Figure 1: Shark Decision Pathway

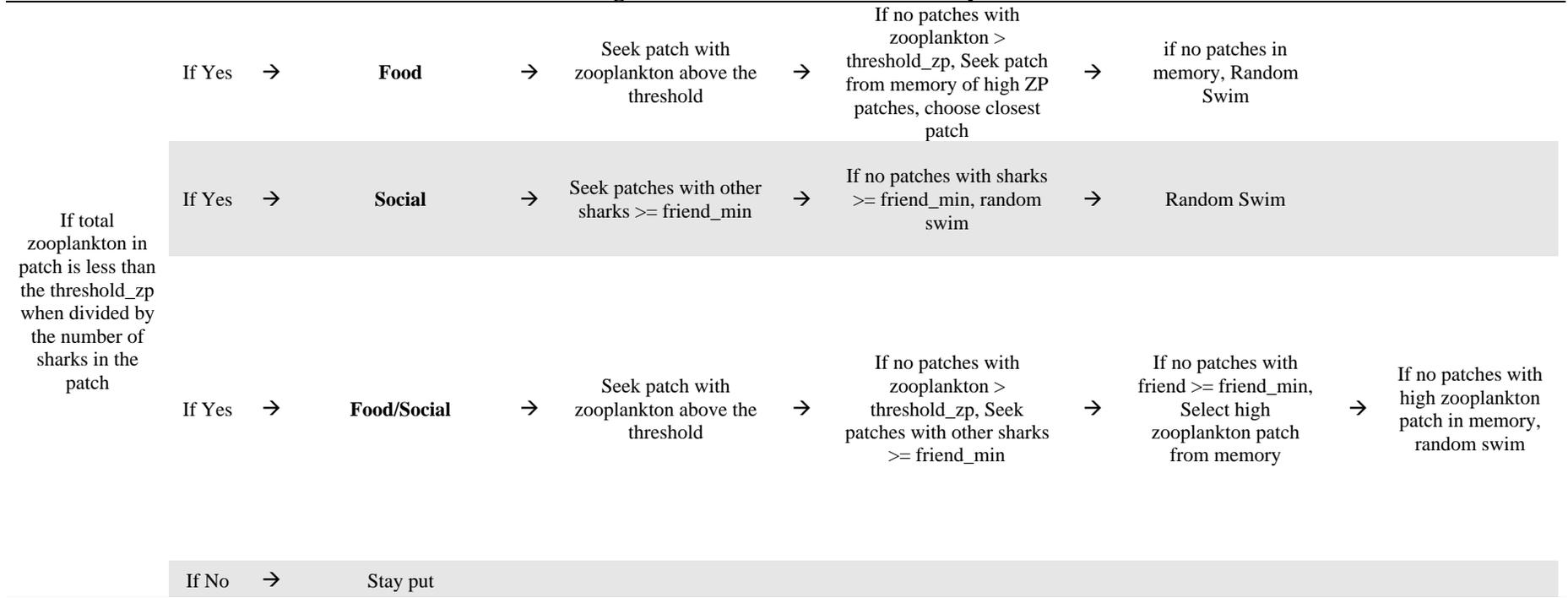|											
If total zooplankton in patch is less than the threshold_zp when divided by the number of sharks in the patch	If Yes	→	**Food**	→	Seek patch with zooplankton above the threshold	→	If no patches with zooplankton > threshold_zp, Seek patch from memory of high ZP patches, choose closest patch	→	if no patches in memory, Random Swim		
	If Yes	→	**Social**	→	Seek patches with other sharks >= friend_min	→	If no patches with sharks >= friend_min, random swim	→	Random Swim		
	If Yes	→	**Food/Social**	→	Seek patch with zooplankton above the threshold	→	If no patches with zooplankton > threshold_zp, Seek patches with other sharks >= friend_min	→	If no patches with friend >= friend_min, Select high zooplankton patch from memory	→	If no patches with high zooplankton patch in memory, random swim
	If No	→	Stay put								

Figure 1: Shark Decisions Pathway under different model versions. Each day, sharks complete this decision tree. Note that if a patch that meets the condition is identified, under all versions, sharks make the following action: If within swimming distance, move to it, if out of swimming distance, swim towards it. Random is not included in this table as sharks randomly select a patch to move to each day.

Table 1: User defined settings

Parameter	Explanation	Setting
threshold_zp	Minimum amount of zooplankton (cal and other_zp combined) required for a shark to feed for ~15 hours	0-1000000000000
No_eat_min	Number of days a shark must encounter a patch that is less than the threshold_zp before leaving the model	0-100
sense-distance	How "far" a shark can see (equivalent of ~5km)	0-100
Swim-Speed	The distance a shark can swim (in km)	0-100
return-season	How many days it will take a shark to return after they have left in response to reaching the no_eat_min	0-100
Cal_%	Percentage of patches with Calanus copepods	0-100
other_zp_%	Percentage of patches with other large zooplankton	0-100
friend_min	Number of other sharks a patch must have to attract a shark (only used in the "friends" version)	0-100

Table 1: User defined settings. Because of a lack of adequate data, experimentation is needed to determine the most realistic model settings. Tests have not been conducted yet to determine the impact of parameters on each other.