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A Conceptual Model for Site-Level Ecology of the Giant Gartersnake (*Thamnophis gigas*) in the Sacramento Valley, California

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U.S. Department of the Interior
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Cover: An adult giant gartersnake (*Thamnophis gigas*). Photograph by Matt Meshriy, U.S. Geological Survey, 2011.

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Prepared in cooperation with the California Department of Water Resources

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Contents

Background 1
Study Objective 2
Methods 2
  Conceptual Model 2
  Populating Conditional Probability Tables 4
  Model Review and Revision 4
  Sensitivity and Scenario Analyses 6
Results and Interpretation 6
Acknowledgments 22
References Cited 23
Glossary 25
Appendix A. Narrative Description of Nodes, and Logic and Assumptions Underlying Conditional Probability Table Values 27
Appendix B. Conditional Probability Tables 33

Figures

Figure 1. Version 0.10a of the Bayesian network model for the giant gartersnake (*Thamnophis gigas*) in the Sacramento Valley, California 3
Figure 2. Version 1.00b of the Bayesian network model for the giant gartersnake (*Thamnophis gigas*), in the Sacramento Valley, California 5
Figure 3. Most likely states of all nodes in Bayesian network model given a finding of increasing population growth of giant gartersnakes (*Thamnophis gigas*) in the Sacramento Valley, California 7
Figure 4. Most likely states of all nodes in Bayesian network model given a finding of decreasing population growth of giant gartersnakes (*Thamnophis gigas*) in the Sacramento Valley, California 8
Figure 5. Most likely outcomes of the Bayesian network model for the giant gartersnake (*Thamnophis gigas*) in the Sacramento Valley, California, with ephemeral water-management conditions 14
Figure 6. Most likely outcomes of the Bayesian network model for the giant gartersnake (*Thamnophis gigas*) in the Sacramento Valley, California, with winter water-management conditions typical for wintering waterfowl management 15
Figure 7. Most likely outcomes of the Bayesian network model for the giant gartersnake (*Thamnophis gigas*) in the Sacramento Valley, California, with groundwater substitution water-management conditions (assuming groundwater applied during the summer as for summer water management) 16
Figure 8. Most likely outcomes of the Bayesian network model for the giant gartersnake (*Thamnophis gigas*) in the Sacramento Valley, California, with summer water-management conditions (that is, water only available during the summer as typical of rice agriculture) 17
Figure 9. Most likely outcomes of the Bayesian network model for the giant gartersnake (*Thamnophis gigas*) in the Sacramento Valley, California, with permanent water-management conditions (that is, water in marshes all year) 18
Figure 10. Best-case scenario in Bayesian network model for increasing population growth rate of giant gartersnake (*Thamnophis gigas*), in the Sacramento Valley, California 20
Figure 11. Worst-case scenario in Bayesian network model for decreasing population growth rate of giant gartersnake (*Thamnophis gigas*), in the Sacramento Valley, California 21

Tables

Table 1. Sensitivity analysis diagnostics applied to the Bayesian network model for population growth of giant gartersnakes (*Thamnophis gigas*) in the Sacramento Valley, California, with uninformative (uniform) priors on all parent nodes 9
Table 2. Sensitivity analysis diagnostics applied to the Bayesian network model for adult survival of giant gartersnakes (*Thamnophis gigas*) in the Sacramento Valley, California, with uninformative (uniform) priors on all parent nodes 10
Table 3. Sensitivity analysis diagnostics applied to the Bayesian network model for first-year survival of giant gartersnakes (*Thamnophis gigas*) in the Sacramento Valley, California, with uninformative (uniform) priors on all parent nodes 11
Table 4. Sensitivity analysis diagnostics applied to the Bayesian network model for fecundity of giant gartersnakes (*Thamnophis gigas*) in the Sacramento Valley, California, with uninformative (uniform) priors on all parent nodes 12
Table 5. Sensitivity analysis diagnostics applied to the Bayesian network model for habitat quality of giant gartersnakes (*Thamnophis gigas*) in the Sacramento Valley, California, with uninformative (uniform) priors on all parent nodes 13

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Background

Giant gartersnakes (*Thamnophis gigas*) comprise a species of semi-aquatic snakes precinctive to marshes in the Central Valley of California (Hansen and Brode, 1980; Rossman and others, 1996). Because more than 90 percent of their historical wetland habitat has been converted to other uses (Frayer and others, 1989; Garone, 2007), giant gartersnakes have been listed as threatened by the State of California (California Department of Fish and Game Commission, 1971) and the United States (U.S. Fish and Wildlife Service, 1993). Giant gartersnakes currently occur in a highly modified landscape, with most extant populations occurring in the rice-growing regions of the Sacramento Valley, especially near areas that historically were tule marsh habitat (Halstead and others, 2010, 2014).

In ricelands and managed marshes, many operational decisions likely affect the health and viability of giant gartersnake populations. Land-use decisions, including the management of water, aquatic vegetation, terrestrial vegetation, and co-occurring species, have the potential to affect giant gartersnakes. Little is known, however, about the effects of these types of decisions on the viability of giant gartersnake populations.

Bayesian network models are a useful tool to help guide decisions with uncertain outcomes. These models require the articulation of what experts think they know about a system, and facilitate learning about the hypothesized relations (Marcot and others, 2001; Uusitalo, 2007). Bayesian networks further provide a clear visual display of the model that facilitates understanding among various stakeholders (Marcot and others, 2001; Uusitalo, 2007). Empirical data and expert judgment can be combined, as continuous or categorical variables, to update knowledge about the system (Marcot and others, 2001; Uusitalo, 2007). Importantly, Bayesian network models allow inference from causes to consequences, but also from consequences to

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causes, so that data can inform the states of nodes (values of different random variables) in either direction (Marcot and others, 2001; Uusitalo, 2007). Because they can incorporate both decision nodes that represent management actions and utility nodes that quantify the costs and benefits of outcomes, Bayesian networks are ideally suited to risk analysis and adaptive management (Nyberg and others, 2006; Howes and others, 2010). Thus, Bayesian network models are useful in situations where empirical data are not available, such as questions concerning the responses of giant gartersnakes to management.

Study Objective

The objective of this project was to develop a conceptual model of site-specific ecology of the giant gartersnake in the Sacramento Valley of California. We chose to develop the model at a site-specific scale because that is the scale at which most management decisions are made and at which giant gartersnake responses can be quantified. Because we used a Bayesian network model, we also quantified uncertainty associated with different nodes affecting ecology of the giant gartersnake, and the strength of influence of different variables on population growth rates of giant gartersnakes. We view this as a preliminary step in an ongoing process to clarify and quantify the effects of management actions on giant gartersnake populations.

Methods

Conceptual Model

The first step in developing our Bayesian network model was to construct a conceptual model for ecology of the giant gartersnake at the site level for populations in the Sacramento Valley of California. We chose the site level because it focused on variables that could be determined through measurements in the field and manipulated by resource managers. We attempted to follow structural guidelines of Marcot and others (2006) to the extent possible—namely, keeping the number of parent nodes (variables that exert an influence on the variable of interest) to three or fewer, keeping the number of states (different values each variable can take) per node to five or fewer, and having no more than four levels in the model. Exceptions to these guidelines were that we used five parent nodes for habitat quality and four for prey availability; these exceptions were believed to be necessary to represent the complexity of suitable habitat and factors affecting prey availability for giant gartersnakes (fig. 1). Most nodes without parents (hereafter referred to as "parentless nodes;" variables that are not influenced by other variables in the model) were selected to be measurable in the field at a site. Exceptions to this guideline were competitor effects, which likely are complex for giant gartersnakes (for example, much intraguild predation [predators preying upon each other] occurs, and the community of competitors likely varies with snake size), and winter refuge availability, which is difficult to quantify in the field (fig. 1). This version of the model (Version 0.10a following the conventions of Marcot and others [2001]), was used as a starting point for initiating discussion and expert review. We used Netica™ 5.12 (Norsys Software Corporation, Vancouver, British Columbia, Canada) to construct and analyze the Bayesian network models.

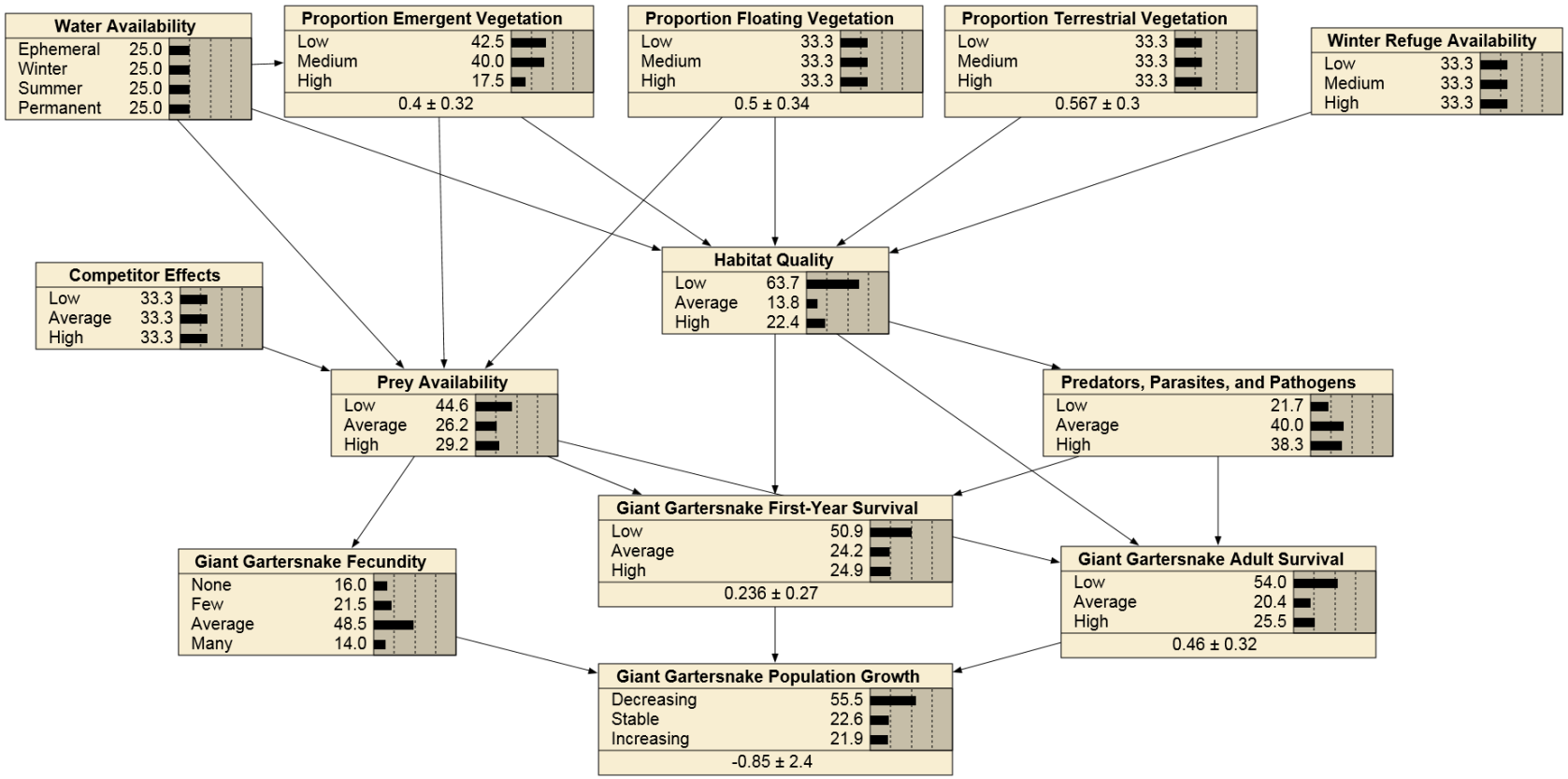

Figure 1. Version 0.10a of the Bayesian network model for the giant gartersnake (*Thamnophis gigas*) in the Sacramento Valley, California. The model is shown here with uniform priors on all parentless nodes.

Populating Conditional Probability Tables

Conditional probability tables (CPTs) govern the relations between parent nodes and their children (Marcot and others, 2001; Nyberg and others, 2006; Uusitalo, 2007). Because few data on the relations among nodes in the conceptual model exist, we largely relied on in-house expert opinion to populate CPTs. Where data existed in the literature, we attempted to include these effects in the CPTs. Whenever possible, we used data from the literature or personal experience to discretize continuous nodes into meaningful categories (appendix A). Conditional probability tables are presented in appendix B.

Model Review and Revision

We submitted Version 0.10a of the Bayesian network model for the giant gartersnake—including model structure, CPTs, and a narrative description of the definitions of nodes and assumptions about relations indicated in the CPTs—to a technical advisory committee of giant gartersnake experts from regulatory agencies and consultants assembled by the California Department of Water Resources. This committee reviewed the structure and logic of the models, and suggested the inclusion of additional nodes and states, as well as the modification of some relations. Changes to Version 0.10a included (1) the addition of several nodes (water quality, submerged vegetation, and other sources of mortality), (2) the addition of another state to the water availability node (groundwater), and (3) strengthening the influence of predation on first-year survival (see appendixes A and B). This revised model (Version 1.00b; fig. 2) then was analyzed for sensitivity of nodes of interest (demographic rates and habitat quality) to the values of other nodes and to examine most likely scenarios for positive and negative outcomes for giant gartersnake populations.

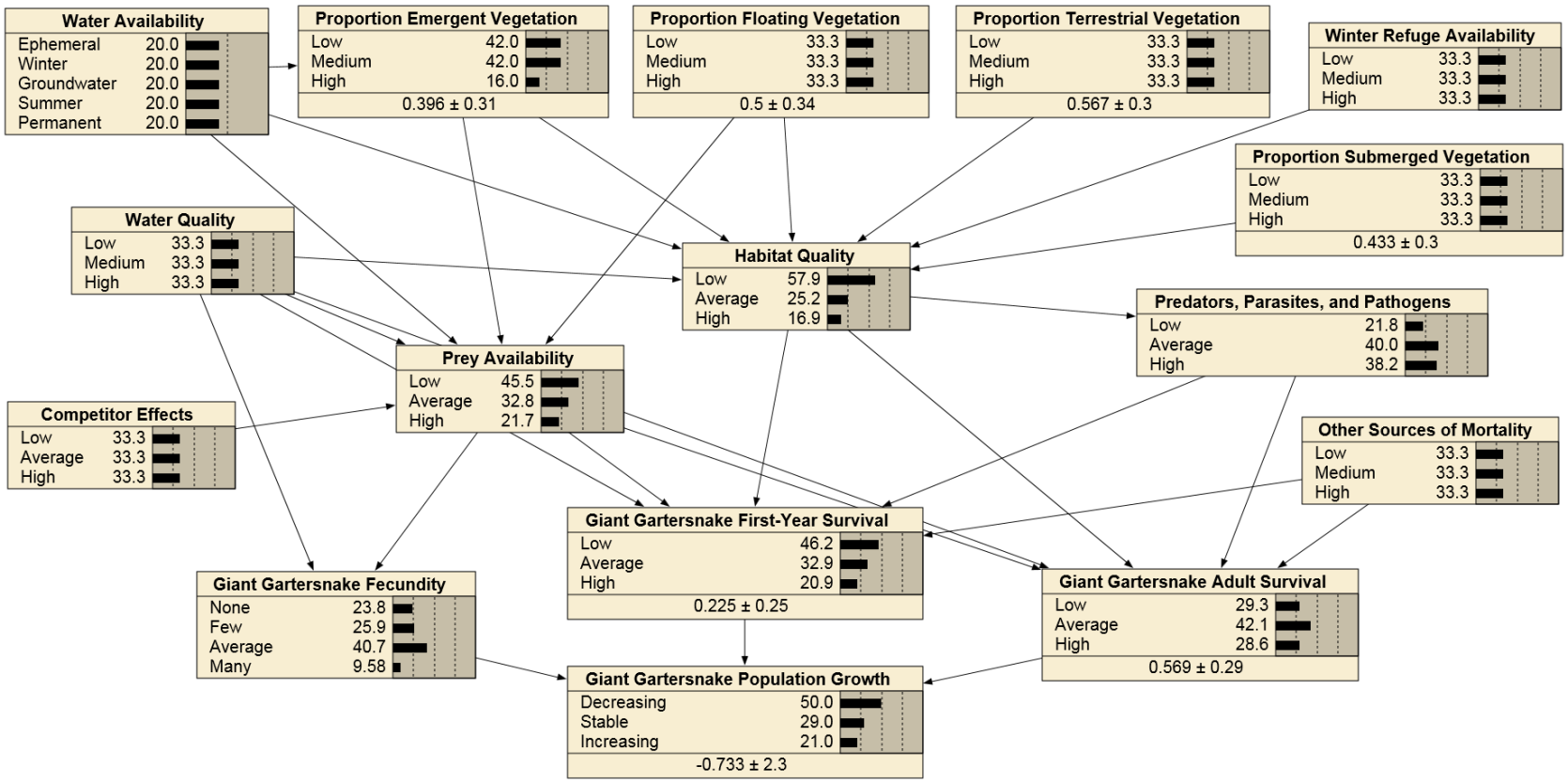

Figure 2. Version 1.00b of the Bayesian network model for the giant gartersnake (*Thamnophis gigas*), in the Sacramento Valley, California. This version of the model was subjected to sensitivity and scenario analyses. The model is shown here with uniform priors on all parentless nodes.

Sensitivity and Scenario Analyses

We used two built-in sensitivity analyses provided by Netica™ to examine the influence of each node on several nodes of interest: variance reduction and mutual information (also referred to as "entropy reduction"). Variance reduction examines the reduction in the uncertainty of a node, given that the value of another node is known; the greater the variance reduction, the more the nodes affect each other. Mutual information is a measure of the amount of information shared by two nodes; like variance reduction, the greater the mutual information contained in two nodes, the stronger their effects on one another. We were particularly interested in how findings at each of the nodes in the network affected beliefs about the nodes for demographic parameters (population growth rate, adult survival, first-year survival, and fecundity) and habitat quality. For all sensitivity analyses, we assumed uniform (uninformative) priors on all parentless nodes. We also used scenario analysis for several scenarios. In two scenarios, we examined the most likely values of parent nodes that produced decreasing or increasing populations of giant gartersnakes. In five scenarios, we examined the influence of different water-management scenarios (that is, ephemeral [water available only briefly, regardless of season], winter water, groundwater, summer water [May through August, as typically applied to rice fields], or permanent water) on giant gartersnake population growth while maintaining uniform (uninformative) priors on all other parentless nodes. Finally, we adjusted all parentless nodes to maximize the likelihood of increasing or decreasing giant gartersnake population growth in two additional scenarios.

Results and Interpretation

The scenario and sensitivity analysis provided several insights into giant gartersnake population growth. When we set population growth to increasing, the most likely states for other demographic parameters were high adult and first-year survival and average fecundity (fig. 3). States within most other nodes remained relatively uncertain, except that high prevalence of predators, parasites, and pathogens was unlikely; medium emergent vegetation was likely; and water availability was likely to be summer or permanent. Water quality also was likely to be high (fig. 3). In contrast, when we set population growth to decreasing, adult and first-year survival were likely to be low, and no recruitment of neonates was the most likely finding for fecundity (fig. 4). Habitat quality, prey availability, and proportion emergent vegetation were all likely to be low, but the prevalence of predators, parasites, and pathogens was likely to be high (fig. 4). The sensitivity analysis for the population growth of giant gartersnakes indicated that adult survival had the largest influence on population growth, followed by fecundity, first-year survival, and habitat quality (table 1). Of the remaining variables, only prey availability; predators, parasites, and pathogens; and water availability had appreciable influence on giant gartersnake population growth, although water quality and proportion emergent vegetation had much more influence than the remaining nodes (table 1).

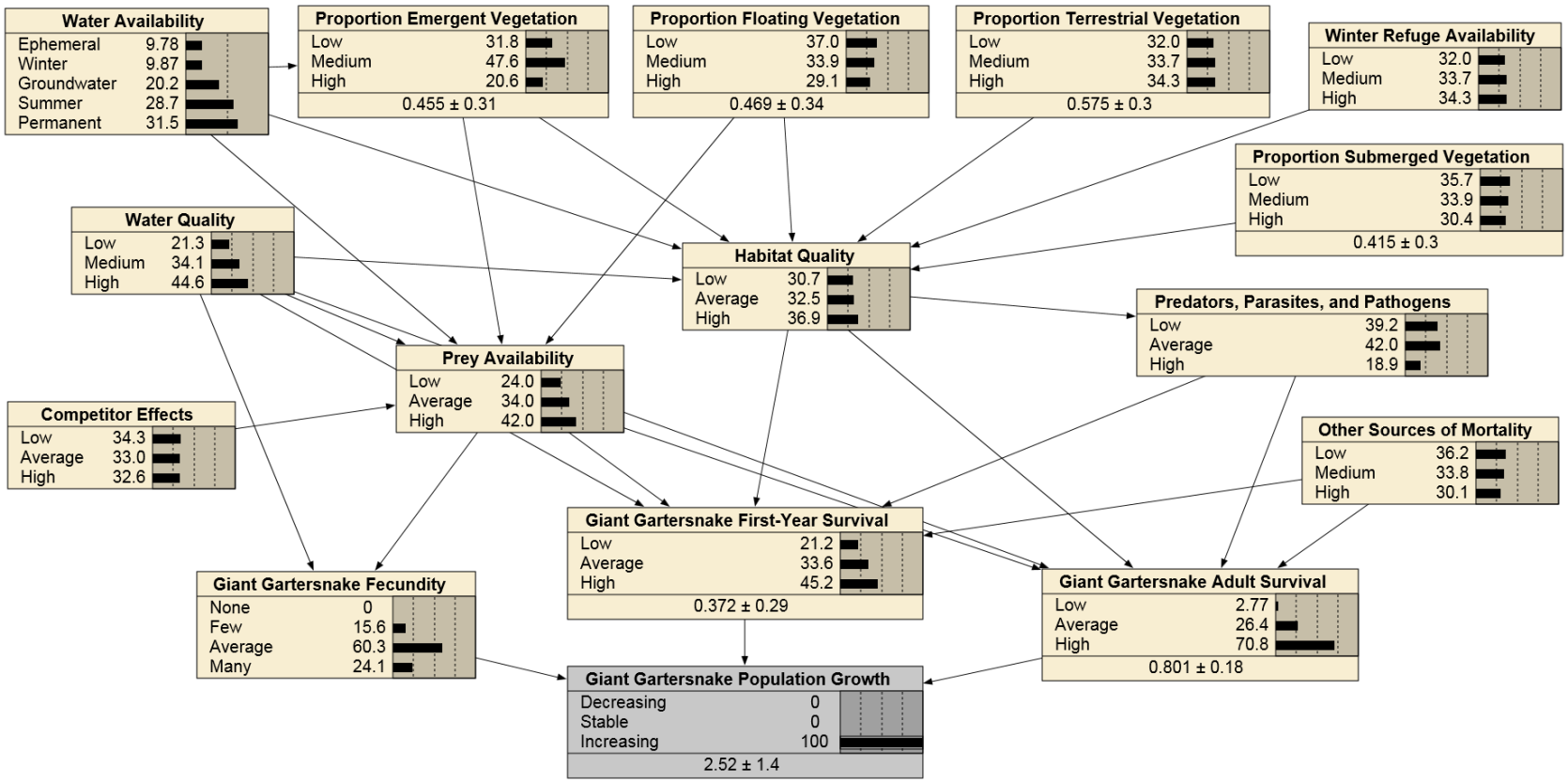

Figure 3. Most likely states of all nodes in Bayesian network model given a finding of increasing population growth of giant gartersnakes (*Thamnophis gigas*) in the Sacramento Valley, California. All parentless nodes were given uninformative (uniform) priors. Values in gray nodes were set at a fixed value to examine their influence on the remaining nodes in the network.

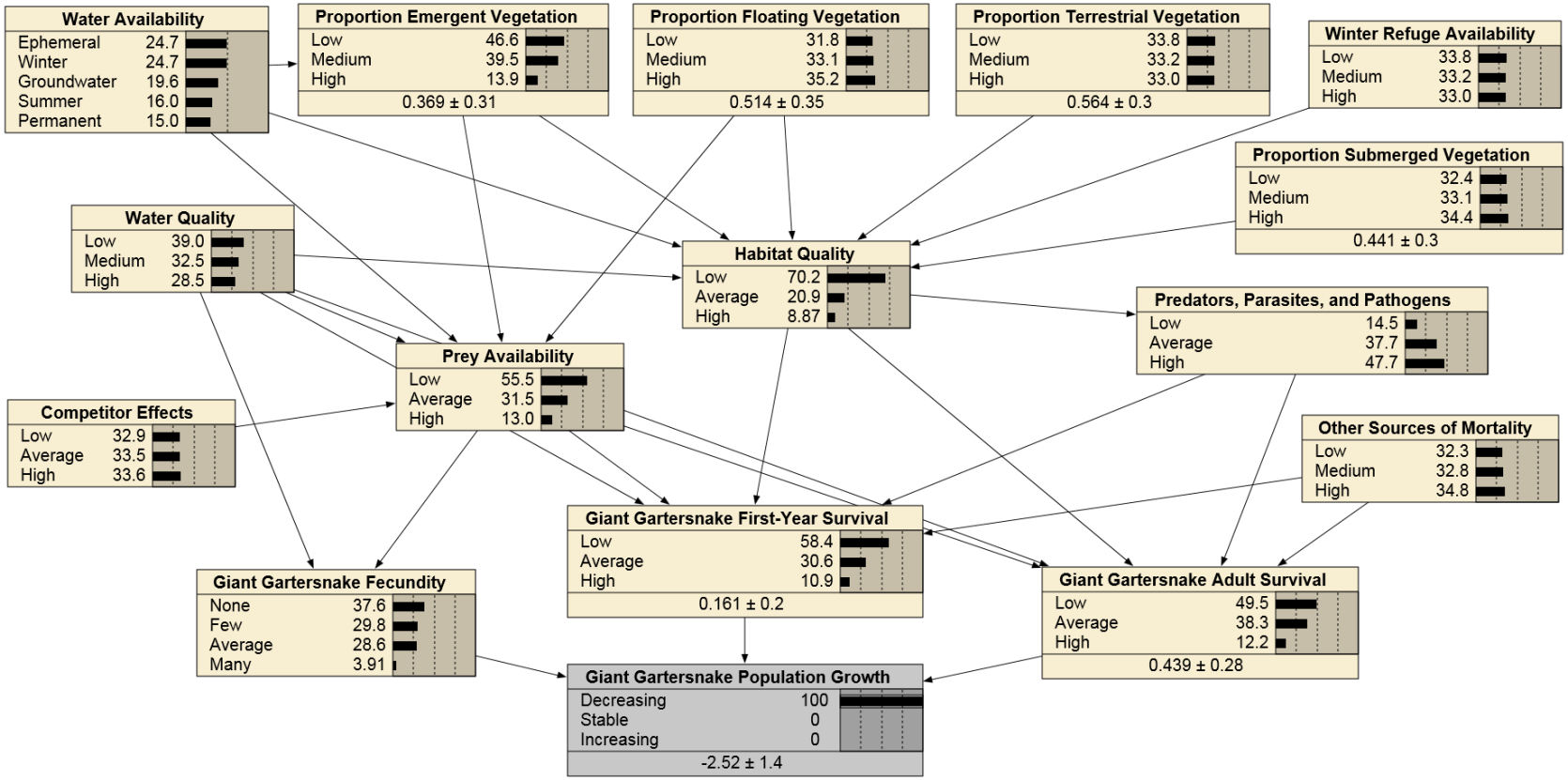

Figure 4. Most likely states of all nodes in Bayesian network model given a finding of decreasing population growth of giant gartersnakes (*Thamnophis gigas*) in the Sacramento Valley, California. All parentless nodes were given uninformative (uniform) priors. Values in gray nodes were set at a fixed value to examine their influence on the remaining nodes in the network.

Table 1. Sensitivity analysis diagnostics applied to the Bayesian network model for population growth of giant gartersnakes (*Thamnophis gigas*) in the Sacramento Valley, California, with uninformative (uniform) priors on all parent nodes.

[Nodes are listed in order of decreasing influence on population growth. For all measures, greater values represent greater influence on population growth. Population growth is included for reference, as it represents the maximum variance reduction (VR) and mutual information (MI). <, less than]

Node	Variance reduction	Percent VR	Mutual information	Percent MI	Variance of beliefs
Giant gartersnake population growth	5.435	100.00	1.491	100.00	0.402
Giant gartersnake adult survival	1.184	21.80	0.260	17.40	0.053
Giant gartersnake fecundity	0.812	14.90	0.178	11.90	0.029
Giant gartersnake first-year survival	0.491	9.04	0.091	6.11	0.015
Habitat quality	0.442	8.14	0.082	5.48	0.013
Prey availability	0.347	6.38	0.064	4.28	0.010
Predators, parasites, and pathogens	0.289	5.32	0.054	3.64	0.009
Water availability	0.252	4.63	0.048	3.25	0.007
Water quality	0.100	1.84	0.019	1.27	0.003
Proportion emergent vegetation	0.055	1.01	0.010	0.69	0.002
Proportion floating vegetation	0.011	0.20	0.002	0.14	<0.001
Other sources of mortality	0.007	0.12	0.001	0.09	<0.001
Proportion submerged vegetation	0.004	0.08	0.001	0.06	<0.001
Winter refuge availability	0.001	0.02	<0.001	0.01	<0.001
Proportion terrestrial vegetation	0.001	0.02	<0.001	0.01	<0.001
Competitor effects	0.001	0.01	<0.001	0.01	<0.001

Because of the influence of demographic parameters on the population growth of giant gartersnakes, we also examined the sensitivity of these parameters to other variables. For adult survival, habitat quality was most influential, followed by predators, parasites, and pathogens (table 2). Water and prey availability also were influential for adult survival (table 2). First-year survival followed similar qualitative patterns, but the influence of other variables was greater than for adult survival. In particular, habitat quality and predators, parasites, and pathogens strongly influenced first-year survival, with water and prey availability also exerting an influence on this node (table 3). In contrast to survival, prey availability was the most influential node for determining giant gartersnake fecundity (table 4). Of the remaining variables, only water quality and water availability influenced fecundity (table 4).

Table 2. Sensitivity analysis diagnostics applied to the Bayesian network model for adult survival of giant gartersnakes (*Thamnophis gigas*) in the Sacramento Valley, California, with uninformative (uniform) priors on all parent nodes.

[Nodes are listed in order of decreasing influence on adult survival. For all measures, greater values represent greater influence on adult survival. Adult survival is included for reference, as it represents the maximum variance reduction (VR) and mutual information (MI). <, less than]

Node	Variance reduction	Percent VR	Mutual information	Percent MI	Variance of beliefs
Giant gartersnake adult survival	0.082	100.00	1.561	100.00	0.433
Giant gartersnake population growth	0.021	25.20	0.260	16.60	0.047
Habitat quality	0.013	15.40	0.165	10.60	0.027
Predators, parasites, and pathogens	0.010	11.80	0.123	7.90	0.017
Giant gartersnake first-year survival	0.007	8.19	0.084	5.36	0.014
Water availability	0.006	7.31	0.081	5.20	0.009
Prey availability	0.003	3.84	0.041	2.62	0.006
Proportion emergent vegetation	0.001	1.65	0.018	1.13	0.002
Water quality	0.001	1.42	0.017	1.12	0.002
Giant gartersnake fecundity	0.001	0.84	0.010	0.62	0.001
Other sources of mortality	<0.001	0.39	0.005	0.34	0.001
Proportion submerged vegetation	<0.001	0.21	0.002	0.16	<0.001
Proportion floating vegetation	<0.001	0.13	0.002	0.10	<0.001
Winter refuge availability	<0.001	0.04	<0.001	0.03	<0.001
Proportion terrestrial vegetation	<0.001	0.04	<0.001	0.03	<0.001
Competitor effects	<0.001	<0.01	<0.001	<0.01	<0.001

Table 3. Sensitivity analysis diagnostics applied to the Bayesian network model for first-year survival of giant gartersnakes (*Thamnophis gigas*) in the Sacramento Valley, California, with uninformative (uniform) priors on all parent nodes.

[Nodes are listed in order of decreasing influence on first-year survival. For all measures, greater values represent greater influence on first-year survival. First-year survival is included for reference, as it represents the maximum variance reduction (VR) and mutual information (MI). <, less than]

Node	Variance reduction	Percent VR	Mutual information	Percent MI	Variance of beliefs
Giant gartersnake first-year survival	0.062	100.00	1.514	100.00	0.413
Habitat quality	0.015	23.70	0.206	13.60	0.032
Predators, parasites, and pathogens	0.012	20.10	0.200	13.20	0.036
Water availability	0.007	11.40	0.110	7.25	0.013
Giant gartersnake population growth	0.007	10.50	0.091	6.01	0.014
Giant gartersnake adult survival	0.006	10.00	0.084	5.53	0.012
Prey availability	0.005	8.13	0.066	4.36	0.009
Proportion emergent vegetation	0.002	2.61	0.023	1.52	0.003
Water quality	0.001	1.82	0.017	1.11	0.002
Giant gartersnake fecundity	0.001	1.74	0.015	0.97	0.002
Other sources of mortality	<0.001	0.36	0.004	0.24	<0.001
Proportion submerged vegetation	<0.001	0.35	0.003	0.20	<0.001
Proportion floating vegetation	<0.001	0.30	0.003	0.18	<0.001
Winter refuge availability	<0.001	0.07	0.001	0.04	<0.001
Proportion terrestrial vegetation	<0.001	0.07	0.001	0.04	<0.001
Competitor effects	<0.001	0.01	<0.001	<0.01	<0.001

Table 4. Sensitivity analysis diagnostics applied to the Bayesian network model for fecundity of giant gartersnakes (*Thamnophis gigas*) in the Sacramento Valley, California, with uninformative (uniform) priors on all parent nodes.

[Nodes are listed in order of decreasing influence on fecundity. For all measures, greater values represent greater influence on fecundity. Fecundity is included for reference, as it represents the maximum mutual information (MI). <, less than]

Node	Mutual information	Percent MI	Variance of beliefs
Giant gartersnake fecundity	1.850	100.00	0.502
Giant gartersnake population growth	0.178	9.63	0.013
Prey availability	0.157	8.48	0.008
Water quality	0.033	1.77	0.003
Water availability	0.024	1.28	0.001
Habitat quality	0.016	0.87	0.001
Giant gartersnake first-year survival	0.015	0.79	0.001
Giant gartersnake adult survival	0.010	0.52	0.001
Proportion emergent vegetation	0.004	0.22	<0.001
Proportion floating vegetation	0.003	0.18	<0.001
Predators, parasites, and pathogens	0.003	0.15	<0.001
Competitor effects	<0.001	0.02	<0.001
Other sources of mortality	<0.001	<0.01	<0.001
Proportion submerged vegetation	<0.001	<0.01	<0.001
Winter refuge availability	<0.001	<0.01	<0.001
Proportion terrestrial vegetation	<0.001	<0.01	<0.001

We also examined the sensitivity of habitat quality because habitat quality had a strong influence on survival and presumably is the variable under the most direct control of resource managers. Water availability exerted the greatest influence on habitat quality, and was more than six times as influential as proportion emergent vegetation, the next most influential parent node for habitat quality (table 5). Proportion emergent vegetation, in turn, was more than 3.5 times more influential than water quality and proportion submerged vegetation, which were similar to each other in their influence on habitat quality (table 5). High sensitivities of the children of habitat quality were indicative of the central location and important role of habitat quality in the network (table 5).

Table 5. Sensitivity analysis diagnostics applied to the Bayesian network model for habitat quality of giant gartersnakes (*Thamnophis gigas*) in the Sacramento Valley, California, with uninformative (uniform) priors on all parent nodes.

[Nodes are listed in order of decreasing influence on habitat quality. For all measures, greater values represent greater influence on habitat quality. Habitat quality is included for reference, as it represents the maximum mutual information (MI). <, less than]

Node	Mutual information	Percent MI	Variance of beliefs
Habitat quality	1.391	100.00	0.360
Water availability	0.483	34.70	0.099
Giant gartersnake first-year survival	0.206	14.80	0.032
Giant gartersnake adult survival	0.165	11.90	0.027
Predators, parasites, and pathogens	0.124	8.94	0.020
Prey availability	0.090	6.46	0.015
Giant gartersnake population growth	0.082	5.87	0.014
Proportion emergent vegetation	0.078	5.63	0.016
Water quality	0.022	1.59	0.002
Proportion submerged vegetation	0.022	1.57	0.002
Giant gartersnake fecundity	0.016	1.16	0.003
Winter refuge availability	0.006	0.40	<0.001
Proportion terrestrial vegetation	0.006	0.40	<0.001
Proportion floating vegetation	0.005	0.38	0.001
Other sources of mortality	<0.001	<0.01	<0.001
Competitor effects	<0.001	<0.01	<0.001

Different water-management scenarios produced divergent results. Ephemeral and winter water produced similar results, with deterministically low habitat quality and a high likelihood of decreasing giant gartersnake population growth (figs. 5 and 6). Groundwater only, which was assumed to be applied during the giant gartersnake active season (similar to summer water), improved habitat quality compared to ephemeral and winter water, resulting in average habitat quality but still likely resulting in decreasing population growth (fig. 7). Summer water only also resulted in average habitat quality being the most likely outcome (fig. 8). In this scenario, decreasing population growth was still the most likely outcome, but an increase in the likelihood of increasing population growth was evident relative to the groundwater only scenario (fig. 8). A permanent water scenario resulted in high habitat quality being the most likely outcome for this node (fig. 9). Although decreasing population growth was still the most likely outcome, stable and increasing populations were nearly as likely under this scenario (fig. 9).

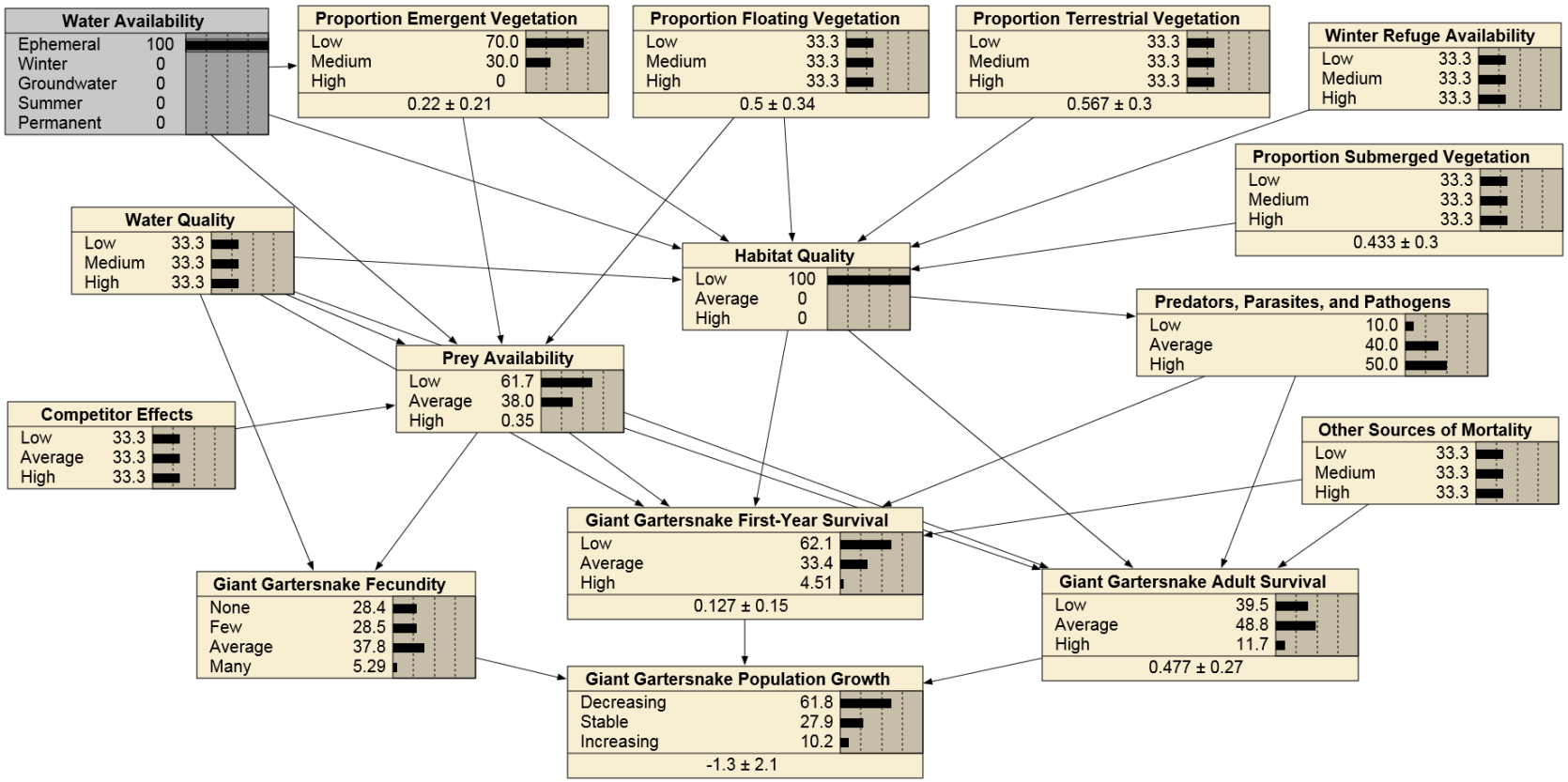

Figure 5. Most likely outcomes of the Bayesian network model for the giant gartersnake (*Thamnophis gigas*) in the Sacramento Valley, California, with ephemeral water-management conditions. All other parentless nodes were given uninformative (uniform) priors. Values in gray nodes were set at a fixed value to examine their influence on the remaining nodes in the network.

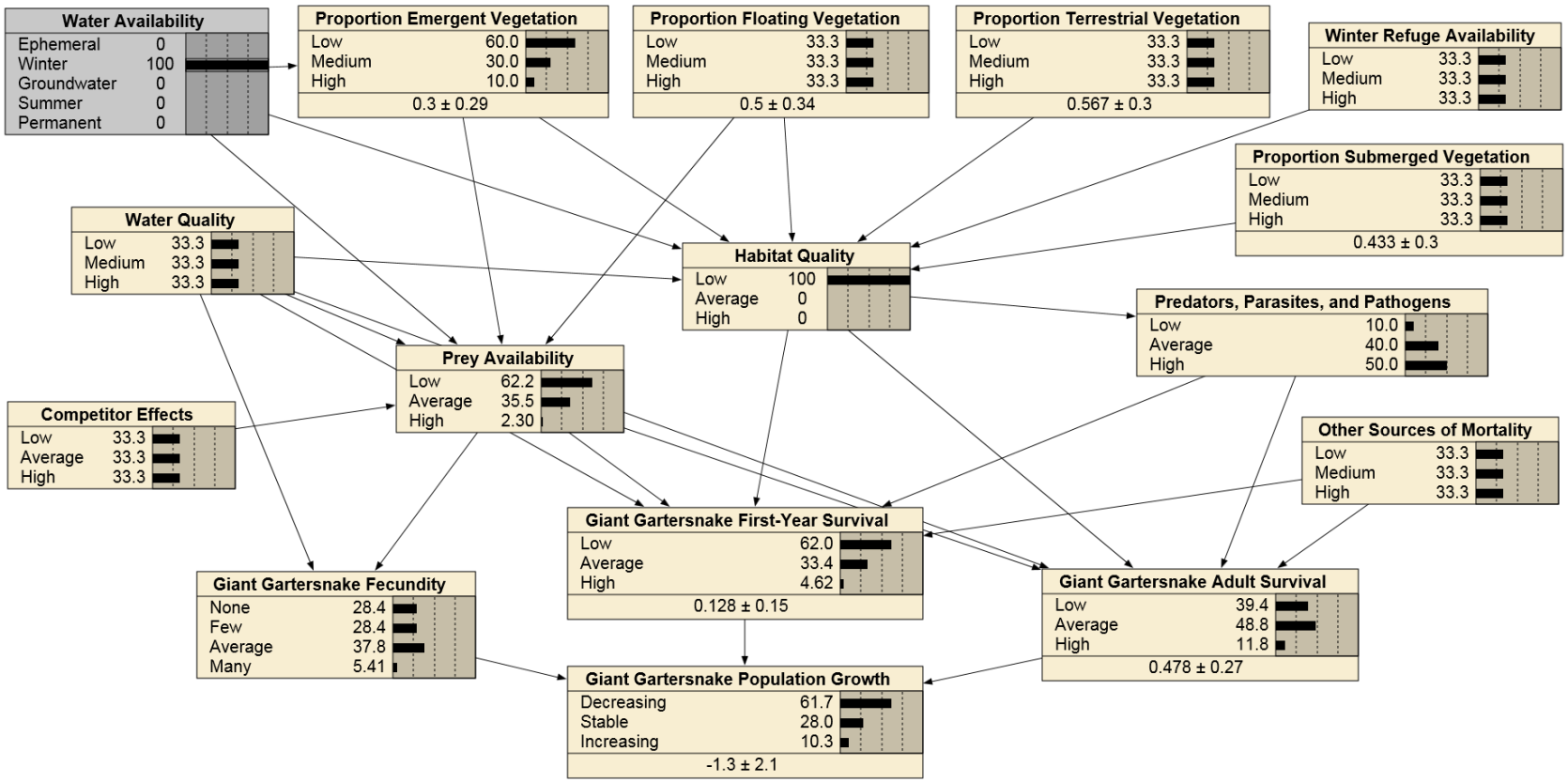

Figure 6. Most likely outcomes of the Bayesian network model for the giant gartersnake (*Thamnophis gigas*) in the Sacramento Valley, California, with winter water-management conditions typical for wintering waterfowl management. All other parentless nodes were given uninformative (uniform) priors. Values in gray nodes were set at a fixed value to examine their influence on the remaining nodes in the network.

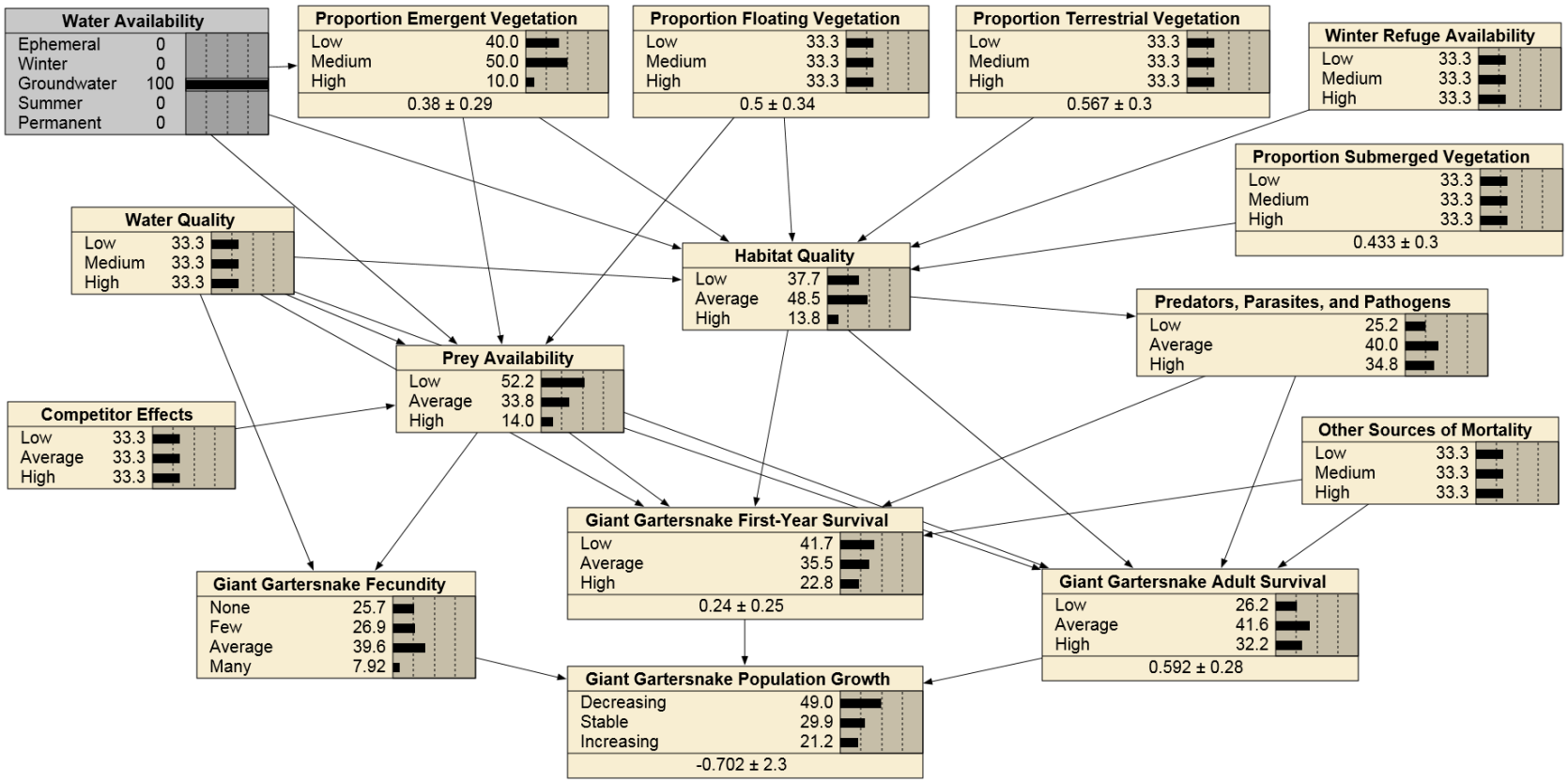

Figure 7. Most likely outcomes of the Bayesian network model for the giant gartersnake (*Thamnophis gigas*) in the Sacramento Valley, California, with groundwater substitution water-management conditions (assuming groundwater applied during the summer as for summer water management). All other parentless nodes were given uninformative (uniform) priors. Values in gray nodes were set at a fixed value to examine their influence on the remaining nodes in the network.

