**Solution Description:**

I used a genetic algorithm to solve this problem, using the typical structure. Provided here is a description of the strategies I used as well as the parameters I have found that generally seem to work well.

- **Representation:** The population is full of Individual objects where each Individual contains a genotype and a fitness value. The genotype is a 2D integer array representing an arrangement of lizards and trees on the board (0 = blank space, 1 = lizard, and 2 = tree), and the fitness value is an integer.

- **Initialization:** Initialized with randomly generated Individuals. However, each individual's genotype contains the correct number of lizards and the correct predefined placement of trees.

- **Fitness Function:** Checks an Individual's genotype and finds the number of pairs of lizards that can eat each other (or are in the same row, column, or diagonal with no tree between them). Returns an integer value such that a lower value is better; 0 pairs of lizards being able to eat each other is a perfect solution.

- **Termination Condition:** Terminates when either all lizards survive (we find a perfect solution), or the defined maximum number of generations has occurred. By default, the maximum is set to 10000 generations.

- **Parent Selection:** Uses tournament selection with 10 Individuals to select a number of parents equal to the population size, which is set to 200 by default. This chooses 10 randomly selected individuals from the population at a time and takes the one that has the lowest/best fitness value.

- **Recombination:** For each set of parents chosen, the child starts off as a copy of one of the parents, which parent to copy is chosen randomly. Then for each row in the copied parent, check if the corresponding row in the other parent has the same number of lizards in it. If so, swap the position(s) of the lizard(s) in the child in that row with the positions of the lizards in the row of the other parent that they are not a copy of. If there is a tree in the way, the swap will not occur.

- **Mutation:** With a probability of 0.6, randomly select two values in the Individual's genotype to swap, while making sure not to move or replace a tree.

- **Survivor Selection:** Take the top 60% of children and fill the other 40% of the population with randomly generated Individuals.