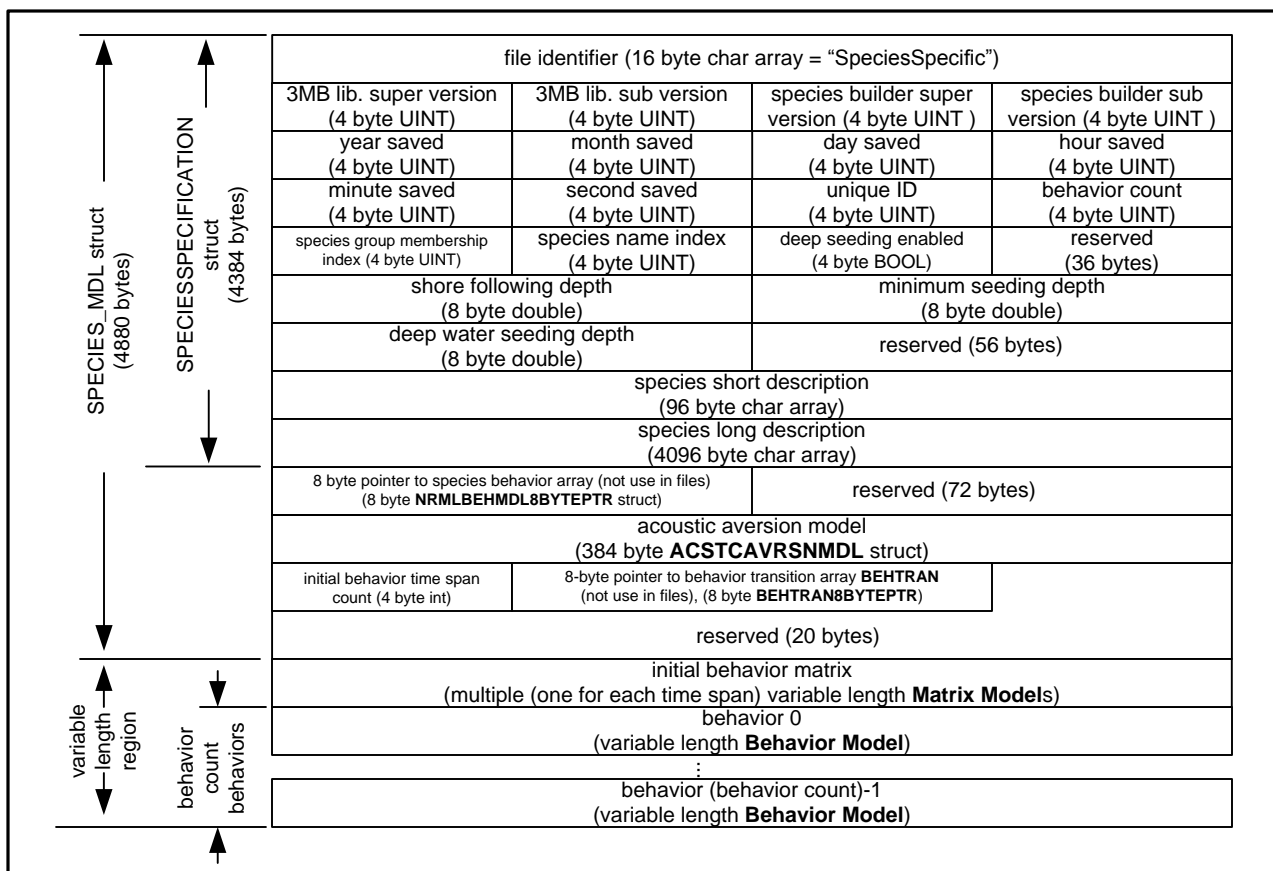


0000 0000

0000 0000

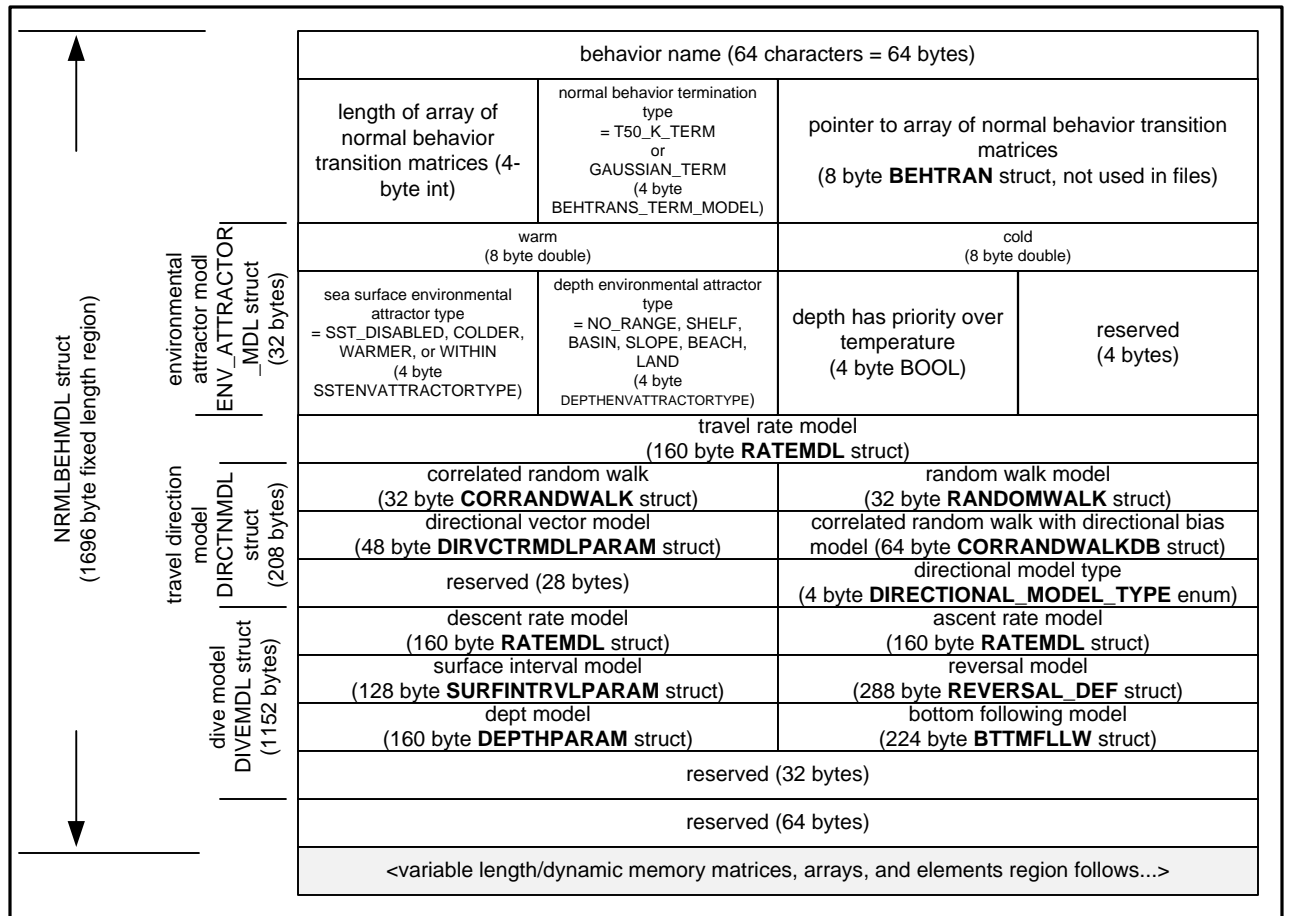


Species Model
Version 09.00.00

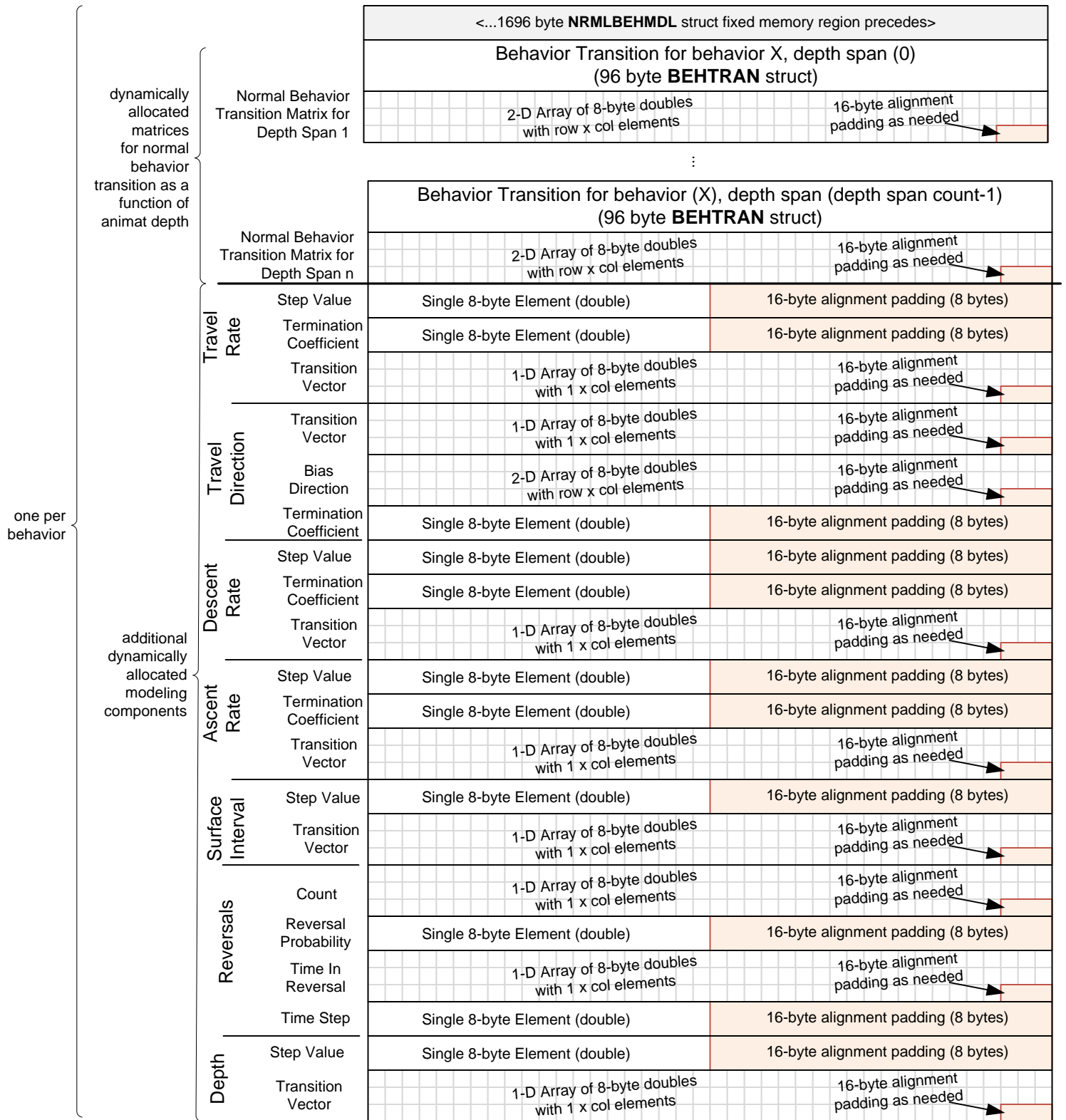
travel direction activates (4 byte BOOL)	travel rate activates (4 byte BOOL)	dive depth activates (4 byte BOOL)	surface interval activates (4 byte BOOL)
ascent rate activates (4 byte BOOL)	descent rate activates (4 byte BOOL)	reversal count activates (4 byte BOOL)	flat bottom dive activates (4 byte BOOL)
aversion behavior beaching depth (8 byte double)		pod breaks up activates (4 byte BOOL)	beaching activates (4 byte BOOL)
flat bottom dive activates (4 byte BOOL)	reserved (28 bytes)		
Gaussian travel rate model (32 byte GAUSS struct)		correlated random walk with directional bias model (64 byte CORRANDWALKDB struct)	
Gaussian reversal model (80 byte REVERSAL_GAUSS struct)		Gaussian surface interval model (32 byte GAUSS struct)	
Gaussian dive depth model (32 byte GAUSS struct)		Gaussian descent rate model (32 byte GAUSS struct)	
Gaussian ascent rate model (32 byte GAUSS struct)			