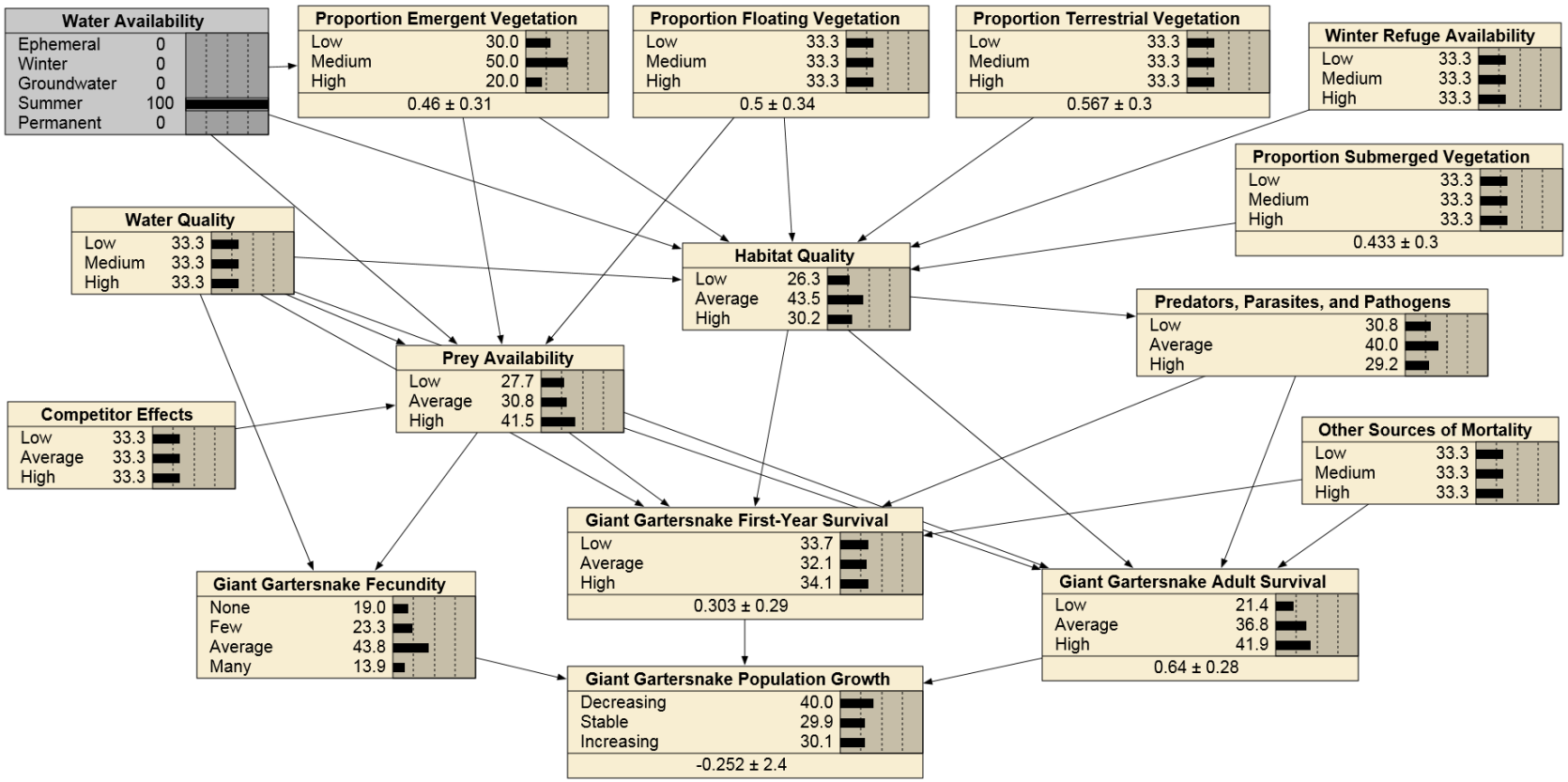

Figure 8. Most likely outcomes of the Bayesian network model for the giant gartersnake (*Thamnophis gigas*) in the Sacramento Valley, California, with summer water-management conditions (that is, water only available during the summer as typical of rice agriculture). All other parentless nodes were given uninformative (uniform) priors. Values in gray nodes were set at a fixed value to examine their influence on the remaining nodes in the network.

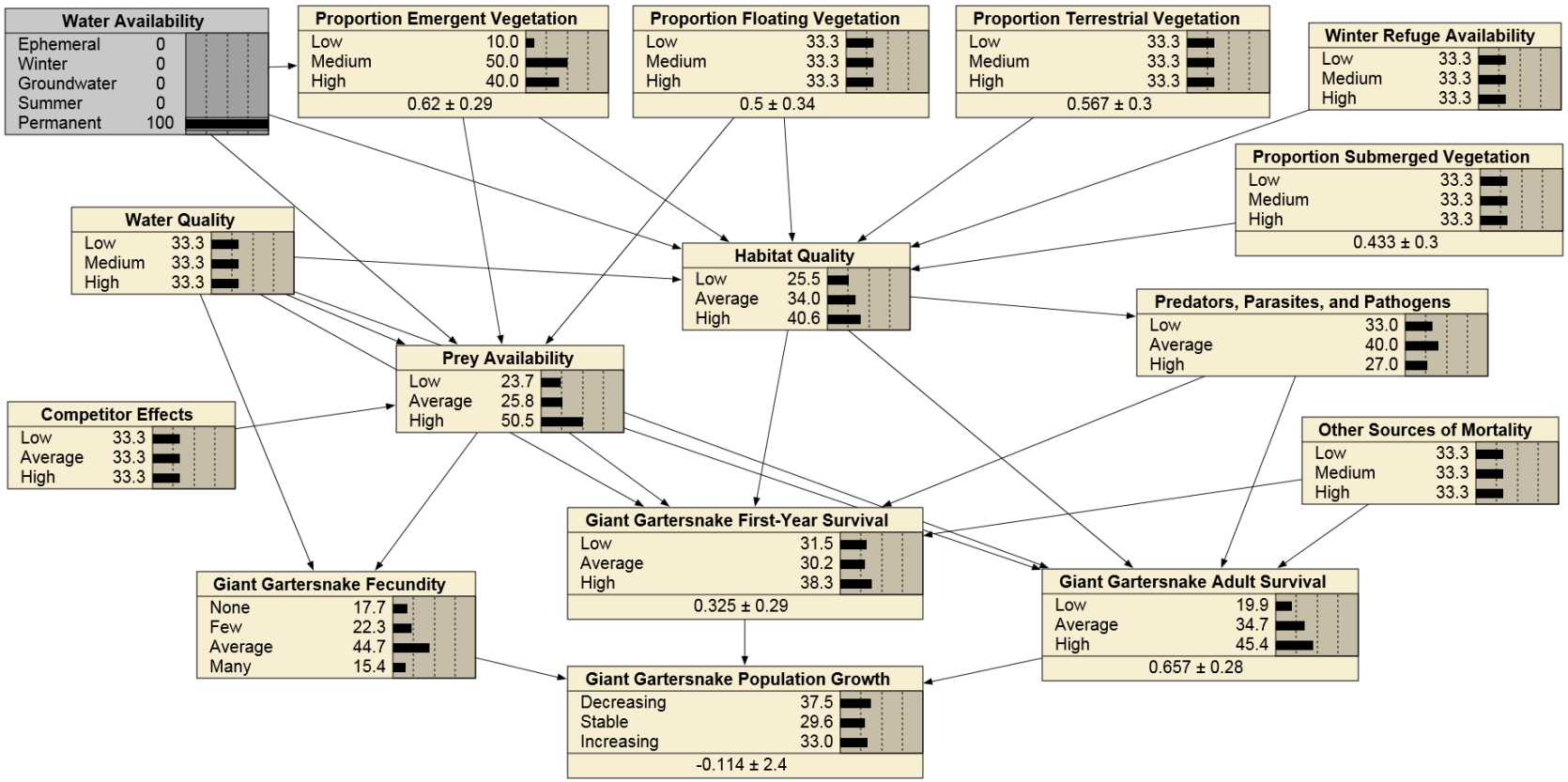

Figure 9. Most likely outcomes of the Bayesian network model for the giant gartersnake (*Thamnophis gigas*) in the Sacramento Valley, California, with permanent water-management conditions (that is, water in marshes all year). All other parentless nodes were given uninformative (uniform) priors. Values in gray nodes were set at a fixed value to examine their influence on the remaining nodes in the network.

Manipulating the parentless nodes to achieve the best possible outcome for giant gartersnakes indicated the importance of high survival, high prey availability, and high habitat quality for increasing population growth (fig. 10). These conditions were fostered by permanent, high-quality water, low proportion of submerged and floating vegetation, low competitor effects and other sources of mortality, and high terrestrial vegetation and winter refuge availability (fig. 10). The worst possible outcome for giant gartersnakes, decreasing the population growth rate, was exemplified by the opposite conditions, with water only available during the winter (fig. 11).

Population growth of the giant gartersnake was most influenced by demographic parameters, especially adult survival. Directly managing for increased survival or fecundity, however, generally is not feasible. Habitat quality, which itself was strongly influenced by water availability and proportion emergent vegetation, can be managed and had a strong influence on both adult and first-year survival. Additional research into the effects of specific habitat attributes on giant gartersnake fitness is needed to better quantify the qualitative relations hypothesized in the Bayesian network model. In this regard, habitat quality; predator, parasite, and pathogen effects; and prey availability (particularly as it affects fecundity) all would be productive avenues for future research efforts.

Alternatively, research could focus on those nodes for which the least information exists. For example, the scenario analysis indicated that changing giant gartersnake population growth from increasing to decreasing resulted in little change in many nodes. Competitor effects, other sources of mortality, and nearly all parents of habitat quality were changed little under increasing and decreasing population growth scenarios. This indicates that these variables either (1) are truly unimportant for determining giant gartersnake population growth, or (2) uncertainty in the strength of these relations precludes drawing conclusions about how these variables affect population growth of the giant gartersnake. The prudent course of action would be to conduct research into the effects of these variables on giant gartersnakes to determine which of these alternatives is correct.

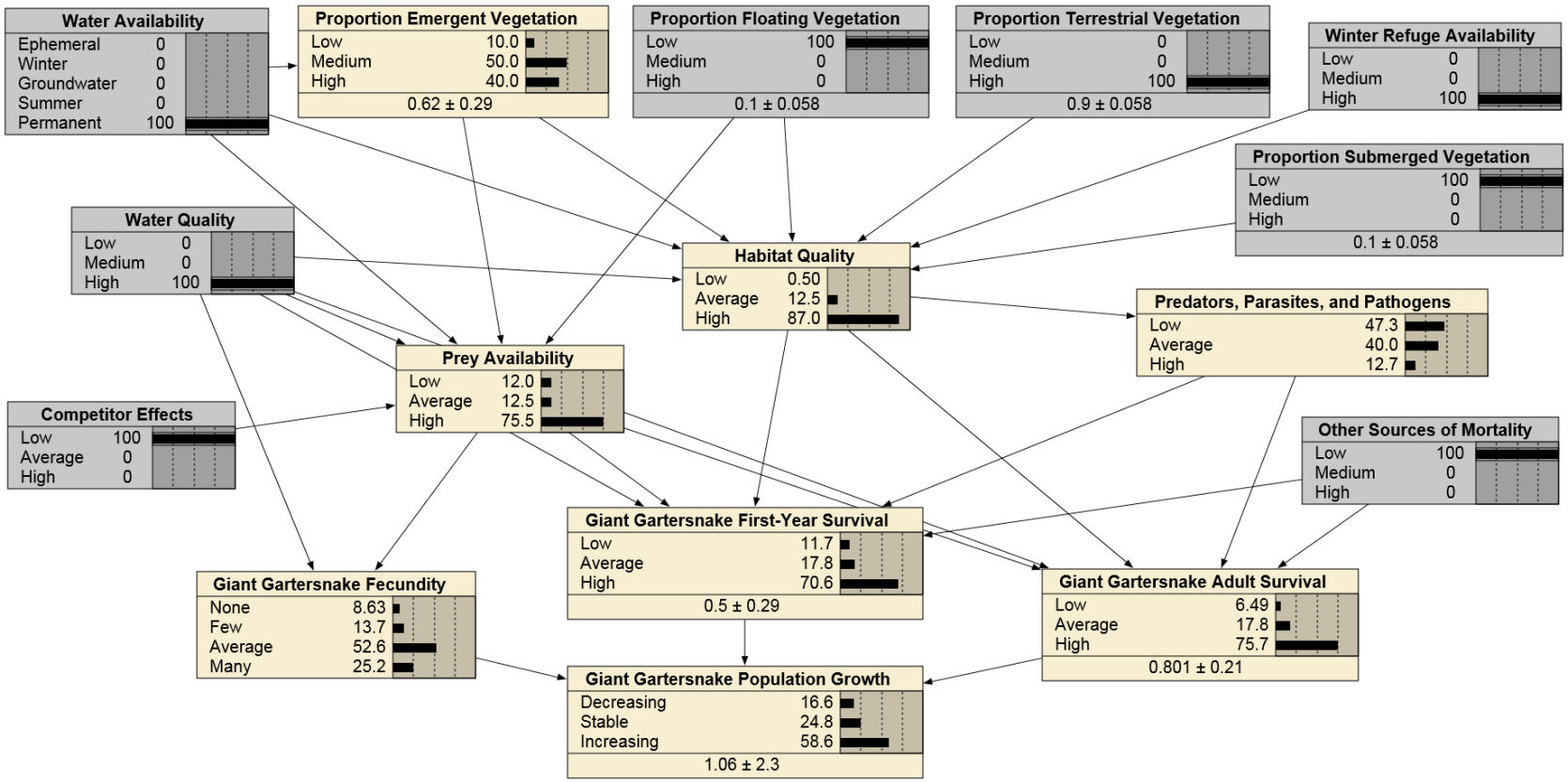

Figure 10. Best-case scenario in the Bayesian network model for increasing population growth rate of giant gartersnakes (*Thamnophis gigas*), in the Sacramento Valley, California. All parentless nodes were adjusted to achieve the highest possible probability of an increasing population. Values in gray nodes were set at a fixed value to examine their influence on the remaining nodes in the network.

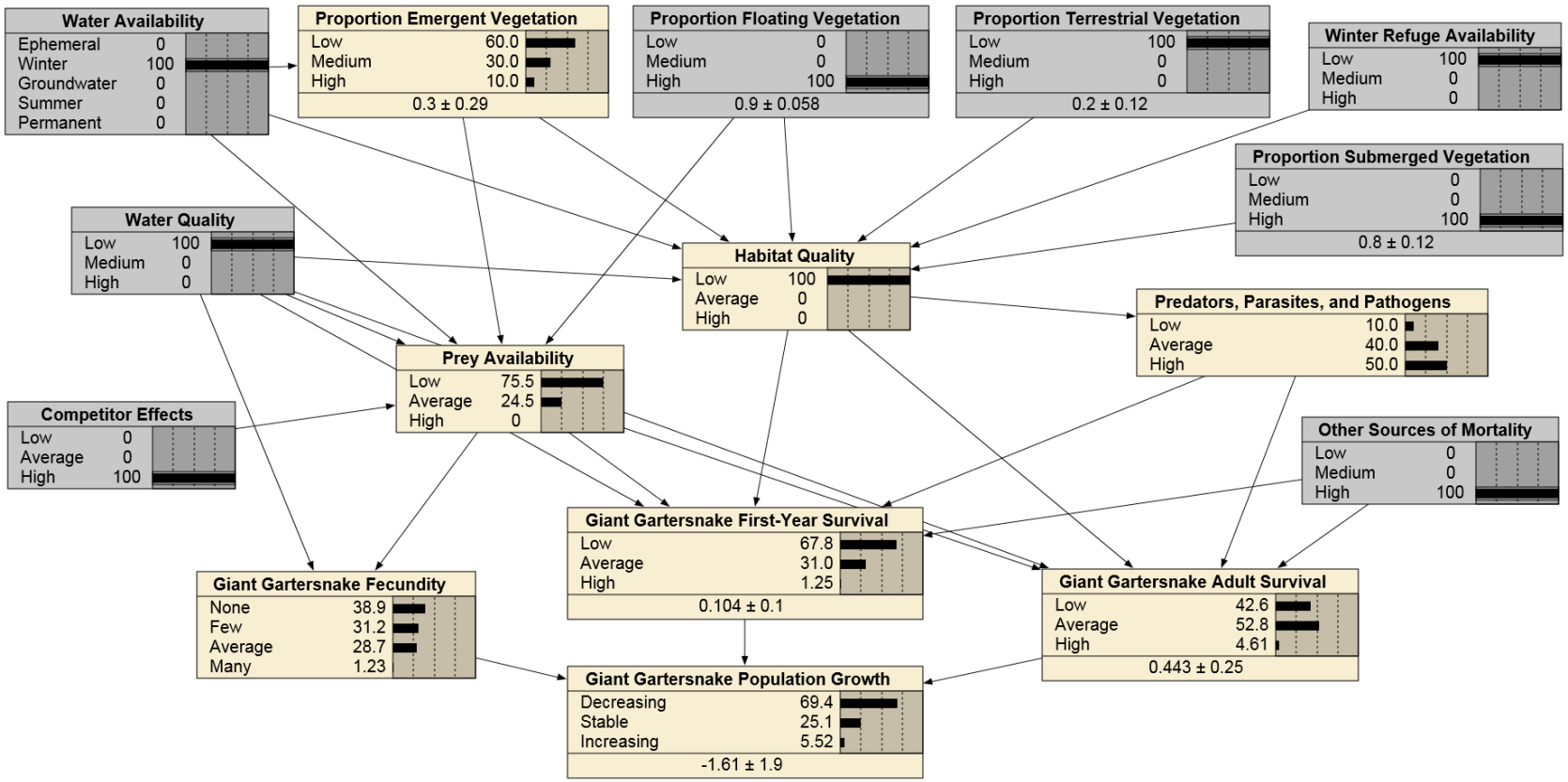

Figure 11. Worst-case scenario in the Bayesian network model for decreasing population growth rate of giant gartersnakes (*Thamnophis gigas*), in the Sacramento Valley, California. All parentless nodes were adjusted to achieve the highest possible probability of a decreasing population. Values in gray nodes were set at a fixed value to examine their influence on the remaining nodes in the network.

Examining specific relations hypothesized in the model in an adaptive management (Wilhere, 2002; McCarthy and Possingham, 2007) framework perhaps is the best use of this Bayesian network model (Nyberg and others, 2006; Howes and others, 2010). The Bayesian paradigm is based on formulating a model, incorporating what is known about the parameters of the model, and updating beliefs about the model structure and values of parameters with additional information (Wade, 2000; McCarthy, 2007; Kéry, 2010; Link and Barker, 2010). Bayesian networks, therefore, are ideally suited to adaptive management, and most Bayesian network software is built to allow models to be updated with additional information. As experiments are conducted or data accumulate under varying field conditions (Shrader-Frechette and McCoy, 1993), the Bayesian network model for the giant gartersnake can be updated to inform resource managers about the best course of action to take for managing populations of giant gartersnakes. Adding decision nodes for different management actions and utility nodes to indicate the costs (in terms of water lost for other uses, habitat management costs, etc.) and benefits of specific management decisions would further enhance the model's utility for adaptive management (Marcot and others, 2001; Nyberg and others, 2006).

Despite the utility of Bayesian network models for understanding ecological relations and facilitating adaptive management, use of such models has important limitations. The ease with which expert opinion can be used to construct Bayesian network models can allow personal biases to creep into the models. This can be avoided by having independent experts review the structure and relations in the model (Marcot and others, 2006), and this was done in the present case. Another limitation of Bayesian network models is that they do not allow for feedback loops (Marcot and others, 2001; Nyberg and others, 2006; Uusitalo, 2007). For the Bayesian network model for the giant gartersnake, this means that we could not directly incorporate density dependence into the model. Although temporal cycles can be included in Bayesian networks at the cost of much complexity (Nyberg and others, 2006; Uusitalo, 2007), little evidence for density dependence exists for giant gartersnakes (Wylie and others, 2010). Such questions about model structure also should be evaluated by future research efforts.

The intent of this Bayesian network model of site-specific giant gartersnake ecology in the Sacramento Valley was to guide management efforts using the current state of knowledge, and to prioritize research into the variables most likely to affect giant gartersnake population growth rates. The model was used successfully to evaluate hypotheses about the manner in which different variables affect giant gartersnake populations, and to indicate where we need to collect additional data to test these assumptions. Thus, the model serves as a launching pad for future research, and should direct research in productive directions. The model is not a substitute for rigorous population analysis using stochastic matrix population models (Caswell, 2006) or integral projection models (Ellner and Rees, 2006; Coulson, 2012), but rather a stepping stone toward this goal.

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Shannon Skalos (U.S. Geological Survey) and David Kelly (U.S. Fish and Wildlife Service) provided thoughtful reviews that improved the quality of this report.

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Glossary

Adaptive management: A structured, iterative process of decision making in the face of uncertainty, with the goal of reducing uncertainty over time by monitoring outcomes.
Bayesian network model: A probabilistic graphical model that represents a set of variables and their relations in a directed acyclic graph.
Child node (children of parent nodes): A node at the end of an edge (arrow) in a Bayesian network model.
Conceptual model: A diagram that shows a set of relations between variables believed to affect a target condition; a diagram that defines theoretical entities, objects, or conditions of a system and the relations between them.
Conditional probability table: A table of probabilities linking discrete, non-independent random variables to represent the marginal probability of states of a single variable with respect to the states of the others. Conditional probability tables control the relations between nodes in a Bayesian network model.
Decision node: A node in a Bayesian network model or influence diagram that represents a decision to be made. Decision nodes usually are represented as rectangles in Bayesian network models.
Demographic parameter: Any variable that can directly affect the growth rate of a population. These may be defined for specific life stages. Examples include birth and death rates, immigration, and emigration.
Deterministic: Of or relating to a process in which no randomness or uncertainty is involved in predicting the state of one variable, given knowledge of the state of another variable.
Discretize: To convert a continuous space into an equivalent discrete space for the purposes of easier calculation.
Edge: Connections between nodes in a Bayesian network model that represent dependence between variables. Edges are represented as arrows in a Bayesian network model.
Ephemeral: Short-lived.
Integral projection model: A population model that uses information on how an individual's state, including continuous states such as size or age, influences its vital rates (survival, fecundity, and so on).
Intraguild predation: The killing and eating of potential competitors. Intraguild predation represents a combination of predation and competition, because both species feed on the same prey resources and benefit from eating one another.
Matrix population model: A specific type of population model that uses matrix algebra to model the dynamics of populations.
Mutual information: A measure of the information that two random variables share. Mutual information can be thought of as measuring how much knowing one of the variables reduces uncertainty about the other. Mutual information is sometimes referred to as "entropy reduction."

Node: A random variable in a Bayesian network model. Nodes can be observable quantities, latent variables, unknown parameters, or hypotheses. Nodes (except decision and utility nodes) usually are represented as circles or ovals in a Bayesian network model, but they are displayed in graphical form in this report to reveal the states of each node.
Parent node: A node at the beginning of an edge (arrow) in a Bayesian network model.
Parentless node: A node that is not a child of any other node in a Bayesian network model.
Precinctive: A species (or smaller taxonomic unit) that is restricted to a defined geographical area.
Risk analysis: The process of defining and analyzing dangers posed to a specified outcome by potential events.
Sensitivity analysis: The study of how the uncertainty in the output of a model can be apportioned to different sources of uncertainty in its inputs.
Scenario analysis: The process of analyzing possible events by considering alternative possible outcomes, including the paths that lead to the alternative outcomes.
State: The possible values that a node can show. In most Bayesian networks, states are discrete values that a node can take.
Stochastic: Of or relating to a process involving randomness or uncertainty in observations, which are considered as a sample of one element from a probability distribution.
Utility node: A node representing the values of all potential outcomes of the parents of that node. Utility nodes also are referred to as “value nodes,” and are represented in Bayesian networks as octagons, diamonds, or hexagons.
Variance reduction: The expected reduction in uncertainty in the expected real value of a variable, given the knowledge of another variable.

Appendix A. Narrative Description of Nodes, and Logic and Assumptions Underlying Conditional Probability Table Values

1. Population Growth Rate
   A. Parent Nodes
      I. Adult Survival: Adult survival for most reptiles and amphibians is the life stage with the greatest effect on population growth rate. For this reason, adult survival is weighted higher than the other variables. At low adult survival (0.0–0.4 annual survival probability), population growth rate always is more likely to be decreasing than stable or increasing. Medium adult survival (0.4–0.8 annual survival probability) results in a 20% decrease in the probability of a decreasing population growth rate. At high adult survival (0.8–1.0 annual survival probability), there is a further 10% decrease in the probability of a decreasing population growth rate.
      II. Juvenile Survival: Juvenile survival has less effect on population growth rate than adult survival. What constitutes low, average, and high values of juvenile survival is currently unknown. Holding all other parent nodes equal, high juvenile survival (0.3–1.0 annual survival probability) results in a 5% increase in the probability of a stable or increasing population (and a 5% decrease in the probability of a decreasing population) greater than that with average juvenile survival (0.1–0.3 annual survival probability). Low juvenile survival (0.0–0.1 annual survival probability) results in a further 5% decrease in the probability of stable or increasing population growth rate.
      III. Fecundity: Fecundity has a large effect on population growth rate because the population cannot increase without recruitment. Regardless of survival, if fecundity is none (0 offspring produced), the population cannot be increasing. It can, however, be stable in the short term if survival rates are high. If all other parent nodes are held constant, many offspring results in a 20% increase in the probability that the population growth is increasing at a rate greater than that achieved with an average number of offspring. An average number of offspring, in turn, results in a 20% increase in the probability that the population growth is increasing at a rate greater than that achieved with few offspring. It remains to be determined how many offspring constitute few, average, or many.
   B. Discretization
      I. Decreasing=$-5.0 \leq r < -0.05$
      II. Stable=$-0.05 \leq r \leq 0.05$
      III. Increasing=$0.0 < r \leq 5.0$

2. Fecundity

   A. Parent Nodes

      I. Prey Availability: Prey availability is assumed to be positively correlated to litter size with the assumption that giant gartersnakes, like other natricine snakes, are capital breeders. The probability of no young is equivalent to the probability that a female will skip reproduction; in this case, low prey availability would result in greater probability of skipping reproduction. Average prey availability is most likely to produce average litter sizes, and high prey availability is likely to increase the probability of average or many young by 10% each.

      II. Water Quality: Water quality is assumed to be positively correlated to litter size (that is, relatively warm water with low concentrations of agrochemicals and heavy metals will allow females to produce larger, healthier litters) with the assumption that many chemical contaminants cause reproductive harm. Under constant prey availability, a decrease in water quality decreases the likelihood of greater categories for litter size by 5–10%.

   B. No discretization applied, but guidelines are as follows:

      I. None=0

      II. Few=1– 15

      III. Average= 15–20

      IV. Many=>20

3. Adult Survival

   A. Parent Nodes

      I. Prey Availability: Prey availability effects on adult survival are assumed to be less than the effects of habitat quality and similar to the effects of predators. As prey quality increases from low to average, the probability of adult survival being high increases by approximately 5–10%. A similar increase occurs as prey availability increases from average to high. Decreases in the probability of low adult survival as prey availability increases are similar to the increases in the probability of high adult survival.

      II. Predator Effects: Predator effects on adult survival are assumed to be less than the effects of habitat quality and similar to the effects of prey availability. As predator effects increase from low to average, the probability of adult survival being high decreases by approximately 5–10%. A similar decrease occurs as predator effects increase from average to high. Increases in the probability of low adult survival as predator effects increase are similar to the decreases in the probability of high adult survival.

      III. Habitat Quality: Direct effects of habitat quality are assumed to have the greatest effect on adult survival. As habitat quality decreases from high to average, with all other parent nodes held constant, the probability of high adult survival decreases by 45–50%. Further decreases from average to low habitat quality result in an additional decrease in the probability of high adult survival of 15–25%. Increases in the probability of low adult survival as habitat quality decreases are similar to the decreases in the probability of high adult survival.

IV. Water Quality: Based upon the findings of Hopkins and others (1999, 2002) and Santos and others (1999), it is assumed that giant gartersnakes are less sensitive to chemical contamination than most mammals, birds, and amphibians. This category also includes water temperature and productivity, which can affect the thermal quality of the habitat and prey availability (although these actions are assumed to act indirectly through the habitat quality node). With all other nodes being equal, decreased water quality decreases the likelihood of high adult survival by 5%.

V. Other Sources of Mortality: This node covers sources of mortality not dealt with elsewhere; for example, direct human killing, roadkill, mortality during routine agricultural or habitat management activity, and so on. It is assumed that these other sources of mortality are low, but in some situations they could be more important than hypothesized in the model. With all other factors being equal, increasing other sources of mortality decreases the likelihood of high adult survival by 5%.

B. Discretization: Discretization is based on Halstead and others (2012).

I. Low=0.0–0.4 annual probability of survival
II. Average=0.4–0.8 annual probability of survival
III. High=0.8–1.0 annual probability of survival

4. First-Year Survival

A. Parent Nodes

I. Prey Availability: Prey availability effects on juvenile survival are assumed to be less than the effects of habitat quality and predators. As prey quality increases from low to average, the probability of juvenile survival being high increases by approximately 5–10%. A similar increase occurs as prey availability increases from average to high. Decreases in the probability of low juvenile survival as prey availability increases are similar to the increases in the probability of high juvenile survival.

II. Predator Effects: Predator effects on juvenile survival are assumed to be stronger than the effects of predators on adults because of the smaller size and greater vulnerability of small snakes to predators. As predator effects increase from low to average, the probability of juvenile survival being low increases by approximately 20–30%. A similar increase occurs as predator effects increase from average to high. Decreases in the probability of high adult survival as predator effects increase are smaller than the increases in the probability of low adult survival.

III. Habitat Quality: Direct effects of habitat quality are assumed to have as great an effect on juvenile survival as predator effects. As habitat quality decreases from high to average, with other parent nodes held constant, the probability of high juvenile survival decreases by 20–30%. Further decreases from average to low habitat quality result in an additional decrease in the probability of high juvenile survival of 15–25%. Increases in the probability of low juvenile survival as habitat quality decreases are similar to the decreases in the probability of high juvenile survival.

IV. Water Quality: Based on the findings of Hopkins and others (1999, 2002) and Santos and others (1999), it is assumed that giant gartersnakes are less sensitive to chemical contamination than most mammals, birds, and amphibians. This category also includes water temperature and productivity, which can affect the thermal quality of the habitat and prey availability (though these actions are assumed to act indirectly through the habitat quality node). With all other nodes being equal, decreased water quality decreases the likelihood of high first-year survival by 5%.

V. Other Sources of Mortality: This node covers sources of mortality not dealt with elsewhere; for example, direct human killing, roadkill, mortality during routine agricultural or habitat management activity, and so on. It is assumed that these other sources of mortality are low, but in some situations they could be more important than hypothesized in the model. All else being equal, increasing other sources of mortality decreases the likelihood of high first-year survival by 5%.

B. Discretization: Discretization is a best guess.

I. Low=0.0–0.1 annual probability of survival
II. Average=0.1–0.3 annual probability of survival
III. High=0.3–1.0 annual probability of survival

5. Predators (including parasites and disease)

A. Parent Nodes

I. Habitat Quality: Habitat quality mediates predator effects through the abundance of predators (for example, perches for raptors) and the efficiency with which predators can prey on giant gartersnakes (less cover/more exposure and simple geometries such as canals that can increase predator efficiency). Low habitat quality increases the probability of severe predator effects (40% chance of average predator effects, 50% of high predator effects), and high habitat quality decreases the probability of predator effects (40% probability of average predator effects, 50% probability of low predator effects). Because predator effects are not strictly linked to habitat quality, there always is some probability of low or high predator effects.

B. Discretization: None applied.

6. Prey

A. Parent Nodes

I. Competitors: Competitors are expected to have an inverse relation with prey availability, but the relation is expected to be weak. Thus, competitors, such as bullfrogs, fishes, wading birds, and other gartersnakes, are not expected to have a large influence on prey availability. Low abundance of competitors is expected to result in an approximately 10% higher prey availability than high abundance of competitors, with all other parent nodes being equal.

II. Water Availability/Seasonality: Water availability has the greatest effect on prey availability. Permanent water provides the greatest probability of having abundant prey. Summer water prey availability is assumed to be about one-half of permanent water prey availability. Winter and ephemeral water result further decreases in prey availability.

III. Percent Cover of Emergent Vegetation: Percent cover of emergent vegetation is expected to have a small, positive effect on prey availability because of the refuge it provides for small prey items. Increasing emergent vegetation cover from low to medium and medium to high increases the probability of average and high prey availability by 5% at each step, and decreases the probability of low prey availability by 10% at each step.

IV. Percent Cover of Floating Vegetation: Percent cover of floating vegetation is expected to have a small, negative effect on prey availability because of the potential negative alterations to aquatic habitats (reduced light penetration, etc.). Increasing floating vegetation cover from low to medium and medium to high decreases the probability of average and high prey availability by 5% at each step, and increases the probability of low prey availability by 10% at each step.

V. Water Quality: Water quality is assumed to affect prey communities based upon temperature and productivity (that is, warm, productive surface water compared to cold groundwater with few prey), as well as chemical contamination reducing or eliminating prey populations. With all other nodes being equal, a unit decrease in water quality decreases the likelihood of high prey availability by 5–10%.

B. Discretization: None Applied.

7. Habitat Quality

A. Parent Nodes

I. Water Availability/Seasonality: Ephemeral water availability, or water that is only available in the winter, results in low habitat quality, regardless of the values of other parent nodes. With all other parent nodes being equal, summer water results in lower habitat quality than permanent water, but only by about 10 percent (that is, permanent water generally results in a 10% higher probability of high-quality habitat and a 10% lower probability of low quality habitat than summer water with the other parent nodes fixed).

II. Water Quality: Water quality affects habitat quality as a primary driver of the thermal quality of habitat. It also facilitates or inhibits the growth of different types of vegetation, depending upon the timing and levels of agricultural runoff (herbicides, fertilizers, and so on). With all other nodes being equal, a unit increase in water quality increases habitat quality by 10–20%.

III. Percent Cover of Emergent Vegetation: Medium (20–80%) cover of emergent vegetation results in the highest habitat quality, with high (80–100%) cover resulting in a slight decrease in the probability of habitat being of high quality. Because of the importance of emergent vegetation as cover for giant gartersnakes, low (0–20%) cover results in a decrease of 40 – 60% in the probability of habitat being of high quality relative to medium cover, and similar increases in the probability of habitat being of low quality.

IV. Percent Cover of Floating Vegetation: Floating vegetation (algae, *Lemna* spp., and *Azolla* spp.) has a negative effect on the probability of occurrence of giant gartersnakes, and radio telemetered individuals avoid floating vegetation (U.S. Geological Survey, unpub. data, 2012). Low (0–20%) cover of floating vegetation results in the greatest probability of high-quality habitat, with medium (20–80%) cover resulting in a decrease of 10% in the probability of habitat being of high

quality and high (80–100 percent) cover resulting in an additional 20% decrease in the probability of habitat being of high quality. Increases in the probability of habitat being of low quality with increasing percent cover of floating vegetation were of less magnitude.

V. Percent Cover of Terrestrial Vegetation: Because it provides cover for giant gartersnakes while they are in terrestrial habitats, high (80–100%) cover of terrestrial vegetation results in the highest habitat quality. Medium (40–80%) cover of terrestrial vegetation results in a decrease of 10% in the probability of habitat being of high quality and low (0– 40%) cover results in an additional 20% decrease in the probability of habitat being of high quality. Increases in the probability of habitat being of low quality with decreasing percent cover of terrestrial vegetation were of less magnitude.

VI. Percent Cover of Submerged Vegetation: Submerged vegetation has a negative effect on the probability of occurrence of giant gartersnakes (U.S. Geological Survey, unpublished data, 2013; Eric Hansen, oral commun., 2014). Low (0–20%) cover of submerged vegetation results in the greatest probability of high-quality habitat, with medium (20–80%) cover resulting in a decrease of 5–10% in the probability of habitat being of high quality and high (80–100%) cover resulting in an additional 5–10% decrease in the probability of habitat being of high quality. Increases in the probability of habitat being of low quality with increasing percent cover of submerged vegetation were of less magnitude.

VII. Availability of Refugia/Hibernacula: Because of the necessity of refugia (such as mammal and crayfish burrows, dense clumps of vegetation, riprap, or piles of debris, for brumation and protection from predators and environmental extremes), high availability of refugia results in the highest habitat quality. Medium availability of refugia results in a decrease of 10% in the probability of habitat being of high quality and low availability of refugia results in an additional 20% decrease in the probability of habitat being of high quality. Increases in the probability of habitat being of low quality with decreasing availability of refugia were of less magnitude.

B. Discretization: None Applied.

8. Emergent Vegetation

A. Parent Nodes

I. Water Availability/Seasonality: The potential for emergent vegetation to become established and persist increases with increasing hydroperiod. Standing water is viewed as a necessary, but not sufficient, condition for the growth of emergent vegetation; thus, the presence of standing water for longer periods of time increases the probability that emergent vegetation will have a greater percent cover.

B. Discretization

I. Low = 0–20% cover

II. Medium = 20–80% cover

III. High = 80–100% cover

Appendix B. Conditional Probability Tables

Table B1. Conditional probability table (CPT) for the emergent vegetation node.

[Numbers in the table represent probabilities as percentages (that is, 70=70% or 0.70) that the response node will take the value in the column (low, medium, high), given the value of the parent node (water availability)]

Water availability	Proportion emergent		
	Low	Medium	High
Ephemeral	70	30	0
Winter	60	30	10
Groundwater	40	50	10
Summer	30	50	20
Permanent	10	50	40

Table B2. Conditional probability table (CPT) for the prey availability node.

[Numbers in the table represent probabilities as percentages (that is, 55 = 55% or 0.55) that the response node will take the value in the column (low, average, high), given the value of the parent nodes (competitor effects, water availability, proportion emergent vegetation, proportion floating vegetation, and water quality)]

Inputs					Prey availability		
Competitors	Water availability	Emergent	Floating	Water quality	Low	Average	High
Low	Ephemeral	Low	Low	Low	55	45	0
Low	Ephemeral	Low	Low	Medium	50	50	0
Low	Ephemeral	Low	Low	High	50	45	5
Low	Ephemeral	Low	Medium	Low	60	40	0
Low	Ephemeral	Low	Medium	Medium	55	45	0
Low	Ephemeral	Low	Medium	High	55	45	0
Low	Ephemeral	Low	High	Low	70	30	0
Low	Ephemeral	Low	High	Medium	65	35	0
Low	Ephemeral	Low	High	High	65	35	0
Low	Ephemeral	Medium	Low	Low	55	45	0
Low	Ephemeral	Medium	Low	Medium	50	45	5
Low	Ephemeral	Medium	Low	High	50	40	10
Low	Ephemeral	Medium	Medium	Low	60	40	0
Low	Ephemeral	Medium	Medium	Medium	55	45	0
Low	Ephemeral	Medium	Medium	High	55	45	0
Low	Ephemeral	Medium	High	Low	70	30	0
Low	Ephemeral	Medium	High	Medium	65	35	0
Low	Ephemeral	Medium	High	High	65	35	0
Low	Ephemeral	High	Low	Low	60	40	0
Low	Ephemeral	High	Low	Medium	55	45	0
Low	Ephemeral	High	Low	High	55	45	0
Low	Ephemeral	High	Medium	Low	65	35	0
Low	Ephemeral	High	Medium	Medium	60	40	0
Low	Ephemeral	High	Medium	High	60	40	0
Low	Ephemeral	High	High	Low	75	25	0
Low	Ephemeral	High	High	Medium	70	30	0
Low	Ephemeral	High	High	High	70	30	0
Low	Winter	Low	Low	Low	55	45	0
Low	Winter	Low	Low	Medium	50	40	10
Low	Winter	Low	Low	High	50	35	15
Low	Winter	Low	Medium	Low	60	40	0
Low	Winter	Low	Medium	Medium	55	45	0
Low	Winter	Low	Medium	High	55	40	5
Low	Winter	Low	High	Low	70	30	0

Inputs					Prey availability		
Competitors	Water availability	Emergent	Floating	Water quality	Low	Average	High
Low	Winter	Low	High	Medium	65	35	0
Low	Winter	Low	High	High	65	35	0
Low	Winter	Medium	Low	Low	55	40	5
Low	Winter	Medium	Low	Medium	50	35	15
Low	Winter	Medium	Low	High	50	30	20
Low	Winter	Medium	Medium	Low	60	40	0
Low	Winter	Medium	Medium	Medium	55	40	5
Low	Winter	Medium	Medium	High	55	35	10
Low	Winter	Medium	High	Low	70	30	0
Low	Winter	Medium	High	Medium	65	35	0
Low	Winter	Medium	High	High	65	35	0
Low	Winter	High	Low	Low	60	40	0
Low	Winter	High	Low	Medium	55	40	5
Low	Winter	High	Low	High	55	35	10
Low	Winter	High	Medium	Low	65	35	0
Low	Winter	High	Medium	Medium	60	40	0
Low	Winter	High	Medium	High	60	40	0
Low	Winter	High	High	Low	75	25	0
Low	Winter	High	High	Medium	70	30	0
Low	Winter	High	High	High	70	30	0
Low	Groundwater	Low	Low	Low	45	35	20
Low	Groundwater	Low	Low	Medium	40	30	30
Low	Groundwater	Low	Low	High	40	25	35
Low	Groundwater	Low	Medium	Low	50	40	10
Low	Groundwater	Low	Medium	Medium	45	35	20
Low	Groundwater	Low	Medium	High	45	30	25
Low	Groundwater	Low	High	Low	60	40	0
Low	Groundwater	Low	High	Medium	55	45	0
Low	Groundwater	Low	High	High	55	40	5
Low	Groundwater	Medium	Low	Low	45	30	25
Low	Groundwater	Medium	Low	Medium	40	25	35
Low	Groundwater	Medium	Low	High	40	20	40
Low	Groundwater	Medium	Medium	Low	50	35	15
Low	Groundwater	Medium	Medium	Medium	45	30	25
Low	Groundwater	Medium	Medium	High	45	25	30
Low	Groundwater	Medium	High	Low	60	40	0
Low	Groundwater	Medium	High	Medium	55	40	5
Low	Groundwater	Medium	High	High	55	35	10
Low	Groundwater	High	Low	Low	50	35	15

Inputs					Prey availability		
Competitors	Water availability	Emergent	Floating	Water quality	Low	Average	High
Low	Groundwater	High	Low	Medium	45	30	25
Low	Groundwater	High	Low	High	45	25	30
Low	Groundwater	High	Medium	Low	55	40	5
Low	Groundwater	High	Medium	Medium	50	35	15
Low	Groundwater	High	Medium	High	50	30	20
Low	Groundwater	High	High	Low	65	35	0
Low	Groundwater	High	High	Medium	60	40	0
Low	Groundwater	High	High	High	60	40	0
Low	Summer	Low	Low	Low	20	30	50
Low	Summer	Low	Low	Medium	15	25	60
Low	Summer	Low	Low	High	15	20	65
Low	Summer	Low	Medium	Low	25	35	40
Low	Summer	Low	Medium	Medium	20	30	50
Low	Summer	Low	Medium	High	20	25	55
Low	Summer	Low	High	Low	35	45	20
Low	Summer	Low	High	Medium	30	40	30
Low	Summer	Low	High	High	30	35	35
Low	Summer	Medium	Low	Low	20	25	55
Low	Summer	Medium	Low	Medium	15	20	65
Low	Summer	Medium	Low	High	15	15	70
Low	Summer	Medium	Medium	Low	25	30	45
Low	Summer	Medium	Medium	Medium	20	25	55
Low	Summer	Medium	Medium	High	20	20	60
Low	Summer	Medium	High	Low	35	40	25
Low	Summer	Medium	High	Medium	30	35	35
Low	Summer	Medium	High	High	30	30	40
Low	Summer	High	Low	Low	25	30	45
Low	Summer	High	Low	Medium	20	25	55
Low	Summer	High	Low	High	20	20	60
Low	Summer	High	Medium	Low	30	35	35
Low	Summer	High	Medium	Medium	25	30	45
Low	Summer	High	Medium	High	25	25	50
Low	Summer	High	High	Low	40	45	15
Low	Summer	High	High	Medium	35	40	25
Low	Summer	High	High	High	35	35	30
Low	Permanent	Low	Low	Low	15	25	60
Low	Permanent	Low	Low	Medium	10	20	70
Low	Permanent	Low	Low	High	10	15	75
Low	Permanent	Low	Medium	Low	20	30	50

Inputs					Prey availability		
Competitors	Water availability	Emergent	Floating	Water quality	Low	Average	High
Low	Permanent	Low	Medium	Medium	15	25	60
Low	Permanent	Low	Medium	High	15	20	65
Low	Permanent	Low	High	Low	30	40	30
Low	Permanent	Low	High	Medium	25	35	40
Low	Permanent	Low	High	High	25	30	45
Low	Permanent	Medium	Low	Low	15	20	65
Low	Permanent	Medium	Low	Medium	10	15	75
Low	Permanent	Medium	Low	High	10	10	80
Low	Permanent	Medium	Medium	Low	20	25	55
Low	Permanent	Medium	Medium	Medium	15	20	65
Low	Permanent	Medium	Medium	High	15	15	70
Low	Permanent	Medium	High	Low	30	35	35
Low	Permanent	Medium	High	Medium	25	30	45
Low	Permanent	Medium	High	High	25	25	50
Low	Permanent	High	Low	Low	20	25	55
Low	Permanent	High	Low	Medium	15	20	65
Low	Permanent	High	Low	High	15	15	70
Low	Permanent	High	Medium	Low	25	30	45
Low	Permanent	High	Medium	Medium	20	25	55
Low	Permanent	High	Medium	High	20	20	60
Low	Permanent	High	High	Low	35	40	25
Low	Permanent	High	High	Medium	30	35	35
Low	Permanent	High	High	High	30	30	40
Average	Ephemeral	Low	Low	Low	60	40	0
Average	Ephemeral	Low	Low	Medium	55	45	0
Average	Ephemeral	Low	Low	High	55	45	0
Average	Ephemeral	Low	Medium	Low	65	35	0
Average	Ephemeral	Low	Medium	Medium	60	40	0
Average	Ephemeral	Low	Medium	High	60	40	0
Average	Ephemeral	Low	High	Low	75	25	0
Average	Ephemeral	Low	High	Medium	70	30	0
Average	Ephemeral	Low	High	High	70	30	0
Average	Ephemeral	Medium	Low	Low	60	40	0
Average	Ephemeral	Medium	Low	Medium	55	45	0
Average	Ephemeral	Medium	Low	High	55	40	5
Average	Ephemeral	Medium	Medium	Low	65	35	0
Average	Ephemeral	Medium	Medium	Medium	60	40	0
Average	Ephemeral	Medium	Medium	High	60	40	0
Average	Ephemeral	Medium	High	Low	75	25	0

Inputs					Prey availability		
Competitors	Water availability	Emergent	Floating	Water quality	Low	Average	High
Average	Ephemeral	Medium	High	Medium	70	30	0
Average	Ephemeral	Medium	High	High	70	30	0
Average	Ephemeral	High	Low	Low	65	35	0
Average	Ephemeral	High	Low	Medium	60	40	0
Average	Ephemeral	High	Low	High	60	40	0
Average	Ephemeral	High	Medium	Low	70	30	0
Average	Ephemeral	High	Medium	Medium	65	35	0
Average	Ephemeral	High	Medium	High	65	35	0
Average	Ephemeral	High	High	Low	80	20	0
Average	Ephemeral	High	High	Medium	75	25	0
Average	Ephemeral	High	High	High	75	25	0
Average	Winter	Low	Low	Low	60	40	0
Average	Winter	Low	Low	Medium	55	40	5
Average	Winter	Low	Low	High	55	35	10
Average	Winter	Low	Medium	Low	65	35	0
Average	Winter	Low	Medium	Medium	60	40	0
Average	Winter	Low	Medium	High	60	40	0
Average	Winter	Low	High	Low	75	25	0
Average	Winter	Low	High	Medium	70	30	0
Average	Winter	Low	High	High	70	30	0
Average	Winter	Medium	Low	Low	60	40	0
Average	Winter	Medium	Low	Medium	55	35	10
Average	Winter	Medium	Low	High	55	30	15
Average	Winter	Medium	Medium	Low	65	35	0
Average	Winter	Medium	Medium	Medium	60	40	0
Average	Winter	Medium	Medium	High	60	35	5
Average	Winter	Medium	High	Low	75	25	0
Average	Winter	Medium	High	Medium	70	30	0
Average	Winter	Medium	High	High	70	30	0
Average	Winter	High	Low	Low	65	35	0
Average	Winter	High	Low	Medium	60	40	0
Average	Winter	High	Low	High	60	35	5
Average	Winter	High	Medium	Low	70	30	0
Average	Winter	High	Medium	Medium	65	35	0
Average	Winter	High	Medium	High	65	35	0
Average	Winter	High	High	Low	80	20	0
Average	Winter	High	High	Medium	75	25	0
Average	Winter	High	High	High	75	25	0
Average	Groundwater	Low	Low	Low	50	35	15

