SOLUTION

The key observation is that we can use a greedy algorithm to check if the towns can accomodate X tourists each. The algorithm considers towns from left to right. If a town has more than X units of food, it can send all of its excess food to the town directly to its right. If it has less than X units of food, it needs to receive food from the town to its right (note that, unless it is the leftmost town, it may have already implicitly received or sent out food to the cities to its left). If, after processing all towns, the rightmost town has enough food then X is a candidate solution.

Now note that if X is a candidate solution, X−1 is most certainly also a candidate solution. Similarly, if X is not a candidate solution, X+1 also cannot be a solution. With that in mind, we can use binary search to find the largest X that is a candidate solution. The time complexity of this algorithm is O(N log MAX), where MAX is any obvious upper bound on the solution.