Acoustic Aversion Model
(ACSTCAVRSNMDL struct, 384 bytes)

one per
behavior



Behavior Model part 1 of 2



Behavior Model
 part 2 of 2
 (variable length region)
 Variable length/dynamic memory matrices, arrays, and elements
 region for a single behavior.

T-50 mean time in behavior (8 byte double)	slope coefficient (8 byte double)
reserved (16 byte)	
behavior transition (16 byte ARRAY struct)	behavior termination coefficient (16 byte ELEMENT struct)

BEHTRANSMDL struct (64 bytes)

max (8 byte double)	min (8 byte double)	
delta (8 byte double)	max enabled (4 byte BOOL)	min enabled (4 byte BOOL)
delta enabled (4 byte BOOL)	reserved (28 bytes)	

ENVATTRACTORMDL struct (64 bytes)

random model (32 byte RANDOM struct)	Gaussian model (GAUSS struct, 32 byte)	
vector model (16 byte RATEVCTRMDLPARAM)	model type (4 byte STANDARD_MODEL TYPE enum)	reserved (28 bytes)

RATEMDL struct (160 bytes)

transition vector (16 byte ARRAY struct)	step model (16 byte ELEMENT struct)
termination coefficient (16 byte ELEMENT struct)	reserved (16 byte)

RATEVCTRMDLPARAM struct (64 bytes)

termination coefficient (8 byte double)	reserved (24 bytes)
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RANDOMWALK struct (32 bytes)

perturbation (8 byte double)	termination coefficient (8 byte double)
reserved (16 byte)	

CORRANDWALK struct (32 byte)

perturbation (8 byte double)	direction of bias (8 byte double)
bias (8 byte double)	arc step (8 byte double)
termination coefficient (8 byte double)	reserved (24 byte)

CORRANDWALKDB struct (64 byte)

direction vector (16 byte ARRAY struct)
directional bias matrix (16 byte MATRIX struct)
termination coefficient (16 byte ELEMENT struct)

DIRVCTRMDLPARAM struct (48 bytes)

Gaussian model (32 byte GAUSS struct)		vector model (32 byte VCTRMDLPARAM struct)	
model type (4 byte STANDARD_MODEL _TYPE enum)	reserved (28-byte)		

SURFINTRVLPARAM struct (128 bytes)

random reversal model (48 byte REVERSAL_RND struct)		Gaussian reversal model (160 byte REVERSAL_GAUSS struct)	
reversal vector model (160 byte REVVCTRMDLPARAM struct)		dive rate model (32 byte GAUSS struct)	ascent rate model (32 byte GAUSS struct)
reversal dive rate type = NO_INDEPENDENT, INDEPENDENT, INDEPENDENT_DIVE_AND_ ASCENT (4-byte enum)	reverses (4 byte BOOL)	model type (4 byte STANDARD_MODEL _TYPE enum)	reserved (4 bytes)