Inputs					Prey availability		
Competitors	Water availability	Emergent	Floating	Water quality	Low	Average	High
Average	Groundwater	Low	Low	Medium	45	30	25
Average	Groundwater	Low	Low	High	45	25	30
Average	Groundwater	Low	Medium	Low	55	40	5
Average	Groundwater	Low	Medium	Medium	50	35	15
Average	Groundwater	Low	Medium	High	50	30	20
Average	Groundwater	Low	High	Low	65	35	0
Average	Groundwater	Low	High	Medium	60	40	0
Average	Groundwater	Low	High	High	60	40	0
Average	Groundwater	Medium	Low	Low	50	30	20
Average	Groundwater	Medium	Low	Medium	45	25	30
Average	Groundwater	Medium	Low	High	45	20	35
Average	Groundwater	Medium	Medium	Low	55	35	10
Average	Groundwater	Medium	Medium	Medium	50	30	20
Average	Groundwater	Medium	Medium	High	50	25	25
Average	Groundwater	Medium	High	Low	65	35	0
Average	Groundwater	Medium	High	Medium	60	40	0
Average	Groundwater	Medium	High	High	60	35	5
Average	Groundwater	High	Low	Low	55	35	10
Average	Groundwater	High	Low	Medium	50	30	20
Average	Groundwater	High	Low	High	50	25	25
Average	Groundwater	High	Medium	Low	60	40	0
Average	Groundwater	High	Medium	Medium	55	35	10
Average	Groundwater	High	Medium	High	55	30	15
Average	Groundwater	High	High	Low	70	30	0
Average	Groundwater	High	High	Medium	65	35	0
Average	Groundwater	High	High	High	65	35	0
Average	Summer	Low	Low	Low	25	30	45
Average	Summer	Low	Low	Medium	20	25	55
Average	Summer	Low	Low	High	20	20	60
Average	Summer	Low	Medium	Low	30	35	35
Average	Summer	Low	Medium	Medium	25	30	45
Average	Summer	Low	Medium	High	25	25	50
Average	Summer	Low	High	Low	40	45	15
Average	Summer	Low	High	Medium	35	40	25
Average	Summer	Low	High	High	35	35	30
Average	Summer	Medium	Low	Low	25	25	50
Average	Summer	Medium	Low	Medium	20	20	60
Average	Summer	Medium	Low	High	20	15	65
Average	Summer	Medium	Medium	Low	30	30	40

Inputs					Prey availability		
Competitors	Water availability	Emergent	Floating	Water quality	Low	Average	High
Average	Summer	Medium	Medium	Medium	25	25	50
Average	Summer	Medium	Medium	High	25	20	55
Average	Summer	Medium	High	Low	40	40	20
Average	Summer	Medium	High	Medium	35	35	30
Average	Summer	Medium	High	High	35	30	35
Average	Summer	High	Low	Low	30	30	40
Average	Summer	High	Low	Medium	25	25	50
Average	Summer	High	Low	High	25	20	55
Average	Summer	High	Medium	Low	35	35	30
Average	Summer	High	Medium	Medium	30	30	40
Average	Summer	High	Medium	High	30	25	45
Average	Summer	High	High	Low	45	45	10
Average	Summer	High	High	Medium	40	40	20
Average	Summer	High	High	High	40	35	25
Average	Permanent	Low	Low	Low	20	25	55
Average	Permanent	Low	Low	Medium	15	20	65
Average	Permanent	Low	Low	High	15	15	70
Average	Permanent	Low	Medium	Low	25	30	45
Average	Permanent	Low	Medium	Medium	20	25	55
Average	Permanent	Low	Medium	High	20	20	60
Average	Permanent	Low	High	Low	35	40	25
Average	Permanent	Low	High	Medium	30	35	35
Average	Permanent	Low	High	High	30	30	40
Average	Permanent	Medium	Low	Low	20	20	60
Average	Permanent	Medium	Low	Medium	15	15	70
Average	Permanent	Medium	Low	High	15	10	75
Average	Permanent	Medium	Medium	Low	25	25	50
Average	Permanent	Medium	Medium	Medium	20	20	60
Average	Permanent	Medium	Medium	High	20	15	65
Average	Permanent	Medium	High	Low	35	35	30
Average	Permanent	Medium	High	Medium	30	30	40
Average	Permanent	Medium	High	High	30	25	45
Average	Permanent	High	Low	Low	25	25	50
Average	Permanent	High	Low	Medium	20	20	60
Average	Permanent	High	Low	High	20	15	65
Average	Permanent	High	Medium	Low	30	30	40
Average	Permanent	High	Medium	Medium	25	25	50
Average	Permanent	High	Medium	High	25	20	55
Average	Permanent	High	High	Low	40	40	20

Inputs					Prey availability		
Competitors	Water availability	Emergent	Floating	Water quality	Low	Average	High
Average	Permanent	High	High	Medium	35	35	30
Average	Permanent	High	High	High	35	30	35
High	Ephemeral	Low	Low	Low	60	40	0
High	Ephemeral	Low	Low	Medium	55	45	0
High	Ephemeral	Low	Low	High	55	45	0
High	Ephemeral	Low	Medium	Low	65	35	0
High	Ephemeral	Low	Medium	Medium	60	40	0
High	Ephemeral	Low	Medium	High	60	40	0
High	Ephemeral	Low	High	Low	75	25	0
High	Ephemeral	Low	High	Medium	70	30	0
High	Ephemeral	Low	High	High	70	30	0
High	Ephemeral	Medium	Low	Low	60	40	0
High	Ephemeral	Medium	Low	Medium	55	45	0
High	Ephemeral	Medium	Low	High	55	45	0
High	Ephemeral	Medium	Medium	Low	65	35	0
High	Ephemeral	Medium	Medium	Medium	60	40	0
High	Ephemeral	Medium	Medium	High	60	40	0
High	Ephemeral	Medium	High	Low	75	25	0
High	Ephemeral	Medium	High	Medium	70	30	0
High	Ephemeral	Medium	High	High	70	30	0
High	Ephemeral	High	Low	Low	65	35	0
High	Ephemeral	High	Low	Medium	60	40	0
High	Ephemeral	High	Low	High	60	40	0
High	Ephemeral	High	Medium	Low	70	30	0
High	Ephemeral	High	Medium	Medium	65	35	0
High	Ephemeral	High	Medium	High	65	35	0
High	Ephemeral	High	High	Low	80	20	0
High	Ephemeral	High	High	Medium	75	25	0
High	Ephemeral	High	High	High	75	25	0
High	Winter	Low	Low	Low	60	40	0
High	Winter	Low	Low	Medium	55	45	0
High	Winter	Low	Low	High	55	40	5
High	Winter	Low	Medium	Low	65	35	0
High	Winter	Low	Medium	Medium	60	40	0
High	Winter	Low	Medium	High	60	40	0
High	Winter	Low	High	Low	75	25	0
High	Winter	Low	High	Medium	70	30	0
High	Winter	Low	High	High	70	30	0
High	Winter	Medium	Low	Low	60	40	0

Inputs					Prey availability		
Competitors	Water availability	Emergent	Floating	Water quality	Low	Average	High
High	Winter	Medium	Low	Medium	55	40	5
High	Winter	Medium	Low	High	55	35	10
High	Winter	Medium	Medium	Low	65	35	0
High	Winter	Medium	Medium	Medium	60	40	0
High	Winter	Medium	Medium	High	60	40	0
High	Winter	Medium	High	Low	75	25	0
High	Winter	Medium	High	Medium	70	30	0
High	Winter	Medium	High	High	70	30	0
High	Winter	High	Low	Low	65	35	0
High	Winter	High	Low	Medium	60	40	0
High	Winter	High	Low	High	60	40	0
High	Winter	High	Medium	Low	70	30	0
High	Winter	High	Medium	Medium	65	35	0
High	Winter	High	Medium	High	65	35	0
High	Winter	High	High	Low	80	20	0
High	Winter	High	High	Medium	75	25	0
High	Winter	High	High	High	75	25	0
High	Groundwater	Low	Low	Low	50	40	10
High	Groundwater	Low	Low	Medium	45	35	20
High	Groundwater	Low	Low	High	45	30	25
High	Groundwater	Low	Medium	Low	55	45	0
High	Groundwater	Low	Medium	Medium	50	40	10
High	Groundwater	Low	Medium	High	50	35	15
High	Groundwater	Low	High	Low	65	35	0
High	Groundwater	Low	High	Medium	60	40	0
High	Groundwater	Low	High	High	60	40	0
High	Groundwater	Medium	Low	Low	50	35	15
High	Groundwater	Medium	Low	Medium	45	30	25
High	Groundwater	Medium	Low	High	45	25	30
High	Groundwater	Medium	Medium	Low	55	40	5
High	Groundwater	Medium	Medium	Medium	50	35	15
High	Groundwater	Medium	Medium	High	50	30	20
High	Groundwater	Medium	High	Low	65	35	0
High	Groundwater	Medium	High	Medium	60	40	0
High	Groundwater	Medium	High	High	60	40	0
High	Groundwater	High	Low	Low	55	40	5
High	Groundwater	High	Low	Medium	50	35	15
High	Groundwater	High	Low	High	50	30	20
High	Groundwater	High	Medium	Low	60	40	0

Inputs					Prey availability		
Competitors	Water availability	Emergent	Floating	Water quality	Low	Average	High
High	Groundwater	High	Medium	Medium	55	40	5
High	Groundwater	High	Medium	High	55	35	10
High	Groundwater	High	High	Low	70	30	0
High	Groundwater	High	High	Medium	65	35	0
High	Groundwater	High	High	High	65	35	0
High	Summer	Low	Low	Low	25	35	40
High	Summer	Low	Low	Medium	20	30	50
High	Summer	Low	Low	High	20	25	55
High	Summer	Low	Medium	Low	30	40	30
High	Summer	Low	Medium	Medium	25	35	40
High	Summer	Low	Medium	High	25	30	45
High	Summer	Low	High	Low	40	50	10
High	Summer	Low	High	Medium	35	45	20
High	Summer	Low	High	High	35	40	25
High	Summer	Medium	Low	Low	25	30	45
High	Summer	Medium	Low	Medium	20	25	55
High	Summer	Medium	Low	High	20	20	60
High	Summer	Medium	Medium	Low	30	35	35
High	Summer	Medium	Medium	Medium	25	30	45
High	Summer	Medium	Medium	High	25	25	50
High	Summer	Medium	High	Low	40	45	15
High	Summer	Medium	High	Medium	35	40	25
High	Summer	Medium	High	High	35	35	30
High	Summer	High	Low	Low	30	35	35
High	Summer	High	Low	Medium	25	30	45
High	Summer	High	Low	High	25	25	50
High	Summer	High	Medium	Low	35	40	25
High	Summer	High	Medium	Medium	30	35	35
High	Summer	High	Medium	High	30	30	40
High	Summer	High	High	Low	45	50	5
High	Summer	High	High	Medium	40	45	15
High	Summer	High	High	High	40	40	20
High	Permanent	Low	Low	Low	20	30	50
High	Permanent	Low	Low	Medium	15	25	60
High	Permanent	Low	Low	High	15	20	65
High	Permanent	Low	Medium	Low	25	35	40
High	Permanent	Low	Medium	Medium	20	30	50
High	Permanent	Low	Medium	High	20	25	55
High	Permanent	Low	High	Low	35	45	20

Inputs					Prey availability		
Competitors	Water availability	Emergent	Floating	Water quality	Low	Average	High
High	Permanent	Low	High	Medium	30	40	30
High	Permanent	Low	High	High	30	35	35
High	Permanent	Medium	Low	Low	20	25	55
High	Permanent	Medium	Low	Medium	15	20	65
High	Permanent	Medium	Low	High	15	15	70
High	Permanent	Medium	Medium	Low	25	30	45
High	Permanent	Medium	Medium	Medium	20	25	55
High	Permanent	Medium	Medium	High	20	20	60
High	Permanent	Medium	High	Low	35	40	25
High	Permanent	Medium	High	Medium	30	35	35
High	Permanent	Medium	High	High	30	30	40
High	Permanent	High	Low	Low	25	30	45
High	Permanent	High	Low	Medium	20	25	55
High	Permanent	High	Low	High	20	20	60
High	Permanent	High	Medium	Low	30	35	35
High	Permanent	High	Medium	Medium	25	30	45
High	Permanent	High	Medium	High	25	25	50
High	Permanent	High	High	Low	40	45	15
High	Permanent	High	High	Medium	35	40	25
High	Permanent	High	High	High	35	35	30

Table B3. Conditional probability table (CPT) for the habitat quality node.

[Numbers in the table represent probabilities as percentages (that is, 100=100% or 1.00) that the response node will take the value in the column (low, average, high), given the value of the parent nodes (water availability, proportion emergent vegetation, proportion floating vegetation, proportion terrestrial vegetation, winter refuge availability, proportion submerged vegetation, and water quality)]

