KHAPRA BEETLE

Countries of concern for Australia. Countries in RED are the countries most likely visited by U.S. Navy Vessels.

African Continent, excluding South Africa

Algeria
Angola
Benin
Botswana
Burkina
Burundi
Cameroon
Central African Republic
Chad
Comoros
Congo
Djibouti
Egypt
Equatorial Guinea
Eritrea
Ethiopia
Gabon
Gambia
Ghana
Guinea
Guinea Bissau, Rep
Ivory Coast
Kenya
Lesotho
Liberia
Libya
Madagascar
Malawi
Mali
Mauritania
Morocco
Mozambique
Namibia
Niger
Nigeria
Rwanda
Senegal
Sierra Leone

Biology

Trogoderma granarium, the Khapra beetle, is a small beetle 2-3 mm in size, oval in shape, brown to brownish-black in color with the body densely clothed in yellowish hairs.

The larvae are 5-6 mm in length and covered in spear-headed hairs. When larvae move from one stage to the next, they shed their skin (cuticle) and the old hairs stay on the old skin.

Khapra beetles probably originated in South Asia, are a severe pest of grains, and considered to be one of the top invasive, species in the world.. Trogoderma granarium is considered medically important and a quarantinable insect because the larval hairs can cause severe intestinal problems and diarrhea when consumed.

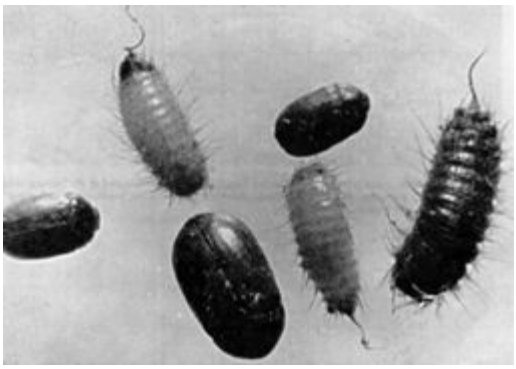
The genus is tropical or sub-tropical in origin, but T. granarium is nearly cosmopolitan. T. granarium takes approximately 7 weeks to develop from egg to adult under optimal temperatures. Large populations can build up in a short period of time and if conditions are not favorable, T. granarium can enter a diapause, or resting state, until conditions become favorable. Because of its small size, cryptic coloration, and ability to enter diapause, T. granarium can go unobserved in a ship's hold for years.

Trogoderma granarium prefers hot, dry conditions and will feed on beans, spices, noodles, rice, wheat, and other grains. If an infestation is present, cast skins and feces can also be seen.

Survey

Inspections must be made of all food products before they are brought aboard ship. If a Vertical Replenishment

Larvae and Adult T. granarium



(VERTREP) or Underway Replenishment (UNREP) is being conducted, inspections should occur before food is moved into storerooms. If an infestation of T. granarium is found, food should be destroyed.

MIL-STD 904B-outlines acceptable numbers of stored products pests in food. However, if **ONE** T. granarium is found, the foodstuff must be destroyed or not allowed onboard the ship, i.e. there is **ZERO** tolerance for any stage of any Trogoderma species.

Control

Sanitation

Storerooms must be kept clean. Spills of any food should be completely cleaned up immediately. Broken containers and torn sacks should be Removed, thoroughly sealed or placed under refrigeration.

Chemical Fumigation

Fumigation is possible onboard ship but only under extreme circumstances and only following the approval of a Navy Entomologist. Fumigation is an extremely complicated and potentially dangerous operation and should only be conducted if absolutely necessary and only then by qualified personnel.

Somali Republic
Sudan
Swaziland
Tanzania
Togo
Tunisia
Uganda
Zaire
Zambia
Zimbabwe
Middle East from Trukey to Afghanistan (excluding Commonwealth of Independent States)
Afghanistan
Bahrain
Cyprus
Iran
Iraq
Israel
Jordan
Kuwait
Lebanon
Oman
Qatar
Syria
Turkey
United Arab Emirates
Yemen
Pakistan to Bangladesh
Bangladesh
India
Pakistan
Sri Lanka
South America
Uruguay
Venezuela
South-east and East Asia
Cambodia (Kampuchea)
Indonesia
Korea, Rep of (South Korea)
Laos
Malaysia
Myanama (Burma)
Taiwan
Thaniland
Vietnam

KHAPRA BEETLE

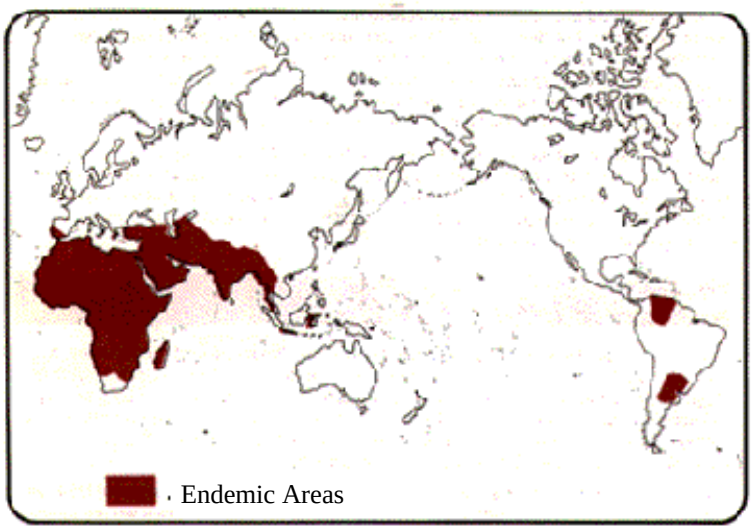
U.S. Navy guidance on the subject can be found in the following publications:

U.S. Navy Shipboard Pest Control Manual

"Fumigation aboard ship is conducted only under special circumstances and requires the approval of a Navy Medical Entomologist."

NAVMED P-5010

"Fumigation of surface vessels and contracts for pest control services from commercial firms are not recommended and shall be done only on approval by the area entomologist. OPNAVINST 6250.4 series provides that all locally procured pesticides and equipment must be technically reviewed and approved before procurement."



Consult an Entomologist at the Navy Entomology Center of Excellence or a Navy Environmental and Preventive Medicine Unit.

Residual / Crack and Crevice Treatments

Residual insecticides are applied per label directions. If a spot or area treatment is required, empty and clean the storeroom before application. Cover all items with plastic to prevent accidental pesticide contamination.

Australia Specific Information

If a ship is enroute to countrirs like Australia and an infestation of T. granarium is found, all T. granarium and infested stores must be destroyed or disposed of. A concentrated surveillance and control effort must be continued throughout the entire ship until no T. granarium are present upon entering Australian waters. If any further assistance is required, do not hesitate to contact a Navy Medical Entomologist at a Navy Environmental and Preventive Medicine Unit or the Navy Entomology Center of Excellence.

A list of specific countries of concern to Australia is provided on the left side of this fact sheet. The countries outlined in red are countries that are potentially visited by the U.S. Navy. Be very concerned about the presence of T. granarium in stores taken on from these countries. Food taken onboard from these countries may have to be destroyed before entering foreign ports. For further information contact NEPMU FIVE at Com: (619) 556-7070, DSN: 526-7070; Email-Vector Control Department: vector@med.navy.mil.