must be added to the region field of all tables found in column 2. Additionally, for every row added to each table with the new region, all other table fields must be populated with requisite data for the newly added region.

Model Parameter Added	Tables Requiring Addition/Editing
Region	<ul style="list-style-type: none"> • AK_Planning_Regions • Habitat_Marine_Areas • Habitat_Ice_Areas • Habitat_Shoreline_Lengths • Habitat_Protected_Area • Habitat_EFH • Species_Abundance
Season/Period	<ul style="list-style-type: none"> • Periods • Habitat_Ice_Areas • Species_Abundance • Oil_MMPD • Oil_WCD • Oil_Spill_Rates_Frop
Marine Habitat	<ul style="list-style-type: none"> • Habitats_Marine_Master_List • Habitat_Marine_Areas
Shoreline Habitat	<ul style="list-style-type: none"> • Habitats_Shoreline_Master_List • Habitat_Shoreline_Lengths
Species	<ul style="list-style-type: none"> • Species_Master_List • Species_Abundances • Species_Impact_x • Species_Recovery
Oil Type	<ul style="list-style-type: none"> • Oil_Class_Ranking • Oil_Spill_Rates_Frop • Oil_MMPD • Oil_WCD