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	Low	Low	Low	Low	Low	Low	100	0	0
Ephemeral	Low	Low	Low	Low	Low	Medium	100	0	0
Ephemeral	Low	Low	Low	Low	Low	High	100	0	0
Ephemeral	Low	Low	Low	Low	Medium	Low	100	0	0
Ephemeral	Low	Low	Low	Low	Medium	Medium	100	0	0
Ephemeral	Low	Low	Low	Low	Medium	High	100	0	0
Ephemeral	Low	Low	Low	Low	High	Low	100	0	0
Ephemeral	Low	Low	Low	Low	High	Medium	100	0	0
Ephemeral	Low	Low	Low	Low	High	High	100	0	0
Ephemeral	Low	Low	Low	Medium	Low	Low	100	0	0
Ephemeral	Low	Low	Low	Medium	Low	Medium	100	0	0
Ephemeral	Low	Low	Low	Medium	Low	High	100	0	0
Ephemeral	Low	Low	Low	Medium	Medium	Low	100	0	0
Ephemeral	Low	Low	Low	Medium	Medium	Medium	100	0	0
Ephemeral	Low	Low	Low	Medium	Medium	High	100	0	0
Ephemeral	Low	Low	Low	Medium	High	Low	100	0	0
Ephemeral	Low	Low	Low	Medium	High	Medium	100	0	0
Ephemeral	Low	Low	Low	Medium	High	High	100	0	0
Ephemeral	Low	Low	Low	High	Low	Low	100	0	0
Ephemeral	Low	Low	Low	High	Low	Medium	100	0	0
Ephemeral	Low	Low	Low	High	Low	High	100	0	0
Ephemeral	Low	Low	Low	High	Medium	Low	100	0	0
Ephemeral	Low	Low	Low	High	Medium	Medium	100	0	0
Ephemeral	Low	Low	Low	High	Medium	High	100	0	0
Ephemeral	Low	Low	Low	High	High	Low	100	0	0
Ephemeral	Low	Low	Low	High	High	Medium	100	0	0
Ephemeral	Low	Low	Low	High	High	High	100	0	0
Ephemeral	Low	Low	Medium	Low	Low	Low	100	0	0
Ephemeral	Low	Low	Medium	Low	Low	Medium	100	0	0
Ephemeral	Low	Low	Medium	Low	Low	High	100	0	0
Ephemeral	Low	Low	Medium	Low	Medium	Low	100	0	0
Ephemeral	Low	Low	Medium	Low	Medium	Medium	100	0	0
Ephemeral	Low	Low	Medium	Low	Medium	High	100	0	0
Ephemeral	Low	Low	Medium	Low	High	Low	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	Low	Low	Medium	Low	High	Medium	100	0	0
Ephemeral	Low	Low	Medium	Low	High	High	100	0	0
Ephemeral	Low	Low	Medium	Medium	Low	Low	100	0	0
Ephemeral	Low	Low	Medium	Medium	Low	Medium	100	0	0
Ephemeral	Low	Low	Medium	Medium	Low	High	100	0	0
Ephemeral	Low	Low	Medium	Medium	Medium	Low	100	0	0
Ephemeral	Low	Low	Medium	Medium	Medium	Medium	100	0	0
Ephemeral	Low	Low	Medium	Medium	Medium	High	100	0	0
Ephemeral	Low	Low	Medium	Medium	High	Low	100	0	0
Ephemeral	Low	Low	Medium	Medium	High	Medium	100	0	0
Ephemeral	Low	Low	Medium	Medium	High	High	100	0	0
Ephemeral	Low	Low	Medium	High	Low	Low	100	0	0
Ephemeral	Low	Low	Medium	High	Low	Medium	100	0	0
Ephemeral	Low	Low	Medium	High	Low	High	100	0	0
Ephemeral	Low	Low	Medium	High	Medium	Low	100	0	0
Ephemeral	Low	Low	Medium	High	Medium	Medium	100	0	0
Ephemeral	Low	Low	Medium	High	Medium	High	100	0	0
Ephemeral	Low	Low	Medium	High	High	Low	100	0	0
Ephemeral	Low	Low	Medium	High	High	Medium	100	0	0
Ephemeral	Low	Low	Medium	High	High	High	100	0	0
Ephemeral	Low	Low	High	Low	Low	Low	100	0	0
Ephemeral	Low	Low	High	Low	Low	Medium	100	0	0
Ephemeral	Low	Low	High	Low	Low	High	100	0	0
Ephemeral	Low	Low	High	Low	Medium	Low	100	0	0
Ephemeral	Low	Low	High	Low	Medium	Medium	100	0	0
Ephemeral	Low	Low	High	Low	Medium	High	100	0	0
Ephemeral	Low	Low	High	Low	High	Low	100	0	0
Ephemeral	Low	Low	High	Low	High	Medium	100	0	0
Ephemeral	Low	Low	High	Low	High	High	100	0	0
Ephemeral	Low	Low	High	Medium	Low	Low	100	0	0
Ephemeral	Low	Low	High	Medium	Low	Medium	100	0	0
Ephemeral	Low	Low	High	Medium	Low	High	100	0	0
Ephemeral	Low	Low	High	Medium	Medium	Low	100	0	0
Ephemeral	Low	Low	High	Medium	Medium	Medium	100	0	0
Ephemeral	Low	Low	High	Medium	Medium	High	100	0	0
Ephemeral	Low	Low	High	Medium	High	Low	100	0	0
Ephemeral	Low	Low	High	Medium	High	Medium	100	0	0
Ephemeral	Low	Low	High	Medium	High	High	100	0	0
Ephemeral	Low	Low	High	High	Low	Low	100	0	0
Ephemeral	Low	Low	High	High	Low	Medium	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	Low	Low	High	High	Low	High	100	0	0
Ephemeral	Low	Low	High	High	Medium	Low	100	0	0
Ephemeral	Low	Low	High	High	Medium	Medium	100	0	0
Ephemeral	Low	Low	High	High	Medium	High	100	0	0
Ephemeral	Low	Low	High	High	High	Low	100	0	0
Ephemeral	Low	Low	High	High	High	Medium	100	0	0
Ephemeral	Low	Low	High	High	High	High	100	0	0
Ephemeral	Low	Medium	Low	Low	Low	Low	100	0	0
Ephemeral	Low	Medium	Low	Low	Low	Medium	100	0	0
Ephemeral	Low	Medium	Low	Low	Low	High	100	0	0
Ephemeral	Low	Medium	Low	Low	Medium	Low	100	0	0
Ephemeral	Low	Medium	Low	Low	Medium	Medium	100	0	0
Ephemeral	Low	Medium	Low	Low	Medium	High	100	0	0
Ephemeral	Low	Medium	Low	Low	High	Low	100	0	0
Ephemeral	Low	Medium	Low	Low	High	Medium	100	0	0
Ephemeral	Low	Medium	Low	Low	High	High	100	0	0
Ephemeral	Low	Medium	Low	Medium	Low	Low	100	0	0
Ephemeral	Low	Medium	Low	Medium	Low	Medium	100	0	0
Ephemeral	Low	Medium	Low	Medium	Low	High	100	0	0
Ephemeral	Low	Medium	Low	Medium	Medium	Low	100	0	0
Ephemeral	Low	Medium	Low	Medium	Medium	Medium	100	0	0
Ephemeral	Low	Medium	Low	Medium	Medium	High	100	0	0
Ephemeral	Low	Medium	Low	Medium	High	Low	100	0	0
Ephemeral	Low	Medium	Low	Medium	High	Medium	100	0	0
Ephemeral	Low	Medium	Low	Medium	High	High	100	0	0
Ephemeral	Low	Medium	Low	High	Low	Low	100	0	0
Ephemeral	Low	Medium	Low	High	Low	Medium	100	0	0
Ephemeral	Low	Medium	Low	High	Low	High	100	0	0
Ephemeral	Low	Medium	Low	High	Medium	Low	100	0	0
Ephemeral	Low	Medium	Low	High	Medium	Medium	100	0	0
Ephemeral	Low	Medium	Low	High	Medium	High	100	0	0
Ephemeral	Low	Medium	Low	High	High	Low	100	0	0
Ephemeral	Low	Medium	Low	High	High	Medium	100	0	0
Ephemeral	Low	Medium	Low	High	High	High	100	0	0
Ephemeral	Low	Medium	Medium	Low	Low	Low	100	0	0
Ephemeral	Low	Medium	Medium	Low	Low	Medium	100	0	0
Ephemeral	Low	Medium	Medium	Low	Low	High	100	0	0
Ephemeral	Low	Medium	Medium	Low	Medium	Low	100	0	0
Ephemeral	Low	Medium	Medium	Low	Medium	Medium	100	0	0
Ephemeral	Low	Medium	Medium	Low	Medium	High	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	Low	Medium	Medium	Low	High	Low	100	0	0
Ephemeral	Low	Medium	Medium	Low	High	Medium	100	0	0
Ephemeral	Low	Medium	Medium	Low	High	High	100	0	0
Ephemeral	Low	Medium	Medium	Medium	Low	Low	100	0	0
Ephemeral	Low	Medium	Medium	Medium	Low	Medium	100	0	0
Ephemeral	Low	Medium	Medium	Medium	Low	High	100	0	0
Ephemeral	Low	Medium	Medium	Medium	Medium	Low	100	0	0
Ephemeral	Low	Medium	Medium	Medium	Medium	Medium	100	0	0
Ephemeral	Low	Medium	Medium	Medium	Medium	High	100	0	0
Ephemeral	Low	Medium	Medium	Medium	High	Low	100	0	0
Ephemeral	Low	Medium	Medium	Medium	High	Medium	100	0	0
Ephemeral	Low	Medium	Medium	Medium	High	High	100	0	0
Ephemeral	Low	Medium	Medium	High	Low	Low	100	0	0
Ephemeral	Low	Medium	Medium	High	Low	Medium	100	0	0
Ephemeral	Low	Medium	Medium	High	Low	High	100	0	0
Ephemeral	Low	Medium	Medium	High	Medium	Low	100	0	0
Ephemeral	Low	Medium	Medium	High	Medium	Medium	100	0	0
Ephemeral	Low	Medium	Medium	High	Medium	High	100	0	0
Ephemeral	Low	Medium	Medium	High	High	Low	100	0	0
Ephemeral	Low	Medium	Medium	High	High	Medium	100	0	0
Ephemeral	Low	Medium	Medium	High	High	High	100	0	0
Ephemeral	Low	Medium	High	Low	Low	Low	100	0	0
Ephemeral	Low	Medium	High	Low	Low	Medium	100	0	0
Ephemeral	Low	Medium	High	Low	Low	High	100	0	0
Ephemeral	Low	Medium	High	Low	Medium	Low	100	0	0
Ephemeral	Low	Medium	High	Low	Medium	Medium	100	0	0
Ephemeral	Low	Medium	High	Low	Medium	High	100	0	0
Ephemeral	Low	Medium	High	Low	High	Low	100	0	0
Ephemeral	Low	Medium	High	Low	High	Medium	100	0	0
Ephemeral	Low	Medium	High	Low	High	High	100	0	0
Ephemeral	Low	Medium	High	Medium	Low	Low	100	0	0
Ephemeral	Low	Medium	High	Medium	Low	Medium	100	0	0
Ephemeral	Low	Medium	High	Medium	Low	High	100	0	0
Ephemeral	Low	Medium	High	Medium	Medium	Low	100	0	0
Ephemeral	Low	Medium	High	Medium	Medium	Medium	100	0	0
Ephemeral	Low	Medium	High	Medium	Medium	High	100	0	0
Ephemeral	Low	Medium	High	Medium	High	Low	100	0	0
Ephemeral	Low	Medium	High	Medium	High	Medium	100	0	0
Ephemeral	Low	Medium	High	Medium	High	High	100	0	0
Ephemeral	Low	Medium	High	High	Low	Low	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	Low	Medium	High	High	Low	Medium	100	0	0
Ephemeral	Low	Medium	High	High	Low	High	100	0	0
Ephemeral	Low	Medium	High	High	Medium	Low	100	0	0
Ephemeral	Low	Medium	High	High	Medium	Medium	100	0	0
Ephemeral	Low	Medium	High	High	Medium	High	100	0	0
Ephemeral	Low	Medium	High	High	High	Low	100	0	0
Ephemeral	Low	Medium	High	High	High	Medium	100	0	0
Ephemeral	Low	Medium	High	High	High	High	100	0	0
Ephemeral	Low	High	Low	Low	Low	Low	100	0	0
Ephemeral	Low	High	Low	Low	Low	Medium	100	0	0
Ephemeral	Low	High	Low	Low	Low	High	100	0	0
Ephemeral	Low	High	Low	Low	Medium	Low	100	0	0
Ephemeral	Low	High	Low	Low	Medium	Medium	100	0	0
Ephemeral	Low	High	Low	Low	Medium	High	100	0	0
Ephemeral	Low	High	Low	Low	High	Low	100	0	0
Ephemeral	Low	High	Low	Low	High	Medium	100	0	0
Ephemeral	Low	High	Low	Low	High	High	100	0	0
Ephemeral	Low	High	Low	Medium	Low	Low	100	0	0
Ephemeral	Low	High	Low	Medium	Low	Medium	100	0	0
Ephemeral	Low	High	Low	Medium	Low	High	100	0	0
Ephemeral	Low	High	Low	Medium	Medium	Low	100	0	0
Ephemeral	Low	High	Low	Medium	Medium	Medium	100	0	0
Ephemeral	Low	High	Low	Medium	Medium	High	100	0	0
Ephemeral	Low	High	Low	Medium	High	Low	100	0	0
Ephemeral	Low	High	Low	Medium	High	Medium	100	0	0
Ephemeral	Low	High	Low	Medium	High	High	100	0	0
Ephemeral	Low	High	Low	High	Low	Low	100	0	0
Ephemeral	Low	High	Low	High	Low	Medium	100	0	0
Ephemeral	Low	High	Low	High	Low	High	100	0	0
Ephemeral	Low	High	Low	High	Medium	Low	100	0	0
Ephemeral	Low	High	Low	High	Medium	Medium	100	0	0
Ephemeral	Low	High	Low	High	Medium	High	100	0	0
Ephemeral	Low	High	Low	High	High	Low	100	0	0
Ephemeral	Low	High	Low	High	High	Medium	100	0	0
Ephemeral	Low	High	Low	High	High	High	100	0	0
Ephemeral	Low	High	Medium	Low	Low	Low	100	0	0
Ephemeral	Low	High	Medium	Low	Low	Medium	100	0	0
Ephemeral	Low	High	Medium	Low	Low	High	100	0	0
Ephemeral	Low	High	Medium	Low	Medium	Low	100	0	0
Ephemeral	Low	High	Medium	Low	Medium	Medium	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	Low	High	Medium	Low	Medium	High	100	0	0
Ephemeral	Low	High	Medium	Low	High	Low	100	0	0
Ephemeral	Low	High	Medium	Low	High	Medium	100	0	0
Ephemeral	Low	High	Medium	Low	High	High	100	0	0
Ephemeral	Low	High	Medium	Medium	Low	Low	100	0	0
Ephemeral	Low	High	Medium	Medium	Low	Medium	100	0	0
Ephemeral	Low	High	Medium	Medium	Low	High	100	0	0
Ephemeral	Low	High	Medium	Medium	Medium	Low	100	0	0
Ephemeral	Low	High	Medium	Medium	Medium	Medium	100	0	0
Ephemeral	Low	High	Medium	Medium	Medium	High	100	0	0
Ephemeral	Low	High	Medium	Medium	High	Low	100	0	0
Ephemeral	Low	High	Medium	Medium	High	Medium	100	0	0
Ephemeral	Low	High	Medium	Medium	High	High	100	0	0
Ephemeral	Low	High	Medium	High	Low	Low	100	0	0
Ephemeral	Low	High	Medium	High	Low	Medium	100	0	0
Ephemeral	Low	High	Medium	High	Low	High	100	0	0
Ephemeral	Low	High	Medium	High	Medium	Low	100	0	0
Ephemeral	Low	High	Medium	High	Medium	Medium	100	0	0
Ephemeral	Low	High	Medium	High	Medium	High	100	0	0
Ephemeral	Low	High	Medium	High	High	Low	100	0	0
Ephemeral	Low	High	Medium	High	High	Medium	100	0	0
Ephemeral	Low	High	Medium	High	High	High	100	0	0
Ephemeral	Low	High	High	Low	Low	Low	100	0	0
Ephemeral	Low	High	High	Low	Low	Medium	100	0	0
Ephemeral	Low	High	High	Low	Low	High	100	0	0
Ephemeral	Low	High	High	Low	Medium	Low	100	0	0
Ephemeral	Low	High	High	Low	Medium	Medium	100	0	0
Ephemeral	Low	High	High	Low	Medium	High	100	0	0
Ephemeral	Low	High	High	Low	High	Low	100	0	0
Ephemeral	Low	High	High	Low	High	Medium	100	0	0
Ephemeral	Low	High	High	Low	High	High	100	0	0
Ephemeral	Low	High	High	Medium	Low	Low	100	0	0
Ephemeral	Low	High	High	Medium	Low	Medium	100	0	0
Ephemeral	Low	High	High	Medium	Low	High	100	0	0
Ephemeral	Low	High	High	Medium	Medium	Low	100	0	0
Ephemeral	Low	High	High	Medium	Medium	Medium	100	0	0
Ephemeral	Low	High	High	Medium	Medium	High	100	0	0
Ephemeral	Low	High	High	Medium	High	Low	100	0	0
Ephemeral	Low	High	High	Medium	High	Medium	100	0	0
Ephemeral	Low	High	High	Medium	High	High	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	Low	High	High	High	Low	Low	100	0	0
Ephemeral	Low	High	High	High	Low	Medium	100	0	0
Ephemeral	Low	High	High	High	Low	High	100	0	0
Ephemeral	Low	High	High	High	Medium	Low	100	0	0
Ephemeral	Low	High	High	High	Medium	Medium	100	0	0
Ephemeral	Low	High	High	High	Medium	High	100	0	0
Ephemeral	Low	High	High	High	High	Low	100	0	0
Ephemeral	Low	High	High	High	High	Medium	100	0	0
Ephemeral	Low	High	High	High	High	High	100	0	0
Ephemeral	Medium	Low	Low	Low	Low	Low	100	0	0
Ephemeral	Medium	Low	Low	Low	Low	Medium	100	0	0
Ephemeral	Medium	Low	Low	Low	Low	High	100	0	0
Ephemeral	Medium	Low	Low	Low	Medium	Low	100	0	0
Ephemeral	Medium	Low	Low	Low	Medium	Medium	100	0	0
Ephemeral	Medium	Low	Low	Low	Medium	High	100	0	0
Ephemeral	Medium	Low	Low	Low	High	Low	100	0	0
Ephemeral	Medium	Low	Low	Low	High	Medium	100	0	0
Ephemeral	Medium	Low	Low	Low	High	High	100	0	0
Ephemeral	Medium	Low	Low	Medium	Low	Low	100	0	0
Ephemeral	Medium	Low	Low	Medium	Low	Medium	100	0	0
Ephemeral	Medium	Low	Low	Medium	Low	High	100	0	0
Ephemeral	Medium	Low	Low	Medium	Medium	Low	100	0	0
Ephemeral	Medium	Low	Low	Medium	Medium	Medium	100	0	0
Ephemeral	Medium	Low	Low	Medium	Medium	High	100	0	0
Ephemeral	Medium	Low	Low	Medium	High	Low	100	0	0
Ephemeral	Medium	Low	Low	Medium	High	Medium	100	0	0
Ephemeral	Medium	Low	Low	Medium	High	High	100	0	0
Ephemeral	Medium	Low	Low	High	Low	Low	100	0	0
Ephemeral	Medium	Low	Low	High	Low	Medium	100	0	0
Ephemeral	Medium	Low	Low	High	Low	High	100	0	0
Ephemeral	Medium	Low	Low	High	Medium	Low	100	0	0
Ephemeral	Medium	Low	Low	High	Medium	Medium	100	0	0
Ephemeral	Medium	Low	Low	High	Medium	High	100	0	0
Ephemeral	Medium	Low	Low	High	High	Low	100	0	0
Ephemeral	Medium	Low	Low	High	High	Medium	100	0	0
Ephemeral	Medium	Low	Low	High	High	High	100	0	0
Ephemeral	Medium	Low	Medium	Low	Low	Low	100	0	0
Ephemeral	Medium	Low	Medium	Low	Low	Medium	100	0	0
Ephemeral	Medium	Low	Medium	Low	Low	High	100	0	0
Ephemeral	Medium	Low	Medium	Low	Medium	Low	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	Medium	Low	Medium	Low	Medium	Medium	100	0	0
Ephemeral	Medium	Low	Medium	Low	Medium	High	100	0	0
Ephemeral	Medium	Low	Medium	Low	High	Low	100	0	0
Ephemeral	Medium	Low	Medium	Low	High	Medium	100	0	0
Ephemeral	Medium	Low	Medium	Low	High	High	100	0	0
Ephemeral	Medium	Low	Medium	Medium	Low	Low	100	0	0
Ephemeral	Medium	Low	Medium	Medium	Low	Medium	100	0	0
Ephemeral	Medium	Low	Medium	Medium	Low	High	100	0	0
Ephemeral	Medium	Low	Medium	Medium	Medium	Low	100	0	0
Ephemeral	Medium	Low	Medium	Medium	Medium	Medium	100	0	0
Ephemeral	Medium	Low	Medium	Medium	Medium	High	100	0	0
Ephemeral	Medium	Low	Medium	Medium	High	Low	100	0	0
Ephemeral	Medium	Low	Medium	Medium	High	Medium	100	0	0
Ephemeral	Medium	Low	Medium	Medium	High	High	100	0	0
Ephemeral	Medium	Low	Medium	High	Low	Low	100	0	0
Ephemeral	Medium	Low	Medium	High	Low	Medium	100	0	0
Ephemeral	Medium	Low	Medium	High	Low	High	100	0	0
Ephemeral	Medium	Low	Medium	High	Medium	Low	100	0	0
Ephemeral	Medium	Low	Medium	High	Medium	Medium	100	0	0
Ephemeral	Medium	Low	Medium	High	Medium	High	100	0	0
Ephemeral	Medium	Low	Medium	High	High	Low	100	0	0
Ephemeral	Medium	Low	Medium	High	High	Medium	100	0	0
Ephemeral	Medium	Low	Medium	High	High	High	100	0	0
Ephemeral	Medium	Low	High	Low	Low	Low	100	0	0
Ephemeral	Medium	Low	High	Low	Low	Medium	100	0	0
Ephemeral	Medium	Low	High	Low	Low	High	100	0	0
Ephemeral	Medium	Low	High	Low	Medium	Low	100	0	0
Ephemeral	Medium	Low	High	Low	Medium	Medium	100	0	0
Ephemeral	Medium	Low	High	Low	Medium	High	100	0	0
Ephemeral	Medium	Low	High	Low	High	Low	100	0	0
Ephemeral	Medium	Low	High	Low	High	Medium	100	0	0
Ephemeral	Medium	Low	High	Low	High	High	100	0	0
Ephemeral	Medium	Low	High	Medium	Low	Low	100	0	0
Ephemeral	Medium	Low	High	Medium	Low	Medium	100	0	0
Ephemeral	Medium	Low	High	Medium	Low	High	100	0	0
Ephemeral	Medium	Low	High	Medium	Medium	Low	100	0	0
Ephemeral	Medium	Low	High	Medium	Medium	Medium	100	0	0
Ephemeral	Medium	Low	High	Medium	Medium	High	100	0	0
Ephemeral	Medium	Low	High	Medium	High	Low	100	0	0
Ephemeral	Medium	Low	High	Medium	High	Medium	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	Medium	Low	High	Medium	High	High	100	0	0
Ephemeral	Medium	Low	High	High	Low	Low	100	0	0
Ephemeral	Medium	Low	High	High	Low	Medium	100	0	0
Ephemeral	Medium	Low	High	High	Low	High	100	0	0
Ephemeral	Medium	Low	High	High	Medium	Low	100	0	0
Ephemeral	Medium	Low	High	High	Medium	Medium	100	0	0
Ephemeral	Medium	Low	High	High	Medium	High	100	0	0
Ephemeral	Medium	Low	High	High	High	Low	100	0	0
Ephemeral	Medium	Low	High	High	High	Medium	100	0	0
Ephemeral	Medium	Low	High	High	High	High	100	0	0
Ephemeral	Medium	Medium	Low	Low	Low	Low	100	0	0
Ephemeral	Medium	Medium	Low	Low	Low	Medium	100	0	0
Ephemeral	Medium	Medium	Low	Low	Low	High	100	0	0
Ephemeral	Medium	Medium	Low	Low	Medium	Low	100	0	0
Ephemeral	Medium	Medium	Low	Low	Medium	Medium	100	0	0
Ephemeral	Medium	Medium	Low	Low	Medium	High	100	0	0
Ephemeral	Medium	Medium	Low	Low	High	Low	100	0	0
Ephemeral	Medium	Medium	Low	Low	High	Medium	100	0	0
Ephemeral	Medium	Medium	Low	Low	High	High	100	0	0
Ephemeral	Medium	Medium	Low	Medium	Low	Low	100	0	0
Ephemeral	Medium	Medium	Low	Medium	Low	Medium	100	0	0
Ephemeral	Medium	Medium	Low	Medium	Low	High	100	0	0
Ephemeral	Medium	Medium	Low	Medium	Medium	Low	100	0	0
Ephemeral	Medium	Medium	Low	Medium	Medium	Medium	100	0	0
Ephemeral	Medium	Medium	Low	Medium	Medium	High	100	0	0
Ephemeral	Medium	Medium	Low	Medium	High	Low	100	0	0
Ephemeral	Medium	Medium	Low	Medium	High	Medium	100	0	0
Ephemeral	Medium	Medium	Low	Medium	High	High	100	0	0
Ephemeral	Medium	Medium	Low	High	Low	Low	100	0	0
Ephemeral	Medium	Medium	Low	High	Low	Medium	100	0	0
Ephemeral	Medium	Medium	Low	High	Low	High	100	0	0
Ephemeral	Medium	Medium	Low	High	Medium	Low	100	0	0
Ephemeral	Medium	Medium	Low	High	Medium	Medium	100	0	0
Ephemeral	Medium	Medium	Low	High	Medium	High	100	0	0
Ephemeral	Medium	Medium	Low	High	High	Low	100	0	0
Ephemeral	Medium	Medium	Low	High	High	Medium	100	0	0
Ephemeral	Medium	Medium	Low	High	High	High	100	0	0
Ephemeral	Medium	Medium	Medium	Low	Low	Low	100	0	0
Ephemeral	Medium	Medium	Medium	Low	Low	Medium	100	0	0
Ephemeral	Medium	Medium	Medium	Low	Low	High	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	Medium	Medium	Medium	Low	Medium	Low	100	0	0
Ephemeral	Medium	Medium	Medium	Low	Medium	Medium	100	0	0
Ephemeral	Medium	Medium	Medium	Low	Medium	High	100	0	0
Ephemeral	Medium	Medium	Medium	Low	High	Low	100	0	0
Ephemeral	Medium	Medium	Medium	Low	High	Medium	100	0	0
Ephemeral	Medium	Medium	Medium	Low	High	High	100	0	0
Ephemeral	Medium	Medium	Medium	Medium	Low	Low	100	0	0
Ephemeral	Medium	Medium	Medium	Medium	Low	Medium	100	0	0
Ephemeral	Medium	Medium	Medium	Medium	Low	High	100	0	0
Ephemeral	Medium	Medium	Medium	Medium	Medium	Low	100	0	0
Ephemeral	Medium	Medium	Medium	Medium	Medium	Medium	100	0	0
Ephemeral	Medium	Medium	Medium	Medium	Medium	High	100	0	0
Ephemeral	Medium	Medium	Medium	Medium	High	Low	100	0	0
Ephemeral	Medium	Medium	Medium	Medium	High	Medium	100	0	0
Ephemeral	Medium	Medium	Medium	Medium	High	High	100	0	0
Ephemeral	Medium	Medium	Medium	High	Low	Low	100	0	0
Ephemeral	Medium	Medium	Medium	High	Low	Medium	100	0	0
Ephemeral	Medium	Medium	Medium	High	Low	High	100	0	0
Ephemeral	Medium	Medium	Medium	High	Medium	Low	100	0	0
Ephemeral	Medium	Medium	Medium	High	Medium	Medium	100	0	0
Ephemeral	Medium	Medium	Medium	High	Medium	High	100	0	0
Ephemeral	Medium	Medium	Medium	High	High	Low	100	0	0
Ephemeral	Medium	Medium	Medium	High	High	Medium	100	0	0
Ephemeral	Medium	Medium	Medium	High	High	High	100	0	0
Ephemeral	Medium	Medium	High	Low	Low	Low	100	0	0
Ephemeral	Medium	Medium	High	Low	Low	Medium	100	0	0
Ephemeral	Medium	Medium	High	Low	Low	High	100	0	0
Ephemeral	Medium	Medium	High	Low	Medium	Low	100	0	0
Ephemeral	Medium	Medium	High	Low	Medium	Medium	100	0	0
Ephemeral	Medium	Medium	High	Low	Medium	High	100	0	0
Ephemeral	Medium	Medium	High	Low	High	Low	100	0	0
Ephemeral	Medium	Medium	High	Low	High	Medium	100	0	0
Ephemeral	Medium	Medium	High	Low	High	High	100	0	0
Ephemeral	Medium	Medium	High	Medium	Low	Low	100	0	0
Ephemeral	Medium	Medium	High	Medium	Low	Medium	100	0	0
Ephemeral	Medium	Medium	High	Medium	Low	High	100	0	0
Ephemeral	Medium	Medium	High	Medium	Medium	Low	100	0	0
Ephemeral	Medium	Medium	High	Medium	Medium	Medium	100	0	0
Ephemeral	Medium	Medium	High	Medium	Medium	High	100	0	0
Ephemeral	Medium	Medium	High	Medium	High	Low	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	Medium	Medium	High	Medium	High	Medium	100	0	0
Ephemeral	Medium	Medium	High	Medium	High	High	100	0	0
Ephemeral	Medium	Medium	High	High	Low	Low	100	0	0
Ephemeral	Medium	Medium	High	High	Low	Medium	100	0	0
Ephemeral	Medium	Medium	High	High	Low	High	100	0	0
Ephemeral	Medium	Medium	High	High	Medium	Low	100	0	0
Ephemeral	Medium	Medium	High	High	Medium	Medium	100	0	0
Ephemeral	Medium	Medium	High	High	Medium	High	100	0	0
Ephemeral	Medium	Medium	High	High	High	Low	100	0	0
Ephemeral	Medium	Medium	High	High	High	Medium	100	0	0
Ephemeral	Medium	Medium	High	High	High	High	100	0	0
Ephemeral	Medium	High	Low	Low	Low	Low	100	0	0
Ephemeral	Medium	High	Low	Low	Low	Medium	100	0	0
Ephemeral	Medium	High	Low	Low	Low	High	100	0	0
Ephemeral	Medium	High	Low	Low	Medium	Low	100	0	0
Ephemeral	Medium	High	Low	Low	Medium	Medium	100	0	0
Ephemeral	Medium	High	Low	Low	Medium	High	100	0	0
Ephemeral	Medium	High	Low	Low	High	Low	100	0	0
Ephemeral	Medium	High	Low	Low	High	Medium	100	0	0
Ephemeral	Medium	High	Low	Low	High	High	100	0	0
Ephemeral	Medium	High	Low	Medium	Low	Low	100	0	0
Ephemeral	Medium	High	Low	Medium	Low	Medium	100	0	0
Ephemeral	Medium	High	Low	Medium	Low	High	100	0	0
Ephemeral	Medium	High	Low	Medium	Medium	Low	100	0	0
Ephemeral	Medium	High	Low	Medium	Medium	Medium	100	0	0
Ephemeral	Medium	High	Low	Medium	Medium	High	100	0	0
Ephemeral	Medium	High	Low	Medium	High	Low	100	0	0
Ephemeral	Medium	High	Low	Medium	High	Medium	100	0	0
Ephemeral	Medium	High	Low	Medium	High	High	100	0	0
Ephemeral	Medium	High	Low	High	Low	Low	100	0	0
Ephemeral	Medium	High	Low	High	Low	Medium	100	0	0
Ephemeral	Medium	High	Low	High	Low	High	100	0	0
Ephemeral	Medium	High	Low	High	Medium	Low	100	0	0
Ephemeral	Medium	High	Low	High	Medium	Medium	100	0	0
Ephemeral	Medium	High	Low	High	Medium	High	100	0	0
Ephemeral	Medium	High	Low	High	High	Low	100	0	0
Ephemeral	Medium	High	Low	High	High	Medium	100	0	0
Ephemeral	Medium	High	Low	High	High	High	100	0	0
Ephemeral	Medium	High	Medium	Low	Low	Low	100	0	0
Ephemeral	Medium	High	Medium	Low	Low	Medium	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	Medium	High	Medium	Low	Low	High	100	0	0
Ephemeral	Medium	High	Medium	Low	Medium	Low	100	0	0
Ephemeral	Medium	High	Medium	Low	Medium	Medium	100	0	0
Ephemeral	Medium	High	Medium	Low	Medium	High	100	0	0
Ephemeral	Medium	High	Medium	Low	High	Low	100	0	0
Ephemeral	Medium	High	Medium	Low	High	Medium	100	0	0
Ephemeral	Medium	High	Medium	Low	High	High	100	0	0
Ephemeral	Medium	High	Medium	Medium	Low	Low	100	0	0
Ephemeral	Medium	High	Medium	Medium	Low	Medium	100	0	0
Ephemeral	Medium	High	Medium	Medium	Low	High	100	0	0
Ephemeral	Medium	High	Medium	Medium	Medium	Low	100	0	0
Ephemeral	Medium	High	Medium	Medium	Medium	Medium	100	0	0
Ephemeral	Medium	High	Medium	Medium	Medium	High	100	0	0
Ephemeral	Medium	High	Medium	Medium	High	Low	100	0	0
Ephemeral	Medium	High	Medium	Medium	High	Medium	100	0	0
Ephemeral	Medium	High	Medium	Medium	High	High	100	0	0
Ephemeral	Medium	High	Medium	High	Low	Low	100	0	0
Ephemeral	Medium	High	Medium	High	Low	Medium	100	0	0
Ephemeral	Medium	High	Medium	High	Low	High	100	0	0
Ephemeral	Medium	High	Medium	High	Medium	Low	100	0	0
Ephemeral	Medium	High	Medium	High	Medium	Medium	100	0	0
Ephemeral	Medium	High	Medium	High	Medium	High	100	0	0
Ephemeral	Medium	High	Medium	High	High	Low	100	0	0
Ephemeral	Medium	High	Medium	High	High	Medium	100	0	0
Ephemeral	Medium	High	Medium	High	High	High	100	0	0
Ephemeral	Medium	High	High	Low	Low	Low	100	0	0
Ephemeral	Medium	High	High	Low	Low	Medium	100	0	0
Ephemeral	Medium	High	High	Low	Low	High	100	0	0
Ephemeral	Medium	High	High	Low	Medium	Low	100	0	0
Ephemeral	Medium	High	High	Low	Medium	Medium	100	0	0
Ephemeral	Medium	High	High	Low	Medium	High	100	0	0
Ephemeral	Medium	High	High	Low	High	Low	100	0	0
Ephemeral	Medium	High	High	Low	High	Medium	100	0	0
Ephemeral	Medium	High	High	Low	High	High	100	0	0
Ephemeral	Medium	High	High	Medium	Low	Low	100	0	0
Ephemeral	Medium	High	High	Medium	Low	Medium	100	0	0
Ephemeral	Medium	High	High	Medium	Low	High	100	0	0
Ephemeral	Medium	High	High	Medium	Medium	Low	100	0	0
Ephemeral	Medium	High	High	Medium	Medium	Medium	100	0	0
Ephemeral	Medium	High	High	Medium	Medium	High	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	Medium	High	High	Medium	High	Low	100	0	0
Ephemeral	Medium	High	High	Medium	High	Medium	100	0	0
Ephemeral	Medium	High	High	Medium	High	High	100	0	0
Ephemeral	Medium	High	High	High	Low	Low	100	0	0
Ephemeral	Medium	High	High	High	Low	Medium	100	0	0
Ephemeral	Medium	High	High	High	Low	High	100	0	0
Ephemeral	Medium	High	High	High	Medium	Low	100	0	0
Ephemeral	Medium	High	High	High	Medium	Medium	100	0	0
Ephemeral	Medium	High	High	High	Medium	High	100	0	0
Ephemeral	Medium	High	High	High	High	Low	100	0	0
Ephemeral	Medium	High	High	High	High	Medium	100	0	0
Ephemeral	Medium	High	High	High	High	High	100	0	0
Ephemeral	High	Low	Low	Low	Low	Low	100	0	0
Ephemeral	High	Low	Low	Low	Low	Medium	100	0	0
Ephemeral	High	Low	Low	Low	Low	High	100	0	0
Ephemeral	High	Low	Low	Low	Medium	Low	100	0	0
Ephemeral	High	Low	Low	Low	Medium	Medium	100	0	0
Ephemeral	High	Low	Low	Low	Medium	High	100	0	0
Ephemeral	High	Low	Low	Low	High	Low	100	0	0
Ephemeral	High	Low	Low	Low	High	Medium	100	0	0
Ephemeral	High	Low	Low	Low	High	High	100	0	0
Ephemeral	High	Low	Low	Medium	Low	Low	100	0	0
Ephemeral	High	Low	Low	Medium	Low	Medium	100	0	0
Ephemeral	High	Low	Low	Medium	Low	High	100	0	0
Ephemeral	High	Low	Low	Medium	Medium	Low	100	0	0
Ephemeral	High	Low	Low	Medium	Medium	Medium	100	0	0
Ephemeral	High	Low	Low	Medium	Medium	High	100	0	0
Ephemeral	High	Low	Low	Medium	High	Low	100	0	0
Ephemeral	High	Low	Low	Medium	High	Medium	100	0	0
Ephemeral	High	Low	Low	Medium	High	High	100	0	0
Ephemeral	High	Low	Low	High	Low	Low	100	0	0
Ephemeral	High	Low	Low	High	Low	Medium	100	0	0
Ephemeral	High	Low	Low	High	Low	High	100	0	0
Ephemeral	High	Low	Low	High	Medium	Low	100	0	0
Ephemeral	High	Low	Low	High	Medium	Medium	100	0	0
Ephemeral	High	Low	Low	High	Medium	High	100	0	0
Ephemeral	High	Low	Low	High	High	Low	100	0	0
Ephemeral	High	Low	Low	High	High	Medium	100	0	0
Ephemeral	High	Low	Low	High	High	High	100	0	0
Ephemeral	High	Low	Medium	Low	Low	Low	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	High	Low	Medium	Low	Low	Medium	100	0	0
Ephemeral	High	Low	Medium	Low	Low	High	100	0	0
Ephemeral	High	Low	Medium	Low	Medium	Low	100	0	0
Ephemeral	High	Low	Medium	Low	Medium	Medium	100	0	0
Ephemeral	High	Low	Medium	Low	Medium	High	100	0	0
Ephemeral	High	Low	Medium	Low	High	Low	100	0	0
Ephemeral	High	Low	Medium	Low	High	Medium	100	0	0
Ephemeral	High	Low	Medium	Low	High	High	100	0	0
Ephemeral	High	Low	Medium	Medium	Low	Low	100	0	0
Ephemeral	High	Low	Medium	Medium	Low	Medium	100	0	0
Ephemeral	High	Low	Medium	Medium	Low	High	100	0	0
Ephemeral	High	Low	Medium	Medium	Medium	Low	100	0	0
Ephemeral	High	Low	Medium	Medium	Medium	Medium	100	0	0
Ephemeral	High	Low	Medium	Medium	Medium	High	100	0	0
Ephemeral	High	Low	Medium	Medium	High	Low	100	0	0
Ephemeral	High	Low	Medium	Medium	High	Medium	100	0	0
Ephemeral	High	Low	Medium	Medium	High	High	100	0	0
Ephemeral	High	Low	Medium	High	Low	Low	100	0	0
Ephemeral	High	Low	Medium	High	Low	Medium	100	0	0
Ephemeral	High	Low	Medium	High	Low	High	100	0	0
Ephemeral	High	Low	Medium	High	Medium	Low	100	0	0
Ephemeral	High	Low	Medium	High	Medium	Medium	100	0	0
Ephemeral	High	Low	Medium	High	Medium	High	100	0	0
Ephemeral	High	Low	Medium	High	High	Low	100	0	0
Ephemeral	High	Low	Medium	High	High	Medium	100	0	0
Ephemeral	High	Low	Medium	High	High	High	100	0	0
Ephemeral	High	Low	High	Low	Low	Low	100	0	0
Ephemeral	High	Low	High	Low	Low	Medium	100	0	0
Ephemeral	High	Low	High	Low	Low	High	100	0	0
Ephemeral	High	Low	High	Low	Medium	Low	100	0	0
Ephemeral	High	Low	High	Low	Medium	Medium	100	0	0
Ephemeral	High	Low	High	Low	Medium	High	100	0	0
Ephemeral	High	Low	High	Low	High	Low	100	0	0
Ephemeral	High	Low	High	Low	High	Medium	100	0	0
Ephemeral	High	Low	High	Low	High	High	100	0	0
Ephemeral	High	Low	High	Medium	Low	Low	100	0	0
Ephemeral	High	Low	High	Medium	Low	Medium	100	0	0
Ephemeral	High	Low	High	Medium	Low	High	100	0	0
Ephemeral	High	Low	High	Medium	Medium	Low	100	0	0
Ephemeral	High	Low	High	Medium	Medium	Medium	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	High	Low	High	Medium	Medium	High	100	0	0
Ephemeral	High	Low	High	Medium	High	Low	100	0	0
Ephemeral	High	Low	High	Medium	High	Medium	100	0	0
Ephemeral	High	Low	High	Medium	High	High	100	0	0
Ephemeral	High	Low	High	High	Low	Low	100	0	0
Ephemeral	High	Low	High	High	Low	Medium	100	0	0
Ephemeral	High	Low	High	High	Low	High	100	0	0
Ephemeral	High	Low	High	High	Medium	Low	100	0	0
Ephemeral	High	Low	High	High	Medium	Medium	100	0	0
Ephemeral	High	Low	High	High	Medium	High	100	0	0
Ephemeral	High	Low	High	High	High	Low	100	0	0
Ephemeral	High	Low	High	High	High	Medium	100	0	0
Ephemeral	High	Low	High	High	High	High	100	0	0
Ephemeral	High	Medium	Low	Low	Low	Low	100	0	0
Ephemeral	High	Medium	Low	Low	Low	Medium	100	0	0
Ephemeral	High	Medium	Low	Low	Low	High	100	0	0
Ephemeral	High	Medium	Low	Low	Medium	Low	100	0	0
Ephemeral	High	Medium	Low	Low	Medium	Medium	100	0	0
Ephemeral	High	Medium	Low	Low	Medium	High	100	0	0
Ephemeral	High	Medium	Low	Low	High	Low	100	0	0
Ephemeral	High	Medium	Low	Low	High	Medium	100	0	0
Ephemeral	High	Medium	Low	Low	High	High	100	0	0
Ephemeral	High	Medium	Low	Medium	Low	Low	100	0	0
Ephemeral	High	Medium	Low	Medium	Low	Medium	100	0	0
Ephemeral	High	Medium	Low	Medium	Low	High	100	0	0
Ephemeral	High	Medium	Low	Medium	Medium	Low	100	0	0
Ephemeral	High	Medium	Low	Medium	Medium	Medium	100	0	0
Ephemeral	High	Medium	Low	Medium	Medium	High	100	0	0
Ephemeral	High	Medium	Low	Medium	High	Low	100	0	0
Ephemeral	High	Medium	Low	Medium	High	Medium	100	0	0
Ephemeral	High	Medium	Low	Medium	High	High	100	0	0
Ephemeral	High	Medium	Low	High	Low	Low	100	0	0
Ephemeral	High	Medium	Low	High	Low	Medium	100	0	0
Ephemeral	High	Medium	Low	High	Low	High	100	0	0
Ephemeral	High	Medium	Low	High	Medium	Low	100	0	0
Ephemeral	High	Medium	Low	High	Medium	Medium	100	0	0
Ephemeral	High	Medium	Low	High	Medium	High	100	0	0
Ephemeral	High	Medium	Low	High	High	Low	100	0	0
Ephemeral	High	Medium	Low	High	High	Medium	100	0	0
Ephemeral	High	Medium	Low	High	High	High	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	High	Medium	Medium	Low	Low	Low	100	0	0
Ephemeral	High	Medium	Medium	Low	Low	Medium	100	0	0
Ephemeral	High	Medium	Medium	Low	Low	High	100	0	0
Ephemeral	High	Medium	Medium	Low	Medium	Low	100	0	0
Ephemeral	High	Medium	Medium	Low	Medium	Medium	100	0	0
Ephemeral	High	Medium	Medium	Low	Medium	High	100	0	0
Ephemeral	High	Medium	Medium	Low	High	Low	100	0	0
Ephemeral	High	Medium	Medium	Low	High	Medium	100	0	0
Ephemeral	High	Medium	Medium	Low	High	High	100	0	0
Ephemeral	High	Medium	Medium	Medium	Low	Low	100	0	0
Ephemeral	High	Medium	Medium	Medium	Low	Medium	100	0	0
Ephemeral	High	Medium	Medium	Medium	Low	High	100	0	0
Ephemeral	High	Medium	Medium	Medium	Medium	Low	100	0	0
Ephemeral	High	Medium	Medium	Medium	Medium	Medium	100	0	0
Ephemeral	High	Medium	Medium	Medium	Medium	High	100	0	0
Ephemeral	High	Medium	Medium	Medium	High	Low	100	0	0
Ephemeral	High	Medium	Medium	Medium	High	Medium	100	0	0
Ephemeral	High	Medium	Medium	Medium	High	High	100	0	0
Ephemeral	High	Medium	Medium	High	Low	Low	100	0	0
Ephemeral	High	Medium	Medium	High	Low	Medium	100	0	0
Ephemeral	High	Medium	Medium	High	Low	High	100	0	0
Ephemeral	High	Medium	Medium	High	Medium	Low	100	0	0
Ephemeral	High	Medium	Medium	High	Medium	Medium	100	0	0
Ephemeral	High	Medium	Medium	High	Medium	High	100	0	0
Ephemeral	High	Medium	Medium	High	High	Low	100	0	0
Ephemeral	High	Medium	Medium	High	High	Medium	100	0	0
Ephemeral	High	Medium	Medium	High	High	High	100	0	0
Ephemeral	High	Medium	High	Low	Low	Low	100	0	0
Ephemeral	High	Medium	High	Low	Low	Medium	100	0	0
Ephemeral	High	Medium	High	Low	Low	High	100	0	0
Ephemeral	High	Medium	High	Low	Medium	Low	100	0	0
Ephemeral	High	Medium	High	Low	Medium	Medium	100	0	0
Ephemeral	High	Medium	High	Low	Medium	High	100	0	0
Ephemeral	High	Medium	High	Low	High	Low	100	0	0
Ephemeral	High	Medium	High	Low	High	Medium	100	0	0
Ephemeral	High	Medium	High	Low	High	High	100	0	0
Ephemeral	High	Medium	High	Medium	Low	Low	100	0	0
Ephemeral	High	Medium	High	Medium	Low	Medium	100	0	0
Ephemeral	High	Medium	High	Medium	Low	High	100	0	0
Ephemeral	High	Medium	High	Medium	Medium	Low	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	High	Medium	High	Medium	Medium	Medium	100	0	0
Ephemeral	High	Medium	High	Medium	Medium	High	100	0	0
Ephemeral	High	Medium	High	Medium	High	Low	100	0	0
Ephemeral	High	Medium	High	Medium	High	Medium	100	0	0
Ephemeral	High	Medium	High	Medium	High	High	100	0	0
Ephemeral	High	Medium	High	High	Low	Low	100	0	0
Ephemeral	High	Medium	High	High	Low	Medium	100	0	0
Ephemeral	High	Medium	High	High	Low	High	100	0	0
Ephemeral	High	Medium	High	High	Medium	Low	100	0	0
Ephemeral	High	Medium	High	High	Medium	Medium	100	0	0
Ephemeral	High	Medium	High	High	Medium	High	100	0	0
Ephemeral	High	Medium	High	High	High	Low	100	0	0
Ephemeral	High	Medium	High	High	High	Medium	100	0	0
Ephemeral	High	Medium	High	High	High	High	100	0	0
Ephemeral	High	High	Low	Low	Low	Low	100	0	0
Ephemeral	High	High	Low	Low	Low	Medium	100	0	0
Ephemeral	High	High	Low	Low	Low	High	100	0	0
Ephemeral	High	High	Low	Low	Medium	Low	100	0	0
Ephemeral	High	High	Low	Low	Medium	Medium	100	0	0
Ephemeral	High	High	Low	Low	Medium	High	100	0	0
Ephemeral	High	High	Low	Low	High	Low	100	0	0
Ephemeral	High	High	Low	Low	High	Medium	100	0	0
Ephemeral	High	High	Low	Low	High	High	100	0	0
Ephemeral	High	High	Low	Medium	Low	Low	100	0	0
Ephemeral	High	High	Low	Medium	Low	Medium	100	0	0
Ephemeral	High	High	Low	Medium	Low	High	100	0	0
Ephemeral	High	High	Low	Medium	Medium	Low	100	0	0
Ephemeral	High	High	Low	Medium	Medium	Medium	100	0	0
Ephemeral	High	High	Low	Medium	Medium	High	100	0	0
Ephemeral	High	High	Low	Medium	High	Low	100	0	0
Ephemeral	High	High	Low	Medium	High	Medium	100	0	0
Ephemeral	High	High	Low	Medium	High	High	100	0	0
Ephemeral	High	High	Low	High	Low	Low	100	0	0
Ephemeral	High	High	Low	High	Low	Medium	100	0	0
Ephemeral	High	High	Low	High	Low	High	100	0	0
Ephemeral	High	High	Low	High	Medium	Low	100	0	0
Ephemeral	High	High	Low	High	Medium	Medium	100	0	0
Ephemeral	High	High	Low	High	Medium	High	100	0	0
Ephemeral	High	High	Low	High	High	Low	100	0	0
Ephemeral	High	High	Low	High	High	Medium	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	High	High	Low	High	High	High	100	0	0
Ephemeral	High	High	Medium	Low	Low	Low	100	0	0
Ephemeral	High	High	Medium	Low	Low	Medium	100	0	0
Ephemeral	High	High	Medium	Low	Low	High	100	0	0
Ephemeral	High	High	Medium	Low	Medium	Low	100	0	0
Ephemeral	High	High	Medium	Low	Medium	Medium	100	0	0
Ephemeral	High	High	Medium	Low	Medium	High	100	0	0
Ephemeral	High	High	Medium	Low	High	Low	100	0	0
Ephemeral	High	High	Medium	Low	High	Medium	100	0	0
Ephemeral	High	High	Medium	Low	High	High	100	0	0
Ephemeral	High	High	Medium	Medium	Low	Low	100	0	0
Ephemeral	High	High	Medium	Medium	Low	Medium	100	0	0
Ephemeral	High	High	Medium	Medium	Low	High	100	0	0
Ephemeral	High	High	Medium	Medium	Medium	Low	100	0	0
Ephemeral	High	High	Medium	Medium	Medium	Medium	100	0	0
Ephemeral	High	High	Medium	Medium	Medium	High	100	0	0
Ephemeral	High	High	Medium	Medium	High	Low	100	0	0
Ephemeral	High	High	Medium	Medium	High	Medium	100	0	0
Ephemeral	High	High	Medium	Medium	High	High	100	0	0
Ephemeral	High	High	Medium	High	Low	Low	100	0	0
Ephemeral	High	High	Medium	High	Low	Medium	100	0	0
Ephemeral	High	High	Medium	High	Low	High	100	0	0
Ephemeral	High	High	Medium	High	Medium	Low	100	0	0
Ephemeral	High	High	Medium	High	Medium	Medium	100	0	0
Ephemeral	High	High	Medium	High	Medium	High	100	0	0
Ephemeral	High	High	Medium	High	High	Low	100	0	0
Ephemeral	High	High	Medium	High	High	Medium	100	0	0
Ephemeral	High	High	Medium	High	High	High	100	0	0
Ephemeral	High	High	High	Low	Low	Low	100	0	0
Ephemeral	High	High	High	Low	Low	Medium	100	0	0
Ephemeral	High	High	High	Low	Low	High	100	0	0
Ephemeral	High	High	High	Low	Medium	Low	100	0	0
Ephemeral	High	High	High	Low	Medium	Medium	100	0	0
Ephemeral	High	High	High	Low	Medium	High	100	0	0
Ephemeral	High	High	High	Low	High	Low	100	0	0
Ephemeral	High	High	High	Low	High	Medium	100	0	0
Ephemeral	High	High	High	Low	High	High	100	0	0
Ephemeral	High	High	High	Medium	Low	Low	100	0	0
Ephemeral	High	High	High	Medium	Low	Medium	100	0	0
Ephemeral	High	High	High	Medium	Low	High	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Ephemeral	High	High	High	Medium	Medium	Low	100	0	0
Ephemeral	High	High	High	Medium	Medium	Medium	100	0	0
Ephemeral	High	High	High	Medium	Medium	High	100	0	0
Ephemeral	High	High	High	Medium	High	Low	100	0	0
Ephemeral	High	High	High	Medium	High	Medium	100	0	0
Ephemeral	High	High	High	Medium	High	High	100	0	0
Ephemeral	High	High	High	High	Low	Low	100	0	0
Ephemeral	High	High	High	High	Low	Medium	100	0	0
Ephemeral	High	High	High	High	Low	High	100	0	0
Ephemeral	High	High	High	High	Medium	Low	100	0	0
Ephemeral	High	High	High	High	Medium	Medium	100	0	0
Ephemeral	High	High	High	High	Medium	High	100	0	0
Ephemeral	High	High	High	High	High	Low	100	0	0
Ephemeral	High	High	High	High	High	Medium	100	0	0
Ephemeral	High	High	High	High	High	High	100	0	0
Winter	Low	Low	Low	Low	Low	Low	100	0	0
Winter	Low	Low	Low	Low	Low	Medium	100	0	0
Winter	Low	Low	Low	Low	Low	High	100	0	0
Winter	Low	Low	Low	Low	Medium	Low	100	0	0
Winter	Low	Low	Low	Low	Medium	Medium	100	0	0
Winter	Low	Low	Low	Low	Medium	High	100	0	0
Winter	Low	Low	Low	Low	High	Low	100	0	0
Winter	Low	Low	Low	Low	High	Medium	100	0	0
Winter	Low	Low	Low	Low	High	High	100	0	0
Winter	Low	Low	Low	Medium	Low	Low	100	0	0
Winter	Low	Low	Low	Medium	Low	Medium	100	0	0
Winter	Low	Low	Low	Medium	Low	High	100	0	0
Winter	Low	Low	Low	Medium	Medium	Low	100	0	0
Winter	Low	Low	Low	Medium	Medium	Medium	100	0	0
Winter	Low	Low	Low	Medium	Medium	High	100	0	0
Winter	Low	Low	Low	Medium	High	Low	100	0	0
Winter	Low	Low	Low	Medium	High	Medium	100	0	0
Winter	Low	Low	Low	Medium	High	High	100	0	0
Winter	Low	Low	Low	High	Low	Low	100	0	0
Winter	Low	Low	Low	High	Low	Medium	100	0	0
Winter	Low	Low	Low	High	Low	High	100	0	0
Winter	Low	Low	Low	High	Medium	Low	100	0	0
Winter	Low	Low	Low	High	Medium	Medium	100	0	0
Winter	Low	Low	Low	High	Medium	High	100	0	0
Winter	Low	Low	Low	High	High	Low	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	Low	Low	Low	High	High	Medium	100	0	0
Winter	Low	Low	Low	High	High	High	100	0	0
Winter	Low	Low	Medium	Low	Low	Low	100	0	0
Winter	Low	Low	Medium	Low	Low	Medium	100	0	0
Winter	Low	Low	Medium	Low	Low	High	100	0	0
Winter	Low	Low	Medium	Low	Medium	Low	100	0	0
Winter	Low	Low	Medium	Low	Medium	Medium	100	0	0
Winter	Low	Low	Medium	Low	Medium	High	100	0	0
Winter	Low	Low	Medium	Low	High	Low	100	0	0
Winter	Low	Low	Medium	Low	High	Medium	100	0	0
Winter	Low	Low	Medium	Low	High	High	100	0	0
Winter	Low	Low	Medium	Medium	Low	Low	100	0	0
Winter	Low	Low	Medium	Medium	Low	Medium	100	0	0
Winter	Low	Low	Medium	Medium	Low	High	100	0	0
Winter	Low	Low	Medium	Medium	Medium	Low	100	0	0
Winter	Low	Low	Medium	Medium	Medium	Medium	100	0	0
Winter	Low	Low	Medium	Medium	Medium	High	100	0	0
Winter	Low	Low	Medium	Medium	High	Low	100	0	0
Winter	Low	Low	Medium	Medium	High	Medium	100	0	0
Winter	Low	Low	Medium	Medium	High	High	100	0	0
Winter	Low	Low	Medium	High	Low	Low	100	0	0
Winter	Low	Low	Medium	High	Low	Medium	100	0	0
Winter	Low	Low	Medium	High	Low	High	100	0	0
Winter	Low	Low	Medium	High	Medium	Low	100	0	0
Winter	Low	Low	Medium	High	Medium	Medium	100	0	0
Winter	Low	Low	Medium	High	Medium	High	100	0	0
Winter	Low	Low	Medium	High	High	Low	100	0	0
Winter	Low	Low	Medium	High	High	Medium	100	0	0
Winter	Low	Low	Medium	High	High	High	100	0	0
Winter	Low	Low	High	Low	Low	Low	100	0	0
Winter	Low	Low	High	Low	Low	Medium	100	0	0
Winter	Low	Low	High	Low	Low	High	100	0	0
Winter	Low	Low	High	Low	Medium	Low	100	0	0
Winter	Low	Low	High	Low	Medium	Medium	100	0	0
Winter	Low	Low	High	Low	Medium	High	100	0	0
Winter	Low	Low	High	Low	High	Low	100	0	0
Winter	Low	Low	High	Low	High	Medium	100	0	0
Winter	Low	Low	High	Low	High	High	100	0	0
Winter	Low	Low	High	Medium	Low	Low	100	0	0
Winter	Low	Low	High	Medium	Low	Medium	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	Low	Low	High	Medium	Low	High	100	0	0
Winter	Low	Low	High	Medium	Medium	Low	100	0	0
Winter	Low	Low	High	Medium	Medium	Medium	100	0	0
Winter	Low	Low	High	Medium	Medium	High	100	0	0
Winter	Low	Low	High	Medium	High	Low	100	0	0
Winter	Low	Low	High	Medium	High	Medium	100	0	0
Winter	Low	Low	High	Medium	High	High	100	0	0
Winter	Low	Low	High	High	Low	Low	100	0	0
Winter	Low	Low	High	High	Low	Medium	100	0	0
Winter	Low	Low	High	High	Low	High	100	0	0
Winter	Low	Low	High	High	Medium	Low	100	0	0
Winter	Low	Low	High	High	Medium	Medium	100	0	0
Winter	Low	Low	High	High	Medium	High	100	0	0
Winter	Low	Low	High	High	High	Low	100	0	0
Winter	Low	Low	High	High	High	Medium	100	0	0
Winter	Low	Low	High	High	High	High	100	0	0
Winter	Low	Medium	Low	Low	Low	Low	100	0	0
Winter	Low	Medium	Low	Low	Low	Medium	100	0	0
Winter	Low	Medium	Low	Low	Low	High	100	0	0
Winter	Low	Medium	Low	Low	Medium	Low	100	0	0
Winter	Low	Medium	Low	Low	Medium	Medium	100	0	0
Winter	Low	Medium	Low	Low	Medium	High	100	0	0
Winter	Low	Medium	Low	Low	High	Low	100	0	0
Winter	Low	Medium	Low	Low	High	Medium	100	0	0
Winter	Low	Medium	Low	Low	High	High	100	0	0
Winter	Low	Medium	Low	Medium	Low	Low	100	0	0
Winter	Low	Medium	Low	Medium	Low	Medium	100	0	0
Winter	Low	Medium	Low	Medium	Low	High	100	0	0
Winter	Low	Medium	Low	Medium	Medium	Low	100	0	0
Winter	Low	Medium	Low	Medium	Medium	Medium	100	0	0
Winter	Low	Medium	Low	Medium	Medium	High	100	0	0
Winter	Low	Medium	Low	Medium	High	Low	100	0	0
Winter	Low	Medium	Low	Medium	High	Medium	100	0	0
Winter	Low	Medium	Low	Medium	High	High	100	0	0
Winter	Low	Medium	Low	High	Low	Low	100	0	0
Winter	Low	Medium	Low	High	Low	Medium	100	0	0
Winter	Low	Medium	Low	High	Low	High	100	0	0
Winter	Low	Medium	Low	High	Medium	Low	100	0	0
Winter	Low	Medium	Low	High	Medium	Medium	100	0	0
Winter	Low	Medium	Low	High	Medium	High	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	Low	Medium	Low	High	High	Low	100	0	0
Winter	Low	Medium	Low	High	High	Medium	100	0	0
Winter	Low	Medium	Low	High	High	High	100	0	0
Winter	Low	Medium	Medium	Low	Low	Low	100	0	0
Winter	Low	Medium	Medium	Low	Low	Medium	100	0	0
Winter	Low	Medium	Medium	Low	Low	High	100	0	0
Winter	Low	Medium	Medium	Low	Medium	Low	100	0	0
Winter	Low	Medium	Medium	Low	Medium	Medium	100	0	0
Winter	Low	Medium	Medium	Low	Medium	High	100	0	0
Winter	Low	Medium	Medium	Low	High	Low	100	0	0
Winter	Low	Medium	Medium	Low	High	Medium	100	0	0
Winter	Low	Medium	Medium	Low	High	High	100	0	0
Winter	Low	Medium	Medium	Medium	Low	Low	100	0	0
Winter	Low	Medium	Medium	Medium	Low	Medium	100	0	0
Winter	Low	Medium	Medium	Medium	Low	High	100	0	0
Winter	Low	Medium	Medium	Medium	Medium	Low	100	0	0
Winter	Low	Medium	Medium	Medium	Medium	Medium	100	0	0
Winter	Low	Medium	Medium	Medium	Medium	High	100	0	0
Winter	Low	Medium	Medium	Medium	High	Low	100	0	0
Winter	Low	Medium	Medium	Medium	High	Medium	100	0	0
Winter	Low	Medium	Medium	Medium	High	High	100	0	0
Winter	Low	Medium	Medium	High	Low	Low	100	0	0
Winter	Low	Medium	Medium	High	Low	Medium	100	0	0
Winter	Low	Medium	Medium	High	Low	High	100	0	0
Winter	Low	Medium	Medium	High	Medium	Low	100	0	0
Winter	Low	Medium	Medium	High	Medium	Medium	100	0	0
Winter	Low	Medium	Medium	High	Medium	High	100	0	0
Winter	Low	Medium	Medium	High	High	Low	100	0	0
Winter	Low	Medium	Medium	High	High	Medium	100	0	0
Winter	Low	Medium	Medium	High	High	High	100	0	0
Winter	Low	Medium	High	Low	Low	Low	100	0	0
Winter	Low	Medium	High	Low	Low	Medium	100	0	0
Winter	Low	Medium	High	Low	Low	High	100	0	0
Winter	Low	Medium	High	Low	Medium	Low	100	0	0
Winter	Low	Medium	High	Low	Medium	Medium	100	0	0
Winter	Low	Medium	High	Low	Medium	High	100	0	0
Winter	Low	Medium	High	Low	High	Low	100	0	0
Winter	Low	Medium	High	Low	High	Medium	100	0	0
Winter	Low	Medium	High	Low	High	High	100	0	0
Winter	Low	Medium	High	Medium	Low	Low	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	Low	Medium	High	Medium	Low	Medium	100	0	0
Winter	Low	Medium	High	Medium	Low	High	100	0	0
Winter	Low	Medium	High	Medium	Medium	Low	100	0	0
Winter	Low	Medium	High	Medium	Medium	Medium	100	0	0
Winter	Low	Medium	High	Medium	Medium	High	100	0	0
Winter	Low	Medium	High	Medium	High	Low	100	0	0
Winter	Low	Medium	High	Medium	High	Medium	100	0	0
Winter	Low	Medium	High	Medium	High	High	100	0	0
Winter	Low	Medium	High	High	Low	Low	100	0	0
Winter	Low	Medium	High	High	Low	Medium	100	0	0
Winter	Low	Medium	High	High	Low	High	100	0	0
Winter	Low	Medium	High	High	Medium	Low	100	0	0
Winter	Low	Medium	High	High	Medium	Medium	100	0	0
Winter	Low	Medium	High	High	Medium	High	100	0	0
Winter	Low	Medium	High	High	High	Low	100	0	0
Winter	Low	Medium	High	High	High	Medium	100	0	0
Winter	Low	Medium	High	High	High	High	100	0	0
Winter	Low	High	Low	Low	Low	Low	100	0	0
Winter	Low	High	Low	Low	Low	Medium	100	0	0
Winter	Low	High	Low	Low	Low	High	100	0	0
Winter	Low	High	Low	Low	Medium	Low	100	0	0
Winter	Low	High	Low	Low	Medium	Medium	100	0	0
Winter	Low	High	Low	Low	Medium	High	100	0	0
Winter	Low	High	Low	Low	High	Low	100	0	0
Winter	Low	High	Low	Low	High	Medium	100	0	0
Winter	Low	High	Low	Low	High	High	100	0	0
Winter	Low	High	Low	Medium	Low	Low	100	0	0
Winter	Low	High	Low	Medium	Low	Medium	100	0	0
Winter	Low	High	Low	Medium	Low	High	100	0	0
Winter	Low	High	Low	Medium	Medium	Low	100	0	0
Winter	Low	High	Low	Medium	Medium	Medium	100	0	0
Winter	Low	High	Low	Medium	Medium	High	100	0	0
Winter	Low	High	Low	Medium	High	Low	100	0	0
Winter	Low	High	Low	Medium	High	Medium	100	0	0
Winter	Low	High	Low	Medium	High	High	100	0	0
Winter	Low	High	Low	High	Low	Low	100	0	0
Winter	Low	High	Low	High	Low	Medium	100	0	0
Winter	Low	High	Low	High	Low	High	100	0	0
Winter	Low	High	Low	High	Medium	Low	100	0	0
Winter	Low	High	Low	High	Medium	Medium	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	Low	High	Low	High	Medium	High	100	0	0
Winter	Low	High	Low	High	High	Low	100	0	0
Winter	Low	High	Low	High	High	Medium	100	0	0
Winter	Low	High	Low	High	High	High	100	0	0
Winter	Low	High	Medium	Low	Low	Low	100	0	0
Winter	Low	High	Medium	Low	Low	Medium	100	0	0
Winter	Low	High	Medium	Low	Low	High	100	0	0
Winter	Low	High	Medium	Low	Medium	Low	100	0	0
Winter	Low	High	Medium	Low	Medium	Medium	100	0	0
Winter	Low	High	Medium	Low	Medium	High	100	0	0
Winter	Low	High	Medium	Low	High	Low	100	0	0
Winter	Low	High	Medium	Low	High	Medium	100	0	0
Winter	Low	High	Medium	Low	High	High	100	0	0
Winter	Low	High	Medium	Medium	Low	Low	100	0	0
Winter	Low	High	Medium	Medium	Low	Medium	100	0	0
Winter	Low	High	Medium	Medium	Low	High	100	0	0
Winter	Low	High	Medium	Medium	Medium	Low	100	0	0
Winter	Low	High	Medium	Medium	Medium	Medium	100	0	0
Winter	Low	High	Medium	Medium	Medium	High	100	0	0
Winter	Low	High	Medium	Medium	High	Low	100	0	0
Winter	Low	High	Medium	Medium	High	Medium	100	0	0
Winter	Low	High	Medium	Medium	High	High	100	0	0
Winter	Low	High	Medium	High	Low	Low	100	0	0
Winter	Low	High	Medium	High	Low	Medium	100	0	0
Winter	Low	High	Medium	High	Low	High	100	0	0
Winter	Low	High	Medium	High	Medium	Low	100	0	0
Winter	Low	High	Medium	High	Medium	Medium	100	0	0
Winter	Low	High	Medium	High	Medium	High	100	0	0
Winter	Low	High	Medium	High	High	Low	100	0	0
Winter	Low	High	Medium	High	High	Medium	100	0	0
Winter	Low	High	Medium	High	High	High	100	0	0
Winter	Low	High	High	Low	Low	Low	100	0	0
Winter	Low	High	High	Low	Low	Medium	100	0	0
Winter	Low	High	High	Low	Low	High	100	0	0
Winter	Low	High	High	Low	Medium	Low	100	0	0
Winter	Low	High	High	Low	Medium	Medium	100	0	0
Winter	Low	High	High	Low	Medium	High	100	0	0
Winter	Low	High	High	Low	High	Low	100	0	0
Winter	Low	High	High	Low	High	Medium	100	0	0
Winter	Low	High	High	Low	High	High	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	Low	High	High	Medium	Low	Low	100	0	0
Winter	Low	High	High	Medium	Low	Medium	100	0	0
Winter	Low	High	High	Medium	Low	High	100	0	0
Winter	Low	High	High	Medium	Medium	Low	100	0	0
Winter	Low	High	High	Medium	Medium	Medium	100	0	0
Winter	Low	High	High	Medium	Medium	High	100	0	0
Winter	Low	High	High	Medium	High	Low	100	0	0
Winter	Low	High	High	Medium	High	Medium	100	0	0
Winter	Low	High	High	Medium	High	High	100	0	0
Winter	Low	High	High	High	Low	Low	100	0	0
Winter	Low	High	High	High	Low	Medium	100	0	0
Winter	Low	High	High	High	Low	High	100	0	0
Winter	Low	High	High	High	Medium	Low	100	0	0
Winter	Low	High	High	High	Medium	Medium	100	0	0
Winter	Low	High	High	High	Medium	High	100	0	0
Winter	Low	High	High	High	High	Low	100	0	0
Winter	Low	High	High	High	High	Medium	100	0	0
Winter	Low	High	High	High	High	High	100	0	0
Winter	Medium	Low	Low	Low	Low	Low	100	0	0
Winter	Medium	Low	Low	Low	Low	Medium	100	0	0
Winter	Medium	Low	Low	Low	Low	High	100	0	0
Winter	Medium	Low	Low	Low	Medium	Low	100	0	0
Winter	Medium	Low	Low	Low	Medium	Medium	100	0	0
Winter	Medium	Low	Low	Low	Medium	High	100	0	0
Winter	Medium	Low	Low	Low	High	Low	100	0	0
Winter	Medium	Low	Low	Low	High	Medium	100	0	0
Winter	Medium	Low	Low	Low	High	High	100	0	0
Winter	Medium	Low	Low	Medium	Low	Low	100	0	0
Winter	Medium	Low	Low	Medium	Low	Medium	100	0	0
Winter	Medium	Low	Low	Medium	Low	High	100	0	0
Winter	Medium	Low	Low	Medium	Medium	Low	100	0	0
Winter	Medium	Low	Low	Medium	Medium	Medium	100	0	0
Winter	Medium	Low	Low	Medium	Medium	High	100	0	0
Winter	Medium	Low	Low	Medium	High	Low	100	0	0
Winter	Medium	Low	Low	Medium	High	Medium	100	0	0
Winter	Medium	Low	Low	Medium	High	High	100	0	0
Winter	Medium	Low	Low	High	Low	Low	100	0	0
Winter	Medium	Low	Low	High	Low	Medium	100	0	0
Winter	Medium	Low	Low	High	Low	High	100	0	0
Winter	Medium	Low	Low	High	Medium	Low	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	Medium	Low	Low	High	Medium	Medium	100	0	0
Winter	Medium	Low	Low	High	Medium	High	100	0	0
Winter	Medium	Low	Low	High	High	Low	100	0	0
Winter	Medium	Low	Low	High	High	Medium	100	0	0
Winter	Medium	Low	Low	High	High	High	100	0	0
Winter	Medium	Low	Medium	Low	Low	Low	100	0	0
Winter	Medium	Low	Medium	Low	Low	Medium	100	0	0
Winter	Medium	Low	Medium	Low	Low	High	100	0	0
Winter	Medium	Low	Medium	Low	Medium	Low	100	0	0
Winter	Medium	Low	Medium	Low	Medium	Medium	100	0	0
Winter	Medium	Low	Medium	Low	Medium	High	100	0	0
Winter	Medium	Low	Medium	Low	High	Low	100	0	0
Winter	Medium	Low	Medium	Low	High	Medium	100	0	0
Winter	Medium	Low	Medium	Low	High	High	100	0	0
Winter	Medium	Low	Medium	Medium	Low	Low	100	0	0
Winter	Medium	Low	Medium	Medium	Low	Medium	100	0	0
Winter	Medium	Low	Medium	Medium	Low	High	100	0	0
Winter	Medium	Low	Medium	Medium	Medium	Low	100	0	0
Winter	Medium	Low	Medium	Medium	Medium	Medium	100	0	0
Winter	Medium	Low	Medium	Medium	Medium	High	100	0	0
Winter	Medium	Low	Medium	Medium	High	Low	100	0	0
Winter	Medium	Low	Medium	Medium	High	Medium	100	0	0
Winter	Medium	Low	Medium	Medium	High	High	100	0	0
Winter	Medium	Low	Medium	High	Low	Low	100	0	0
Winter	Medium	Low	Medium	High	Low	Medium	100	0	0
Winter	Medium	Low	Medium	High	Low	High	100	0	0
Winter	Medium	Low	Medium	High	Medium	Low	100	0	0
Winter	Medium	Low	Medium	High	Medium	Medium	100	0	0
Winter	Medium	Low	Medium	High	Medium	High	100	0	0
Winter	Medium	Low	Medium	High	High	Low	100	0	0
Winter	Medium	Low	Medium	High	High	Medium	100	0	0
Winter	Medium	Low	Medium	High	High	High	100	0	0
Winter	Medium	Low	High	Low	Low	Low	100	0	0
Winter	Medium	Low	High	Low	Low	Medium	100	0	0
Winter	Medium	Low	High	Low	Low	High	100	0	0
Winter	Medium	Low	High	Low	Medium	Low	100	0	0
Winter	Medium	Low	High	Low	Medium	Medium	100	0	0
Winter	Medium	Low	High	Low	Medium	High	100	0	0
Winter	Medium	Low	High	Low	High	Low	100	0	0
Winter	Medium	Low	High	Low	High	Medium	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	Medium	Low	High	Low	High	High	100	0	0
Winter	Medium	Low	High	Medium	Low	Low	100	0	0
Winter	Medium	Low	High	Medium	Low	Medium	100	0	0
Winter	Medium	Low	High	Medium	Low	High	100	0	0
Winter	Medium	Low	High	Medium	Medium	Low	100	0	0
Winter	Medium	Low	High	Medium	Medium	Medium	100	0	0
Winter	Medium	Low	High	Medium	Medium	High	100	0	0
Winter	Medium	Low	High	Medium	High	Low	100	0	0
Winter	Medium	Low	High	Medium	High	Medium	100	0	0
Winter	Medium	Low	High	Medium	High	High	100	0	0
Winter	Medium	Low	High	High	Low	Low	100	0	0
Winter	Medium	Low	High	High	Low	Medium	100	0	0
Winter	Medium	Low	High	High	Low	High	100	0	0
Winter	Medium	Low	High	High	Medium	Low	100	0	0
Winter	Medium	Low	High	High	Medium	Medium	100	0	0
Winter	Medium	Low	High	High	Medium	High	100	0	0
Winter	Medium	Low	High	High	High	Low	100	0	0
Winter	Medium	Low	High	High	High	Medium	100	0	0
Winter	Medium	Low	High	High	High	High	100	0	0
Winter	Medium	Medium	Low	Low	Low	Low	100	0	0
Winter	Medium	Medium	Low	Low	Low	Medium	100	0	0
Winter	Medium	Medium	Low	Low	Low	High	100	0	0
Winter	Medium	Medium	Low	Low	Medium	Low	100	0	0
Winter	Medium	Medium	Low	Low	Medium	Medium	100	0	0
Winter	Medium	Medium	Low	Low	Medium	High	100	0	0
Winter	Medium	Medium	Low	Low	High	Low	100	0	0
Winter	Medium	Medium	Low	Low	High	Medium	100	0	0
Winter	Medium	Medium	Low	Low	High	High	100	0	0
Winter	Medium	Medium	Low	Medium	Low	Low	100	0	0
Winter	Medium	Medium	Low	Medium	Low	Medium	100	0	0
Winter	Medium	Medium	Low	Medium	Low	High	100	0	0
Winter	Medium	Medium	Low	Medium	Medium	Low	100	0	0
Winter	Medium	Medium	Low	Medium	Medium	Medium	100	0	0
Winter	Medium	Medium	Low	Medium	Medium	High	100	0	0
Winter	Medium	Medium	Low	Medium	High	Low	100	0	0
Winter	Medium	Medium	Low	Medium	High	Medium	100	0	0
Winter	Medium	Medium	Low	Medium	High	High	100	0	0
Winter	Medium	Medium	Low	High	Low	Low	100	0	0
Winter	Medium	Medium	Low	High	Low	Medium	100	0	0
Winter	Medium	Medium	Low	High	Low	High	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	Medium	Medium	Low	High	Medium	Low	100	0	0
Winter	Medium	Medium	Low	High	Medium	Medium	100	0	0
Winter	Medium	Medium	Low	High	Medium	High	100	0	0
Winter	Medium	Medium	Low	High	High	Low	100	0	0
Winter	Medium	Medium	Low	High	High	Medium	100	0	0
Winter	Medium	Medium	Low	High	High	High	100	0	0
Winter	Medium	Medium	Medium	Low	Low	Low	100	0	0
Winter	Medium	Medium	Medium	Low	Low	Medium	100	0	0
Winter	Medium	Medium	Medium	Low	Low	High	100	0	0
Winter	Medium	Medium	Medium	Low	Medium	Low	100	0	0
Winter	Medium	Medium	Medium	Low	Medium	Medium	100	0	0
Winter	Medium	Medium	Medium	Low	Medium	High	100	0	0
Winter	Medium	Medium	Medium	Low	High	Low	100	0	0
Winter	Medium	Medium	Medium	Low	High	Medium	100	0	0
Winter	Medium	Medium	Medium	Low	High	High	100	0	0
Winter	Medium	Medium	Medium	Medium	Low	Low	100	0	0
Winter	Medium	Medium	Medium	Medium	Low	Medium	100	0	0
Winter	Medium	Medium	Medium	Medium	Low	High	100	0	0
Winter	Medium	Medium	Medium	Medium	Medium	Low	100	0	0
Winter	Medium	Medium	Medium	Medium	Medium	Medium	100	0	0
Winter	Medium	Medium	Medium	Medium	Medium	High	100	0	0
Winter	Medium	Medium	Medium	Medium	High	Low	100	0	0
Winter	Medium	Medium	Medium	Medium	High	Medium	100	0	0
Winter	Medium	Medium	Medium	Medium	High	High	100	0	0
Winter	Medium	Medium	Medium	High	Low	Low	100	0	0
Winter	Medium	Medium	Medium	High	Low	Medium	100	0	0
Winter	Medium	Medium	Medium	High	Low	High	100	0	0
Winter	Medium	Medium	Medium	High	Medium	Low	100	0	0
Winter	Medium	Medium	Medium	High	Medium	Medium	100	0	0
Winter	Medium	Medium	Medium	High	Medium	High	100	0	0
Winter	Medium	Medium	Medium	High	High	Low	100	0	0
Winter	Medium	Medium	Medium	High	High	Medium	100	0	0
Winter	Medium	Medium	Medium	High	High	High	100	0	0
Winter	Medium	Medium	High	Low	Low	Low	100	0	0
Winter	Medium	Medium	High	Low	Low	Medium	100	0	0
Winter	Medium	Medium	High	Low	Low	High	100	0	0
Winter	Medium	Medium	High	Low	Medium	Low	100	0	0
Winter	Medium	Medium	High	Low	Medium	Medium	100	0	0
Winter	Medium	Medium	High	Low	Medium	High	100	0	0
Winter	Medium	Medium	High	Low	High	Low	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	Medium	Medium	High	Low	High	Medium	100	0	0
Winter	Medium	Medium	High	Low	High	High	100	0	0
Winter	Medium	Medium	High	Medium	Low	Low	100	0	0
Winter	Medium	Medium	High	Medium	Low	Medium	100	0	0
Winter	Medium	Medium	High	Medium	Low	High	100	0	0
Winter	Medium	Medium	High	Medium	Medium	Low	100	0	0
Winter	Medium	Medium	High	Medium	Medium	Medium	100	0	0
Winter	Medium	Medium	High	Medium	Medium	High	100	0	0
Winter	Medium	Medium	High	Medium	High	Low	100	0	0
Winter	Medium	Medium	High	Medium	High	Medium	100	0	0
Winter	Medium	Medium	High	Medium	High	High	100	0	0
Winter	Medium	Medium	High	High	Low	Low	100	0	0
Winter	Medium	Medium	High	High	Low	Medium	100	0	0
Winter	Medium	Medium	High	High	Low	High	100	0	0
Winter	Medium	Medium	High	High	Medium	Low	100	0	0
Winter	Medium	Medium	High	High	Medium	Medium	100	0	0
Winter	Medium	Medium	High	High	Medium	High	100	0	0
Winter	Medium	Medium	High	High	High	Low	100	0	0
Winter	Medium	Medium	High	High	High	Medium	100	0	0
Winter	Medium	Medium	High	High	High	High	100	0	0
Winter	Medium	High	Low	Low	Low	Low	100	0	0
Winter	Medium	High	Low	Low	Low	Medium	100	0	0
Winter	Medium	High	Low	Low	Low	High	100	0	0
Winter	Medium	High	Low	Low	Medium	Low	100	0	0
Winter	Medium	High	Low	Low	Medium	Medium	100	0	0
Winter	Medium	High	Low	Low	Medium	High	100	0	0
Winter	Medium	High	Low	Low	High	Low	100	0	0
Winter	Medium	High	Low	Low	High	Medium	100	0	0
Winter	Medium	High	Low	Low	High	High	100	0	0
Winter	Medium	High	Low	Medium	Low	Low	100	0	0
Winter	Medium	High	Low	Medium	Low	Medium	100	0	0
Winter	Medium	High	Low	Medium	Low	High	100	0	0
Winter	Medium	High	Low	Medium	Medium	Low	100	0	0
Winter	Medium	High	Low	Medium	Medium	Medium	100	0	0
Winter	Medium	High	Low	Medium	Medium	High	100	0	0
Winter	Medium	High	Low	Medium	High	Low	100	0	0
Winter	Medium	High	Low	Medium	High	Medium	100	0	0
Winter	Medium	High	Low	Medium	High	High	100	0	0
Winter	Medium	High	Low	High	Low	Low	100	0	0
Winter	Medium	High	Low	High	Low	Medium	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	Medium	High	Low	High	Low	High	100	0	0
Winter	Medium	High	Low	High	Medium	Low	100	0	0
Winter	Medium	High	Low	High	Medium	Medium	100	0	0
Winter	Medium	High	Low	High	Medium	High	100	0	0
Winter	Medium	High	Low	High	High	Low	100	0	0
Winter	Medium	High	Low	High	High	Medium	100	0	0
Winter	Medium	High	Low	High	High	High	100	0	0
Winter	Medium	High	Medium	Low	Low	Low	100	0	0
Winter	Medium	High	Medium	Low	Low	Medium	100	0	0
Winter	Medium	High	Medium	Low	Low	High	100	0	0
Winter	Medium	High	Medium	Low	Medium	Low	100	0	0
Winter	Medium	High	Medium	Low	Medium	Medium	100	0	0
Winter	Medium	High	Medium	Low	Medium	High	100	0	0
Winter	Medium	High	Medium	Low	High	Low	100	0	0
Winter	Medium	High	Medium	Low	High	Medium	100	0	0
Winter	Medium	High	Medium	Low	High	High	100	0	0
Winter	Medium	High	Medium	Medium	Low	Low	100	0	0
Winter	Medium	High	Medium	Medium	Low	Medium	100	0	0
Winter	Medium	High	Medium	Medium	Low	High	100	0	0
Winter	Medium	High	Medium	Medium	Medium	Low	100	0	0
Winter	Medium	High	Medium	Medium	Medium	Medium	100	0	0
Winter	Medium	High	Medium	Medium	Medium	High	100	0	0
Winter	Medium	High	Medium	Medium	High	Low	100	0	0
Winter	Medium	High	Medium	Medium	High	Medium	100	0	0
Winter	Medium	High	Medium	Medium	High	High	100	0	0
Winter	Medium	High	Medium	High	Low	Low	100	0	0
Winter	Medium	High	Medium	High	Low	Medium	100	0	0
Winter	Medium	High	Medium	High	Low	High	100	0	0
Winter	Medium	High	Medium	High	Medium	Low	100	0	0
Winter	Medium	High	Medium	High	Medium	Medium	100	0	0
Winter	Medium	High	Medium	High	Medium	High	100	0	0
Winter	Medium	High	Medium	High	High	Low	100	0	0
Winter	Medium	High	Medium	High	High	Medium	100	0	0
Winter	Medium	High	Medium	High	High	High	100	0	0
Winter	Medium	High	High	Low	Low	Low	100	0	0
Winter	Medium	High	High	Low	Low	Medium	100	0	0
Winter	Medium	High	High	Low	Low	High	100	0	0
Winter	Medium	High	High	Low	Medium	Low	100	0	0
Winter	Medium	High	High	Low	Medium	Medium	100	0	0
Winter	Medium	High	High	Low	Medium	High	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	Medium	High	High	Low	High	Low	100	0	0
Winter	Medium	High	High	Low	High	Medium	100	0	0
Winter	Medium	High	High	Low	High	High	100	0	0
Winter	Medium	High	High	Medium	Low	Low	100	0	0
Winter	Medium	High	High	Medium	Low	Medium	100	0	0
Winter	Medium	High	High	Medium	Low	High	100	0	0
Winter	Medium	High	High	Medium	Medium	Low	100	0	0
Winter	Medium	High	High	Medium	Medium	Medium	100	0	0
Winter	Medium	High	High	Medium	Medium	High	100	0	0
Winter	Medium	High	High	Medium	High	Low	100	0	0
Winter	Medium	High	High	Medium	High	Medium	100	0	0
Winter	Medium	High	High	Medium	High	High	100	0	0
Winter	Medium	High	High	High	Low	Low	100	0	0
Winter	Medium	High	High	High	Low	Medium	100	0	0
Winter	Medium	High	High	High	Low	High	100	0	0
Winter	Medium	High	High	High	Medium	Low	100	0	0
Winter	Medium	High	High	High	Medium	Medium	100	0	0
Winter	Medium	High	High	High	Medium	High	100	0	0
Winter	Medium	High	High	High	High	Low	100	0	0
Winter	Medium	High	High	High	High	Medium	100	0	0
Winter	Medium	High	High	High	High	High	100	0	0
Winter	High	Low	Low	Low	Low	Low	100	0	0
Winter	High	Low	Low	Low	Low	Medium	100	0	0
Winter	High	Low	Low	Low	Low	High	100	0	0
Winter	High	Low	Low	Low	Medium	Low	100	0	0
Winter	High	Low	Low	Low	Medium	Medium	100	0	0
Winter	High	Low	Low	Low	Medium	High	100	0	0
Winter	High	Low	Low	Low	High	Low	100	0	0
Winter	High	Low	Low	Low	High	Medium	100	0	0
Winter	High	Low	Low	Low	High	High	100	0	0
Winter	High	Low	Low	Medium	Low	Low	100	0	0
Winter	High	Low	Low	Medium	Low	Medium	100	0	0
Winter	High	Low	Low	Medium	Low	High	100	0	0
Winter	High	Low	Low	Medium	Medium	Low	100	0	0
Winter	High	Low	Low	Medium	Medium	Medium	100	0	0
Winter	High	Low	Low	Medium	Medium	High	100	0	0
Winter	High	Low	Low	Medium	High	Low	100	0	0
Winter	High	Low	Low	Medium	High	Medium	100	0	0
Winter	High	Low	Low	Medium	High	High	100	0	0
Winter	High	Low	Low	High	Low	Low	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	High	Low	Low	High	Low	Medium	100	0	0
Winter	High	Low	Low	High	Low	High	100	0	0
Winter	High	Low	Low	High	Medium	Low	100	0	0
Winter	High	Low	Low	High	Medium	Medium	100	0	0
Winter	High	Low	Low	High	Medium	High	100	0	0
Winter	High	Low	Low	High	High	Low	100	0	0
Winter	High	Low	Low	High	High	Medium	100	0	0
Winter	High	Low	Low	High	High	High	100	0	0
Winter	High	Low	Medium	Low	Low	Low	100	0	0
Winter	High	Low	Medium	Low	Low	Medium	100	0	0
Winter	High	Low	Medium	Low	Low	High	100	0	0
Winter	High	Low	Medium	Low	Medium	Low	100	0	0
Winter	High	Low	Medium	Low	Medium	Medium	100	0	0
Winter	High	Low	Medium	Low	Medium	High	100	0	0
Winter	High	Low	Medium	Low	High	Low	100	0	0
Winter	High	Low	Medium	Low	High	Medium	100	0	0
Winter	High	Low	Medium	Low	High	High	100	0	0
Winter	High	Low	Medium	Medium	Low	Low	100	0	0
Winter	High	Low	Medium	Medium	Low	Medium	100	0	0
Winter	High	Low	Medium	Medium	Low	High	100	0	0
Winter	High	Low	Medium	Medium	Medium	Low	100	0	0
Winter	High	Low	Medium	Medium	Medium	Medium	100	0	0
Winter	High	Low	Medium	Medium	Medium	High	100	0	0
Winter	High	Low	Medium	Medium	High	Low	100	0	0
Winter	High	Low	Medium	Medium	High	Medium	100	0	0
Winter	High	Low	Medium	Medium	High	High	100	0	0
Winter	High	Low	Medium	High	Low	Low	100	0	0
Winter	High	Low	Medium	High	Low	Medium	100	0	0
Winter	High	Low	Medium	High	Low	High	100	0	0
Winter	High	Low	Medium	High	Medium	Low	100	0	0
Winter	High	Low	Medium	High	Medium	Medium	100	0	0
Winter	High	Low	Medium	High	Medium	High	100	0	0
Winter	High	Low	Medium	High	High	Low	100	0	0
Winter	High	Low	Medium	High	High	Medium	100	0	0
Winter	High	Low	Medium	High	High	High	100	0	0
Winter	High	Low	High	Low	Low	Low	100	0	0
Winter	High	Low	High	Low	Low	Medium	100	0	0
Winter	High	Low	High	Low	Low	High	100	0	0
Winter	High	Low	High	Low	Medium	Low	100	0	0
Winter	High	Low	High	Low	Medium	Medium	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	High	Low	High	Low	Medium	High	100	0	0
Winter	High	Low	High	Low	High	Low	100	0	0
Winter	High	Low	High	Low	High	Medium	100	0	0
Winter	High	Low	High	Low	High	High	100	0	0
Winter	High	Low	High	Medium	Low	Low	100	0	0
Winter	High	Low	High	Medium	Low	Medium	100	0	0
Winter	High	Low	High	Medium	Low	High	100	0	0
Winter	High	Low	High	Medium	Medium	Low	100	0	0
Winter	High	Low	High	Medium	Medium	Medium	100	0	0
Winter	High	Low	High	Medium	Medium	High	100	0	0
Winter	High	Low	High	Medium	High	Low	100	0	0
Winter	High	Low	High	Medium	High	Medium	100	0	0
Winter	High	Low	High	Medium	High	High	100	0	0
Winter	High	Low	High	High	Low	Low	100	0	0
Winter	High	Low	High	High	Low	Medium	100	0	0
Winter	High	Low	High	High	Low	High	100	0	0
Winter	High	Low	High	High	Medium	Low	100	0	0
Winter	High	Low	High	High	Medium	Medium	100	0	0
Winter	High	Low	High	High	Medium	High	100	0	0
Winter	High	Low	High	High	High	Low	100	0	0
Winter	High	Low	High	High	High	Medium	100	0	0
Winter	High	Low	High	High	High	High	100	0	0
Winter	High	Medium	Low	Low	Low	Low	100	0	0
Winter	High	Medium	Low	Low	Low	Medium	100	0	0
Winter	High	Medium	Low	Low	Low	High	100	0	0
Winter	High	Medium	Low	Low	Medium	Low	100	0	0
Winter	High	Medium	Low	Low	Medium	Medium	100	0	0
Winter	High	Medium	Low	Low	Medium	High	100	0	0
Winter	High	Medium	Low	Low	High	Low	100	0	0
Winter	High	Medium	Low	Low	High	Medium	100	0	0
Winter	High	Medium	Low	Low	High	High	100	0	0
Winter	High	Medium	Low	Medium	Low	Low	100	0	0
Winter	High	Medium	Low	Medium	Low	Medium	100	0	0
Winter	High	Medium	Low	Medium	Low	High	100	0	0
Winter	High	Medium	Low	Medium	Medium	Low	100	0	0
Winter	High	Medium	Low	Medium	Medium	Medium	100	0	0
Winter	High	Medium	Low	Medium	Medium	High	100	0	0
Winter	High	Medium	Low	Medium	High	Low	100	0	0
Winter	High	Medium	Low	Medium	High	Medium	100	0	0
Winter	High	Medium	Low	Medium	High	High	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	High	Medium	Low	High	Low	Low	100	0	0
Winter	High	Medium	Low	High	Low	Medium	100	0	0
Winter	High	Medium	Low	High	Low	High	100	0	0
Winter	High	Medium	Low	High	Medium	Low	100	0	0
Winter	High	Medium	Low	High	Medium	Medium	100	0	0
Winter	High	Medium	Low	High	Medium	High	100	0	0
Winter	High	Medium	Low	High	High	Low	100	0	0
Winter	High	Medium	Low	High	High	Medium	100	0	0
Winter	High	Medium	Low	High	High	High	100	0	0
Winter	High	Medium	Medium	Low	Low	Low	100	0	0
Winter	High	Medium	Medium	Low	Low	Medium	100	0	0
Winter	High	Medium	Medium	Low	Low	High	100	0	0
Winter	High	Medium	Medium	Low	Medium	Low	100	0	0
Winter	High	Medium	Medium	Low	Medium	Medium	100	0	0
Winter	High	Medium	Medium	Low	Medium	High	100	0	0
Winter	High	Medium	Medium	Low	High	Low	100	0	0
Winter	High	Medium	Medium	Low	High	Medium	100	0	0
Winter	High	Medium	Medium	Low	High	High	100	0	0
Winter	High	Medium	Medium	Medium	Low	Low	100	0	0
Winter	High	Medium	Medium	Medium	Low	Medium	100	0	0
Winter	High	Medium	Medium	Medium	Low	High	100	0	0
Winter	High	Medium	Medium	Medium	Medium	Low	100	0	0
Winter	High	Medium	Medium	Medium	Medium	Medium	100	0	0
Winter	High	Medium	Medium	Medium	Medium	High	100	0	0
Winter	High	Medium	Medium	Medium	High	Low	100	0	0
Winter	High	Medium	Medium	Medium	High	Medium	100	0	0
Winter	High	Medium	Medium	Medium	High	High	100	0	0
Winter	High	Medium	Medium	High	Low	Low	100	0	0
Winter	High	Medium	Medium	High	Low	Medium	100	0	0
Winter	High	Medium	Medium	High	Low	High	100	0	0
Winter	High	Medium	Medium	High	Medium	Low	100	0	0
Winter	High	Medium	Medium	High	Medium	Medium	100	0	0
Winter	High	Medium	Medium	High	Medium	High	100	0	0
Winter	High	Medium	Medium	High	High	Low	100	0	0
Winter	High	Medium	Medium	High	High	Medium	100	0	0
Winter	High	Medium	Medium	High	High	High	100	0	0
Winter	High	Medium	High	Low	Low	Low	100	0	0
Winter	High	Medium	High	Low	Low	Medium	100	0	0
Winter	High	Medium	High	Low	Low	High	100	0	0
Winter	High	Medium	High	Low	Medium	Low	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	High	Medium	High	Low	Medium	Medium	100	0	0
Winter	High	Medium	High	Low	Medium	High	100	0	0
Winter	High	Medium	High	Low	High	Low	100	0	0
Winter	High	Medium	High	Low	High	Medium	100	0	0
Winter	High	Medium	High	Low	High	High	100	0	0
Winter	High	Medium	High	Medium	Low	Low	100	0	0
Winter	High	Medium	High	Medium	Low	Medium	100	0	0
Winter	High	Medium	High	Medium	Low	High	100	0	0
Winter	High	Medium	High	Medium	Medium	Low	100	0	0
Winter	High	Medium	High	Medium	Medium	Medium	100	0	0
Winter	High	Medium	High	Medium	Medium	High	100	0	0
Winter	High	Medium	High	Medium	High	Low	100	0	0
Winter	High	Medium	High	Medium	High	Medium	100	0	0
Winter	High	Medium	High	Medium	High	High	100	0	0
Winter	High	Medium	High	High	Low	Low	100	0	0
Winter	High	Medium	High	High	Low	Medium	100	0	0
Winter	High	Medium	High	High	Low	High	100	0	0
Winter	High	Medium	High	High	Medium	Low	100	0	0
Winter	High	Medium	High	High	Medium	Medium	100	0	0
Winter	High	Medium	High	High	Medium	High	100	0	0
Winter	High	Medium	High	High	High	Low	100	0	0
Winter	High	Medium	High	High	High	Medium	100	0	0
Winter	High	Medium	High	High	High	High	100	0	0
Winter	High	High	Low	Low	Low	Low	100	0	0
Winter	High	High	Low	Low	Low	Medium	100	0	0
Winter	High	High	Low	Low	Low	High	100	0	0
Winter	High	High	Low	Low	Medium	Low	100	0	0
Winter	High	High	Low	Low	Medium	Medium	100	0	0
Winter	High	High	Low	Low	Medium	High	100	0	0
Winter	High	High	Low	Low	High	Low	100	0	0
Winter	High	High	Low	Low	High	Medium	100	0	0
Winter	High	High	Low	Low	High	High	100	0	0
Winter	High	High	Low	Medium	Low	Low	100	0	0
Winter	High	High	Low	Medium	Low	Medium	100	0	0
Winter	High	High	Low	Medium	Low	High	100	0	0
Winter	High	High	Low	Medium	Medium	Low	100	0	0
Winter	High	High	Low	Medium	Medium	Medium	100	0	0
Winter	High	High	Low	Medium	Medium	High	100	0	0
Winter	High	High	Low	Medium	High	Low	100	0	0
Winter	High	High	Low	Medium	High	Medium	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	High	High	Low	Medium	High	High	100	0	0
Winter	High	High	Low	High	Low	Low	100	0	0
Winter	High	High	Low	High	Low	Medium	100	0	0
Winter	High	High	Low	High	Low	High	100	0	0
Winter	High	High	Low	High	Medium	Low	100	0	0
Winter	High	High	Low	High	Medium	Medium	100	0	0
Winter	High	High	Low	High	Medium	High	100	0	0
Winter	High	High	Low	High	High	Low	100	0	0
Winter	High	High	Low	High	High	Medium	100	0	0
Winter	High	High	Low	High	High	High	100	0	0
Winter	High	High	Medium	Low	Low	Low	100	0	0
Winter	High	High	Medium	Low	Low	Medium	100	0	0
Winter	High	High	Medium	Low	Low	High	100	0	0
Winter	High	High	Medium	Low	Medium	Low	100	0	0
Winter	High	High	Medium	Low	Medium	Medium	100	0	0
Winter	High	High	Medium	Low	Medium	High	100	0	0
Winter	High	High	Medium	Low	High	Low	100	0	0
Winter	High	High	Medium	Low	High	Medium	100	0	0
Winter	High	High	Medium	Low	High	High	100	0	0
Winter	High	High	Medium	Medium	Low	Low	100	0	0
Winter	High	High	Medium	Medium	Low	Medium	100	0	0
Winter	High	High	Medium	Medium	Low	High	100	0	0
Winter	High	High	Medium	Medium	Medium	Low	100	0	0
Winter	High	High	Medium	Medium	Medium	Medium	100	0	0
Winter	High	High	Medium	Medium	Medium	High	100	0	0
Winter	High	High	Medium	Medium	High	Low	100	0	0
Winter	High	High	Medium	Medium	High	Medium	100	0	0
Winter	High	High	Medium	Medium	High	High	100	0	0
Winter	High	High	Medium	High	Low	Low	100	0	0
Winter	High	High	Medium	High	Low	Medium	100	0	0
Winter	High	High	Medium	High	Low	High	100	0	0
Winter	High	High	Medium	High	Medium	Low	100	0	0
Winter	High	High	Medium	High	Medium	Medium	100	0	0
Winter	High	High	Medium	High	Medium	High	100	0	0
Winter	High	High	Medium	High	High	Low	100	0	0
Winter	High	High	Medium	High	High	Medium	100	0	0
Winter	High	High	Medium	High	High	High	100	0	0
Winter	High	High	High	Low	Low	Low	100	0	0
Winter	High	High	High	Low	Low	Medium	100	0	0
Winter	High	High	High	Low	Low	High	100	0	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Winter	High	High	High	Low	Medium	Low	100	0	0
Winter	High	High	High	Low	Medium	Medium	100	0	0
Winter	High	High	High	Low	Medium	High	100	0	0
Winter	High	High	High	Low	High	Low	100	0	0
Winter	High	High	High	Low	High	Medium	100	0	0
Winter	High	High	High	Low	High	High	100	0	0
Winter	High	High	High	Medium	Low	Low	100	0	0
Winter	High	High	High	Medium	Low	Medium	100	0	0
Winter	High	High	High	Medium	Low	High	100	0	0
Winter	High	High	High	Medium	Medium	Low	100	0	0
Winter	High	High	High	Medium	Medium	Medium	100	0	0
Winter	High	High	High	Medium	Medium	High	100	0	0
Winter	High	High	High	Medium	High	Low	100	0	0
Winter	High	High	High	Medium	High	Medium	100	0	0
Winter	High	High	High	Medium	High	High	100	0	0
Winter	High	High	High	High	Low	Low	100	0	0
Winter	High	High	High	High	Low	Medium	100	0	0
Winter	High	High	High	High	Low	High	100	0	0
Winter	High	High	High	High	Medium	Low	100	0	0
Winter	High	High	High	High	Medium	Medium	100	0	0
Winter	High	High	High	High	Medium	High	100	0	0
Winter	High	High	High	High	High	Low	100	0	0
Winter	High	High	High	High	High	Medium	100	0	0
Winter	High	High	High	High	High	High	100	0	0
Groundwater	Low	Low	Low	Low	Low	Low	45	55	0
Groundwater	Low	Low	Low	Low	Low	Medium	35	55	10
Groundwater	Low	Low	Low	Low	Low	High	25	55	20
Groundwater	Low	Low	Low	Low	Medium	Low	50	50	0
Groundwater	Low	Low	Low	Low	Medium	Medium	40	60	0
Groundwater	Low	Low	Low	Low	Medium	High	30	60	10
Groundwater	Low	Low	Low	Low	High	Low	65	35	0
Groundwater	Low	Low	Low	Low	High	Medium	50	50	0
Groundwater	Low	Low	Low	Low	High	High	40	60	0
Groundwater	Low	Low	Low	Medium	Low	Low	40	60	0
Groundwater	Low	Low	Low	Medium	Low	Medium	30	50	20
Groundwater	Low	Low	Low	Medium	Low	High	20	50	30
Groundwater	Low	Low	Low	Medium	Medium	Low	45	55	0
Groundwater	Low	Low	Low	Medium	Medium	Medium	35	55	10
Groundwater	Low	Low	Low	Medium	Medium	High	25	55	20
Groundwater	Low	Low	Low	Medium	High	Low	65	35	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	Low	Low	Low	Medium	High	Medium	45	55	0
Groundwater	Low	Low	Low	Medium	High	High	35	65	0
Groundwater	Low	Low	Low	High	Low	Low	40	55	5
Groundwater	Low	Low	Low	High	Low	Medium	30	45	25
Groundwater	Low	Low	Low	High	Low	High	20	45	35
Groundwater	Low	Low	Low	High	Medium	Low	45	55	0
Groundwater	Low	Low	Low	High	Medium	Medium	35	50	15
Groundwater	Low	Low	Low	High	Medium	High	25	50	25
Groundwater	Low	Low	Low	High	High	Low	60	40	0
Groundwater	Low	Low	Low	High	High	Medium	45	55	0
Groundwater	Low	Low	Low	High	High	High	35	60	5
Groundwater	Low	Low	Medium	Low	Low	Low	40	60	0
Groundwater	Low	Low	Medium	Low	Low	Medium	30	50	20
Groundwater	Low	Low	Medium	Low	Low	High	20	50	30
Groundwater	Low	Low	Medium	Low	Medium	Low	45	55	0
Groundwater	Low	Low	Medium	Low	Medium	Medium	35	55	10
Groundwater	Low	Low	Medium	Low	Medium	High	25	55	20
Groundwater	Low	Low	Medium	Low	High	Low	65	35	0
Groundwater	Low	Low	Medium	Low	High	Medium	45	55	0
Groundwater	Low	Low	Medium	Low	High	High	35	65	0
Groundwater	Low	Low	Medium	Medium	Low	Low	35	55	10
Groundwater	Low	Low	Medium	Medium	Low	Medium	25	45	30
Groundwater	Low	Low	Medium	Medium	Low	High	15	45	40
Groundwater	Low	Low	Medium	Medium	Medium	Low	40	60	0
Groundwater	Low	Low	Medium	Medium	Medium	Medium	30	50	20
Groundwater	Low	Low	Medium	Medium	Medium	High	20	50	30
Groundwater	Low	Low	Medium	Medium	High	Low	60	40	0
Groundwater	Low	Low	Medium	Medium	High	Medium	40	60	0
Groundwater	Low	Low	Medium	Medium	High	High	30	60	10
Groundwater	Low	Low	Medium	High	Low	Low	35	50	15
Groundwater	Low	Low	Medium	High	Low	Medium	25	40	35
Groundwater	Low	Low	Medium	High	Low	High	15	40	45
Groundwater	Low	Low	Medium	High	Medium	Low	40	55	5
Groundwater	Low	Low	Medium	High	Medium	Medium	30	45	25
Groundwater	Low	Low	Medium	High	Medium	High	20	45	35
Groundwater	Low	Low	Medium	High	High	Low	55	45	0
Groundwater	Low	Low	Medium	High	High	Medium	40	55	5
Groundwater	Low	Low	Medium	High	High	High	30	55	15
Groundwater	Low	Low	High	Low	Low	Low	40	55	5
Groundwater	Low	Low	High	Low	Low	Medium	30	45	25