REVERSAL_DEF struct (288 bytes)

The **matrix data** normally won't immediately follow the **MATRIX struct** in the file. Instead, it follows from within a region of dynamically allocated memory for data.

row count (4 byte INT32)	column count (4 byte INT32)	**double (4 byte pointer pointer)
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MATRIX struct (16 bytes)

2-D Array of 8-byte doubles with row x col elements		16-byte alignment padding as needed
--	--	--

Matrix Data (variable length)

Matrix Model (variable length)

The **array data** normally won't immediately follow the **array struct** in the file. Instead, it follows from within a region of dynamically allocated memory for data.

row count = 1 (4 byte INT32)	column count (4 byte INT32)	*double (4 byte pointer pointer)	16-Byte aligned padding (4 bytes)
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ARRAY struct (16 bytes)

1-D Array of 8-byte doubles with 1 x col elements		16-byte alignment padding as needed
--	--	--

Array Data (variable length)

Array Model (variable length)

row count = 1 (4 byte INT32)	column count = 1 (4 byte INT32)	value (8 byte double)
---------------------------------	------------------------------------	--------------------------

ELEMENT struct (16 bytes)

and
Element Model

probability of reversal (8 byte double)	Gaussian count model (32 byte GAUSS struct)
Gaussian time model (32 byte GAUSS struct)	reserved (8 Bytes)

REVERSAL_GAUSS struct (80 bytes)

min reversal count (4 byte int)	max reversal count (4 byte int)	reserved (8bytes)
Gaussian time model (32 byte GAUSS struct)		
probability of reversal (8 byte double)		reserved (8bytes)

REVERSAL_RND struct
(64 bytes)

random depth model (32 byte RANDOM struct)	
vector depth model (64 byte VCTRMDLPARAM struct)	
Gaussian depth model (32 byte GAUSS struct)	
model type (4 byte STANDARD_MODEL_TYPE enum)	reserved (28 Bytes)

DEPTHPARAM struct (160 bytes)

model type (4 byte BTTMFLLW_MDL_TYPE enum)	reserved (28 Bytes)
rate model (160 byte RATEMDL struct)	reserved (32 Bytes)

BTTMFLLW struct (224 bytes)

mean (8 byte double)	standard deviation (8 byte double)
termination coefficient (8 byte double)	reserved (8 byte double)

GAUSS struct (32 bytes)

maximum (8 byte double)	minimum (8 byte double)
termination coefficient (8 byte double)	reserved (8 byte double)

RANDOM struct (32 bytes)

array (16 byte ARRAY struct)	step value (16 byte ELEMENT struct)
reserved (32 bytes)	

VCTRMDLPARAM struct (64 bytes)

probability of reversal (16 byte ELEMENT struct)	reversal count array (16 byte ARRAY struct)
reversal time array (16 byte ARRAY struct)	time step (16 byte ELEMENT struct)

REVVCTRMDLPARAM struct (64 bytes)

0 = Gaussian,
1 = uniform random,
2 = vector model

STANDARD_MODEL_TYPE
(4 byte enum)

0 = No Bottom Following,
1 = No Special Bottom Following Dive Rate,
2 = Special Bottom Following Dive Rate

BTTMFLW_MDL_TYPE
(4 byte enum)

0 = random walk,
1 = vector model without biasing
2 = vector model with biasing
3 = correlated random walk
4 = correlated random walk with
directional biasing

DIRECTIONAL_MODEL_TYPE
(4 byte enum)

Reserved (64-bytes)	
depth span behavior transition for current behavior at current depth (16 bytes DEPTHSPAN struct)	Behavior Transition Matrix for current behavior and depth (16 byte MATRIX struct)

BEHTRAN struct (96 bytes)

shallow limit (4 byte int)	deep Limit (4 byte int)
Reserved (8 bytes)	

DEPTHSPAN struct (16 bytes)