



# Bugs in the System

**C**ooking with insects is a fun way to learn about the eating habits of different cultures and a good starting point for understanding the necessity for the sustainable use of resources in a world where the population is increasing at a rapid rate.

There are more insects than any other type of animal on earth. In fact, more than 75% of all named animal species are insects and there are millions yet to be discovered, named and classified.

Insects are used as food in many parts of the world. In Africa, mopane caterpillars are dried and later rehydrated for a tasty meal. Inhabitants of the jungle in New Guinea fell trees especially to attract beetles who lay their eggs in the dead wood, later the grubs are harvested. Termites are also sought out in many parts of the world as they have a wonderful nutty flavor. Some insects, such as the giant water bug from Thailand, are used as a spice. And, even here in the U.S., it is possible to buy canned silk moth larvae in some Chinese markets.

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**Objective:** learn how insects can be viewed as food

**Ages:** Primary, Intermediate and Advanced

**Materials:** See individual recipes for ingredients and utensils.

**Subjects:** Social Studies and Science

**Sources of Live Insects:**

Rainbow Mealworms  
P.O. Box 4907  
126 E. Spruce St.  
Compton, CA 90220  
(213) 635-1494

Bassetts Cricket Ranch  
535 North Lovers Lane  
Visalia, CA 93277  
(800) 332-2445

Most Americans would probably refuse to eat an insect. What they may not realize is that some of their favorite seafood is quite closely related to insects - lobsters, shrimp and crabs are all in the same phylum (Arthropoda) as insects. Tasty and nutritious, insects are a valuable source of protein. The methods we now use to produce protein are often very inefficient. For instance, 16 lbs. of grain and soybeans produces only 1 lb. of beef. Considering the rapid population growth in the world today (86 million more people every year!), it may eventually be necessary for people everywhere to use insects in their diets as a protein source.

## Insect Preparation

Plan enough time to prepare the insects for cooking, allowing extra time for the crickets. Crickets and mealworms are shipped live so prior to cleaning, freeze them in their shipping box for at least two hours or overnight.

**CRICKETS:** Working in small batches, pour frozen crickets into a colander and rinse with cool water. Remove blackened or shriveled ones and any debris. We suggest you place them in a bowl over ice as you work to clean them so they don't defrost. Remove their legs, wings, antennae and ovipositor (the long piece that extends beyond the abdomen in the rear of the females). Removal of the head is optional. Return cleaned batches to the freezer until ready to cook.

**MEALWORMS:** Pour frozen mealworms into a colander and remove any dead mealworms (these are usually the black ones). Remove all cast-off skins. Wash under cold water. Place the mealworms on paper towels and pat dry. They are now ready for cooking or packaging.

Selected Gourmet Recipes

Insect Preparation (Cont.)

**Basic Cooked Insects**

- 1 cup cleaned insects
- 2 cups water
- 1 teaspoon salt
- 1/2 tsp. sage
- 2 dashes pepper
- 1 Tbs. butter
- 2 Tbs. onion finely chopped

Place ingredients in a medium sized saucepan. Bring to a boil and allow to simmer for 30 minutes or until tender.

**Dry Roasted Insects**

Spread fresh frozen, and cleaned insects on paper towels on cookie sheets. Bake at 200 degrees for 1-2 hours or until desired state of dryness is reached.

**Garlic Butter Fried Insects**

- 1/4 cup butter
- 6 cloves garlic crushed
- 1 cup cleaned insects\*\*

Melt butter in fry pan. Reduce heat. Saute garlic in butter for 5 minutes. Add insects. Continue sauteing for 10-15 minutes, stirring occasionally.

\*\*Mealworms are especially delicious prepared in this manner.

**Insect Marinade**

- 1 cup soy sauce
- 1/4 cup sake
- 1 large clove garlic, crushed
- 1 dried red pepper
- 2 Tbs. fresh ginger root, grated

To marinate insects, place them in the sauce for several hours, or if in a hurry, simmer for 20 minutes and cool.

*Now you are ready to use the prepared insects in the following recipes, or try them in your own.*

**Jumping Jubilee**

Our six legged friends will become the life of the party

- 1 1/2 cups mayonnaise
- 1/3 cup lemon juice
- 1/4 cup sugar
- 1/2 sour cream
- 1 large red onion (thinly sliced)
- 2 Tbs. dill
- 1/4 tsp. salt
- 1 1/4 cup of **basic cooked crickets**

Mix ingredients except crickets. Then mix in the crickets. You can add canned shrimp also. Your guests will jump for joy.

**How Insects Fit In:**

- Kingdom: Animalia
- Phylum: Arthropoda
  - Class: Arachnidia (mites, spiders, ticks, scorpions)
  - Class: Crustacea (crabs, lobsters, shrimp, crayfish....)
  - Class: Diplopoda (millipedes)
  - Class: **Insecta** (insects including crickets and mealworms)
  - Class: Chilopoda (centipedes)
- Phylum: Chordata
  - Class: Mammalia (humans, cows....)

**Flying Frittata**

We think you will fly back for more!

- 2 Tbs. oil
- 5 eggs lightly beaten
- 10 mushrooms chopped
- 1/2 lb. broccoli chopped
- 5 scallions chopped
- 1 cup cheddar cheese shredded
- 3/4 cup **butter garlic fried mealworms**
- 1 Tbs. basil
- salt and pepper taste

Heat oil in a medium size omelet pan, add the mushrooms, broccoli, scallions and mealworms and cook

until perfect. Combine eggs, basil, salt and pepper. Pour egg mixture over mealworm mix and cook over medium heat until mixture almost sets. Add cheddar cheese and run under preheated broiler to brown lightly. Prepare for an entomological accolade.

**Chocolate Chip Chirpies**

- 2 1/4 cup all purpose flour
- 1 tsp. baking soda
- 1 tsp. salt
- 1 cup butter softened
- 3/4 cup sugar
- 1/2 cup **dry roasted mealworms**
- 3/4 cup firmly packed brown sugar
- 1 tsp. vanilla extract
- 2 eggs
- one 12 oz. pkg. chocolate chip morsels

Preheat oven to 375 degrees. In small bowl combine flour, baking soda, and salt; set aside. In large bowl, combine butter, sugar, brown sugar and vanilla extract; beat until creamy. Beat in eggs. Gradually add flour mixture; mix well. Stir in chocolate morsels and roasted mealworms. Drop by rounded measuring teaspoons onto ungreased cookie sheets. Bake at 375 degrees for 8-10 minutes.

**References:**

- Entertaining with Insects. Ronald L. Taylor & Barbara J. Carter, 1976. Out of Print.
- How to Make the World a Better Place - 116 Ways You Can Make a Difference. Jeffrey Holender with Linda Catling. W.W. Norton & Co., New York, NY. 1995.
- World Resources 1996-97. World Resources Institute. Oxford University Press, Oxford. 1996.