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	Low	Low	High	Low	Low	High	20	45	35
Groundwater	Low	Low	High	Low	Medium	Low	45	55	0
Groundwater	Low	Low	High	Low	Medium	Medium	35	50	15
Groundwater	Low	Low	High	Low	Medium	High	25	50	25
Groundwater	Low	Low	High	Low	High	Low	60	40	0
Groundwater	Low	Low	High	Low	High	Medium	45	55	0
Groundwater	Low	Low	High	Low	High	High	35	60	5
Groundwater	Low	Low	High	Medium	Low	Low	35	50	15
Groundwater	Low	Low	High	Medium	Low	Medium	25	40	35
Groundwater	Low	Low	High	Medium	Low	High	15	40	45
Groundwater	Low	Low	High	Medium	Medium	Low	40	55	5
Groundwater	Low	Low	High	Medium	Medium	Medium	30	45	25
Groundwater	Low	Low	High	Medium	Medium	High	20	45	35
Groundwater	Low	Low	High	Medium	High	Low	55	45	0
Groundwater	Low	Low	High	Medium	High	Medium	40	55	5
Groundwater	Low	Low	High	Medium	High	High	30	55	15
Groundwater	Low	Low	High	High	Low	Low	35	45	20
Groundwater	Low	Low	High	High	Low	Medium	25	35	40
Groundwater	Low	Low	High	High	Low	High	15	35	50
Groundwater	Low	Low	High	High	Medium	Low	40	50	10
Groundwater	Low	Low	High	High	Medium	Medium	30	40	30
Groundwater	Low	Low	High	High	Medium	High	20	40	40
Groundwater	Low	Low	High	High	High	Low	50	50	0
Groundwater	Low	Low	High	High	High	Medium	40	50	10
Groundwater	Low	Low	High	High	High	High	30	50	20
Groundwater	Low	Medium	Low	Low	Low	Low	50	50	0
Groundwater	Low	Medium	Low	Low	Low	Medium	40	55	5
Groundwater	Low	Medium	Low	Low	Low	High	30	55	15
Groundwater	Low	Medium	Low	Low	Medium	Low	55	45	0
Groundwater	Low	Medium	Low	Low	Medium	Medium	45	55	0
Groundwater	Low	Medium	Low	Low	Medium	High	35	60	5
Groundwater	Low	Medium	Low	Low	High	Low	70	30	0
Groundwater	Low	Medium	Low	Low	High	Medium	55	45	0
Groundwater	Low	Medium	Low	Low	High	High	45	55	0
Groundwater	Low	Medium	Low	Medium	Low	Low	45	55	0
Groundwater	Low	Medium	Low	Medium	Low	Medium	35	50	15
Groundwater	Low	Medium	Low	Medium	Low	High	25	50	25
Groundwater	Low	Medium	Low	Medium	Medium	Low	50	50	0
Groundwater	Low	Medium	Low	Medium	Medium	Medium	40	55	5
Groundwater	Low	Medium	Low	Medium	Medium	High	30	55	15

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	Low	Medium	Low	Medium	High	Low	70	30	0
Groundwater	Low	Medium	Low	Medium	High	Medium	50	50	0
Groundwater	Low	Medium	Low	Medium	High	High	40	60	0
Groundwater	Low	Medium	Low	High	Low	Low	45	55	0
Groundwater	Low	Medium	Low	High	Low	Medium	35	45	20
Groundwater	Low	Medium	Low	High	Low	High	25	45	30
Groundwater	Low	Medium	Low	High	Medium	Low	50	50	0
Groundwater	Low	Medium	Low	High	Medium	Medium	40	50	10
Groundwater	Low	Medium	Low	High	Medium	High	30	50	20
Groundwater	Low	Medium	Low	High	High	Low	65	35	0
Groundwater	Low	Medium	Low	High	High	Medium	50	50	0
Groundwater	Low	Medium	Low	High	High	High	40	60	0
Groundwater	Low	Medium	Medium	Low	Low	Low	45	55	0
Groundwater	Low	Medium	Medium	Low	Low	Medium	35	50	15
Groundwater	Low	Medium	Medium	Low	Low	High	25	50	25
Groundwater	Low	Medium	Medium	Low	Medium	Low	50	50	0
Groundwater	Low	Medium	Medium	Low	Medium	Medium	40	55	5
Groundwater	Low	Medium	Medium	Low	Medium	High	30	55	15
Groundwater	Low	Medium	Medium	Low	High	Low	70	30	0
Groundwater	Low	Medium	Medium	Low	High	Medium	50	50	0
Groundwater	Low	Medium	Medium	Low	High	High	40	60	0
Groundwater	Low	Medium	Medium	Medium	Low	Low	40	55	5
Groundwater	Low	Medium	Medium	Medium	Low	Medium	30	45	25
Groundwater	Low	Medium	Medium	Medium	Low	High	20	45	35
Groundwater	Low	Medium	Medium	Medium	Medium	Low	45	55	0
Groundwater	Low	Medium	Medium	Medium	Medium	Medium	35	50	15
Groundwater	Low	Medium	Medium	Medium	Medium	High	25	50	25
Groundwater	Low	Medium	Medium	Medium	High	Low	65	35	0
Groundwater	Low	Medium	Medium	Medium	High	Medium	45	55	0
Groundwater	Low	Medium	Medium	Medium	High	High	35	60	5
Groundwater	Low	Medium	Medium	High	Low	Low	40	50	10
Groundwater	Low	Medium	Medium	High	Low	Medium	30	40	30
Groundwater	Low	Medium	Medium	High	Low	High	20	40	40
Groundwater	Low	Medium	Medium	High	Medium	Low	45	55	0
Groundwater	Low	Medium	Medium	High	Medium	Medium	35	45	20
Groundwater	Low	Medium	Medium	High	Medium	High	25	45	30
Groundwater	Low	Medium	Medium	High	High	Low	60	40	0
Groundwater	Low	Medium	Medium	High	High	Medium	45	55	0
Groundwater	Low	Medium	Medium	High	High	High	35	55	10
Groundwater	Low	Medium	High	Low	Low	Low	45	55	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	Low	Medium	High	Low	Low	Medium	35	45	20
Groundwater	Low	Medium	High	Low	Low	High	25	45	30
Groundwater	Low	Medium	High	Low	Medium	Low	50	50	0
Groundwater	Low	Medium	High	Low	Medium	Medium	40	50	10
Groundwater	Low	Medium	High	Low	Medium	High	30	50	20
Groundwater	Low	Medium	High	Low	High	Low	65	35	0
Groundwater	Low	Medium	High	Low	High	Medium	50	50	0
Groundwater	Low	Medium	High	Low	High	High	40	60	0
Groundwater	Low	Medium	High	Medium	Low	Low	40	50	10
Groundwater	Low	Medium	High	Medium	Low	Medium	30	40	30
Groundwater	Low	Medium	High	Medium	Low	High	20	40	40
Groundwater	Low	Medium	High	Medium	Medium	Low	45	55	0
Groundwater	Low	Medium	High	Medium	Medium	Medium	35	45	20
Groundwater	Low	Medium	High	Medium	Medium	High	25	45	30
Groundwater	Low	Medium	High	Medium	High	Low	60	40	0
Groundwater	Low	Medium	High	Medium	High	Medium	45	55	0
Groundwater	Low	Medium	High	Medium	High	High	35	55	10
Groundwater	Low	Medium	High	High	Low	Low	40	45	15
Groundwater	Low	Medium	High	High	Low	Medium	30	35	35
Groundwater	Low	Medium	High	High	Low	High	20	35	45
Groundwater	Low	Medium	High	High	Medium	Low	45	50	5
Groundwater	Low	Medium	High	High	Medium	Medium	35	40	25
Groundwater	Low	Medium	High	High	Medium	High	25	40	35
Groundwater	Low	Medium	High	High	High	Low	55	45	0
Groundwater	Low	Medium	High	High	High	Medium	45	50	5
Groundwater	Low	Medium	High	High	High	High	35	50	15
Groundwater	Low	High	Low	Low	Low	Low	55	45	0
Groundwater	Low	High	Low	Low	Low	Medium	45	55	0
Groundwater	Low	High	Low	Low	Low	High	35	60	5
Groundwater	Low	High	Low	Low	Medium	Low	60	40	0
Groundwater	Low	High	Low	Low	Medium	Medium	50	50	0
Groundwater	Low	High	Low	Low	Medium	High	40	60	0
Groundwater	Low	High	Low	Low	High	Low	75	25	0
Groundwater	Low	High	Low	Low	High	Medium	60	40	0
Groundwater	Low	High	Low	Low	High	High	50	50	0
Groundwater	Low	High	Low	Medium	Low	Low	50	50	0
Groundwater	Low	High	Low	Medium	Low	Medium	40	55	5
Groundwater	Low	High	Low	Medium	Low	High	30	55	15
Groundwater	Low	High	Low	Medium	Medium	Low	55	45	0
Groundwater	Low	High	Low	Medium	Medium	Medium	45	55	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	Low	High	Low	Medium	Medium	High	35	60	5
Groundwater	Low	High	Low	Medium	High	Low	70	30	0
Groundwater	Low	High	Low	Medium	High	Medium	55	45	0
Groundwater	Low	High	Low	Medium	High	High	45	55	0
Groundwater	Low	High	Low	High	Low	Low	50	50	0
Groundwater	Low	High	Low	High	Low	Medium	40	50	10
Groundwater	Low	High	Low	High	Low	High	30	50	20
Groundwater	Low	High	Low	High	Medium	Low	55	45	0
Groundwater	Low	High	Low	High	Medium	Medium	45	55	0
Groundwater	Low	High	Low	High	Medium	High	35	55	10
Groundwater	Low	High	Low	High	High	Low	65	35	0
Groundwater	Low	High	Low	High	High	Medium	55	45	0
Groundwater	Low	High	Low	High	High	High	45	55	0
Groundwater	Low	High	Medium	Low	Low	Low	50	50	0
Groundwater	Low	High	Medium	Low	Low	Medium	40	55	5
Groundwater	Low	High	Medium	Low	Low	High	30	55	15
Groundwater	Low	High	Medium	Low	Medium	Low	55	45	0
Groundwater	Low	High	Medium	Low	Medium	Medium	45	55	0
Groundwater	Low	High	Medium	Low	Medium	High	35	60	5
Groundwater	Low	High	Medium	Low	High	Low	70	30	0
Groundwater	Low	High	Medium	Low	High	Medium	55	45	0
Groundwater	Low	High	Medium	Low	High	High	45	55	0
Groundwater	Low	High	Medium	Medium	Low	Low	45	55	0
Groundwater	Low	High	Medium	Medium	Low	Medium	35	50	15
Groundwater	Low	High	Medium	Medium	Low	High	25	50	25
Groundwater	Low	High	Medium	Medium	Medium	Low	50	50	0
Groundwater	Low	High	Medium	Medium	Medium	Medium	40	55	5
Groundwater	Low	High	Medium	Medium	Medium	High	30	55	15
Groundwater	Low	High	Medium	Medium	High	Low	65	35	0
Groundwater	Low	High	Medium	Medium	High	Medium	50	50	0
Groundwater	Low	High	Medium	Medium	High	High	40	60	0
Groundwater	Low	High	Medium	High	Low	Low	45	55	0
Groundwater	Low	High	Medium	High	Low	Medium	35	45	20
Groundwater	Low	High	Medium	High	Low	High	25	45	30
Groundwater	Low	High	Medium	High	Medium	Low	50	50	0
Groundwater	Low	High	Medium	High	Medium	Medium	40	50	10
Groundwater	Low	High	Medium	High	Medium	High	30	50	20
Groundwater	Low	High	Medium	High	High	Low	65	35	0
Groundwater	Low	High	Medium	High	High	Medium	50	50	0
Groundwater	Low	High	Medium	High	High	High	40	60	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	Low	High	High	Low	Low	Low	50	50	0
Groundwater	Low	High	High	Low	Low	Medium	40	50	10
Groundwater	Low	High	High	Low	Low	High	30	50	20
Groundwater	Low	High	High	Low	Medium	Low	55	45	0
Groundwater	Low	High	High	Low	Medium	Medium	45	55	0
Groundwater	Low	High	High	Low	Medium	High	35	55	10
Groundwater	Low	High	High	Low	High	Low	65	35	0
Groundwater	Low	High	High	Low	High	Medium	55	45	0
Groundwater	Low	High	High	Low	High	High	45	55	0
Groundwater	Low	High	High	Medium	Low	Low	45	55	0
Groundwater	Low	High	High	Medium	Low	Medium	35	45	20
Groundwater	Low	High	High	Medium	Low	High	25	45	30
Groundwater	Low	High	High	Medium	Medium	Low	50	50	0
Groundwater	Low	High	High	Medium	Medium	Medium	40	50	10
Groundwater	Low	High	High	Medium	Medium	High	30	50	20
Groundwater	Low	High	High	Medium	High	Low	65	35	0
Groundwater	Low	High	High	Medium	High	Medium	50	50	0
Groundwater	Low	High	High	Medium	High	High	40	60	0
Groundwater	Low	High	High	High	Low	Low	45	50	5
Groundwater	Low	High	High	High	Low	Medium	35	40	25
Groundwater	Low	High	High	High	Low	High	25	40	35
Groundwater	Low	High	High	High	Medium	Low	50	50	0
Groundwater	Low	High	High	High	Medium	Medium	40	45	15
Groundwater	Low	High	High	High	Medium	High	30	45	25
Groundwater	Low	High	High	High	High	Low	60	40	0
Groundwater	Low	High	High	High	High	Medium	50	50	0
Groundwater	Low	High	High	High	High	High	40	55	5
Groundwater	Medium	Low	Low	Low	Low	Low	40	60	0
Groundwater	Medium	Low	Low	Low	Low	Medium	30	50	20
Groundwater	Medium	Low	Low	Low	Low	High	20	50	30
Groundwater	Medium	Low	Low	Low	Medium	Low	45	55	0
Groundwater	Medium	Low	Low	Low	Medium	Medium	35	55	10
Groundwater	Medium	Low	Low	Low	Medium	High	25	55	20
Groundwater	Medium	Low	Low	Low	High	Low	65	35	0
Groundwater	Medium	Low	Low	Low	High	Medium	45	55	0
Groundwater	Medium	Low	Low	Low	High	High	35	65	0
Groundwater	Medium	Low	Low	Medium	Low	Low	35	55	10
Groundwater	Medium	Low	Low	Medium	Low	Medium	25	45	30
Groundwater	Medium	Low	Low	Medium	Low	High	15	45	40
Groundwater	Medium	Low	Low	Medium	Medium	Low	40	60	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	Medium	Low	Low	Medium	Medium	Medium	30	50	20
Groundwater	Medium	Low	Low	Medium	Medium	High	20	50	30
Groundwater	Medium	Low	Low	Medium	High	Low	60	40	0
Groundwater	Medium	Low	Low	Medium	High	Medium	40	60	0
Groundwater	Medium	Low	Low	Medium	High	High	30	60	10
Groundwater	Medium	Low	Low	High	Low	Low	35	50	15
Groundwater	Medium	Low	Low	High	Low	Medium	25	40	35
Groundwater	Medium	Low	Low	High	Low	High	15	40	45
Groundwater	Medium	Low	Low	High	Medium	Low	40	55	5
Groundwater	Medium	Low	Low	High	Medium	Medium	30	45	25
Groundwater	Medium	Low	Low	High	Medium	High	20	45	35
Groundwater	Medium	Low	Low	High	High	Low	55	45	0
Groundwater	Medium	Low	Low	High	High	Medium	40	55	5
Groundwater	Medium	Low	Low	High	High	High	30	55	15
Groundwater	Medium	Low	Medium	Low	Low	Low	35	55	10
Groundwater	Medium	Low	Medium	Low	Low	Medium	25	45	30
Groundwater	Medium	Low	Medium	Low	Low	High	15	45	40
Groundwater	Medium	Low	Medium	Low	Medium	Low	40	60	0
Groundwater	Medium	Low	Medium	Low	Medium	Medium	30	50	20
Groundwater	Medium	Low	Medium	Low	Medium	High	20	50	30
Groundwater	Medium	Low	Medium	Low	High	Low	60	40	0
Groundwater	Medium	Low	Medium	Low	High	Medium	40	60	0
Groundwater	Medium	Low	Medium	Low	High	High	30	60	10
Groundwater	Medium	Low	Medium	Medium	Low	Low	30	50	20
Groundwater	Medium	Low	Medium	Medium	Low	Medium	20	40	40
Groundwater	Medium	Low	Medium	Medium	Low	High	10	40	50
Groundwater	Medium	Low	Medium	Medium	Medium	Low	35	55	10
Groundwater	Medium	Low	Medium	Medium	Medium	Medium	25	45	30
Groundwater	Medium	Low	Medium	Medium	Medium	High	15	45	40
Groundwater	Medium	Low	Medium	Medium	High	Low	55	45	0
Groundwater	Medium	Low	Medium	Medium	High	Medium	35	55	10
Groundwater	Medium	Low	Medium	Medium	High	High	25	55	20
Groundwater	Medium	Low	Medium	High	Low	Low	30	45	25
Groundwater	Medium	Low	Medium	High	Low	Medium	20	35	45
Groundwater	Medium	Low	Medium	High	Low	High	10	35	55
Groundwater	Medium	Low	Medium	High	Medium	Low	35	50	15
Groundwater	Medium	Low	Medium	High	Medium	Medium	25	40	35
Groundwater	Medium	Low	Medium	High	Medium	High	15	40	45
Groundwater	Medium	Low	Medium	High	High	Low	50	50	0
Groundwater	Medium	Low	Medium	High	High	Medium	35	50	15

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	Medium	Low	Medium	High	High	High	25	50	25
Groundwater	Medium	Low	High	Low	Low	Low	35	50	15
Groundwater	Medium	Low	High	Low	Low	Medium	25	40	35
Groundwater	Medium	Low	High	Low	Low	High	15	40	45
Groundwater	Medium	Low	High	Low	Medium	Low	40	55	5
Groundwater	Medium	Low	High	Low	Medium	Medium	30	45	25
Groundwater	Medium	Low	High	Low	Medium	High	20	45	35
Groundwater	Medium	Low	High	Low	High	Low	55	45	0
Groundwater	Medium	Low	High	Low	High	Medium	40	55	5
Groundwater	Medium	Low	High	Low	High	High	30	55	15
Groundwater	Medium	Low	High	Medium	Low	Low	30	45	25
Groundwater	Medium	Low	High	Medium	Low	Medium	20	35	45
Groundwater	Medium	Low	High	Medium	Low	High	10	35	55
Groundwater	Medium	Low	High	Medium	Medium	Low	35	50	15
Groundwater	Medium	Low	High	Medium	Medium	Medium	25	40	35
Groundwater	Medium	Low	High	Medium	Medium	High	15	40	45
Groundwater	Medium	Low	High	Medium	High	Low	50	50	0
Groundwater	Medium	Low	High	Medium	High	Medium	35	50	15
Groundwater	Medium	Low	High	Medium	High	High	25	50	25
Groundwater	Medium	Low	High	High	Low	Low	30	40	30
Groundwater	Medium	Low	High	High	Low	Medium	20	30	50
Groundwater	Medium	Low	High	High	Low	High	10	30	60
Groundwater	Medium	Low	High	High	Medium	Low	35	45	20
Groundwater	Medium	Low	High	High	Medium	Medium	25	35	40
Groundwater	Medium	Low	High	High	Medium	High	15	35	50
Groundwater	Medium	Low	High	High	High	Low	45	55	0
Groundwater	Medium	Low	High	High	High	Medium	35	45	20
Groundwater	Medium	Low	High	High	High	High	25	45	30
Groundwater	Medium	Medium	Low	Low	Low	Low	45	55	0
Groundwater	Medium	Medium	Low	Low	Low	Medium	35	50	15
Groundwater	Medium	Medium	Low	Low	Low	High	25	50	25
Groundwater	Medium	Medium	Low	Low	Medium	Low	50	50	0
Groundwater	Medium	Medium	Low	Low	Medium	Medium	40	55	5
Groundwater	Medium	Medium	Low	Low	Medium	High	30	55	15
Groundwater	Medium	Medium	Low	Low	High	Low	70	30	0
Groundwater	Medium	Medium	Low	Low	High	Medium	50	50	0
Groundwater	Medium	Medium	Low	Low	High	High	40	60	0
Groundwater	Medium	Medium	Low	Medium	Low	Low	40	55	5
Groundwater	Medium	Medium	Low	Medium	Low	Medium	30	45	25
Groundwater	Medium	Medium	Low	Medium	Low	High	20	45	35

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	Medium	Medium	Low	Medium	Medium	Low	45	55	0
Groundwater	Medium	Medium	Low	Medium	Medium	Medium	35	50	15
Groundwater	Medium	Medium	Low	Medium	Medium	High	25	50	25
Groundwater	Medium	Medium	Low	Medium	High	Low	65	35	0
Groundwater	Medium	Medium	Low	Medium	High	Medium	45	55	0
Groundwater	Medium	Medium	Low	Medium	High	High	35	60	5
Groundwater	Medium	Medium	Low	High	Low	Low	40	50	10
Groundwater	Medium	Medium	Low	High	Low	Medium	30	40	30
Groundwater	Medium	Medium	Low	High	Low	High	20	40	40
Groundwater	Medium	Medium	Low	High	Medium	Low	45	55	0
Groundwater	Medium	Medium	Low	High	Medium	Medium	35	45	20
Groundwater	Medium	Medium	Low	High	Medium	High	25	45	30
Groundwater	Medium	Medium	Low	High	High	Low	60	40	0
Groundwater	Medium	Medium	Low	High	High	Medium	45	55	0
Groundwater	Medium	Medium	Low	High	High	High	35	55	10
Groundwater	Medium	Medium	Medium	Low	Low	Low	40	55	5
Groundwater	Medium	Medium	Medium	Low	Low	Medium	30	45	25
Groundwater	Medium	Medium	Medium	Low	Low	High	20	45	35
Groundwater	Medium	Medium	Medium	Low	Medium	Low	45	55	0
Groundwater	Medium	Medium	Medium	Low	Medium	Medium	35	50	15
Groundwater	Medium	Medium	Medium	Low	Medium	High	25	50	25
Groundwater	Medium	Medium	Medium	Low	High	Low	65	35	0
Groundwater	Medium	Medium	Medium	Low	High	Medium	45	55	0
Groundwater	Medium	Medium	Medium	Low	High	High	35	60	5
Groundwater	Medium	Medium	Medium	Medium	Low	Low	35	50	15
Groundwater	Medium	Medium	Medium	Medium	Low	Medium	25	40	35
Groundwater	Medium	Medium	Medium	Medium	Low	High	15	40	45
Groundwater	Medium	Medium	Medium	Medium	Medium	Low	40	55	5
Groundwater	Medium	Medium	Medium	Medium	Medium	Medium	30	45	25
Groundwater	Medium	Medium	Medium	Medium	Medium	High	20	45	35
Groundwater	Medium	Medium	Medium	Medium	High	Low	60	40	0
Groundwater	Medium	Medium	Medium	Medium	High	Medium	40	55	5
Groundwater	Medium	Medium	Medium	Medium	High	High	30	55	15
Groundwater	Medium	Medium	Medium	High	Low	Low	35	45	20
Groundwater	Medium	Medium	Medium	High	Low	Medium	25	35	40
Groundwater	Medium	Medium	Medium	High	Low	High	15	35	50
Groundwater	Medium	Medium	Medium	High	Medium	Low	40	50	10
Groundwater	Medium	Medium	Medium	High	Medium	Medium	30	40	30
Groundwater	Medium	Medium	Medium	High	Medium	High	20	40	40
Groundwater	Medium	Medium	Medium	High	High	Low	55	45	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	Medium	Medium	Medium	High	High	Medium	40	50	10
Groundwater	Medium	Medium	Medium	High	High	High	30	50	20
Groundwater	Medium	Medium	High	Low	Low	Low	40	50	10
Groundwater	Medium	Medium	High	Low	Low	Medium	30	40	30
Groundwater	Medium	Medium	High	Low	Low	High	20	40	40
Groundwater	Medium	Medium	High	Low	Medium	Low	45	55	0
Groundwater	Medium	Medium	High	Low	Medium	Medium	35	45	20
Groundwater	Medium	Medium	High	Low	Medium	High	25	45	30
Groundwater	Medium	Medium	High	Low	High	Low	60	40	0
Groundwater	Medium	Medium	High	Low	High	Medium	45	55	0
Groundwater	Medium	Medium	High	Low	High	High	35	55	10
Groundwater	Medium	Medium	High	Medium	Low	Low	35	45	20
Groundwater	Medium	Medium	High	Medium	Low	Medium	25	35	40
Groundwater	Medium	Medium	High	Medium	Low	High	15	35	50
Groundwater	Medium	Medium	High	Medium	Medium	Low	40	50	10
Groundwater	Medium	Medium	High	Medium	Medium	Medium	30	40	30
Groundwater	Medium	Medium	High	Medium	Medium	High	20	40	40
Groundwater	Medium	Medium	High	Medium	High	Low	55	45	0
Groundwater	Medium	Medium	High	Medium	High	Medium	40	50	10
Groundwater	Medium	Medium	High	Medium	High	High	30	50	20
Groundwater	Medium	Medium	High	High	Low	Low	35	40	25
Groundwater	Medium	Medium	High	High	Low	Medium	25	30	45
Groundwater	Medium	Medium	High	High	Low	High	15	30	55
Groundwater	Medium	Medium	High	High	Medium	Low	40	45	15
Groundwater	Medium	Medium	High	High	Medium	Medium	30	35	35
Groundwater	Medium	Medium	High	High	Medium	High	20	35	45
Groundwater	Medium	Medium	High	High	High	Low	50	50	0
Groundwater	Medium	Medium	High	High	High	Medium	40	45	15
Groundwater	Medium	Medium	High	High	High	High	30	45	25
Groundwater	Medium	High	Low	Low	Low	Low	50	50	0
Groundwater	Medium	High	Low	Low	Low	Medium	40	55	5
Groundwater	Medium	High	Low	Low	Low	High	30	55	15
Groundwater	Medium	High	Low	Low	Medium	Low	55	45	0
Groundwater	Medium	High	Low	Low	Medium	Medium	45	50	5
Groundwater	Medium	High	Low	Low	Medium	High	35	60	5
Groundwater	Medium	High	Low	Low	High	Low	75	25	0
Groundwater	Medium	High	Low	Low	High	Medium	55	45	0
Groundwater	Medium	High	Low	Low	High	High	45	55	0
Groundwater	Medium	High	Low	Medium	Low	Low	45	55	0
Groundwater	Medium	High	Low	Medium	Low	Medium	35	50	15

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	Medium	High	Low	Medium	Low	High	25	50	25
Groundwater	Medium	High	Low	Medium	Medium	Low	50	50	0
Groundwater	Medium	High	Low	Medium	Medium	Medium	40	55	5
Groundwater	Medium	High	Low	Medium	Medium	High	30	55	15
Groundwater	Medium	High	Low	Medium	High	Low	70	30	0
Groundwater	Medium	High	Low	Medium	High	Medium	50	50	0
Groundwater	Medium	High	Low	Medium	High	High	40	60	0
Groundwater	Medium	High	Low	High	Low	Low	45	55	0
Groundwater	Medium	High	Low	High	Low	Medium	35	45	20
Groundwater	Medium	High	Low	High	Low	High	25	45	30
Groundwater	Medium	High	Low	High	Medium	Low	50	50	0
Groundwater	Medium	High	Low	High	Medium	Medium	40	50	10
Groundwater	Medium	High	Low	High	Medium	High	30	50	20
Groundwater	Medium	High	Low	High	High	Low	65	35	0
Groundwater	Medium	High	Low	High	High	Medium	50	50	0
Groundwater	Medium	High	Low	High	High	High	40	60	0
Groundwater	Medium	High	Medium	Low	Low	Low	45	55	0
Groundwater	Medium	High	Medium	Low	Low	Medium	35	50	15
Groundwater	Medium	High	Medium	Low	Low	High	25	50	25
Groundwater	Medium	High	Medium	Low	Medium	Low	50	50	0
Groundwater	Medium	High	Medium	Low	Medium	Medium	40	55	5
Groundwater	Medium	High	Medium	Low	Medium	High	30	55	15
Groundwater	Medium	High	Medium	Low	High	Low	70	30	0
Groundwater	Medium	High	Medium	Low	High	Medium	50	50	0
Groundwater	Medium	High	Medium	Low	High	High	40	60	0
Groundwater	Medium	High	Medium	Medium	Low	Low	40	55	5
Groundwater	Medium	High	Medium	Medium	Low	Medium	30	45	25
Groundwater	Medium	High	Medium	Medium	Low	High	20	45	35
Groundwater	Medium	High	Medium	Medium	Medium	Low	45	55	0
Groundwater	Medium	High	Medium	Medium	Medium	Medium	35	50	15
Groundwater	Medium	High	Medium	Medium	Medium	High	25	50	25
Groundwater	Medium	High	Medium	Medium	High	Low	65	35	0
Groundwater	Medium	High	Medium	Medium	High	Medium	45	55	0
Groundwater	Medium	High	Medium	Medium	High	High	35	60	5
Groundwater	Medium	High	Medium	High	Low	Low	40	50	10
Groundwater	Medium	High	Medium	High	Low	Medium	30	40	30
Groundwater	Medium	High	Medium	High	Low	High	20	40	40
Groundwater	Medium	High	Medium	High	Medium	Low	45	55	0
Groundwater	Medium	High	Medium	High	Medium	Medium	35	45	20
Groundwater	Medium	High	Medium	High	Medium	High	25	45	30

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	Medium	High	Medium	High	High	Low	60	40	0
Groundwater	Medium	High	Medium	High	High	Medium	45	55	0
Groundwater	Medium	High	Medium	High	High	High	35	55	10
Groundwater	Medium	High	High	Low	Low	Low	45	55	0
Groundwater	Medium	High	High	Low	Low	Medium	35	45	20
Groundwater	Medium	High	High	Low	Low	High	25	45	30
Groundwater	Medium	High	High	Low	Medium	Low	50	50	0
Groundwater	Medium	High	High	Low	Medium	Medium	40	50	10
Groundwater	Medium	High	High	Low	Medium	High	30	50	20
Groundwater	Medium	High	High	Low	High	Low	65	35	0
Groundwater	Medium	High	High	Low	High	Medium	50	50	0
Groundwater	Medium	High	High	Low	High	High	40	60	0
Groundwater	Medium	High	High	Medium	Low	Low	40	50	10
Groundwater	Medium	High	High	Medium	Low	Medium	30	40	30
Groundwater	Medium	High	High	Medium	Low	High	20	40	40
Groundwater	Medium	High	High	Medium	Medium	Low	45	55	0
Groundwater	Medium	High	High	Medium	Medium	Medium	35	45	20
Groundwater	Medium	High	High	Medium	Medium	High	25	45	30
Groundwater	Medium	High	High	Medium	High	Low	60	40	0
Groundwater	Medium	High	High	Medium	High	Medium	45	55	0
Groundwater	Medium	High	High	Medium	High	High	35	55	10
Groundwater	Medium	High	High	High	Low	Low	40	45	15
Groundwater	Medium	High	High	High	Low	Medium	30	35	35
Groundwater	Medium	High	High	High	Low	High	20	35	45
Groundwater	Medium	High	High	High	Medium	Low	45	50	5
Groundwater	Medium	High	High	High	Medium	Medium	35	40	25
Groundwater	Medium	High	High	High	Medium	High	25	40	35
Groundwater	Medium	High	High	High	High	Low	55	45	0
Groundwater	Medium	High	High	High	High	Medium	45	50	5
Groundwater	Medium	High	High	High	High	High	35	50	15
Groundwater	High	Low	Low	Low	Low	Low	40	60	0
Groundwater	High	Low	Low	Low	Low	Medium	30	55	15
Groundwater	High	Low	Low	Low	Low	High	20	55	25
Groundwater	High	Low	Low	Low	Medium	Low	45	55	0
Groundwater	High	Low	Low	Low	Medium	Medium	35	60	5
Groundwater	High	Low	Low	Low	Medium	High	25	60	15
Groundwater	High	Low	Low	Low	High	Low	65	35	0
Groundwater	High	Low	Low	Low	High	Medium	45	55	0
Groundwater	High	Low	Low	Low	High	High	35	65	0
Groundwater	High	Low	Low	Medium	Low	Low	35	60	5

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	High	Low	Low	Medium	Low	Medium	25	50	25
Groundwater	High	Low	Low	Medium	Low	High	15	50	35
Groundwater	High	Low	Low	Medium	Medium	Low	40	60	0
Groundwater	High	Low	Low	Medium	Medium	Medium	30	55	15
Groundwater	High	Low	Low	Medium	Medium	High	20	55	25
Groundwater	High	Low	Low	Medium	High	Low	60	40	0
Groundwater	High	Low	Low	Medium	High	Medium	40	60	0
Groundwater	High	Low	Low	Medium	High	High	30	65	5
Groundwater	High	Low	Low	High	Low	Low	35	55	10
Groundwater	High	Low	Low	High	Low	Medium	25	45	30
Groundwater	High	Low	Low	High	Low	High	15	45	40
Groundwater	High	Low	Low	High	Medium	Low	40	60	0
Groundwater	High	Low	Low	High	Medium	Medium	30	50	20
Groundwater	High	Low	Low	High	Medium	High	20	50	30
Groundwater	High	Low	Low	High	High	Low	55	45	0
Groundwater	High	Low	Low	High	High	Medium	40	60	0
Groundwater	High	Low	Low	High	High	High	30	60	10
Groundwater	High	Low	Medium	Low	Low	Low	35	60	5
Groundwater	High	Low	Medium	Low	Low	Medium	25	50	25
Groundwater	High	Low	Medium	Low	Low	High	15	50	35
Groundwater	High	Low	Medium	Low	Medium	Low	40	60	0
Groundwater	High	Low	Medium	Low	Medium	Medium	30	55	15
Groundwater	High	Low	Medium	Low	Medium	High	20	55	25
Groundwater	High	Low	Medium	Low	High	Low	60	40	0
Groundwater	High	Low	Medium	Low	High	Medium	40	60	0
Groundwater	High	Low	Medium	Low	High	High	30	65	5
Groundwater	High	Low	Medium	Medium	Low	Low	30	55	15
Groundwater	High	Low	Medium	Medium	Low	Medium	20	45	35
Groundwater	High	Low	Medium	Medium	Low	High	10	45	45
Groundwater	High	Low	Medium	Medium	Medium	Low	35	60	5
Groundwater	High	Low	Medium	Medium	Medium	Medium	25	50	25
Groundwater	High	Low	Medium	Medium	Medium	High	15	50	35
Groundwater	High	Low	Medium	Medium	High	Low	55	45	0
Groundwater	High	Low	Medium	Medium	High	Medium	35	60	5
Groundwater	High	Low	Medium	Medium	High	High	25	60	15
Groundwater	High	Low	Medium	High	Low	Low	30	50	20
Groundwater	High	Low	Medium	High	Low	Medium	20	40	40
Groundwater	High	Low	Medium	High	Low	High	10	40	50
Groundwater	High	Low	Medium	High	Medium	Low	35	55	10
Groundwater	High	Low	Medium	High	Medium	Medium	25	45	30

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	High	Low	Medium	High	Medium	High	15	45	40
Groundwater	High	Low	Medium	High	High	Low	50	50	0
Groundwater	High	Low	Medium	High	High	Medium	35	55	10
Groundwater	High	Low	Medium	High	High	High	25	55	20
Groundwater	High	Low	High	Low	Low	Low	35	55	10
Groundwater	High	Low	High	Low	Low	Medium	25	45	30
Groundwater	High	Low	High	Low	Low	High	15	45	40
Groundwater	High	Low	High	Low	Medium	Low	40	60	0
Groundwater	High	Low	High	Low	Medium	Medium	30	50	20
Groundwater	High	Low	High	Low	Medium	High	20	50	30
Groundwater	High	Low	High	Low	High	Low	55	45	0
Groundwater	High	Low	High	Low	High	Medium	40	60	0
Groundwater	High	Low	High	Low	High	High	30	60	10
Groundwater	High	Low	High	Medium	Low	Low	30	50	20
Groundwater	High	Low	High	Medium	Low	Medium	20	40	40
Groundwater	High	Low	High	Medium	Low	High	10	40	50
Groundwater	High	Low	High	Medium	Medium	Low	35	55	10
Groundwater	High	Low	High	Medium	Medium	Medium	25	45	30
Groundwater	High	Low	High	Medium	Medium	High	15	45	40
Groundwater	High	Low	High	Medium	High	Low	50	50	0
Groundwater	High	Low	High	Medium	High	Medium	35	55	10
Groundwater	High	Low	High	Medium	High	High	25	55	20
Groundwater	High	Low	High	High	Low	Low	30	45	25
Groundwater	High	Low	High	High	Low	Medium	20	35	45
Groundwater	High	Low	High	High	Low	High	10	35	55
Groundwater	High	Low	High	High	Medium	Low	35	50	15
Groundwater	High	Low	High	High	Medium	Medium	25	40	35
Groundwater	High	Low	High	High	Medium	High	15	40	45
Groundwater	High	Low	High	High	High	Low	45	55	0
Groundwater	High	Low	High	High	High	Medium	35	50	15
Groundwater	High	Low	High	High	High	High	25	50	25
Groundwater	High	Medium	Low	Low	Low	Low	45	55	0
Groundwater	High	Medium	Low	Low	Low	Medium	35	55	10
Groundwater	High	Medium	Low	Low	Low	High	25	55	20
Groundwater	High	Medium	Low	Low	Medium	Low	50	50	0
Groundwater	High	Medium	Low	Low	Medium	Medium	40	60	0
Groundwater	High	Medium	Low	Low	Medium	High	30	60	10
Groundwater	High	Medium	Low	Low	High	Low	70	30	0
Groundwater	High	Medium	Low	Low	High	Medium	50	50	0
Groundwater	High	Medium	Low	Low	High	High	40	60	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	High	Medium	Low	Medium	Low	Low	40	60	0
Groundwater	High	Medium	Low	Medium	Low	Medium	30	50	20
Groundwater	High	Medium	Low	Medium	Low	High	20	50	30
Groundwater	High	Medium	Low	Medium	Medium	Low	45	55	0
Groundwater	High	Medium	Low	Medium	Medium	Medium	35	55	10
Groundwater	High	Medium	Low	Medium	Medium	High	25	55	20
Groundwater	High	Medium	Low	Medium	High	Low	65	35	0
Groundwater	High	Medium	Low	Medium	High	Medium	45	55	0
Groundwater	High	Medium	Low	Medium	High	High	35	65	0
Groundwater	High	Medium	Low	High	Low	Low	40	55	5
Groundwater	High	Medium	Low	High	Low	Medium	30	45	25
Groundwater	High	Medium	Low	High	Low	High	20	45	35
Groundwater	High	Medium	Low	High	Medium	Low	45	55	0
Groundwater	High	Medium	Low	High	Medium	Medium	35	50	15
Groundwater	High	Medium	Low	High	Medium	High	25	50	25
Groundwater	High	Medium	Low	High	High	Low	60	40	0
Groundwater	High	Medium	Low	High	High	Medium	45	55	0
Groundwater	High	Medium	Low	High	High	High	35	60	5
Groundwater	High	Medium	Medium	Low	Low	Low	40	60	0
Groundwater	High	Medium	Medium	Low	Low	Medium	30	50	20
Groundwater	High	Medium	Medium	Low	Low	High	20	50	30
Groundwater	High	Medium	Medium	Low	Medium	Low	45	55	0
Groundwater	High	Medium	Medium	Low	Medium	Medium	35	55	10
Groundwater	High	Medium	Medium	Low	Medium	High	25	55	20
Groundwater	High	Medium	Medium	Low	High	Low	65	35	0
Groundwater	High	Medium	Medium	Low	High	Medium	45	55	0
Groundwater	High	Medium	Medium	Low	High	High	35	65	0
Groundwater	High	Medium	Medium	Medium	Low	Low	35	55	10
Groundwater	High	Medium	Medium	Medium	Low	Medium	25	45	30
Groundwater	High	Medium	Medium	Medium	Low	High	15	45	40
Groundwater	High	Medium	Medium	Medium	Medium	Low	40	60	0
Groundwater	High	Medium	Medium	Medium	Medium	Medium	30	50	20
Groundwater	High	Medium	Medium	Medium	Medium	High	20	50	30
Groundwater	High	Medium	Medium	Medium	High	Low	60	40	0
Groundwater	High	Medium	Medium	Medium	High	Medium	40	60	0
Groundwater	High	Medium	Medium	Medium	High	High	30	60	10
Groundwater	High	Medium	Medium	High	Low	Low	35	50	15
Groundwater	High	Medium	Medium	High	Low	Medium	25	40	35
Groundwater	High	Medium	Medium	High	Low	High	15	40	45
Groundwater	High	Medium	Medium	High	Medium	Low	40	55	5

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	High	Medium	Medium	High	Medium	Medium	30	45	25
Groundwater	High	Medium	Medium	High	Medium	High	20	45	35
Groundwater	High	Medium	Medium	High	High	Low	55	45	0
Groundwater	High	Medium	Medium	High	High	Medium	40	55	5
Groundwater	High	Medium	Medium	High	High	High	30	55	15
Groundwater	High	Medium	High	Low	Low	Low	40	55	5
Groundwater	High	Medium	High	Low	Low	Medium	30	45	25
Groundwater	High	Medium	High	Low	Low	High	20	45	35
Groundwater	High	Medium	High	Low	Medium	Low	45	55	0
Groundwater	High	Medium	High	Low	Medium	Medium	35	50	15
Groundwater	High	Medium	High	Low	Medium	High	25	50	25
Groundwater	High	Medium	High	Low	High	Low	60	40	0
Groundwater	High	Medium	High	Low	High	Medium	45	55	0
Groundwater	High	Medium	High	Low	High	High	35	60	5
Groundwater	High	Medium	High	Medium	Low	Low	35	50	15
Groundwater	High	Medium	High	Medium	Low	Medium	25	40	35
Groundwater	High	Medium	High	Medium	Low	High	15	40	45
Groundwater	High	Medium	High	Medium	Medium	Low	40	55	5
Groundwater	High	Medium	High	Medium	Medium	Medium	30	45	25
Groundwater	High	Medium	High	Medium	Medium	High	20	45	35
Groundwater	High	Medium	High	Medium	High	Low	55	45	0
Groundwater	High	Medium	High	Medium	High	Medium	40	55	5
Groundwater	High	Medium	High	Medium	High	High	30	55	15
Groundwater	High	Medium	High	High	Low	Low	35	45	20
Groundwater	High	Medium	High	High	Low	Medium	25	35	40
Groundwater	High	Medium	High	High	Low	High	15	35	50
Groundwater	High	Medium	High	High	Medium	Low	40	50	10
Groundwater	High	Medium	High	High	Medium	Medium	30	40	30
Groundwater	High	Medium	High	High	Medium	High	20	40	40
Groundwater	High	Medium	High	High	High	Low	50	50	0
Groundwater	High	Medium	High	High	High	Medium	40	50	10
Groundwater	High	Medium	High	High	High	High	30	50	20
Groundwater	High	High	Low	Low	Low	Low	50	50	0
Groundwater	High	High	Low	Low	Low	Medium	40	60	0
Groundwater	High	High	Low	Low	Low	High	30	60	10
Groundwater	High	High	Low	Low	Medium	Low	55	45	0
Groundwater	High	High	Low	Low	Medium	Medium	45	55	0
Groundwater	High	High	Low	Low	Medium	High	35	65	0
Groundwater	High	High	Low	Low	High	Low	75	25	0
Groundwater	High	High	Low	Low	High	Medium	55	45	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	High	High	Low	Low	High	High	45	55	0
Groundwater	High	High	Low	Medium	Low	Low	45	55	0
Groundwater	High	High	Low	Medium	Low	Medium	35	55	10
Groundwater	High	High	Low	Medium	Low	High	25	55	20
Groundwater	High	High	Low	Medium	Medium	Low	50	50	0
Groundwater	High	High	Low	Medium	Medium	Medium	40	60	0
Groundwater	High	High	Low	Medium	Medium	High	30	60	10
Groundwater	High	High	Low	Medium	High	Low	70	30	0
Groundwater	High	High	Low	Medium	High	Medium	50	50	0
Groundwater	High	High	Low	Medium	High	High	40	60	0
Groundwater	High	High	Low	High	Low	Low	45	55	0
Groundwater	High	High	Low	High	Low	Medium	35	50	15
Groundwater	High	High	Low	High	Low	High	25	50	25
Groundwater	High	High	Low	High	Medium	Low	50	50	0
Groundwater	High	High	Low	High	Medium	Medium	40	55	5
Groundwater	High	High	Low	High	Medium	High	30	55	15
Groundwater	High	High	Low	High	High	Low	65	35	0
Groundwater	High	High	Low	High	High	Medium	50	50	0
Groundwater	High	High	Low	High	High	High	40	60	0
Groundwater	High	High	Medium	Low	Low	Low	45	55	0
Groundwater	High	High	Medium	Low	Low	Medium	35	55	10
Groundwater	High	High	Medium	Low	Low	High	25	55	20
Groundwater	High	High	Medium	Low	Medium	Low	50	50	0
Groundwater	High	High	Medium	Low	Medium	Medium	40	60	0
Groundwater	High	High	Medium	Low	Medium	High	30	60	10
Groundwater	High	High	Medium	Low	High	Low	70	30	0
Groundwater	High	High	Medium	Low	High	Medium	50	50	0
Groundwater	High	High	Medium	Low	High	High	40	60	0
Groundwater	High	High	Medium	Medium	Low	Low	40	60	0
Groundwater	High	High	Medium	Medium	Low	Medium	30	50	20
Groundwater	High	High	Medium	Medium	Low	High	20	50	30
Groundwater	High	High	Medium	Medium	Medium	Low	45	55	0
Groundwater	High	High	Medium	Medium	Medium	Medium	35	55	10
Groundwater	High	High	Medium	Medium	Medium	High	25	55	20
Groundwater	High	High	Medium	Medium	High	Low	65	35	0
Groundwater	High	High	Medium	Medium	High	Medium	45	55	0
Groundwater	High	High	Medium	Medium	High	High	35	65	0
Groundwater	High	High	Medium	High	Low	Low	40	55	5
Groundwater	High	High	Medium	High	Low	Medium	30	45	25
Groundwater	High	High	Medium	High	Low	High	20	45	35

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Groundwater	High	High	Medium	High	Medium	Low	45	55	0
Groundwater	High	High	Medium	High	Medium	Medium	35	50	15
Groundwater	High	High	Medium	High	Medium	High	25	50	25
Groundwater	High	High	Medium	High	High	Low	60	40	0
Groundwater	High	High	Medium	High	High	Medium	45	55	0
Groundwater	High	High	Medium	High	High	High	35	60	5
Groundwater	High	High	High	Low	Low	Low	45	55	0
Groundwater	High	High	High	Low	Low	Medium	35	50	15
Groundwater	High	High	High	Low	Low	High	25	50	25
Groundwater	High	High	High	Low	Medium	Low	50	50	0
Groundwater	High	High	High	Low	Medium	Medium	40	55	5
Groundwater	High	High	High	Low	Medium	High	30	55	15
Groundwater	High	High	High	Low	High	Low	65	35	0
Groundwater	High	High	High	Low	High	Medium	50	50	0
Groundwater	High	High	High	Low	High	High	40	60	0
Groundwater	High	High	High	Medium	Low	Low	40	55	5
Groundwater	High	High	High	Medium	Low	Medium	30	45	25
Groundwater	High	High	High	Medium	Low	High	20	45	35
Groundwater	High	High	High	Medium	Medium	Low	45	55	0
Groundwater	High	High	High	Medium	Medium	Medium	35	50	15
Groundwater	High	High	High	Medium	Medium	High	25	50	25
Groundwater	High	High	High	Medium	High	Low	60	40	0
Groundwater	High	High	High	Medium	High	Medium	45	55	0
Groundwater	High	High	High	Medium	High	High	35	60	5
Groundwater	High	High	High	High	Low	Low	40	50	10
Groundwater	High	High	High	High	Low	Medium	30	40	30
Groundwater	High	High	High	High	Low	High	20	40	40
Groundwater	High	High	High	High	Medium	Low	45	55	0
Groundwater	High	High	High	High	Medium	Medium	35	45	20
Groundwater	High	High	High	High	Medium	High	25	45	30
Groundwater	High	High	High	High	High	Low	55	45	0
Groundwater	High	High	High	High	High	Medium	45	55	0
Groundwater	High	High	High	High	High	High	35	55	10
Summer	Low	Low	Low	Low	Low	Low	35	55	10
Summer	Low	Low	Low	Low	Low	Medium	25	45	30
Summer	Low	Low	Low	Low	Low	High	15	45	40
Summer	Low	Low	Low	Low	Medium	Low	40	60	0
Summer	Low	Low	Low	Low	Medium	Medium	30	50	20
Summer	Low	Low	Low	Low	Medium	High	20	50	30
Summer	Low	Low	Low	Low	High	Low	45	55	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	Low	Low	Low	Low	High	Medium	40	60	0
Summer	Low	Low	Low	Low	High	High	30	60	10
Summer	Low	Low	Low	Medium	Low	Low	30	50	20
Summer	Low	Low	Low	Medium	Low	Medium	20	40	40
Summer	Low	Low	Low	Medium	Low	High	10	40	50
Summer	Low	Low	Low	Medium	Medium	Low	35	55	10
Summer	Low	Low	Low	Medium	Medium	Medium	25	45	30
Summer	Low	Low	Low	Medium	Medium	High	15	45	40
Summer	Low	Low	Low	Medium	High	Low	40	60	0
Summer	Low	Low	Low	Medium	High	Medium	35	55	10
Summer	Low	Low	Low	Medium	High	High	25	55	20
Summer	Low	Low	Low	High	Low	Low	30	45	25
Summer	Low	Low	Low	High	Low	Medium	20	35	45
Summer	Low	Low	Low	High	Low	High	10	35	55
Summer	Low	Low	Low	High	Medium	Low	35	50	15
Summer	Low	Low	Low	High	Medium	Medium	25	40	35
Summer	Low	Low	Low	High	Medium	High	15	40	45
Summer	Low	Low	Low	High	High	Low	45	55	0
Summer	Low	Low	Low	High	High	Medium	35	50	15
Summer	Low	Low	Low	High	High	High	25	50	25
Summer	Low	Low	Medium	Low	Low	Low	30	50	20
Summer	Low	Low	Medium	Low	Low	Medium	20	40	40
Summer	Low	Low	Medium	Low	Low	High	10	40	50
Summer	Low	Low	Medium	Low	Medium	Low	35	55	10
Summer	Low	Low	Medium	Low	Medium	Medium	25	45	30
Summer	Low	Low	Medium	Low	Medium	High	15	45	40
Summer	Low	Low	Medium	Low	High	Low	40	60	0
Summer	Low	Low	Medium	Low	High	Medium	35	55	10
Summer	Low	Low	Medium	Low	High	High	25	55	20
Summer	Low	Low	Medium	Medium	Low	Low	25	45	30
Summer	Low	Low	Medium	Medium	Low	Medium	15	35	50
Summer	Low	Low	Medium	Medium	Low	High	5	35	60
Summer	Low	Low	Medium	Medium	Medium	Low	30	50	20
Summer	Low	Low	Medium	Medium	Medium	Medium	20	40	40
Summer	Low	Low	Medium	Medium	Medium	High	10	40	50
Summer	Low	Low	Medium	Medium	High	Low	40	60	0
Summer	Low	Low	Medium	Medium	High	Medium	30	50	20
Summer	Low	Low	Medium	Medium	High	High	20	50	30
Summer	Low	Low	Medium	High	Low	Low	25	40	35
Summer	Low	Low	Medium	High	Low	Medium	15	30	55

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	Low	Low	Medium	High	Low	High	5	30	65
Summer	Low	Low	Medium	High	Medium	Low	30	45	25
Summer	Low	Low	Medium	High	Medium	Medium	20	35	45
Summer	Low	Low	Medium	High	Medium	High	10	35	55
Summer	Low	Low	Medium	High	High	Low	40	55	5
Summer	Low	Low	Medium	High	High	Medium	30	45	25
Summer	Low	Low	Medium	High	High	High	20	45	35
Summer	Low	Low	High	Low	Low	Low	30	45	25
Summer	Low	Low	High	Low	Low	Medium	20	35	45
Summer	Low	Low	High	Low	Low	High	10	35	55
Summer	Low	Low	High	Low	Medium	Low	35	50	15
Summer	Low	Low	High	Low	Medium	Medium	25	40	35
Summer	Low	Low	High	Low	Medium	High	15	40	45
Summer	Low	Low	High	Low	High	Low	45	55	0
Summer	Low	Low	High	Low	High	Medium	35	50	15
Summer	Low	Low	High	Low	High	High	25	50	25
Summer	Low	Low	High	Medium	Low	Low	25	40	35
Summer	Low	Low	High	Medium	Low	Medium	15	30	55
Summer	Low	Low	High	Medium	Low	High	5	30	65
Summer	Low	Low	High	Medium	Medium	Low	30	45	25
Summer	Low	Low	High	Medium	Medium	Medium	20	35	45
Summer	Low	Low	High	Medium	Medium	High	10	35	55
Summer	Low	Low	High	Medium	High	Low	40	55	5
Summer	Low	Low	High	Medium	High	Medium	30	45	25
Summer	Low	Low	High	Medium	High	High	20	45	35
Summer	Low	Low	High	High	Low	Low	25	35	40
Summer	Low	Low	High	High	Low	Medium	15	25	60
Summer	Low	Low	High	High	Low	High	5	25	70
Summer	Low	Low	High	High	Medium	Low	30	40	30
Summer	Low	Low	High	High	Medium	Medium	20	30	50
Summer	Low	Low	High	High	Medium	High	10	30	60
Summer	Low	Low	High	High	High	Low	40	50	10
Summer	Low	Low	High	High	High	Medium	30	40	30
Summer	Low	Low	High	High	High	High	20	40	40
Summer	Low	Medium	Low	Low	Low	Low	40	55	5
Summer	Low	Medium	Low	Low	Low	Medium	30	45	25
Summer	Low	Medium	Low	Low	Low	High	20	45	35
Summer	Low	Medium	Low	Low	Medium	Low	45	55	0
Summer	Low	Medium	Low	Low	Medium	Medium	35	50	15
Summer	Low	Medium	Low	Low	Medium	High	25	50	25

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	Low	Medium	Low	Low	High	Low	50	50	0
Summer	Low	Medium	Low	Low	High	Medium	45	55	0
Summer	Low	Medium	Low	Low	High	High	35	60	5
Summer	Low	Medium	Low	Medium	Low	Low	35	50	15
Summer	Low	Medium	Low	Medium	Low	Medium	25	40	35
Summer	Low	Medium	Low	Medium	Low	High	15	40	45
Summer	Low	Medium	Low	Medium	Medium	Low	40	55	5
Summer	Low	Medium	Low	Medium	Medium	Medium	30	45	25
Summer	Low	Medium	Low	Medium	Medium	High	20	45	35
Summer	Low	Medium	Low	Medium	High	Low	45	55	0
Summer	Low	Medium	Low	Medium	High	Medium	40	55	5
Summer	Low	Medium	Low	Medium	High	High	30	55	15
Summer	Low	Medium	Low	High	Low	Low	35	45	20
Summer	Low	Medium	Low	High	Low	Medium	25	35	40
Summer	Low	Medium	Low	High	Low	High	15	35	50
Summer	Low	Medium	Low	High	Medium	Low	40	50	10
Summer	Low	Medium	Low	High	Medium	Medium	30	40	30
Summer	Low	Medium	Low	High	Medium	High	20	40	40
Summer	Low	Medium	Low	High	High	Low	45	55	0
Summer	Low	Medium	Low	High	High	Medium	40	50	10
Summer	Low	Medium	Low	High	High	High	30	50	20
Summer	Low	Medium	Medium	Low	Low	Low	35	50	15
Summer	Low	Medium	Medium	Low	Low	Medium	25	40	35
Summer	Low	Medium	Medium	Low	Low	High	15	40	45
Summer	Low	Medium	Medium	Low	Medium	Low	40	55	5
Summer	Low	Medium	Medium	Low	Medium	Medium	30	45	25
Summer	Low	Medium	Medium	Low	Medium	High	20	45	35
Summer	Low	Medium	Medium	Low	High	Low	45	55	0
Summer	Low	Medium	Medium	Low	High	Medium	40	55	5
Summer	Low	Medium	Medium	Low	High	High	30	55	15
Summer	Low	Medium	Medium	Medium	Low	Low	30	45	25
Summer	Low	Medium	Medium	Medium	Low	Medium	20	35	45
Summer	Low	Medium	Medium	Medium	Low	High	10	35	55
Summer	Low	Medium	Medium	Medium	Medium	Low	35	50	15
Summer	Low	Medium	Medium	Medium	Medium	Medium	25	40	35
Summer	Low	Medium	Medium	Medium	Medium	High	15	40	45
Summer	Low	Medium	Medium	Medium	High	Low	45	55	0
Summer	Low	Medium	Medium	Medium	High	Medium	35	50	15
Summer	Low	Medium	Medium	Medium	High	High	25	50	25
Summer	Low	Medium	Medium	High	Low	Low	30	40	30

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	Low	Medium	Medium	High	Low	Medium	20	30	50
Summer	Low	Medium	Medium	High	Low	High	10	30	60
Summer	Low	Medium	Medium	High	Medium	Low	35	45	20
Summer	Low	Medium	Medium	High	Medium	Medium	25	35	40
Summer	Low	Medium	Medium	High	Medium	High	15	35	50
Summer	Low	Medium	Medium	High	High	Low	45	55	0
Summer	Low	Medium	Medium	High	High	Medium	35	45	20
Summer	Low	Medium	Medium	High	High	High	25	45	30
Summer	Low	Medium	High	Low	Low	Low	35	45	20
Summer	Low	Medium	High	Low	Low	Medium	25	35	40
Summer	Low	Medium	High	Low	Low	High	15	35	50
Summer	Low	Medium	High	Low	Medium	Low	40	50	10
Summer	Low	Medium	High	Low	Medium	Medium	30	40	30
Summer	Low	Medium	High	Low	Medium	High	20	40	40
Summer	Low	Medium	High	Low	High	Low	45	55	0
Summer	Low	Medium	High	Low	High	Medium	40	50	10
Summer	Low	Medium	High	Low	High	High	30	50	20
Summer	Low	Medium	High	Medium	Low	Low	30	40	30
Summer	Low	Medium	High	Medium	Low	Medium	20	30	50
Summer	Low	Medium	High	Medium	Low	High	10	30	60
Summer	Low	Medium	High	Medium	Medium	Low	35	45	20
Summer	Low	Medium	High	Medium	Medium	Medium	25	35	40
Summer	Low	Medium	High	Medium	Medium	High	15	35	50
Summer	Low	Medium	High	Medium	High	Low	45	55	0
Summer	Low	Medium	High	Medium	High	Medium	35	45	20
Summer	Low	Medium	High	Medium	High	High	25	45	30
Summer	Low	Medium	High	High	Low	Low	30	35	35
Summer	Low	Medium	High	High	Low	Medium	20	25	55
Summer	Low	Medium	High	High	Low	High	10	25	65
Summer	Low	Medium	High	High	Medium	Low	35	40	25
Summer	Low	Medium	High	High	Medium	Medium	25	30	45
Summer	Low	Medium	High	High	Medium	High	15	30	55
Summer	Low	Medium	High	High	High	Low	45	50	5
Summer	Low	Medium	High	High	High	Medium	35	40	25
Summer	Low	Medium	High	High	High	High	25	40	35
Summer	Low	High	Low	Low	Low	Low	45	55	0
Summer	Low	High	Low	Low	Low	Medium	35	50	15
Summer	Low	High	Low	Low	Low	High	25	50	25
Summer	Low	High	Low	Low	Medium	Low	45	55	0
Summer	Low	High	Low	Low	Medium	Medium	40	55	5

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	Low	High	Low	Low	Medium	High	30	55	15
Summer	Low	High	Low	Low	High	Low	55	45	0
Summer	Low	High	Low	Low	High	Medium	45	55	0
Summer	Low	High	Low	Low	High	High	40	60	0
Summer	Low	High	Low	Medium	Low	Low	40	55	5
Summer	Low	High	Low	Medium	Low	Medium	30	45	25
Summer	Low	High	Low	Medium	Low	High	20	45	35
Summer	Low	High	Low	Medium	Medium	Low	45	55	0
Summer	Low	High	Low	Medium	Medium	Medium	35	50	15
Summer	Low	High	Low	Medium	Medium	High	25	50	25
Summer	Low	High	Low	Medium	High	Low	45	55	0
Summer	Low	High	Low	Medium	High	Medium	45	55	0
Summer	Low	High	Low	Medium	High	High	35	60	5
Summer	Low	High	Low	High	Low	Low	40	50	10
Summer	Low	High	Low	High	Low	Medium	30	40	30
Summer	Low	High	Low	High	Low	High	20	40	40
Summer	Low	High	Low	High	Medium	Low	45	55	0
Summer	Low	High	Low	High	Medium	Medium	35	45	20
Summer	Low	High	Low	High	Medium	High	25	45	30
Summer	Low	High	Low	High	High	Low	45	55	0
Summer	Low	High	Low	High	High	Medium	45	55	0
Summer	Low	High	Low	High	High	High	35	55	10
Summer	Low	High	Medium	Low	Low	Low	40	55	5
Summer	Low	High	Medium	Low	Low	Medium	30	45	25
Summer	Low	High	Medium	Low	Low	High	20	45	35
Summer	Low	High	Medium	Low	Medium	Low	45	55	0
Summer	Low	High	Medium	Low	Medium	Medium	35	50	15
Summer	Low	High	Medium	Low	Medium	High	25	50	25
Summer	Low	High	Medium	Low	High	Low	45	55	0
Summer	Low	High	Medium	Low	High	Medium	45	55	0
Summer	Low	High	Medium	Low	High	High	35	60	5
Summer	Low	High	Medium	Medium	Low	Low	35	50	15
Summer	Low	High	Medium	Medium	Low	Medium	25	40	35
Summer	Low	High	Medium	Medium	Low	High	15	40	45
Summer	Low	High	Medium	Medium	Medium	Low	40	55	5
Summer	Low	High	Medium	Medium	Medium	Medium	30	45	25
Summer	Low	High	Medium	Medium	Medium	High	20	45	35
Summer	Low	High	Medium	Medium	High	Low	45	55	0
Summer	Low	High	Medium	Medium	High	Medium	40	55	5
Summer	Low	High	Medium	Medium	High	High	30	55	15

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	Low	High	Medium	High	Low	Low	35	45	20
Summer	Low	High	Medium	High	Low	Medium	25	35	40
Summer	Low	High	Medium	High	Low	High	15	35	50
Summer	Low	High	Medium	High	Medium	Low	40	50	10
Summer	Low	High	Medium	High	Medium	Medium	30	40	30
Summer	Low	High	Medium	High	Medium	High	20	40	40
Summer	Low	High	Medium	High	High	Low	45	55	0
Summer	Low	High	Medium	High	High	Medium	40	50	10
Summer	Low	High	Medium	High	High	High	30	50	20
Summer	Low	High	High	Low	Low	Low	40	50	10
Summer	Low	High	High	Low	Low	Medium	30	40	30
Summer	Low	High	High	Low	Low	High	20	40	40
Summer	Low	High	High	Low	Medium	Low	45	55	0
Summer	Low	High	High	Low	Medium	Medium	35	45	20
Summer	Low	High	High	Low	Medium	High	25	45	30
Summer	Low	High	High	Low	High	Low	45	55	0
Summer	Low	High	High	Low	High	Medium	45	55	0
Summer	Low	High	High	Low	High	High	35	55	10
Summer	Low	High	High	Medium	Low	Low	35	45	20
Summer	Low	High	High	Medium	Low	Medium	25	35	40
Summer	Low	High	High	Medium	Low	High	15	35	50
Summer	Low	High	High	Medium	Medium	Low	40	50	10
Summer	Low	High	High	Medium	Medium	Medium	30	40	30
Summer	Low	High	High	Medium	Medium	High	20	40	40
Summer	Low	High	High	Medium	High	Low	45	55	0
Summer	Low	High	High	Medium	High	Medium	40	50	10
Summer	Low	High	High	Medium	High	High	30	50	20
Summer	Low	High	High	High	Low	Low	35	40	25
Summer	Low	High	High	High	Low	Medium	25	30	45
Summer	Low	High	High	High	Low	High	15	30	55
Summer	Low	High	High	High	Medium	Low	40	45	15
Summer	Low	High	High	High	Medium	Medium	30	35	35
Summer	Low	High	High	High	Medium	High	20	35	45
Summer	Low	High	High	High	High	Low	50	50	0
Summer	Low	High	High	High	High	Medium	40	45	15
Summer	Low	High	High	High	High	High	30	45	25
Summer	Medium	Low	Low	Low	Low	Low	30	50	20
Summer	Medium	Low	Low	Low	Low	Medium	20	40	40
Summer	Medium	Low	Low	Low	Low	High	10	40	50
Summer	Medium	Low	Low	Low	Medium	Low	35	55	10

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	Medium	Low	Low	Low	Medium	Medium	25	45	30
Summer	Medium	Low	Low	Low	Medium	High	15	45	40
Summer	Medium	Low	Low	Low	High	Low	45	55	0
Summer	Medium	Low	Low	Low	High	Medium	35	55	10
Summer	Medium	Low	Low	Low	High	High	25	55	20
Summer	Medium	Low	Low	Medium	Low	Low	25	45	30
Summer	Medium	Low	Low	Medium	Low	Medium	15	35	50
Summer	Medium	Low	Low	Medium	Low	High	5	35	60
Summer	Medium	Low	Low	Medium	Medium	Low	30	50	20
Summer	Medium	Low	Low	Medium	Medium	Medium	20	40	40
Summer	Medium	Low	Low	Medium	Medium	High	10	40	50
Summer	Medium	Low	Low	Medium	High	Low	40	60	0
Summer	Medium	Low	Low	Medium	High	Medium	30	50	20
Summer	Medium	Low	Low	Medium	High	High	20	50	30
Summer	Medium	Low	Low	High	Low	Low	25	40	35
Summer	Medium	Low	Low	High	Low	Medium	15	30	55
Summer	Medium	Low	Low	High	Low	High	5	30	65
Summer	Medium	Low	Low	High	Medium	Low	30	45	25
Summer	Medium	Low	Low	High	Medium	Medium	20	35	45
Summer	Medium	Low	Low	High	Medium	High	10	35	55
Summer	Medium	Low	Low	High	High	Low	40	55	5
Summer	Medium	Low	Low	High	High	Medium	30	45	25
Summer	Medium	Low	Low	High	High	High	20	45	35
Summer	Medium	Low	Medium	Low	Low	Low	25	45	30
Summer	Medium	Low	Medium	Low	Low	Medium	15	35	50
Summer	Medium	Low	Medium	Low	Low	High	5	35	60
Summer	Medium	Low	Medium	Low	Medium	Low	30	50	20
Summer	Medium	Low	Medium	Low	Medium	Medium	20	40	40
Summer	Medium	Low	Medium	Low	Medium	High	10	40	50
Summer	Medium	Low	Medium	Low	High	Low	40	60	0
Summer	Medium	Low	Medium	Low	High	Medium	30	50	20
Summer	Medium	Low	Medium	Low	High	High	20	50	30
Summer	Medium	Low	Medium	Medium	Low	Low	20	40	40
Summer	Medium	Low	Medium	Medium	Low	Medium	10	30	60
Summer	Medium	Low	Medium	Medium	Low	High	0	30	70
Summer	Medium	Low	Medium	Medium	Medium	Low	25	45	30
Summer	Medium	Low	Medium	Medium	Medium	Medium	15	35	50
Summer	Medium	Low	Medium	Medium	Medium	High	5	35	60
Summer	Medium	Low	Medium	Medium	High	Low	35	55	10
Summer	Medium	Low	Medium	Medium	High	Medium	25	45	30

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	Medium	Low	Medium	Medium	High	High	15	45	40
Summer	Medium	Low	Medium	High	Low	Low	20	35	45
Summer	Medium	Low	Medium	High	Low	Medium	10	25	65
Summer	Medium	Low	Medium	High	Low	High	0	25	75
Summer	Medium	Low	Medium	High	Medium	Low	25	40	35
Summer	Medium	Low	Medium	High	Medium	Medium	15	30	55
Summer	Medium	Low	Medium	High	Medium	High	5	30	65
Summer	Medium	Low	Medium	High	High	Low	35	50	15
Summer	Medium	Low	Medium	High	High	Medium	25	40	35
Summer	Medium	Low	Medium	High	High	High	15	40	45
Summer	Medium	Low	High	Low	Low	Low	25	40	35
Summer	Medium	Low	High	Low	Low	Medium	15	30	55
Summer	Medium	Low	High	Low	Low	High	5	30	65
Summer	Medium	Low	High	Low	Medium	Low	30	45	25
Summer	Medium	Low	High	Low	Medium	Medium	20	35	45
Summer	Medium	Low	High	Low	Medium	High	10	35	55
Summer	Medium	Low	High	Low	High	Low	40	55	5
Summer	Medium	Low	High	Low	High	Medium	30	45	25
Summer	Medium	Low	High	Low	High	High	20	45	35
Summer	Medium	Low	High	Medium	Low	Low	20	35	45
Summer	Medium	Low	High	Medium	Low	Medium	10	25	65
Summer	Medium	Low	High	Medium	Low	High	0	25	75
Summer	Medium	Low	High	Medium	Medium	Low	25	40	35
Summer	Medium	Low	High	Medium	Medium	Medium	15	30	55
Summer	Medium	Low	High	Medium	Medium	High	5	30	65
Summer	Medium	Low	High	Medium	High	Low	35	50	15
Summer	Medium	Low	High	Medium	High	Medium	25	40	35
Summer	Medium	Low	High	Medium	High	High	15	40	45
Summer	Medium	Low	High	High	Low	Low	20	30	50
Summer	Medium	Low	High	High	Low	Medium	10	20	70
Summer	Medium	Low	High	High	Low	High	0	20	80
Summer	Medium	Low	High	High	Medium	Low	25	35	40
Summer	Medium	Low	High	High	Medium	Medium	15	25	60
Summer	Medium	Low	High	High	Medium	High	5	25	70
Summer	Medium	Low	High	High	High	Low	35	45	20
Summer	Medium	Low	High	High	High	Medium	25	35	40
Summer	Medium	Low	High	High	High	High	15	35	50
Summer	Medium	Medium	Low	Low	Low	Low	35	50	15
Summer	Medium	Medium	Low	Low	Low	Medium	25	40	35
Summer	Medium	Medium	Low	Low	Low	High	15	40	45

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	Medium	Medium	Low	Low	Medium	Low	40	55	5
Summer	Medium	Medium	Low	Low	Medium	Medium	30	45	25
Summer	Medium	Medium	Low	Low	Medium	High	20	45	35
Summer	Medium	Medium	Low	Low	High	Low	50	50	0
Summer	Medium	Medium	Low	Low	High	Medium	40	55	5
Summer	Medium	Medium	Low	Low	High	High	30	55	15
Summer	Medium	Medium	Low	Medium	Low	Low	30	45	25
Summer	Medium	Medium	Low	Medium	Low	Medium	20	35	45
Summer	Medium	Medium	Low	Medium	Low	High	10	35	55
Summer	Medium	Medium	Low	Medium	Medium	Low	35	50	15
Summer	Medium	Medium	Low	Medium	Medium	Medium	25	40	35
Summer	Medium	Medium	Low	Medium	Medium	High	15	40	45
Summer	Medium	Medium	Low	Medium	High	Low	45	55	0
Summer	Medium	Medium	Low	Medium	High	Medium	35	50	15
Summer	Medium	Medium	Low	Medium	High	High	25	50	25
Summer	Medium	Medium	Low	High	Low	Low	30	40	30
Summer	Medium	Medium	Low	High	Low	Medium	20	30	50
Summer	Medium	Medium	Low	High	Low	High	10	30	60
Summer	Medium	Medium	Low	High	Medium	Low	35	45	20
Summer	Medium	Medium	Low	High	Medium	Medium	25	35	40
Summer	Medium	Medium	Low	High	Medium	High	15	35	50
Summer	Medium	Medium	Low	High	High	Low	45	55	0
Summer	Medium	Medium	Low	High	High	Medium	35	45	20
Summer	Medium	Medium	Low	High	High	High	25	45	30
Summer	Medium	Medium	Medium	Low	Low	Low	30	45	25
Summer	Medium	Medium	Medium	Low	Low	Medium	20	35	45
Summer	Medium	Medium	Medium	Low	Low	High	10	35	55
Summer	Medium	Medium	Medium	Low	Medium	Low	35	50	15
Summer	Medium	Medium	Medium	Low	Medium	Medium	25	40	35
Summer	Medium	Medium	Medium	Low	Medium	High	15	40	45
Summer	Medium	Medium	Medium	Low	High	Low	45	55	0
Summer	Medium	Medium	Medium	Low	High	Medium	35	50	15
Summer	Medium	Medium	Medium	Low	High	High	25	50	25
Summer	Medium	Medium	Medium	Medium	Low	Low	25	40	35
Summer	Medium	Medium	Medium	Medium	Low	Medium	15	30	55
Summer	Medium	Medium	Medium	Medium	Low	High	5	30	65
Summer	Medium	Medium	Medium	Medium	Medium	Low	30	45	25
Summer	Medium	Medium	Medium	Medium	Medium	Medium	20	35	45
Summer	Medium	Medium	Medium	Medium	Medium	High	10	35	55
Summer	Medium	Medium	Medium	Medium	High	Low	40	55	5

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	Medium	Medium	Medium	Medium	High	Medium	30	45	25
Summer	Medium	Medium	Medium	Medium	High	High	20	45	35
Summer	Medium	Medium	Medium	High	Low	Low	25	35	40
Summer	Medium	Medium	Medium	High	Low	Medium	15	25	60
Summer	Medium	Medium	Medium	High	Low	High	5	25	70
Summer	Medium	Medium	Medium	High	Medium	Low	30	40	30
Summer	Medium	Medium	Medium	High	Medium	Medium	20	30	50
Summer	Medium	Medium	Medium	High	Medium	High	10	30	60
Summer	Medium	Medium	Medium	High	High	Low	40	50	10
Summer	Medium	Medium	Medium	High	High	Medium	30	40	30
Summer	Medium	Medium	Medium	High	High	High	20	40	40
Summer	Medium	Medium	High	Low	Low	Low	30	40	30
Summer	Medium	Medium	High	Low	Low	Medium	20	30	50
Summer	Medium	Medium	High	Low	Low	High	10	30	60
Summer	Medium	Medium	High	Low	Medium	Low	35	45	20
Summer	Medium	Medium	High	Low	Medium	Medium	25	35	40
Summer	Medium	Medium	High	Low	Medium	High	15	35	50
Summer	Medium	Medium	High	Low	High	Low	45	55	0
Summer	Medium	Medium	High	Low	High	Medium	35	45	20
Summer	Medium	Medium	High	Low	High	High	25	45	30
Summer	Medium	Medium	High	Medium	Low	Low	25	35	40
Summer	Medium	Medium	High	Medium	Low	Medium	15	25	60
Summer	Medium	Medium	High	Medium	Low	High	5	25	70
Summer	Medium	Medium	High	Medium	Medium	Low	30	40	30
Summer	Medium	Medium	High	Medium	Medium	Medium	20	30	50
Summer	Medium	Medium	High	Medium	Medium	High	10	30	60
Summer	Medium	Medium	High	Medium	High	Low	40	50	10
Summer	Medium	Medium	High	Medium	High	Medium	30	40	30
Summer	Medium	Medium	High	Medium	High	High	20	40	40
Summer	Medium	Medium	High	High	Low	Low	25	30	45
Summer	Medium	Medium	High	High	Low	Medium	15	20	65
Summer	Medium	Medium	High	High	Low	High	5	20	75
Summer	Medium	Medium	High	High	Medium	Low	30	35	35
Summer	Medium	Medium	High	High	Medium	Medium	20	25	55
Summer	Medium	Medium	High	High	Medium	High	10	25	65
Summer	Medium	Medium	High	High	High	Low	40	45	15
Summer	Medium	Medium	High	High	High	Medium	30	35	35
Summer	Medium	Medium	High	High	High	High	20	35	45
Summer	Medium	High	Low	Low	Low	Low	40	55	5
Summer	Medium	High	Low	Low	Low	Medium	30	45	25

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	Medium	High	Low	Low	Low	High	20	45	35
Summer	Medium	High	Low	Low	Medium	Low	45	55	0
Summer	Medium	High	Low	Low	Medium	Medium	35	50	15
Summer	Medium	High	Low	Low	Medium	High	25	50	25
Summer	Medium	High	Low	Low	High	Low	55	45	0
Summer	Medium	High	Low	Low	High	Medium	45	55	0
Summer	Medium	High	Low	Low	High	High	35	60	5
Summer	Medium	High	Low	Medium	Low	Low	35	50	15
Summer	Medium	High	Low	Medium	Low	Medium	25	40	35
Summer	Medium	High	Low	Medium	Low	High	15	40	45
Summer	Medium	High	Low	Medium	Medium	Low	40	55	5
Summer	Medium	High	Low	Medium	Medium	Medium	30	45	25
Summer	Medium	High	Low	Medium	Medium	High	20	45	35
Summer	Medium	High	Low	Medium	High	Low	45	55	0
Summer	Medium	High	Low	Medium	High	Medium	40	55	5
Summer	Medium	High	Low	Medium	High	High	30	55	15
Summer	Medium	High	Low	High	Low	Low	35	45	20
Summer	Medium	High	Low	High	Low	Medium	25	35	40
Summer	Medium	High	Low	High	Low	High	15	35	50
Summer	Medium	High	Low	High	Medium	Low	40	50	10
Summer	Medium	High	Low	High	Medium	Medium	30	40	30
Summer	Medium	High	Low	High	Medium	High	20	40	40
Summer	Medium	High	Low	High	High	Low	45	55	0
Summer	Medium	High	Low	High	High	Medium	40	50	10
Summer	Medium	High	Low	High	High	High	30	50	20
Summer	Medium	High	Medium	Low	Low	Low	35	50	15
Summer	Medium	High	Medium	Low	Low	Medium	25	40	35
Summer	Medium	High	Medium	Low	Low	High	15	40	45
Summer	Medium	High	Medium	Low	Medium	Low	40	55	5
Summer	Medium	High	Medium	Low	Medium	Medium	30	45	25
Summer	Medium	High	Medium	Low	Medium	High	20	45	35
Summer	Medium	High	Medium	Low	High	Low	45	55	0
Summer	Medium	High	Medium	Low	High	Medium	40	55	5
Summer	Medium	High	Medium	Low	High	High	30	55	15
Summer	Medium	High	Medium	Medium	Low	Low	30	45	25
Summer	Medium	High	Medium	Medium	Low	Medium	20	35	45
Summer	Medium	High	Medium	Medium	Low	High	10	35	55
Summer	Medium	High	Medium	Medium	Medium	Low	35	50	15
Summer	Medium	High	Medium	Medium	Medium	Medium	25	40	35
Summer	Medium	High	Medium	Medium	Medium	High	15	40	45

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	Medium	High	Medium	Medium	High	Low	45	55	0
Summer	Medium	High	Medium	Medium	High	Medium	35	50	15
Summer	Medium	High	Medium	Medium	High	High	25	50	25
Summer	Medium	High	Medium	High	Low	Low	30	40	30
Summer	Medium	High	Medium	High	Low	Medium	20	30	50
Summer	Medium	High	Medium	High	Low	High	10	30	60
Summer	Medium	High	Medium	High	Medium	Low	35	45	20
Summer	Medium	High	Medium	High	Medium	Medium	25	35	40
Summer	Medium	High	Medium	High	Medium	High	15	35	50
Summer	Medium	High	Medium	High	High	Low	45	55	0
Summer	Medium	High	Medium	High	High	Medium	35	45	20
Summer	Medium	High	Medium	High	High	High	25	45	30
Summer	Medium	High	High	Low	Low	Low	35	45	20
Summer	Medium	High	High	Low	Low	Medium	25	35	40
Summer	Medium	High	High	Low	Low	High	15	35	50
Summer	Medium	High	High	Low	Medium	Low	40	50	10
Summer	Medium	High	High	Low	Medium	Medium	30	40	30
Summer	Medium	High	High	Low	Medium	High	20	40	40
Summer	Medium	High	High	Low	High	Low	45	55	0
Summer	Medium	High	High	Low	High	Medium	40	50	10
Summer	Medium	High	High	Low	High	High	30	50	20
Summer	Medium	High	High	Medium	Low	Low	30	40	30
Summer	Medium	High	High	Medium	Low	Medium	20	30	50
Summer	Medium	High	High	Medium	Low	High	10	30	60
Summer	Medium	High	High	Medium	Medium	Low	35	45	20
Summer	Medium	High	High	Medium	Medium	Medium	25	35	40
Summer	Medium	High	High	Medium	Medium	High	15	35	50
Summer	Medium	High	High	Medium	High	Low	45	55	0
Summer	Medium	High	High	Medium	High	Medium	35	45	20
Summer	Medium	High	High	Medium	High	High	25	45	30
Summer	Medium	High	High	High	Low	Low	30	35	35
Summer	Medium	High	High	High	Low	Medium	20	25	55
Summer	Medium	High	High	High	Low	High	10	25	65
Summer	Medium	High	High	High	Medium	Low	35	40	25
Summer	Medium	High	High	High	Medium	Medium	25	30	45
Summer	Medium	High	High	High	Medium	High	15	30	55
Summer	Medium	High	High	High	High	Low	45	50	5
Summer	Medium	High	High	High	High	Medium	35	40	25
Summer	Medium	High	High	High	High	High	25	40	35
Summer	High	Low	Low	Low	Low	Low	30	55	15

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	High	Low	Low	Low	Low	Medium	20	45	35
Summer	High	Low	Low	Low	Low	High	10	45	45
Summer	High	Low	Low	Low	Medium	Low	35	60	5
Summer	High	Low	Low	Low	Medium	Medium	25	50	25
Summer	High	Low	Low	Low	Medium	High	15	50	35
Summer	High	Low	Low	Low	High	Low	45	55	0
Summer	High	Low	Low	Low	High	Medium	35	60	5
Summer	High	Low	Low	Low	High	High	25	60	15
Summer	High	Low	Low	Medium	Low	Low	25	50	25
Summer	High	Low	Low	Medium	Low	Medium	15	40	45
Summer	High	Low	Low	Medium	Low	High	5	40	55
Summer	High	Low	Low	Medium	Medium	Low	30	55	15
Summer	High	Low	Low	Medium	Medium	Medium	20	45	35
Summer	High	Low	Low	Medium	Medium	High	10	45	45
Summer	High	Low	Low	Medium	High	Low	40	60	0
Summer	High	Low	Low	Medium	High	Medium	30	55	15
Summer	High	Low	Low	Medium	High	High	20	55	25
Summer	High	Low	Low	High	Low	Low	25	45	30
Summer	High	Low	Low	High	Low	Medium	15	35	50
Summer	High	Low	Low	High	Low	High	5	35	60
Summer	High	Low	Low	High	Medium	Low	30	50	20
Summer	High	Low	Low	High	Medium	Medium	20	40	40
Summer	High	Low	Low	High	Medium	High	10	40	50
Summer	High	Low	Low	High	High	Low	40	60	0
Summer	High	Low	Low	High	High	Medium	30	50	20
Summer	High	Low	Low	High	High	High	20	50	30
Summer	High	Low	Medium	Low	Low	Low	25	50	25
Summer	High	Low	Medium	Low	Low	Medium	15	40	45
Summer	High	Low	Medium	Low	Low	High	5	40	55
Summer	High	Low	Medium	Low	Medium	Low	30	55	15
Summer	High	Low	Medium	Low	Medium	Medium	20	45	35
Summer	High	Low	Medium	Low	Medium	High	10	45	45
Summer	High	Low	Medium	Low	High	Low	40	60	0
Summer	High	Low	Medium	Low	High	Medium	30	55	15
Summer	High	Low	Medium	Low	High	High	20	55	25
Summer	High	Low	Medium	Medium	Low	Low	20	45	35
Summer	High	Low	Medium	Medium	Low	Medium	10	35	55
Summer	High	Low	Medium	Medium	Low	High	0	35	65
Summer	High	Low	Medium	Medium	Medium	Low	25	50	25
Summer	High	Low	Medium	Medium	Medium	Medium	15	40	45

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	High	Low	Medium	Medium	Medium	High	5	40	55
Summer	High	Low	Medium	Medium	High	Low	35	60	5
Summer	High	Low	Medium	Medium	High	Medium	25	50	25
Summer	High	Low	Medium	Medium	High	High	15	50	35
Summer	High	Low	Medium	High	Low	Low	20	40	40
Summer	High	Low	Medium	High	Low	Medium	10	30	60
Summer	High	Low	Medium	High	Low	High	0	30	70
Summer	High	Low	Medium	High	Medium	Low	25	45	30
Summer	High	Low	Medium	High	Medium	Medium	15	35	50
Summer	High	Low	Medium	High	Medium	High	5	35	60
Summer	High	Low	Medium	High	High	Low	35	55	10
Summer	High	Low	Medium	High	High	Medium	25	45	30
Summer	High	Low	Medium	High	High	High	15	45	40
Summer	High	Low	High	Low	Low	Low	25	45	30
Summer	High	Low	High	Low	Low	Medium	15	35	50
Summer	High	Low	High	Low	Low	High	5	35	60
Summer	High	Low	High	Low	Medium	Low	30	50	20
Summer	High	Low	High	Low	Medium	Medium	20	40	40
Summer	High	Low	High	Low	Medium	High	10	40	50
Summer	High	Low	High	Low	High	Low	40	60	0
Summer	High	Low	High	Low	High	Medium	30	50	20
Summer	High	Low	High	Low	High	High	20	50	30
Summer	High	Low	High	Medium	Low	Low	20	40	40
Summer	High	Low	High	Medium	Low	Medium	10	30	60
Summer	High	Low	High	Medium	Low	High	0	30	70
Summer	High	Low	High	Medium	Medium	Low	25	45	30
Summer	High	Low	High	Medium	Medium	Medium	15	35	50
Summer	High	Low	High	Medium	Medium	High	5	35	60
Summer	High	Low	High	Medium	High	Low	35	55	10
Summer	High	Low	High	Medium	High	Medium	25	45	30
Summer	High	Low	High	Medium	High	High	15	45	40
Summer	High	Low	High	High	Low	Low	20	35	45
Summer	High	Low	High	High	Low	Medium	10	25	65
Summer	High	Low	High	High	Low	High	0	25	75
Summer	High	Low	High	High	Medium	Low	25	40	35
Summer	High	Low	High	High	Medium	Medium	15	30	55
Summer	High	Low	High	High	Medium	High	5	30	65
Summer	High	Low	High	High	High	Low	35	50	15
Summer	High	Low	High	High	High	Medium	25	40	35
Summer	High	Low	High	High	High	High	15	40	45

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	High	Medium	Low	Low	Low	Low	35	55	10
Summer	High	Medium	Low	Low	Low	Medium	25	45	30
Summer	High	Medium	Low	Low	Low	High	15	45	40
Summer	High	Medium	Low	Low	Medium	Low	40	60	0
Summer	High	Medium	Low	Low	Medium	Medium	30	50	20
Summer	High	Medium	Low	Low	Medium	High	20	50	30
Summer	High	Medium	Low	Low	High	Low	50	50	0
Summer	High	Medium	Low	Low	High	Medium	40	60	0
Summer	High	Medium	Low	Low	High	High	30	60	10
Summer	High	Medium	Low	Medium	Low	Low	30	50	20
Summer	High	Medium	Low	Medium	Low	Medium	20	40	40
Summer	High	Medium	Low	Medium	Low	High	10	40	50
Summer	High	Medium	Low	Medium	Medium	Low	35	55	10
Summer	High	Medium	Low	Medium	Medium	Medium	25	45	30
Summer	High	Medium	Low	Medium	Medium	High	15	45	40
Summer	High	Medium	Low	Medium	High	Low	45	55	0
Summer	High	Medium	Low	Medium	High	Medium	35	55	10
Summer	High	Medium	Low	Medium	High	High	25	55	20
Summer	High	Medium	Low	High	Low	Low	30	45	25
Summer	High	Medium	Low	High	Low	Medium	20	35	45
Summer	High	Medium	Low	High	Low	High	10	35	55
Summer	High	Medium	Low	High	Medium	Low	35	50	15
Summer	High	Medium	Low	High	Medium	Medium	25	40	35
Summer	High	Medium	Low	High	Medium	High	15	40	45
Summer	High	Medium	Low	High	High	Low	45	55	0
Summer	High	Medium	Low	High	High	Medium	35	50	15
Summer	High	Medium	Low	High	High	High	25	50	25
Summer	High	Medium	Medium	Low	Low	Low	30	50	20
Summer	High	Medium	Medium	Low	Low	Medium	20	40	40
Summer	High	Medium	Medium	Low	Low	High	10	40	50
Summer	High	Medium	Medium	Low	Medium	Low	35	55	10
Summer	High	Medium	Medium	Low	Medium	Medium	25	45	30
Summer	High	Medium	Medium	Low	Medium	High	15	45	40
Summer	High	Medium	Medium	Low	High	Low	45	55	0
Summer	High	Medium	Medium	Low	High	Medium	35	55	10
Summer	High	Medium	Medium	Low	High	High	25	55	20
Summer	High	Medium	Medium	Medium	Low	Low	25	45	30
Summer	High	Medium	Medium	Medium	Low	Medium	15	35	50
Summer	High	Medium	Medium	Medium	Low	High	5	35	60
Summer	High	Medium	Medium	Medium	Medium	Low	30	50	20

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	High	Medium	Medium	Medium	Medium	Medium	20	40	40
Summer	High	Medium	Medium	Medium	Medium	High	10	40	50
Summer	High	Medium	Medium	Medium	High	Low	40	60	0
Summer	High	Medium	Medium	Medium	High	Medium	30	50	20
Summer	High	Medium	Medium	Medium	High	High	20	50	30
Summer	High	Medium	Medium	High	Low	Low	25	40	35
Summer	High	Medium	Medium	High	Low	Medium	15	30	55
Summer	High	Medium	Medium	High	Low	High	5	30	65
Summer	High	Medium	Medium	High	Medium	Low	30	45	25
Summer	High	Medium	Medium	High	Medium	Medium	20	35	45
Summer	High	Medium	Medium	High	Medium	High	10	35	55
Summer	High	Medium	Medium	High	High	Low	40	55	5
Summer	High	Medium	Medium	High	High	Medium	30	45	25
Summer	High	Medium	Medium	High	High	High	20	45	35
Summer	High	Medium	High	Low	Low	Low	30	45	25
Summer	High	Medium	High	Low	Low	Medium	20	35	45
Summer	High	Medium	High	Low	Low	High	10	35	55
Summer	High	Medium	High	Low	Medium	Low	35	50	15
Summer	High	Medium	High	Low	Medium	Medium	25	40	35
Summer	High	Medium	High	Low	Medium	High	15	40	45
Summer	High	Medium	High	Low	High	Low	45	55	0
Summer	High	Medium	High	Low	High	Medium	35	50	15
Summer	High	Medium	High	Low	High	High	25	50	25
Summer	High	Medium	High	Medium	Low	Low	25	40	35
Summer	High	Medium	High	Medium	Low	Medium	15	30	55
Summer	High	Medium	High	Medium	Low	High	5	30	65
Summer	High	Medium	High	Medium	Medium	Low	30	45	25
Summer	High	Medium	High	Medium	Medium	Medium	20	35	45
Summer	High	Medium	High	Medium	Medium	High	10	35	55
Summer	High	Medium	High	Medium	High	Low	40	55	5
Summer	High	Medium	High	Medium	High	Medium	30	45	25
Summer	High	Medium	High	Medium	High	High	20	45	35
Summer	High	Medium	High	High	Low	Low	25	35	40
Summer	High	Medium	High	High	Low	Medium	15	25	60
Summer	High	Medium	High	High	Low	High	5	25	70
Summer	High	Medium	High	High	Medium	Low	30	40	30
Summer	High	Medium	High	High	Medium	Medium	20	30	50
Summer	High	Medium	High	High	Medium	High	10	30	60
Summer	High	Medium	High	High	High	Low	40	50	10
Summer	High	Medium	High	High	High	Medium	30	40	30

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	High	Medium	High	High	High	High	20	40	40
Summer	High	High	Low	Low	Low	Low	40	60	0
Summer	High	High	Low	Low	Low	Medium	30	50	20
Summer	High	High	Low	Low	Low	High	20	50	30
Summer	High	High	Low	Low	Medium	Low	45	55	0
Summer	High	High	Low	Low	Medium	Medium	35	55	10
Summer	High	High	Low	Low	Medium	High	25	55	20
Summer	High	High	Low	Low	High	Low	55	45	0
Summer	High	High	Low	Low	High	Medium	45	55	0
Summer	High	High	Low	Low	High	High	35	65	0
Summer	High	High	Low	Medium	Low	Low	35	55	10
Summer	High	High	Low	Medium	Low	Medium	25	45	30
Summer	High	High	Low	Medium	Low	High	15	45	40
Summer	High	High	Low	Medium	Medium	Low	40	60	0
Summer	High	High	Low	Medium	Medium	Medium	30	50	20
Summer	High	High	Low	Medium	Medium	High	20	50	30
Summer	High	High	Low	Medium	High	Low	45	55	0
Summer	High	High	Low	Medium	High	Medium	40	60	0
Summer	High	High	Low	Medium	High	High	30	60	10
Summer	High	High	Low	High	Low	Low	35	50	15
Summer	High	High	Low	High	Low	Medium	25	40	35
Summer	High	High	Low	High	Low	High	15	40	45
Summer	High	High	Low	High	Medium	Low	40	55	5
Summer	High	High	Low	High	Medium	Medium	30	45	25
Summer	High	High	Low	High	Medium	High	20	45	35
Summer	High	High	Low	High	High	Low	45	55	0
Summer	High	High	Low	High	High	Medium	40	55	5
Summer	High	High	Low	High	High	High	30	55	15
Summer	High	High	Medium	Low	Low	Low	35	55	10
Summer	High	High	Medium	Low	Low	Medium	25	45	30
Summer	High	High	Medium	Low	Low	High	15	45	40
Summer	High	High	Medium	Low	Medium	Low	40	60	0
Summer	High	High	Medium	Low	Medium	Medium	30	50	20
Summer	High	High	Medium	Low	Medium	High	20	50	30
Summer	High	High	Medium	Low	High	Low	45	55	0
Summer	High	High	Medium	Low	High	Medium	40	60	0
Summer	High	High	Medium	Low	High	High	30	60	10
Summer	High	High	Medium	Medium	Low	Low	30	50	20
Summer	High	High	Medium	Medium	Low	Medium	20	40	40
Summer	High	High	Medium	Medium	Low	High	10	40	50

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	High	High	Medium	Medium	Medium	Low	35	55	10
Summer	High	High	Medium	Medium	Medium	Medium	25	45	30
Summer	High	High	Medium	Medium	Medium	High	15	45	40
Summer	High	High	Medium	Medium	High	Low	45	55	0
Summer	High	High	Medium	Medium	High	Medium	35	55	10
Summer	High	High	Medium	Medium	High	High	25	55	20
Summer	High	High	Medium	High	Low	Low	30	45	25
Summer	High	High	Medium	High	Low	Medium	20	35	45
Summer	High	High	Medium	High	Low	High	10	35	55
Summer	High	High	Medium	High	Medium	Low	35	50	15
Summer	High	High	Medium	High	Medium	Medium	25	40	35
Summer	High	High	Medium	High	Medium	High	15	40	45
Summer	High	High	Medium	High	High	Low	45	55	0
Summer	High	High	Medium	High	High	Medium	35	50	15
Summer	High	High	Medium	High	High	High	25	50	25
Summer	High	High	High	Low	Low	Low	35	50	15
Summer	High	High	High	Low	Low	Medium	25	40	35
Summer	High	High	High	Low	Low	High	15	40	45
Summer	High	High	High	Low	Medium	Low	40	55	5
Summer	High	High	High	Low	Medium	Medium	30	45	25
Summer	High	High	High	Low	Medium	High	20	45	35
Summer	High	High	High	Low	High	Low	45	55	0
Summer	High	High	High	Low	High	Medium	40	55	5
Summer	High	High	High	Low	High	High	30	55	15
Summer	High	High	High	Medium	Low	Low	30	45	25
Summer	High	High	High	Medium	Low	Medium	20	35	45
Summer	High	High	High	Medium	Low	High	10	35	55
Summer	High	High	High	Medium	Medium	Low	35	50	15
Summer	High	High	High	Medium	Medium	Medium	25	40	35
Summer	High	High	High	Medium	Medium	High	15	40	45
Summer	High	High	High	Medium	High	Low	45	55	0
Summer	High	High	High	Medium	High	Medium	35	50	15
Summer	High	High	High	Medium	High	High	25	50	25
Summer	High	High	High	High	Low	Low	30	40	30
Summer	High	High	High	High	Low	Medium	20	30	50
Summer	High	High	High	High	Low	High	10	30	60
Summer	High	High	High	High	Medium	Low	35	45	20
Summer	High	High	High	High	Medium	Medium	25	35	40
Summer	High	High	High	High	Medium	High	15	35	50
Summer	High	High	High	High	High	Low	45	55	0

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Summer	High	High	High	High	High	Medium	35	45	20
Summer	High	High	High	High	High	High	25	45	30
Permanent	Low	Low	Low	Low	Low	Low	35	45	20
Permanent	Low	Low	Low	Low	Low	Medium	25	35	40
Permanent	Low	Low	Low	Low	Low	High	15	35	50
Permanent	Low	Low	Low	Low	Medium	Low	40	50	10
Permanent	Low	Low	Low	Low	Medium	Medium	30	40	30
Permanent	Low	Low	Low	Low	Medium	High	20	40	40
Permanent	Low	Low	Low	Low	High	Low	45	55	0
Permanent	Low	Low	Low	Low	High	Medium	40	50	10
Permanent	Low	Low	Low	Low	High	High	30	50	20
Permanent	Low	Low	Low	Medium	Low	Low	30	40	30
Permanent	Low	Low	Low	Medium	Low	Medium	20	30	50
Permanent	Low	Low	Low	Medium	Low	High	10	30	60
Permanent	Low	Low	Low	Medium	Medium	Low	35	45	20
Permanent	Low	Low	Low	Medium	Medium	Medium	25	35	40
Permanent	Low	Low	Low	Medium	Medium	High	15	35	50
Permanent	Low	Low	Low	Medium	High	Low	45	55	0
Permanent	Low	Low	Low	Medium	High	Medium	35	45	20
Permanent	Low	Low	Low	Medium	High	High	25	45	30
Permanent	Low	Low	Low	High	Low	Low	30	35	35
Permanent	Low	Low	Low	High	Low	Medium	20	25	55
Permanent	Low	Low	Low	High	Low	High	10	25	65
Permanent	Low	Low	Low	High	Medium	Low	35	40	25
Permanent	Low	Low	Low	High	Medium	Medium	25	30	45
Permanent	Low	Low	Low	High	Medium	High	15	30	55
Permanent	Low	Low	Low	High	High	Low	45	50	5
Permanent	Low	Low	Low	High	High	Medium	35	40	25
Permanent	Low	Low	Low	High	High	High	25	40	35
Permanent	Low	Low	Medium	Low	Low	Low	30	40	30
Permanent	Low	Low	Medium	Low	Low	Medium	20	30	50
Permanent	Low	Low	Medium	Low	Low	High	10	30	60
Permanent	Low	Low	Medium	Low	Medium	Low	35	45	20
Permanent	Low	Low	Medium	Low	Medium	Medium	25	35	40
Permanent	Low	Low	Medium	Low	Medium	High	15	35	50
Permanent	Low	Low	Medium	Low	High	Low	45	55	0
Permanent	Low	Low	Medium	Low	High	Medium	35	45	20
Permanent	Low	Low	Medium	Low	High	High	25	45	30
Permanent	Low	Low	Medium	Medium	Low	Low	25	35	40
Permanent	Low	Low	Medium	Medium	Low	Medium	15	25	60

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	Low	Low	Medium	Medium	Low	High	5	25	70
Permanent	Low	Low	Medium	Medium	Medium	Low	30	40	30
Permanent	Low	Low	Medium	Medium	Medium	Medium	20	30	50
Permanent	Low	Low	Medium	Medium	Medium	High	10	30	60
Permanent	Low	Low	Medium	Medium	High	Low	40	50	10
Permanent	Low	Low	Medium	Medium	High	Medium	30	40	30
Permanent	Low	Low	Medium	Medium	High	High	20	40	40
Permanent	Low	Low	Medium	High	Low	Low	25	30	45
Permanent	Low	Low	Medium	High	Low	Medium	15	20	65
Permanent	Low	Low	Medium	High	Low	High	5	20	75
Permanent	Low	Low	Medium	High	Medium	Low	30	35	35
Permanent	Low	Low	Medium	High	Medium	Medium	20	25	55
Permanent	Low	Low	Medium	High	Medium	High	10	25	65
Permanent	Low	Low	Medium	High	High	Low	40	45	15
Permanent	Low	Low	Medium	High	High	Medium	30	35	35
Permanent	Low	Low	Medium	High	High	High	20	35	45
Permanent	Low	Low	High	Low	Low	Low	30	35	35
Permanent	Low	Low	High	Low	Low	Medium	20	25	55
Permanent	Low	Low	High	Low	Low	High	10	25	65
Permanent	Low	Low	High	Low	Medium	Low	35	40	25
Permanent	Low	Low	High	Low	Medium	Medium	25	30	45
Permanent	Low	Low	High	Low	Medium	High	15	30	55
Permanent	Low	Low	High	Low	High	Low	45	50	5
Permanent	Low	Low	High	Low	High	Medium	35	40	25
Permanent	Low	Low	High	Low	High	High	25	40	35
Permanent	Low	Low	High	Medium	Low	Low	25	30	45
Permanent	Low	Low	High	Medium	Low	Medium	15	20	65
Permanent	Low	Low	High	Medium	Low	High	5	20	75
Permanent	Low	Low	High	Medium	Medium	Low	30	35	35
Permanent	Low	Low	High	Medium	Medium	Medium	20	25	55
Permanent	Low	Low	High	Medium	Medium	High	10	25	65
Permanent	Low	Low	High	Medium	High	Low	40	45	15
Permanent	Low	Low	High	Medium	High	Medium	30	35	35
Permanent	Low	Low	High	Medium	High	High	20	35	45
Permanent	Low	Low	High	High	Low	Low	25	25	50
Permanent	Low	Low	High	High	Low	Medium	15	15	70
Permanent	Low	Low	High	High	Low	High	5	15	80
Permanent	Low	Low	High	High	Medium	Low	30	30	40
Permanent	Low	Low	High	High	Medium	Medium	20	20	60
Permanent	Low	Low	High	High	Medium	High	10	20	70

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	Low	Low	High	High	High	Low	40	40	20
Permanent	Low	Low	High	High	High	Medium	30	30	40
Permanent	Low	Low	High	High	High	High	20	30	50
Permanent	Low	Medium	Low	Low	Low	Low	40	45	15
Permanent	Low	Medium	Low	Low	Low	Medium	30	35	35
Permanent	Low	Medium	Low	Low	Low	High	20	35	45
Permanent	Low	Medium	Low	Low	Medium	Low	45	50	5
Permanent	Low	Medium	Low	Low	Medium	Medium	35	40	25
Permanent	Low	Medium	Low	Low	Medium	High	25	40	35
Permanent	Low	Medium	Low	Low	High	Low	50	50	0
Permanent	Low	Medium	Low	Low	High	Medium	45	50	5
Permanent	Low	Medium	Low	Low	High	High	35	50	15
Permanent	Low	Medium	Low	Medium	Low	Low	35	40	25
Permanent	Low	Medium	Low	Medium	Low	Medium	25	30	45
Permanent	Low	Medium	Low	Medium	Low	High	15	30	55
Permanent	Low	Medium	Low	Medium	Medium	Low	40	45	15
Permanent	Low	Medium	Low	Medium	Medium	Medium	30	35	35
Permanent	Low	Medium	Low	Medium	Medium	High	20	35	45
Permanent	Low	Medium	Low	Medium	High	Low	50	50	0
Permanent	Low	Medium	Low	Medium	High	Medium	40	45	15
Permanent	Low	Medium	Low	Medium	High	High	30	45	25
Permanent	Low	Medium	Low	High	Low	Low	35	35	30
Permanent	Low	Medium	Low	High	Low	Medium	25	25	50
Permanent	Low	Medium	Low	High	Low	High	15	25	60
Permanent	Low	Medium	Low	High	Medium	Low	40	40	20
Permanent	Low	Medium	Low	High	Medium	Medium	30	30	40
Permanent	Low	Medium	Low	High	Medium	High	20	30	50
Permanent	Low	Medium	Low	High	High	Low	50	50	0
Permanent	Low	Medium	Low	High	High	Medium	40	40	20
Permanent	Low	Medium	Low	High	High	High	30	40	30
Permanent	Low	Medium	Medium	Low	Low	Low	35	40	25
Permanent	Low	Medium	Medium	Low	Low	Medium	25	30	45
Permanent	Low	Medium	Medium	Low	Low	High	15	30	55
Permanent	Low	Medium	Medium	Low	Medium	Low	40	45	15
Permanent	Low	Medium	Medium	Low	Medium	Medium	30	35	35
Permanent	Low	Medium	Medium	Low	Medium	High	20	35	45
Permanent	Low	Medium	Medium	Low	High	Low	50	50	0
Permanent	Low	Medium	Medium	Low	High	Medium	40	45	15
Permanent	Low	Medium	Medium	Low	High	High	30	45	25
Permanent	Low	Medium	Medium	Medium	Low	Low	30	35	35

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	Low	Medium	Medium	Medium	Low	Medium	20	25	55
Permanent	Low	Medium	Medium	Medium	Low	High	10	25	65
Permanent	Low	Medium	Medium	Medium	Medium	Low	35	40	25
Permanent	Low	Medium	Medium	Medium	Medium	Medium	25	30	45
Permanent	Low	Medium	Medium	Medium	Medium	High	15	30	55
Permanent	Low	Medium	Medium	Medium	High	Low	45	50	5
Permanent	Low	Medium	Medium	Medium	High	Medium	35	40	25
Permanent	Low	Medium	Medium	Medium	High	High	25	40	35
Permanent	Low	Medium	Medium	High	Low	Low	30	30	40
Permanent	Low	Medium	Medium	High	Low	Medium	20	20	60
Permanent	Low	Medium	Medium	High	Low	High	10	20	70
Permanent	Low	Medium	Medium	High	Medium	Low	35	35	30
Permanent	Low	Medium	Medium	High	Medium	Medium	25	25	50
Permanent	Low	Medium	Medium	High	Medium	High	15	25	60
Permanent	Low	Medium	Medium	High	High	Low	45	45	10
Permanent	Low	Medium	Medium	High	High	Medium	35	35	30
Permanent	Low	Medium	Medium	High	High	High	25	35	40
Permanent	Low	Medium	High	Low	Low	Low	35	35	30
Permanent	Low	Medium	High	Low	Low	Medium	25	25	50
Permanent	Low	Medium	High	Low	Low	High	15	25	60
Permanent	Low	Medium	High	Low	Medium	Low	40	40	20
Permanent	Low	Medium	High	Low	Medium	Medium	30	30	40
Permanent	Low	Medium	High	Low	Medium	High	20	30	50
Permanent	Low	Medium	High	Low	High	Low	50	50	0
Permanent	Low	Medium	High	Low	High	Medium	40	40	20
Permanent	Low	Medium	High	Low	High	High	30	40	30
Permanent	Low	Medium	High	Medium	Low	Low	30	30	40
Permanent	Low	Medium	High	Medium	Low	Medium	20	20	60
Permanent	Low	Medium	High	Medium	Low	High	10	20	70
Permanent	Low	Medium	High	Medium	Medium	Low	35	35	30
Permanent	Low	Medium	High	Medium	Medium	Medium	25	25	50
Permanent	Low	Medium	High	Medium	Medium	High	15	25	60
Permanent	Low	Medium	High	Medium	High	Low	45	45	10
Permanent	Low	Medium	High	Medium	High	Medium	35	35	30
Permanent	Low	Medium	High	Medium	High	High	25	35	40
Permanent	Low	Medium	High	High	Low	Low	30	25	45
Permanent	Low	Medium	High	High	Low	Medium	20	15	65
Permanent	Low	Medium	High	High	Low	High	10	15	75
Permanent	Low	Medium	High	High	Medium	Low	35	30	35
Permanent	Low	Medium	High	High	Medium	Medium	25	20	55

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	Low	Medium	High	High	Medium	High	15	20	65
Permanent	Low	Medium	High	High	High	Low	45	40	15
Permanent	Low	Medium	High	High	High	Medium	35	30	35
Permanent	Low	Medium	High	High	High	High	25	30	45
Permanent	Low	High	Low	Low	Low	Low	45	50	5
Permanent	Low	High	Low	Low	Low	Medium	35	40	25
Permanent	Low	High	Low	Low	Low	High	25	40	35
Permanent	Low	High	Low	Low	Medium	Low	50	50	0
Permanent	Low	High	Low	Low	Medium	Medium	40	45	15
Permanent	Low	High	Low	Low	Medium	High	30	45	25
Permanent	Low	High	Low	Low	High	Low	55	45	0
Permanent	Low	High	Low	Low	High	Medium	50	50	0
Permanent	Low	High	Low	Low	High	High	40	55	5
Permanent	Low	High	Low	Medium	Low	Low	40	45	15
Permanent	Low	High	Low	Medium	Low	Medium	30	35	35
Permanent	Low	High	Low	Medium	Low	High	20	35	45
Permanent	Low	High	Low	Medium	Medium	Low	45	50	5
Permanent	Low	High	Low	Medium	Medium	Medium	35	40	25
Permanent	Low	High	Low	Medium	Medium	High	25	40	35
Permanent	Low	High	Low	Medium	High	Low	50	50	0
Permanent	Low	High	Low	Medium	High	Medium	45	50	5
Permanent	Low	High	Low	Medium	High	High	35	50	15
Permanent	Low	High	Low	High	Low	Low	40	40	20
Permanent	Low	High	Low	High	Low	Medium	30	30	40
Permanent	Low	High	Low	High	Low	High	20	30	50
Permanent	Low	High	Low	High	Medium	Low	45	45	10
Permanent	Low	High	Low	High	Medium	Medium	35	35	30
Permanent	Low	High	Low	High	Medium	High	25	35	40
Permanent	Low	High	Low	High	High	Low	50	50	0
Permanent	Low	High	Low	High	High	Medium	45	45	10
Permanent	Low	High	Low	High	High	High	35	45	20
Permanent	Low	High	Medium	Low	Low	Low	40	45	15
Permanent	Low	High	Medium	Low	Low	Medium	30	35	35
Permanent	Low	High	Medium	Low	Low	High	20	35	45
Permanent	Low	High	Medium	Low	Medium	Low	45	50	5
Permanent	Low	High	Medium	Low	Medium	Medium	35	40	25
Permanent	Low	High	Medium	Low	Medium	High	25	40	35
Permanent	Low	High	Medium	Low	High	Low	50	50	0
Permanent	Low	High	Medium	Low	High	Medium	45	50	5
Permanent	Low	High	Medium	Low	High	High	35	50	15

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	Low	High	Medium	Medium	Low	Low	35	40	25
Permanent	Low	High	Medium	Medium	Low	Medium	25	30	45
Permanent	Low	High	Medium	Medium	Low	High	15	30	55
Permanent	Low	High	Medium	Medium	Medium	Low	40	45	15
Permanent	Low	High	Medium	Medium	Medium	Medium	30	35	35
Permanent	Low	High	Medium	Medium	Medium	High	20	35	45
Permanent	Low	High	Medium	Medium	High	Low	45	55	0
Permanent	Low	High	Medium	Medium	High	Medium	40	45	15
Permanent	Low	High	Medium	Medium	High	High	30	45	25
Permanent	Low	High	Medium	High	Low	Low	35	35	30
Permanent	Low	High	Medium	High	Low	Medium	25	25	50
Permanent	Low	High	Medium	High	Low	High	15	25	60
Permanent	Low	High	Medium	High	Medium	Low	40	40	20
Permanent	Low	High	Medium	High	Medium	Medium	30	30	40
Permanent	Low	High	Medium	High	Medium	High	20	30	50
Permanent	Low	High	Medium	High	High	Low	50	50	0
Permanent	Low	High	Medium	High	High	Medium	40	40	20
Permanent	Low	High	Medium	High	High	High	30	40	30
Permanent	Low	High	High	Low	Low	Low	40	40	20
Permanent	Low	High	High	Low	Low	Medium	30	30	40
Permanent	Low	High	High	Low	Low	High	20	30	50
Permanent	Low	High	High	Low	Medium	Low	45	45	10
Permanent	Low	High	High	Low	Medium	Medium	35	35	30
Permanent	Low	High	High	Low	Medium	High	25	35	40
Permanent	Low	High	High	Low	High	Low	50	50	0
Permanent	Low	High	High	Low	High	Medium	45	45	10
Permanent	Low	High	High	Low	High	High	35	45	20
Permanent	Low	High	High	Medium	Low	Low	35	35	30
Permanent	Low	High	High	Medium	Low	Medium	25	25	50
Permanent	Low	High	High	Medium	Low	High	15	25	60
Permanent	Low	High	High	Medium	Medium	Low	40	40	20
Permanent	Low	High	High	Medium	Medium	Medium	30	30	40
Permanent	Low	High	High	Medium	Medium	High	20	30	50
Permanent	Low	High	High	Medium	High	Low	50	50	0
Permanent	Low	High	High	Medium	High	Medium	40	40	20
Permanent	Low	High	High	Medium	High	High	30	40	30
Permanent	Low	High	High	High	Low	Low	35	30	35
Permanent	Low	High	High	High	Low	Medium	25	20	55
Permanent	Low	High	High	High	Low	High	15	20	65
Permanent	Low	High	High	High	Medium	Low	40	35	25

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	Low	High	High	High	Medium	Medium	30	25	45
Permanent	Low	High	High	High	Medium	High	20	25	55
Permanent	Low	High	High	High	High	Low	50	45	5
Permanent	Low	High	High	High	High	Medium	40	35	25
Permanent	Low	High	High	High	High	High	30	35	35
Permanent	Medium	Low	Low	Low	Low	Low	30	40	30
Permanent	Medium	Low	Low	Low	Low	Medium	20	30	50
Permanent	Medium	Low	Low	Low	Low	High	10	30	60
Permanent	Medium	Low	Low	Low	Medium	Low	35	45	20
Permanent	Medium	Low	Low	Low	Medium	Medium	25	35	40
Permanent	Medium	Low	Low	Low	Medium	High	15	35	50
Permanent	Medium	Low	Low	Low	High	Low	45	55	0
Permanent	Medium	Low	Low	Low	High	Medium	35	45	20
Permanent	Medium	Low	Low	Low	High	High	25	45	30
Permanent	Medium	Low	Low	Medium	Low	Low	25	35	40
Permanent	Medium	Low	Low	Medium	Low	Medium	15	25	60
Permanent	Medium	Low	Low	Medium	Low	High	5	25	70
Permanent	Medium	Low	Low	Medium	Medium	Low	30	40	30
Permanent	Medium	Low	Low	Medium	Medium	Medium	20	30	50
Permanent	Medium	Low	Low	Medium	Medium	High	10	30	60
Permanent	Medium	Low	Low	Medium	High	Low	40	50	10
Permanent	Medium	Low	Low	Medium	High	Medium	30	40	30
Permanent	Medium	Low	Low	Medium	High	High	20	40	40
Permanent	Medium	Low	Low	High	Low	Low	25	30	45
Permanent	Medium	Low	Low	High	Low	Medium	15	20	65
Permanent	Medium	Low	Low	High	Low	High	5	20	75
Permanent	Medium	Low	Low	High	Medium	Low	30	35	35
Permanent	Medium	Low	Low	High	Medium	Medium	20	25	55
Permanent	Medium	Low	Low	High	Medium	High	10	25	65
Permanent	Medium	Low	Low	High	High	Low	40	45	15
Permanent	Medium	Low	Low	High	High	Medium	30	35	35
Permanent	Medium	Low	Low	High	High	High	20	35	45
Permanent	Medium	Low	Medium	Low	Low	Low	25	35	40
Permanent	Medium	Low	Medium	Low	Low	Medium	15	25	60
Permanent	Medium	Low	Medium	Low	Low	High	5	25	70
Permanent	Medium	Low	Medium	Low	Medium	Low	30	40	30
Permanent	Medium	Low	Medium	Low	Medium	Medium	20	30	50
Permanent	Medium	Low	Medium	Low	Medium	High	10	30	60
Permanent	Medium	Low	Medium	Low	High	Low	40	50	10
Permanent	Medium	Low	Medium	Low	High	Medium	30	40	30

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	Medium	Low	Medium	Low	High	High	20	40	40
Permanent	Medium	Low	Medium	Medium	Low	Low	20	30	50
Permanent	Medium	Low	Medium	Medium	Low	Medium	10	20	70
Permanent	Medium	Low	Medium	Medium	Low	High	0	20	80
Permanent	Medium	Low	Medium	Medium	Medium	Low	25	35	40
Permanent	Medium	Low	Medium	Medium	Medium	Medium	15	25	60
Permanent	Medium	Low	Medium	Medium	Medium	High	5	25	70
Permanent	Medium	Low	Medium	Medium	High	Low	35	45	20
Permanent	Medium	Low	Medium	Medium	High	Medium	25	35	40
Permanent	Medium	Low	Medium	Medium	High	High	15	35	50
Permanent	Medium	Low	Medium	High	Low	Low	20	25	55
Permanent	Medium	Low	Medium	High	Low	Medium	10	15	75
Permanent	Medium	Low	Medium	High	Low	High	0	15	85
Permanent	Medium	Low	Medium	High	Medium	Low	25	30	45
Permanent	Medium	Low	Medium	High	Medium	Medium	15	20	65
Permanent	Medium	Low	Medium	High	Medium	High	5	20	75
Permanent	Medium	Low	Medium	High	High	Low	35	40	25
Permanent	Medium	Low	Medium	High	High	Medium	25	30	45
Permanent	Medium	Low	Medium	High	High	High	15	30	55
Permanent	Medium	Low	High	Low	Low	Low	25	30	45
Permanent	Medium	Low	High	Low	Low	Medium	15	20	65
Permanent	Medium	Low	High	Low	Low	High	5	20	75
Permanent	Medium	Low	High	Low	Medium	Low	30	35	35
Permanent	Medium	Low	High	Low	Medium	Medium	20	25	55
Permanent	Medium	Low	High	Low	Medium	High	10	25	65
Permanent	Medium	Low	High	Low	High	Low	40	45	15
Permanent	Medium	Low	High	Low	High	Medium	30	35	35
Permanent	Medium	Low	High	Low	High	High	20	35	45
Permanent	Medium	Low	High	Medium	Low	Low	20	25	55
Permanent	Medium	Low	High	Medium	Low	Medium	10	15	75
Permanent	Medium	Low	High	Medium	Low	High	0	15	85
Permanent	Medium	Low	High	Medium	Medium	Low	25	30	45
Permanent	Medium	Low	High	Medium	Medium	Medium	15	20	65
Permanent	Medium	Low	High	Medium	Medium	High	5	20	75
Permanent	Medium	Low	High	Medium	High	Low	35	40	25
Permanent	Medium	Low	High	Medium	High	Medium	25	30	45
Permanent	Medium	Low	High	Medium	High	High	15	30	55
Permanent	Medium	Low	High	High	Low	Low	20	20	60
Permanent	Medium	Low	High	High	Low	Medium	10	10	80
Permanent	Medium	Low	High	High	Low	High	0	10	90

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	Medium	Low	High	High	Medium	Low	25	25	50
Permanent	Medium	Low	High	High	Medium	Medium	15	15	70
Permanent	Medium	Low	High	High	Medium	High	5	15	80
Permanent	Medium	Low	High	High	High	Low	35	35	30
Permanent	Medium	Low	High	High	High	Medium	25	25	50
Permanent	Medium	Low	High	High	High	High	15	25	60
Permanent	Medium	Medium	Low	Low	Low	Low	35	40	25
Permanent	Medium	Medium	Low	Low	Low	Medium	25	30	45
Permanent	Medium	Medium	Low	Low	Low	High	15	30	55
Permanent	Medium	Medium	Low	Low	Medium	Low	40	45	15
Permanent	Medium	Medium	Low	Low	Medium	Medium	30	35	35
Permanent	Medium	Medium	Low	Low	Medium	High	20	35	45
Permanent	Medium	Medium	Low	Low	High	Low	50	50	0
Permanent	Medium	Medium	Low	Low	High	Medium	40	45	15
Permanent	Medium	Medium	Low	Low	High	High	30	45	25
Permanent	Medium	Medium	Low	Medium	Low	Low	30	35	35
Permanent	Medium	Medium	Low	Medium	Low	Medium	20	25	55
Permanent	Medium	Medium	Low	Medium	Low	High	10	25	65
Permanent	Medium	Medium	Low	Medium	Medium	Low	35	40	25
Permanent	Medium	Medium	Low	Medium	Medium	Medium	25	30	45
Permanent	Medium	Medium	Low	Medium	Medium	High	15	30	55
Permanent	Medium	Medium	Low	Medium	High	Low	45	50	5
Permanent	Medium	Medium	Low	Medium	High	Medium	35	40	25
Permanent	Medium	Medium	Low	Medium	High	High	25	40	35
Permanent	Medium	Medium	Low	High	Low	Low	30	30	40
Permanent	Medium	Medium	Low	High	Low	Medium	20	20	60
Permanent	Medium	Medium	Low	High	Low	High	10	20	70
Permanent	Medium	Medium	Low	High	Medium	Low	35	35	30
Permanent	Medium	Medium	Low	High	Medium	Medium	25	25	50
Permanent	Medium	Medium	Low	High	Medium	High	15	25	60
Permanent	Medium	Medium	Low	High	High	Low	45	45	10
Permanent	Medium	Medium	Low	High	High	Medium	35	35	30
Permanent	Medium	Medium	Low	High	High	High	25	35	40
Permanent	Medium	Medium	Medium	Low	Low	Low	30	35	35
Permanent	Medium	Medium	Medium	Low	Low	Medium	20	25	55
Permanent	Medium	Medium	Medium	Low	Low	High	10	25	65
Permanent	Medium	Medium	Medium	Low	Medium	Low	35	40	25
Permanent	Medium	Medium	Medium	Low	Medium	Medium	25	30	45
Permanent	Medium	Medium	Medium	Low	Medium	High	15	30	55
Permanent	Medium	Medium	Medium	Low	High	Low	45	50	5

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	Medium	Medium	Medium	Low	High	Medium	35	40	25
Permanent	Medium	Medium	Medium	Low	High	High	25	40	35
Permanent	Medium	Medium	Medium	Medium	Low	Low	25	30	45
Permanent	Medium	Medium	Medium	Medium	Low	Medium	15	20	65
Permanent	Medium	Medium	Medium	Medium	Low	High	5	20	75
Permanent	Medium	Medium	Medium	Medium	Medium	Low	30	35	35
Permanent	Medium	Medium	Medium	Medium	Medium	Medium	20	25	55
Permanent	Medium	Medium	Medium	Medium	Medium	High	10	25	65
Permanent	Medium	Medium	Medium	Medium	High	Low	40	45	15
Permanent	Medium	Medium	Medium	Medium	High	Medium	30	35	35
Permanent	Medium	Medium	Medium	Medium	High	High	20	35	45
Permanent	Medium	Medium	Medium	High	Low	Low	25	25	50
Permanent	Medium	Medium	Medium	High	Low	Medium	15	15	70
Permanent	Medium	Medium	Medium	High	Low	High	5	15	80
Permanent	Medium	Medium	Medium	High	Medium	Low	30	30	40
Permanent	Medium	Medium	Medium	High	Medium	Medium	20	20	60
Permanent	Medium	Medium	Medium	High	Medium	High	10	20	70
Permanent	Medium	Medium	Medium	High	High	Low	40	40	20
Permanent	Medium	Medium	Medium	High	High	Medium	30	30	40
Permanent	Medium	Medium	Medium	High	High	High	20	30	50
Permanent	Medium	Medium	High	Low	Low	Low	30	30	40
Permanent	Medium	Medium	High	Low	Low	Medium	20	20	60
Permanent	Medium	Medium	High	Low	Low	High	10	20	70
Permanent	Medium	Medium	High	Low	Medium	Low	35	35	30
Permanent	Medium	Medium	High	Low	Medium	Medium	25	25	50
Permanent	Medium	Medium	High	Low	Medium	High	15	25	60
Permanent	Medium	Medium	High	Low	High	Low	45	45	10
Permanent	Medium	Medium	High	Low	High	Medium	35	35	30
Permanent	Medium	Medium	High	Low	High	High	25	35	40
Permanent	Medium	Medium	High	Medium	Low	Low	25	25	50
Permanent	Medium	Medium	High	Medium	Low	Medium	15	15	70
Permanent	Medium	Medium	High	Medium	Low	High	5	15	80
Permanent	Medium	Medium	High	Medium	Medium	Low	30	30	40
Permanent	Medium	Medium	High	Medium	Medium	Medium	20	20	60
Permanent	Medium	Medium	High	Medium	Medium	High	10	20	70
Permanent	Medium	Medium	High	Medium	High	Low	40	40	20
Permanent	Medium	Medium	High	Medium	High	Medium	30	30	40
Permanent	Medium	Medium	High	Medium	High	High	20	30	50
Permanent	Medium	Medium	High	High	Low	Low	25	20	55
Permanent	Medium	Medium	High	High	Low	Medium	15	10	75

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	Medium	Medium	High	High	Low	High	5	10	85
Permanent	Medium	Medium	High	High	Medium	Low	30	25	45
Permanent	Medium	Medium	High	High	Medium	Medium	20	15	65
Permanent	Medium	Medium	High	High	Medium	High	10	15	75
Permanent	Medium	Medium	High	High	High	Low	40	35	25
Permanent	Medium	Medium	High	High	High	Medium	30	25	45
Permanent	Medium	Medium	High	High	High	High	20	25	55
Permanent	Medium	High	Low	Low	Low	Low	40	45	15
Permanent	Medium	High	Low	Low	Low	Medium	30	35	35
Permanent	Medium	High	Low	Low	Low	High	20	35	45
Permanent	Medium	High	Low	Low	Medium	Low	45	50	5
Permanent	Medium	High	Low	Low	Medium	Medium	35	40	25
Permanent	Medium	High	Low	Low	Medium	High	25	40	35
Permanent	Medium	High	Low	Low	High	Low	55	45	0
Permanent	Medium	High	Low	Low	High	Medium	45	50	5
Permanent	Medium	High	Low	Low	High	High	35	50	15
Permanent	Medium	High	Low	Medium	Low	Low	35	40	25
Permanent	Medium	High	Low	Medium	Low	Medium	25	30	45
Permanent	Medium	High	Low	Medium	Low	High	15	30	55
Permanent	Medium	High	Low	Medium	Medium	Low	40	45	15
Permanent	Medium	High	Low	Medium	Medium	Medium	30	35	35
Permanent	Medium	High	Low	Medium	Medium	High	20	35	45
Permanent	Medium	High	Low	Medium	High	Low	50	50	0
Permanent	Medium	High	Low	Medium	High	Medium	40	45	15
Permanent	Medium	High	Low	Medium	High	High	30	45	25
Permanent	Medium	High	Low	High	Low	Low	35	35	30
Permanent	Medium	High	Low	High	Low	Medium	25	25	50
Permanent	Medium	High	Low	High	Low	High	15	25	60
Permanent	Medium	High	Low	High	Medium	Low	40	40	20
Permanent	Medium	High	Low	High	Medium	Medium	30	30	40
Permanent	Medium	High	Low	High	Medium	High	20	30	50
Permanent	Medium	High	Low	High	High	Low	50	50	0
Permanent	Medium	High	Low	High	High	Medium	40	40	20
Permanent	Medium	High	Low	High	High	High	30	40	30
Permanent	Medium	High	Medium	Low	Low	Low	35	40	25
Permanent	Medium	High	Medium	Low	Low	Medium	25	30	45
Permanent	Medium	High	Medium	Low	Low	High	15	30	55
Permanent	Medium	High	Medium	Low	Medium	Low	40	45	15
Permanent	Medium	High	Medium	Low	Medium	Medium	30	35	35
Permanent	Medium	High	Medium	Low	Medium	High	20	35	45

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	Medium	High	Medium	Low	High	Low	50	50	0
Permanent	Medium	High	Medium	Low	High	Medium	40	45	15
Permanent	Medium	High	Medium	Low	High	High	30	45	25
Permanent	Medium	High	Medium	Medium	Low	Low	30	35	35
Permanent	Medium	High	Medium	Medium	Low	Medium	20	25	55
Permanent	Medium	High	Medium	Medium	Low	High	10	25	65
Permanent	Medium	High	Medium	Medium	Medium	Low	35	40	25
Permanent	Medium	High	Medium	Medium	Medium	Medium	25	30	45
Permanent	Medium	High	Medium	Medium	Medium	High	15	30	55
Permanent	Medium	High	Medium	Medium	High	Low	45	50	5
Permanent	Medium	High	Medium	Medium	High	Medium	35	40	25
Permanent	Medium	High	Medium	Medium	High	High	25	40	35
Permanent	Medium	High	Medium	High	Low	Low	30	30	40
Permanent	Medium	High	Medium	High	Low	Medium	20	20	60
Permanent	Medium	High	Medium	High	Low	High	10	20	70
Permanent	Medium	High	Medium	High	Medium	Low	35	35	30
Permanent	Medium	High	Medium	High	Medium	Medium	25	25	50
Permanent	Medium	High	Medium	High	Medium	High	15	25	60
Permanent	Medium	High	Medium	High	High	Low	45	45	10
Permanent	Medium	High	Medium	High	High	Medium	35	35	30
Permanent	Medium	High	Medium	High	High	High	25	35	40
Permanent	Medium	High	High	Low	Low	Low	35	35	30
Permanent	Medium	High	High	Low	Low	Medium	25	25	50
Permanent	Medium	High	High	Low	Low	High	15	25	60
Permanent	Medium	High	High	Low	Medium	Low	40	40	20
Permanent	Medium	High	High	Low	Medium	Medium	30	30	40
Permanent	Medium	High	High	Low	Medium	High	20	30	50
Permanent	Medium	High	High	Low	High	Low	50	50	0
Permanent	Medium	High	High	Low	High	Medium	40	40	20
Permanent	Medium	High	High	Low	High	High	30	40	30
Permanent	Medium	High	High	Medium	Low	Low	30	30	40
Permanent	Medium	High	High	Medium	Low	Medium	20	20	60
Permanent	Medium	High	High	Medium	Low	High	10	20	70
Permanent	Medium	High	High	Medium	Medium	Low	35	35	30
Permanent	Medium	High	High	Medium	Medium	Medium	25	25	50
Permanent	Medium	High	High	Medium	Medium	High	15	25	60
Permanent	Medium	High	High	Medium	High	Low	45	45	10
Permanent	Medium	High	High	Medium	High	Medium	35	35	30
Permanent	Medium	High	High	Medium	High	High	25	35	40
Permanent	Medium	High	High	High	Low	Low	30	25	45

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	Medium	High	High	High	Low	Medium	20	15	65
Permanent	Medium	High	High	High	Low	High	10	15	75
Permanent	Medium	High	High	High	Medium	Low	35	30	35
Permanent	Medium	High	High	High	Medium	Medium	25	20	55
Permanent	Medium	High	High	High	Medium	High	15	20	65
Permanent	Medium	High	High	High	High	Low	45	40	15
Permanent	Medium	High	High	High	High	Medium	35	30	35
Permanent	Medium	High	High	High	High	High	25	30	45
Permanent	High	Low	Low	Low	Low	Low	30	45	25
Permanent	High	Low	Low	Low	Low	Medium	20	35	45
Permanent	High	Low	Low	Low	Low	High	10	35	55
Permanent	High	Low	Low	Low	Medium	Low	35	50	15
Permanent	High	Low	Low	Low	Medium	Medium	25	40	35
Permanent	High	Low	Low	Low	Medium	High	15	40	45
Permanent	High	Low	Low	Low	High	Low	45	55	0
Permanent	High	Low	Low	Low	High	Medium	35	50	15
Permanent	High	Low	Low	Low	High	High	25	50	25
Permanent	High	Low	Low	Medium	Low	Low	25	40	35
Permanent	High	Low	Low	Medium	Low	Medium	15	30	55
Permanent	High	Low	Low	Medium	Low	High	5	30	65
Permanent	High	Low	Low	Medium	Medium	Low	30	45	25
Permanent	High	Low	Low	Medium	Medium	Medium	20	35	45
Permanent	High	Low	Low	Medium	Medium	High	10	35	55
Permanent	High	Low	Low	Medium	High	Low	40	55	5
Permanent	High	Low	Low	Medium	High	Medium	30	45	25
Permanent	High	Low	Low	Medium	High	High	20	45	35
Permanent	High	Low	Low	High	Low	Low	25	35	40
Permanent	High	Low	Low	High	Low	Medium	15	25	60
Permanent	High	Low	Low	High	Low	High	5	25	70
Permanent	High	Low	Low	High	Medium	Low	30	40	30
Permanent	High	Low	Low	High	Medium	Medium	20	30	50
Permanent	High	Low	Low	High	Medium	High	10	30	60
Permanent	High	Low	Low	High	High	Low	40	50	10
Permanent	High	Low	Low	High	High	Medium	30	40	30
Permanent	High	Low	Low	High	High	High	20	40	40
Permanent	High	Low	Medium	Low	Low	Low	25	40	35
Permanent	High	Low	Medium	Low	Low	Medium	15	30	55
Permanent	High	Low	Medium	Low	Low	High	5	30	65
Permanent	High	Low	Medium	Low	Medium	Low	30	45	25
Permanent	High	Low	Medium	Low	Medium	Medium	20	35	45

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	High	Low	Medium	Low	Medium	High	10	35	55
Permanent	High	Low	Medium	Low	High	Low	40	55	5
Permanent	High	Low	Medium	Low	High	Medium	30	45	25
Permanent	High	Low	Medium	Low	High	High	20	45	35
Permanent	High	Low	Medium	Medium	Low	Low	20	35	45
Permanent	High	Low	Medium	Medium	Low	Medium	10	25	65
Permanent	High	Low	Medium	Medium	Low	High	0	25	75
Permanent	High	Low	Medium	Medium	Medium	Low	25	40	35
Permanent	High	Low	Medium	Medium	Medium	Medium	15	30	55
Permanent	High	Low	Medium	Medium	Medium	High	5	30	65
Permanent	High	Low	Medium	Medium	High	Low	35	50	15
Permanent	High	Low	Medium	Medium	High	Medium	25	40	35
Permanent	High	Low	Medium	Medium	High	High	15	40	45
Permanent	High	Low	Medium	High	Low	Low	20	30	50
Permanent	High	Low	Medium	High	Low	Medium	10	20	70
Permanent	High	Low	Medium	High	Low	High	0	20	80
Permanent	High	Low	Medium	High	Medium	Low	25	35	40
Permanent	High	Low	Medium	High	Medium	Medium	15	25	60
Permanent	High	Low	Medium	High	Medium	High	5	25	70
Permanent	High	Low	Medium	High	High	Low	35	45	20
Permanent	High	Low	Medium	High	High	Medium	25	35	40
Permanent	High	Low	Medium	High	High	High	15	35	50
Permanent	High	Low	High	Low	Low	Low	25	35	40
Permanent	High	Low	High	Low	Low	Medium	15	25	60
Permanent	High	Low	High	Low	Low	High	5	25	70
Permanent	High	Low	High	Low	Medium	Low	30	40	30
Permanent	High	Low	High	Low	Medium	Medium	20	30	50
Permanent	High	Low	High	Low	Medium	High	10	30	60
Permanent	High	Low	High	Low	High	Low	40	50	10
Permanent	High	Low	High	Low	High	Medium	30	40	30
Permanent	High	Low	High	Low	High	High	20	40	40
Permanent	High	Low	High	Medium	Low	Low	20	30	50
Permanent	High	Low	High	Medium	Low	Medium	10	20	70
Permanent	High	Low	High	Medium	Low	High	0	20	80
Permanent	High	Low	High	Medium	Medium	Low	25	35	40
Permanent	High	Low	High	Medium	Medium	Medium	15	25	60
Permanent	High	Low	High	Medium	Medium	High	5	25	70
Permanent	High	Low	High	Medium	High	Low	35	45	20
Permanent	High	Low	High	Medium	High	Medium	25	35	40
Permanent	High	Low	High	Medium	High	High	15	35	50

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	High	Low	High	High	Low	Low	20	25	55
Permanent	High	Low	High	High	Low	Medium	10	15	75
Permanent	High	Low	High	High	Low	High	0	15	85
Permanent	High	Low	High	High	Medium	Low	25	30	45
Permanent	High	Low	High	High	Medium	Medium	15	20	65
Permanent	High	Low	High	High	Medium	High	5	20	75
Permanent	High	Low	High	High	High	Low	35	40	25
Permanent	High	Low	High	High	High	Medium	25	30	45
Permanent	High	Low	High	High	High	High	15	30	55
Permanent	High	Medium	Low	Low	Low	Low	35	45	20
Permanent	High	Medium	Low	Low	Low	Medium	25	35	40
Permanent	High	Medium	Low	Low	Low	High	15	35	50
Permanent	High	Medium	Low	Low	Medium	Low	40	50	10
Permanent	High	Medium	Low	Low	Medium	Medium	30	40	30
Permanent	High	Medium	Low	Low	Medium	High	20	40	40
Permanent	High	Medium	Low	Low	High	Low	50	50	0
Permanent	High	Medium	Low	Low	High	Medium	40	50	10
Permanent	High	Medium	Low	Low	High	High	30	50	20
Permanent	High	Medium	Low	Medium	Low	Low	30	40	30
Permanent	High	Medium	Low	Medium	Low	Medium	20	30	50
Permanent	High	Medium	Low	Medium	Low	High	10	30	60
Permanent	High	Medium	Low	Medium	Medium	Low	35	45	20
Permanent	High	Medium	Low	Medium	Medium	Medium	25	35	40
Permanent	High	Medium	Low	Medium	Medium	High	15	35	50
Permanent	High	Medium	Low	Medium	High	Low	45	55	0
Permanent	High	Medium	Low	Medium	High	Medium	35	45	20
Permanent	High	Medium	Low	Medium	High	High	25	45	30
Permanent	High	Medium	Low	High	Low	Low	30	35	35
Permanent	High	Medium	Low	High	Low	Medium	20	25	55
Permanent	High	Medium	Low	High	Low	High	10	25	65
Permanent	High	Medium	Low	High	Medium	Low	35	40	25
Permanent	High	Medium	Low	High	Medium	Medium	25	30	45
Permanent	High	Medium	Low	High	Medium	High	15	30	55
Permanent	High	Medium	Low	High	High	Low	45	50	5
Permanent	High	Medium	Low	High	High	Medium	35	40	25
Permanent	High	Medium	Low	High	High	High	25	40	35
Permanent	High	Medium	Medium	Low	Low	Low	30	40	30
Permanent	High	Medium	Medium	Low	Low	Medium	20	30	50
Permanent	High	Medium	Medium	Low	Low	High	10	30	60
Permanent	High	Medium	Medium	Low	Medium	Low	35	45	20

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	High	Medium	Medium	Low	Medium	Medium	25	35	40
Permanent	High	Medium	Medium	Low	Medium	High	15	35	50
Permanent	High	Medium	Medium	Low	High	Low	45	55	0
Permanent	High	Medium	Medium	Low	High	Medium	35	45	20
Permanent	High	Medium	Medium	Low	High	High	25	45	30
Permanent	High	Medium	Medium	Medium	Low	Low	25	35	40
Permanent	High	Medium	Medium	Medium	Low	Medium	15	25	60
Permanent	High	Medium	Medium	Medium	Low	High	5	25	70
Permanent	High	Medium	Medium	Medium	Medium	Low	30	40	30
Permanent	High	Medium	Medium	Medium	Medium	Medium	20	30	50
Permanent	High	Medium	Medium	Medium	Medium	High	10	30	60
Permanent	High	Medium	Medium	Medium	High	Low	40	50	10
Permanent	High	Medium	Medium	Medium	High	Medium	30	40	30
Permanent	High	Medium	Medium	Medium	High	High	20	40	40
Permanent	High	Medium	Medium	High	Low	Low	25	30	45
Permanent	High	Medium	Medium	High	Low	Medium	15	20	65
Permanent	High	Medium	Medium	High	Low	High	5	20	75
Permanent	High	Medium	Medium	High	Medium	Low	30	35	35
Permanent	High	Medium	Medium	High	Medium	Medium	20	25	55
Permanent	High	Medium	Medium	High	Medium	High	10	25	65
Permanent	High	Medium	Medium	High	High	Low	40	45	15
Permanent	High	Medium	Medium	High	High	Medium	30	35	35
Permanent	High	Medium	Medium	High	High	High	20	35	45
Permanent	High	Medium	High	Low	Low	Low	30	35	35
Permanent	High	Medium	High	Low	Low	Medium	20	25	55
Permanent	High	Medium	High	Low	Low	High	10	25	65
Permanent	High	Medium	High	Low	Medium	Low	35	40	25
Permanent	High	Medium	High	Low	Medium	Medium	25	30	45
Permanent	High	Medium	High	Low	Medium	High	15	30	55
Permanent	High	Medium	High	Low	High	Low	45	50	5
Permanent	High	Medium	High	Low	High	Medium	35	40	25
Permanent	High	Medium	High	Low	High	High	25	40	35
Permanent	High	Medium	High	Medium	Low	Low	25	30	45
Permanent	High	Medium	High	Medium	Low	Medium	15	20	65
Permanent	High	Medium	High	Medium	Low	High	5	20	75
Permanent	High	Medium	High	Medium	Medium	Low	30	35	35
Permanent	High	Medium	High	Medium	Medium	Medium	20	25	55
Permanent	High	Medium	High	Medium	Medium	High	10	25	65
Permanent	High	Medium	High	Medium	High	Low	40	45	15
Permanent	High	Medium	High	Medium	High	Medium	30	35	35

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	High	Medium	High	Medium	High	High	20	35	45
Permanent	High	Medium	High	High	Low	Low	25	25	50
Permanent	High	Medium	High	High	Low	Medium	15	15	70
Permanent	High	Medium	High	High	Low	High	5	15	80
Permanent	High	Medium	High	High	Medium	Low	30	30	40
Permanent	High	Medium	High	High	Medium	Medium	20	20	60
Permanent	High	Medium	High	High	Medium	High	10	20	70
Permanent	High	Medium	High	High	High	Low	40	40	20
Permanent	High	Medium	High	High	High	Medium	30	30	40
Permanent	High	Medium	High	High	High	High	20	30	50
Permanent	High	High	Low	Low	Low	Low	40	50	10
Permanent	High	High	Low	Low	Low	Medium	30	40	30
Permanent	High	High	Low	Low	Low	High	20	40	40
Permanent	High	High	Low	Low	Medium	Low	45	55	0
Permanent	High	High	Low	Low	Medium	Medium	35	45	20
Permanent	High	High	Low	Low	Medium	High	25	45	30
Permanent	High	High	Low	Low	High	Low	55	45	0
Permanent	High	High	Low	Low	High	Medium	45	55	0
Permanent	High	High	Low	Low	High	High	35	55	10
Permanent	High	High	Low	Medium	Low	Low	35	45	20
Permanent	High	High	Low	Medium	Low	Medium	25	35	40
Permanent	High	High	Low	Medium	Low	High	15	35	50
Permanent	High	High	Low	Medium	Medium	Low	40	50	10
Permanent	High	High	Low	Medium	Medium	Medium	30	40	30
Permanent	High	High	Low	Medium	Medium	High	20	40	40
Permanent	High	High	Low	Medium	High	Low	50	50	0
Permanent	High	High	Low	Medium	High	Medium	40	50	10
Permanent	High	High	Low	Medium	High	High	30	50	20
Permanent	High	High	Low	High	Low	Low	35	40	25
Permanent	High	High	Low	High	Low	Medium	25	30	45
Permanent	High	High	Low	High	Low	High	15	30	55
Permanent	High	High	Low	High	Medium	Low	40	45	15
Permanent	High	High	Low	High	Medium	Medium	30	35	35
Permanent	High	High	Low	High	Medium	High	20	35	45
Permanent	High	High	Low	High	High	Low	50	50	0
Permanent	High	High	Low	High	High	Medium	40	45	15
Permanent	High	High	Low	High	High	High	30	45	25
Permanent	High	High	Medium	Low	Low	Low	35	45	20
Permanent	High	High	Medium	Low	Low	Medium	25	35	40
Permanent	High	High	Medium	Low	Low	High	15	35	50

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	High	High	Medium	Low	Medium	Low	40	50	10
Permanent	High	High	Medium	Low	Medium	Medium	30	40	30
Permanent	High	High	Medium	Low	Medium	High	20	40	40
Permanent	High	High	Medium	Low	High	Low	50	50	0
Permanent	High	High	Medium	Low	High	Medium	40	50	10
Permanent	High	High	Medium	Low	High	High	30	50	20
Permanent	High	High	Medium	Medium	Low	Low	30	40	30
Permanent	High	High	Medium	Medium	Low	Medium	20	30	50
Permanent	High	High	Medium	Medium	Low	High	10	30	60
Permanent	High	High	Medium	Medium	Medium	Low	35	45	20
Permanent	High	High	Medium	Medium	Medium	Medium	25	35	40
Permanent	High	High	Medium	Medium	Medium	High	15	35	50
Permanent	High	High	Medium	Medium	High	Low	45	55	0
Permanent	High	High	Medium	Medium	High	Medium	35	45	20
Permanent	High	High	Medium	Medium	High	High	25	45	30
Permanent	High	High	Medium	High	Low	Low	30	35	35
Permanent	High	High	Medium	High	Low	Medium	20	25	55
Permanent	High	High	Medium	High	Low	High	10	25	65
Permanent	High	High	Medium	High	Medium	Low	35	40	25
Permanent	High	High	Medium	High	Medium	Medium	25	30	45
Permanent	High	High	Medium	High	Medium	High	15	30	55
Permanent	High	High	Medium	High	High	Low	45	50	5
Permanent	High	High	Medium	High	High	Medium	35	40	25
Permanent	High	High	Medium	High	High	High	25	40	35
Permanent	High	High	High	Low	Low	Low	35	40	25
Permanent	High	High	High	Low	Low	Medium	25	30	45
Permanent	High	High	High	Low	Low	High	15	30	55
Permanent	High	High	High	Low	Medium	Low	40	45	15
Permanent	High	High	High	Low	Medium	Medium	30	35	35
Permanent	High	High	High	Low	Medium	High	20	35	45
Permanent	High	High	High	Low	High	Low	50	50	0
Permanent	High	High	High	Low	High	Medium	40	45	15
Permanent	High	High	High	Low	High	High	30	45	25
Permanent	High	High	High	Medium	Low	Low	30	35	35
Permanent	High	High	High	Medium	Low	Medium	20	25	55
Permanent	High	High	High	Medium	Low	High	10	25	65
Permanent	High	High	High	Medium	Medium	Low	35	40	25
Permanent	High	High	High	Medium	Medium	Medium	25	30	45
Permanent	High	High	High	Medium	Medium	High	15	30	55
Permanent	High	High	High	Medium	High	Low	45	50	5

Inputs							Habitat quality		
Water availability	Emergent	Floating	Terrestrial	Winter refuge	Submerged	Water quality	Low	Average	High
Permanent	High	High	High	Medium	High	Medium	35	40	25
Permanent	High	High	High	Medium	High	High	25	40	35
Permanent	High	High	High	High	Low	Low	30	30	40
Permanent	High	High	High	High	Low	Medium	20	20	60
Permanent	High	High	High	High	Low	High	10	20	70
Permanent	High	High	High	High	Medium	Low	35	35	30
Permanent	High	High	High	High	Medium	Medium	25	25	50
Permanent	High	High	High	High	Medium	High	15	25	60
Permanent	High	High	High	High	High	Low	45	45	10
Permanent	High	High	High	High	High	Medium	35	35	30
Permanent	High	High	High	High	High	High	25	35	40

Table B4. Conditional probability table (CPT) for the predator, parasite, and pathogen effects node.

[Numbers in the table represent probabilities as percentages (that is, 10=10% or 0.10) that the response node will take the value in the column (low, average, high), given the value of the parent node (habitat quality)]

	Predator effects		
Habitat quality	Low	Average	High
Low	10	40	50
Average	30	40	30
High	50	40	10

Table B5. Conditional probability table (CPT) for the giant gartersnake (*Thamnophis gigas*) fecundity node.

[Numbers in the table represent probabilities as percentages (that is, 45=45% or 0.45) that the response node will take the value in the column (none, few, average, many), given the value of the parent nodes (prey availability and water quality)]

Inputs		Number of young/Adult female			
Prey availability	Water quality	None	Few	Average	Many
Low	Low	45	30	25	0
Low	Medium	35	30	35	0
Low	High	30	30	40	0
Medium	Low	20	35	40	5
Medium	Medium	15	25	45	15
Medium	High	10	20	50	20
High	Low	15	25	45	15
High	Medium	10	15	50	25
High	High	5	10	55	30

Table B6. Conditional probability table (CPT) for the giant gartersnake (*Thamnophis gigas*) first-year survival node.

[Numbers in the table represent probabilities as percentages (that is, 40=40% or 0.40) that the response node will take the value in the column (low, average, high), given the value of the parent nodes (predator, parasite, and pathogen effects; habitat quality; prey availability; water quality; and other sources of mortality)]

Inputs					First year survival		
Predators	Habitat quality	Prey availability	Water quality	Other mortality	Low	Average	High
Low	Low	Low	Low	Low	40	40	20
Low	Low	Low	Low	Medium	40	45	15
Low	Low	Low	Low	High	45	45	10
Low	Low	Low	Medium	Low	40	35	25
Low	Low	Low	Medium	Medium	40	40	20
Low	Low	Low	Medium	High	45	40	15
Low	Low	Low	High	Low	35	35	30
Low	Low	Low	High	Medium	35	40	25
Low	Low	Low	High	High	40	40	20
Low	Low	Average	Low	Low	35	35	30
Low	Low	Average	Low	Medium	35	40	25
Low	Low	Average	Low	High	40	40	20
Low	Low	Average	Medium	Low	35	30	35
Low	Low	Average	Medium	Medium	35	35	30
Low	Low	Average	Medium	High	40	35	25
Low	Low	Average	High	Low	30	30	40
Low	Low	Average	High	Medium	30	35	35
Low	Low	Average	High	High	35	35	30
Low	Low	High	Low	Low	30	30	40
Low	Low	High	Low	Medium	30	35	35
Low	Low	High	Low	High	35	35	30
Low	Low	High	Medium	Low	30	25	45
Low	Low	High	Medium	Medium	30	30	40
Low	Low	High	Medium	High	35	30	35
Low	Low	High	High	Low	25	25	50
Low	Low	High	High	Medium	25	30	45
Low	Low	High	High	High	30	30	40
Low	Average	Low	Low	Low	20	40	40
Low	Average	Low	Low	Medium	20	45	35
Low	Average	Low	Low	High	25	45	30
Low	Average	Low	Medium	Low	20	35	45
Low	Average	Low	Medium	Medium	20	40	40
Low	Average	Low	Medium	High	25	40	35

Inputs					First year survival		
Predators	Habitat quality	Prey availability	Water quality	Other mortality	Low	Average	High
Low	Average	Low	High	Low	15	35	50
Low	Average	Low	High	Medium	15	40	45
Low	Average	Low	High	High	20	40	40
Low	Average	Average	Low	Low	15	35	50
Low	Average	Average	Low	Medium	15	40	45
Low	Average	Average	Low	High	20	40	40
Low	Average	Average	Medium	Low	15	30	55
Low	Average	Average	Medium	Medium	15	35	50
Low	Average	Average	Medium	High	20	35	45
Low	Average	Average	High	Low	10	30	60
Low	Average	Average	High	Medium	10	35	55
Low	Average	Average	High	High	15	35	50
Low	Average	High	Low	Low	10	30	60
Low	Average	High	Low	Medium	10	35	55
Low	Average	High	Low	High	15	35	50
Low	Average	High	Medium	Low	10	25	65
Low	Average	High	Medium	Medium	10	30	60
Low	Average	High	Medium	High	15	30	55
Low	Average	High	High	Low	5	25	70
Low	Average	High	High	Medium	5	30	65
Low	Average	High	High	High	10	30	60
Low	High	Low	Low	Low	15	25	60
Low	High	Low	Low	Medium	15	30	55
Low	High	Low	Low	High	20	30	50
Low	High	Low	Medium	Low	15	20	65
Low	High	Low	Medium	Medium	15	25	60
Low	High	Low	Medium	High	20	25	55
Low	High	Low	High	Low	10	20	70
Low	High	Low	High	Medium	10	25	65
Low	High	Low	High	High	15	25	60
Low	High	Average	Low	Low	10	20	70
Low	High	Average	Low	Medium	10	25	65
Low	High	Average	Low	High	15	25	60
Low	High	Average	Medium	Low	10	15	75
Low	High	Average	Medium	Medium	10	20	70
Low	High	Average	Medium	High	15	20	65
Low	High	Average	High	Low	5	15	80
Low	High	Average	High	Medium	5	20	75
Low	High	Average	High	High	10	20	70

Inputs					First year survival		
Predators	Habitat quality	Prey availability	Water quality	Other mortality	Low	Average	High
Low	High	High	Low	Low	5	15	80
Low	High	High	Low	Medium	5	20	75
Low	High	High	Low	High	10	20	70
Low	High	High	Medium	Low	5	10	85
Low	High	High	Medium	Medium	5	15	80
Low	High	High	Medium	High	10	15	75
Low	High	High	High	Low	0	10	90
Low	High	High	High	Medium	0	15	85
Low	High	High	High	High	5	15	80
Average	Low	Low	Low	Low	50	50	0
Average	Low	Low	Low	Medium	50	50	0
Average	Low	Low	Low	High	55	45	0
Average	Low	Low	Medium	Low	50	45	5
Average	Low	Low	Medium	Medium	50	50	0
Average	Low	Low	Medium	High	55	45	0
Average	Low	Low	High	Low	45	45	10
Average	Low	Low	High	Medium	45	50	5
Average	Low	Low	High	High	50	50	0
Average	Low	Average	Low	Low	45	45	10
Average	Low	Average	Low	Medium	45	50	5
Average	Low	Average	Low	High	50	50	0
Average	Low	Average	Medium	Low	45	40	15
Average	Low	Average	Medium	Medium	45	45	10
Average	Low	Average	Medium	High	50	45	5
Average	Low	Average	High	Low	40	40	20
Average	Low	Average	High	Medium	40	45	15
Average	Low	Average	High	High	45	45	10
Average	Low	High	Low	Low	40	40	20
Average	Low	High	Low	Medium	40	45	15
Average	Low	High	Low	High	45	45	10
Average	Low	High	Medium	Low	40	35	25
Average	Low	High	Medium	Medium	40	40	20
Average	Low	High	Medium	High	45	40	15
Average	Low	High	High	Low	35	35	30
Average	Low	High	High	Medium	35	40	25
Average	Low	High	High	High	40	40	20
Average	Average	Low	Low	Low	30	50	20
Average	Average	Low	Low	Medium	30	55	15
Average	Average	Low	Low	High	35	55	10

Inputs					First year survival		
Predators	Habitat quality	Prey availability	Water quality	Other mortality	Low	Average	High
Average	Average	Low	Medium	Low	30	45	25
Average	Average	Low	Medium	Medium	30	50	20
Average	Average	Low	Medium	High	35	50	15
Average	Average	Low	High	Low	25	45	30
Average	Average	Low	High	Medium	25	50	25
Average	Average	Low	High	High	30	50	20
Average	Average	Average	Low	Low	25	45	30
Average	Average	Average	Low	Medium	25	50	25
Average	Average	Average	Low	High	30	50	20
Average	Average	Average	Medium	Low	25	40	35
Average	Average	Average	Medium	Medium	25	45	30
Average	Average	Average	Medium	High	30	45	25
Average	Average	Average	High	Low	20	40	40
Average	Average	Average	High	Medium	20	45	35
Average	Average	Average	High	High	25	45	30
Average	Average	High	Low	Low	20	40	40
Average	Average	High	Low	Medium	20	45	35
Average	Average	High	Low	High	25	45	30
Average	Average	High	Medium	Low	20	35	45
Average	Average	High	Medium	Medium	20	40	40
Average	Average	High	Medium	High	25	40	35
Average	Average	High	High	Low	15	35	50
Average	Average	High	High	Medium	15	40	45
Average	Average	High	High	High	20	40	40
Average	High	Low	Low	Low	25	35	40
Average	High	Low	Low	Medium	25	40	35
Average	High	Low	Low	High	30	40	30
Average	High	Low	Medium	Low	25	30	45
Average	High	Low	Medium	Medium	25	35	40
Average	High	Low	Medium	High	30	35	35
Average	High	Low	High	Low	20	30	50
Average	High	Low	High	Medium	20	35	45
Average	High	Low	High	High	25	35	40
Average	High	Average	Low	Low	20	30	50
Average	High	Average	Low	Medium	20	35	45
Average	High	Average	Low	High	25	35	40
Average	High	Average	Medium	Low	20	25	55
Average	High	Average	Medium	Medium	20	30	50
Average	High	Average	Medium	High	25	30	45

Inputs					First year survival		
Predators	Habitat quality	Prey availability	Water quality	Other mortality	Low	Average	High
Average	High	Average	High	Low	15	25	60
Average	High	Average	High	Medium	15	30	55
Average	High	Average	High	High	20	30	50
Average	High	High	Low	Low	15	25	60
Average	High	High	Low	Medium	15	30	55
Average	High	High	Low	High	20	30	50
Average	High	High	Medium	Low	15	20	65
Average	High	High	Medium	Medium	15	25	60
Average	High	High	Medium	High	20	25	55
Average	High	High	High	Low	10	20	70
Average	High	High	High	Medium	10	25	65
Average	High	High	High	High	15	25	60
High	Low	Low	Low	Low	80	20	0
High	Low	Low	Low	Medium	80	20	0
High	Low	Low	Low	High	85	15	0
High	Low	Low	Medium	Low	80	20	0
High	Low	Low	Medium	Medium	80	20	0
High	Low	Low	Medium	High	85	15	0
High	Low	Low	High	Low	75	25	0
High	Low	Low	High	Medium	75	25	0
High	Low	Low	High	High	80	20	0
High	Low	Average	Low	Low	75	25	0
High	Low	Average	Low	Medium	75	25	0
High	Low	Average	Low	High	80	20	0
High	Low	Average	Medium	Low	75	25	0
High	Low	Average	Medium	Medium	75	25	0
High	Low	Average	Medium	High	80	20	0
High	Low	Average	High	Low	70	30	0
High	Low	Average	High	Medium	70	30	0
High	Low	Average	High	High	75	25	0
High	Low	High	Low	Low	70	30	0
High	Low	High	Low	Medium	70	30	0
High	Low	High	Low	High	75	25	0
High	Low	High	Medium	Low	70	25	5
High	Low	High	Medium	Medium	70	30	0
High	Low	High	Medium	High	75	25	0
High	Low	High	High	Low	65	25	10
High	Low	High	High	Medium	65	30	5
High	Low	High	High	High	70	30	0

Inputs					First year survival		
Predators	Habitat quality	Prey availability	Water quality	Other mortality	Low	Average	High
High	Average	Low	Low	Low	60	40	0
High	Average	Low	Low	Medium	60	40	0
High	Average	Low	Low	High	65	35	0
High	Average	Low	Medium	Low	60	35	5
High	Average	Low	Medium	Medium	60	40	0
High	Average	Low	Medium	High	65	35	0
High	Average	Low	High	Low	55	35	10
High	Average	Low	High	Medium	55	40	5
High	Average	Low	High	High	60	40	0
High	Average	Average	Low	Low	55	35	10
High	Average	Average	Low	Medium	55	40	5
High	Average	Average	Low	High	60	40	0
High	Average	Average	Medium	Low	55	30	15
High	Average	Average	Medium	Medium	55	35	10
High	Average	Average	Medium	High	60	35	5
High	Average	Average	High	Low	50	30	20
High	Average	Average	High	Medium	50	35	15
High	Average	Average	High	High	55	35	10
High	Average	High	Low	Low	50	30	20
High	Average	High	Low	Medium	50	35	15
High	Average	High	Low	High	55	35	10
High	Average	High	Medium	Low	50	25	25
High	Average	High	Medium	Medium	50	30	20
High	Average	High	Medium	High	55	30	15
High	Average	High	High	Low	45	25	30
High	Average	High	High	Medium	45	30	25
High	Average	High	High	High	50	30	20
High	High	Low	Low	Low	55	25	20
High	High	Low	Low	Medium	55	30	15
High	High	Low	Low	High	60	30	10
High	High	Low	Medium	Low	55	20	25
High	High	Low	Medium	Medium	55	25	20
High	High	Low	Medium	High	60	25	15
High	High	Low	High	Low	50	20	30
High	High	Low	High	Medium	50	25	25
High	High	Low	High	High	55	25	20
High	High	Average	Low	Low	50	20	30
High	High	Average	Low	Medium	50	25	25
High	High	Average	Low	High	55	25	20

Inputs					First year survival		
Predators	Habitat quality	Prey availability	Water quality	Other mortality	Low	Average	High
High	High	Average	Medium	Low	50	15	35
High	High	Average	Medium	Medium	50	20	30
High	High	Average	Medium	High	55	20	25
High	High	Average	High	Low	45	15	40
High	High	Average	High	Medium	45	20	35
High	High	Average	High	High	50	20	30
High	High	High	Low	Low	45	15	40
High	High	High	Low	Medium	45	20	35
High	High	High	Low	High	50	20	30
High	High	High	Medium	Low	45	10	45
High	High	High	Medium	Medium	45	15	40
High	High	High	Medium	High	50	15	35
High	High	High	High	Low	40	10	50
High	High	High	High	Medium	40	15	45
High	High	High	High	High	45	15	40

Table B7. Conditional probability table (CPT) for the giant gartersnake (*Thamnophis gigas*) adult survival node.

[Numbers in the table represent probabilities as percentages (that is, 30=30% or 0.30) that the response node will take the value in the column (low, average, high), given the value of the parent nodes (predator, parasite, and pathogen effects; habitat quality; prey availability; water quality; and other sources of mortality)]

Inputs					Adult Survival		
Prey availability	Predator effects	Habitat quality	Water quality	Other mortality	Low	Average	High
Low	Low	Low	Low	Low	30	40	30
Low	Low	Low	Low	Medium	30	45	25
Low	Low	Low	Low	High	35	45	20
Low	Low	Low	Medium	Low	25	40	35
Low	Low	Low	Medium	Medium	25	45	30
Low	Low	Low	Medium	High	30	45	25
Low	Low	Low	High	Low	25	35	40
Low	Low	Low	High	Medium	25	40	35
Low	Low	Low	High	High	30	40	30
Low	Low	Average	Low	Low	15	35	50
Low	Low	Average	Low	Medium	15	40	45
Low	Low	Average	Low	High	20	40	40
Low	Low	Average	Medium	Low	10	35	55
Low	Low	Average	Medium	Medium	10	40	50
Low	Low	Average	Medium	High	15	40	45
Low	Low	Average	High	Low	10	30	60
Low	Low	Average	High	Medium	10	35	55
Low	Low	Average	High	High	15	35	50
Low	Low	High	Low	Low	10	20	70
Low	Low	High	Low	Medium	10	25	65
Low	Low	High	Low	High	15	25	60
Low	Low	High	Medium	Low	5	20	75
Low	Low	High	Medium	Medium	5	25	70
Low	Low	High	Medium	High	10	25	65
Low	Low	High	High	Low	5	15	80
Low	Low	High	High	Medium	5	20	75
Low	Low	High	High	High	10	20	70
Low	Average	Low	Low	Low	35	50	15
Low	Average	Low	Low	Medium	35	55	10
Low	Average	Low	Low	High	40	55	5
Low	Average	Low	Medium	Low	30	50	20
Low	Average	Low	Medium	Medium	30	55	15
Low	Average	Low	Medium	High	35	55	10
Low	Average	Low	High	Low	30	45	25

Inputs					Adult Survival		
Prey availability	Predator effects	Habitat quality	Water quality	Other mortality	Low	Average	High
Low	Average	Low	High	Medium	30	50	20
Low	Average	Low	High	High	35	50	15
Low	Average	Average	Low	Low	20	45	35
Low	Average	Average	Low	Medium	20	50	30
Low	Average	Average	Low	High	25	50	25
Low	Average	Average	Medium	Low	15	45	40
Low	Average	Average	Medium	Medium	15	50	35
Low	Average	Average	Medium	High	20	50	30
Low	Average	Average	High	Low	15	40	45
Low	Average	Average	High	Medium	15	45	40
Low	Average	Average	High	High	20	45	35
Low	Average	High	Low	Low	15	30	55
Low	Average	High	Low	Medium	15	35	50
Low	Average	High	Low	High	20	35	45
Low	Average	High	Medium	Low	10	30	60
Low	Average	High	Medium	Medium	10	35	55
Low	Average	High	Medium	High	15	35	50
Low	Average	High	High	Low	10	25	65
Low	Average	High	High	Medium	10	30	60
Low	Average	High	High	High	15	30	55
Low	High	Low	Low	Low	50	50	0
Low	High	Low	Low	Medium	45	55	0
Low	High	Low	Low	High	45	55	0
Low	High	Low	Medium	Low	45	50	5
Low	High	Low	Medium	Medium	45	55	0
Low	High	Low	Medium	High	45	55	0
Low	High	Low	High	Low	45	45	10
Low	High	Low	High	Medium	45	50	5
Low	High	Low	High	High	50	50	0
Low	High	Average	Low	Low	35	45	20
Low	High	Average	Low	Medium	35	50	15
Low	High	Average	Low	High	40	50	10
Low	High	Average	Medium	Low	30	45	25
Low	High	Average	Medium	Medium	30	50	20
Low	High	Average	Medium	High	35	50	15
Low	High	Average	High	Low	30	40	30
Low	High	Average	High	Medium	30	45	25
Low	High	Average	High	High	35	45	20
Low	High	High	Low	Low	30	30	40

Inputs					Adult Survival		
Prey availability	Predator effects	Habitat quality	Water quality	Other mortality	Low	Average	High
Low	High	High	Low	Medium	30	35	35
Low	High	High	Low	High	35	35	30
Low	High	High	Medium	Low	25	30	45
Low	High	High	Medium	Medium	25	35	40
Low	High	High	Medium	High	30	35	35
Low	High	High	High	Low	25	25	50
Low	High	High	High	Medium	25	30	45
Low	High	High	High	High	30	30	40
Average	Low	Low	Low	Low	30	35	35
Average	Low	Low	Low	Medium	30	40	30
Average	Low	Low	Low	High	35	40	25
Average	Low	Low	Medium	Low	25	35	40
Average	Low	Low	Medium	Medium	25	40	35
Average	Low	Low	Medium	High	30	40	30
Average	Low	Low	High	Low	25	30	45
Average	Low	Low	High	Medium	25	35	40
Average	Low	Low	High	High	30	35	35
Average	Low	Average	Low	Low	15	30	55
Average	Low	Average	Low	Medium	15	35	50
Average	Low	Average	Low	High	20	35	45
Average	Low	Average	Medium	Low	10	30	60
Average	Low	Average	Medium	Medium	10	35	55
Average	Low	Average	Medium	High	15	35	50
Average	Low	Average	High	Low	10	25	65
Average	Low	Average	High	Medium	10	30	60
Average	Low	Average	High	High	15	30	55
Average	Low	High	Low	Low	10	15	75
Average	Low	High	Low	Medium	10	20	70
Average	Low	High	Low	High	15	20	65
Average	Low	High	Medium	Low	5	15	80
Average	Low	High	Medium	Medium	5	20	75
Average	Low	High	Medium	High	10	20	70
Average	Low	High	High	Low	5	10	85
Average	Low	High	High	Medium	5	15	80
Average	Low	High	High	High	10	15	75
Average	Average	Low	Low	Low	35	45	20
Average	Average	Low	Low	Medium	35	50	15
Average	Average	Low	Low	High	40	50	10
Average	Average	Low	Medium	Low	30	45	25

Inputs					Adult Survival		
Prey availability	Predator effects	Habitat quality	Water quality	Other mortality	Low	Average	High
Average	Average	Low	Medium	Medium	30	50	20
Average	Average	Low	Medium	High	35	50	15
Average	Average	Low	High	Low	30	40	30
Average	Average	Low	High	Medium	30	45	25
Average	Average	Low	High	High	35	45	20
Average	Average	Average	Low	Low	20	40	40
Average	Average	Average	Low	Medium	20	45	35
Average	Average	Average	Low	High	25	45	30
Average	Average	Average	Medium	Low	15	40	45
Average	Average	Average	Medium	Medium	15	45	40
Average	Average	Average	Medium	High	20	45	35
Average	Average	Average	High	Low	15	35	50
Average	Average	Average	High	Medium	15	40	45
Average	Average	Average	High	High	20	40	40
Average	Average	High	Low	Low	15	25	60
Average	Average	High	Low	Medium	15	30	55
Average	Average	High	Low	High	20	30	50
Average	Average	High	Medium	Low	10	25	65
Average	Average	High	Medium	Medium	10	30	60
Average	Average	High	Medium	High	15	30	55
Average	Average	High	High	Low	10	20	70
Average	Average	High	High	Medium	10	25	65
Average	Average	High	High	High	15	25	60
Average	High	Low	Low	Low	50	45	5
Average	High	Low	Low	Medium	50	50	0
Average	High	Low	Low	High	50	50	0
Average	High	Low	Medium	Low	45	45	10
Average	High	Low	Medium	Medium	45	50	5
Average	High	Low	Medium	High	50	50	0
Average	High	Low	High	Low	45	40	15
Average	High	Low	High	Medium	45	45	10
Average	High	Low	High	High	50	45	5
Average	High	Average	Low	Low	35	40	25
Average	High	Average	Low	Medium	35	45	20
Average	High	Average	Low	High	40	45	15
Average	High	Average	Medium	Low	30	40	30
Average	High	Average	Medium	Medium	30	45	25
Average	High	Average	Medium	High	35	45	20
Average	High	Average	High	Low	30	35	35

Inputs					Adult Survival		
Prey availability	Predator effects	Habitat quality	Water quality	Other mortality	Low	Average	High
Average	High	Average	High	Medium	30	40	30
Average	High	Average	High	High	35	40	25
Average	High	High	Low	Low	30	25	45
Average	High	High	Low	Medium	30	30	40
Average	High	High	Low	High	35	30	35
Average	High	High	Medium	Low	25	25	50
Average	High	High	Medium	Medium	25	30	45
Average	High	High	Medium	High	30	30	40
Average	High	High	High	Low	25	20	55
Average	High	High	High	Medium	25	25	50
Average	High	High	High	High	30	25	45
High	Low	Low	Low	Low	25	35	40
High	Low	Low	Low	Medium	25	40	35
High	Low	Low	Low	High	30	40	30
High	Low	Low	Medium	Low	20	35	45
High	Low	Low	Medium	Medium	20	40	40
High	Low	Low	Medium	High	25	40	35
High	Low	Low	High	Low	20	30	50
High	Low	Low	High	Medium	20	35	45
High	Low	Low	High	High	25	35	40
High	Low	Average	Low	Low	10	30	60
High	Low	Average	Low	Medium	10	35	55
High	Low	Average	Low	High	15	35	50
High	Low	Average	Medium	Low	5	30	65
High	Low	Average	Medium	Medium	5	35	60
High	Low	Average	Medium	High	10	35	55
High	Low	Average	High	Low	5	25	70
High	Low	Average	High	Medium	5	30	65
High	Low	Average	High	High	10	30	60
High	Low	High	Low	Low	5	15	80
High	Low	High	Low	Medium	5	20	75
High	Low	High	Low	High	10	20	70
High	Low	High	Medium	Low	0	15	85
High	Low	High	Medium	Medium	0	20	80
High	Low	High	Medium	High	5	20	75
High	Low	High	High	Low	0	10	90
High	Low	High	High	Medium	0	15	85
High	Low	High	High	High	5	15	80
High	Average	Low	Low	Low	30	45	25

Inputs					Adult Survival		
Prey availability	Predator effects	Habitat quality	Water quality	Other mortality	Low	Average	High
High	Average	Low	Low	Medium	30	50	20
High	Average	Low	Low	High	35	50	15
High	Average	Low	Medium	Low	25	45	30
High	Average	Low	Medium	Medium	25	50	25
High	Average	Low	Medium	High	30	50	20
High	Average	Low	High	Low	25	40	35
High	Average	Low	High	Medium	25	45	30
High	Average	Low	High	High	30	45	25
High	Average	Average	Low	Low	15	40	45
High	Average	Average	Low	Medium	15	45	40
High	Average	Average	Low	High	20	45	35
High	Average	Average	Medium	Low	10	40	50
High	Average	Average	Medium	Medium	10	45	45
High	Average	Average	Medium	High	15	45	40
High	Average	Average	High	Low	10	35	55
High	Average	Average	High	Medium	10	40	50
High	Average	Average	High	High	15	40	45
High	Average	High	Low	Low	10	25	65
High	Average	High	Low	Medium	10	30	60
High	Average	High	Low	High	15	30	55
High	Average	High	Medium	Low	5	25	70
High	Average	High	Medium	Medium	5	30	65
High	Average	High	Medium	High	10	30	60
High	Average	High	High	Low	5	20	75
High	Average	High	High	Medium	5	25	70
High	Average	High	High	High	10	25	65
High	High	Low	Low	Low	45	45	10
High	High	Low	Low	Medium	45	50	5
High	High	Low	Low	High	50	50	0
High	High	Low	Medium	Low	40	45	15
High	High	Low	Medium	Medium	40	50	10
High	High	Low	Medium	High	45	50	5
High	High	Low	High	Low	40	40	20
High	High	Low	High	Medium	40	45	15
High	High	Low	High	High	45	45	10
High	High	Average	Low	Low	30	40	30
High	High	Average	Low	Medium	30	45	25
High	High	Average	Low	High	35	45	20
High	High	Average	Medium	Low	25	40	35

Inputs					Adult Survival		
Prey availability	Predator effects	Habitat quality	Water quality	Other mortality	Low	Average	High
High	High	Average	Medium	Medium	25	45	30
High	High	Average	Medium	High	30	45	25
High	High	Average	High	Low	25	35	40
High	High	Average	High	Medium	25	40	35
High	High	Average	High	High	30	40	30
High	High	High	Low	Low	25	25	50
High	High	High	Low	Medium	25	30	45
High	High	High	Low	High	30	30	40
High	High	High	Medium	Low	20	25	55
High	High	High	Medium	Medium	20	30	50
High	High	High	Medium	High	25	30	45
High	High	High	High	Low	20	20	60
High	High	High	High	Medium	20	25	55
High	High	High	High	High	25	25	50

Table B8. Conditional probability table (CPT) for the giant gartersnake (*Thamnophis gigas*) population growth node.

[Numbers in the table represent probabilities as percentages (that is, 45=45% or 0.45) that the response node will take the value in the column (none, few, average, many), given the value of the parent nodes (prey availability and water quality)]

Inputs			Population growth rate		
Adult survival	Juvenile survival	Fecundity	Decreasing	Stable	Increasing
Low	Low	None	100	0	0
Low	Low	Few	90	10	0
Low	Low	Average	80	20	0
Low	Low	Many	70	20	10
Low	Average	None	95	5	0
Low	Average	Few	85	15	0
Low	Average	Average	75	20	5
Low	Average	Many	60	25	15
Low	High	None	90	10	0
Low	High	Few	80	20	0
Low	High	Average	70	20	10
Low	High	Many	60	25	15
Medium	Low	None	80	20	0
Medium	Low	Few	70	30	0
Medium	Low	Average	30	50	20
Medium	Low	Many	25	50	25
Medium	Average	None	60	40	0
Medium	Average	Few	40	50	10
Medium	Average	Average	25	50	25
Medium	Average	Many	15	50	35
Medium	High	None	70	30	0
Medium	High	Few	50	40	10
Medium	High	Average	20	50	30
Medium	High	Many	0	60	40
High	Low	None	70	30	0
High	Low	Few	40	40	20
High	Low	Average	20	40	40
High	Low	Many	0	20	80
High	Average	None	70	30	0
High	Average	Few	20	40	40
High	Average	Average	10	20	70
High	Average	Many	0	10	90
High	High	None	60	40	0
High	High	Few	10	30	60
High	High	Average	0	20	80
High	High	Many	0	0	100

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