



Tarsus

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CIRCULAR OF THE ENTOMOLOGICAL SOCIETY OF NEW SOUTH WALES Inc

CHRISTMAS DINNER 2006

SATURDAY 9th DECEMBER 6.30 pm

BOATSHED CAFÉ

1609 ANZAC PARADE
LA PEROUSE

(see map)

TEL: 9661 9315

ENTRÉE: CAESAR CHICKEN SALAD

MAIN: GRILLED BARRAMUNDI

OR

FRIED WHITING FILLETS

OR

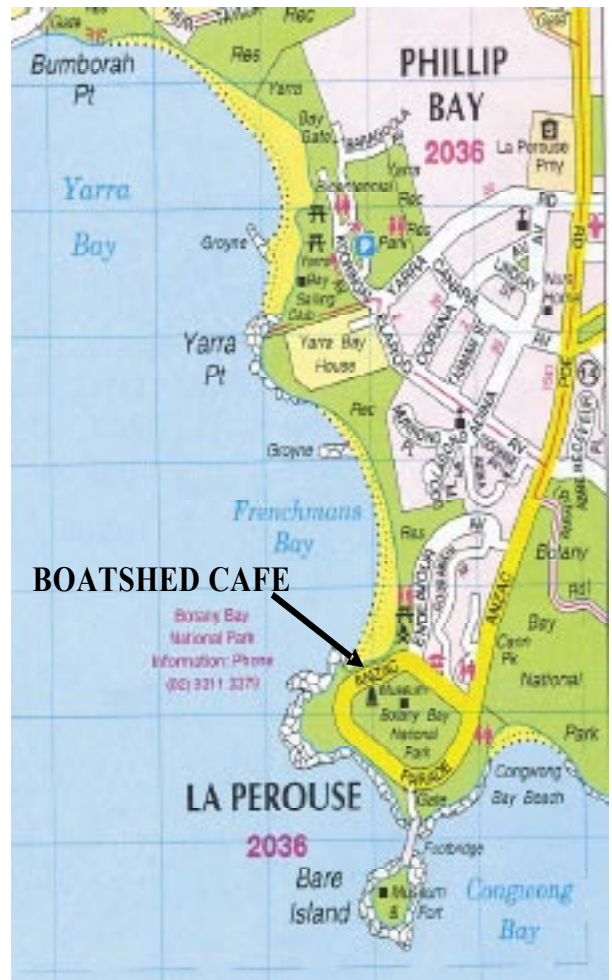
TASMANIAN SALMON WITH CAPERS AND
LEMON

Each served with Greek salad, fries and dinner rolls

DESSERT with tea or coffee

COST: \$38 per person

(+ buy your own drinks at the restaurant)



RSVP: Ted TAYLOR – 96613627 by 4th December

For an interactive map go to: www.eatability.com.au/au/sydney/boatshed_the/map.htm

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LAST MEETING

SUMMARY OF THE TALK GIVEN IN NOVEMBER 2006

CAN MODERN MOSQUITO TRAPS STOP THE SUMMER BITE?

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Nuisance biting mosquitoes can have a serious impact and may pose potential health risks. The number of human notifications of disease caused by arboviruses (e.g. Ross River virus and Barmah Forest virus) is increasing as urban areas expand and the development of residential and recreational areas close to productive mosquito habitats (e.g. coastal saltmarsh) brings people and mosquitoes closer together. In the absence of broadscale mosquito control programs, the impetus for disease minimization falls onto the individual through mosquito avoidance strategies that may include the use of repellents or avoiding outdoor activity during periods of peak mosquito activity.



For many individuals, the desire for a 'moszie free' backyard cannot be underestimated and the financial investment in a mosquito trap may be considered money well spent. Unfortunately, there is a wide range of devices that purport to trap and kill mosquitoes, and reduce the impacts of nuisance biting, but while the majority of these traps will catch mosquitoes, the quantity of mosquitoes (as well as non-mosquito insects) they collect varies greatly. Can the use of one of these traps actually reduce the nuisance biting of summer's mosquito populations?

To stop the summer bite, traps need to achieve two goals, firstly to collect a large proportion of pest mosquitoes and secondly, be more attractive to mosquitoes than the people in the backyard. While many traps will collect mosquitoes, there is no quantitative evidence that they will significantly reduce nuisance biting impacts or public health risks in areas close to productive mosquito habitats. There are many different types of ‘moszkie trap’ available and some can be relatively expensive to purchase and operate. The attractant, its delivery system and the mosquito collection (or killing) method can vary greatly between trap type and model, with varying degrees of effectiveness.



Photo: http://ruina.tam.cornell.edu/Personal%20photos/KonMin_A2_MacroSamples/originals/mosquito.JPG

While the ‘non-target’ impacts of mosquito control programs are often a concern for the community, many of these mosquito traps collect substantially greater numbers of insects other than mosquitoes including moths, bees and non-biting flies. When combined with the use of residual insecticides around the home, the pursuit of a ‘moszkie free’ backyard can have a more substantial effect on beneficial insect populations than a well planned and targeted larviciding program by local authorities.

Carbon dioxide (CO₂) has been considered the most important mosquito attractant since the 1920s and is a common component in commercial mosquito traps. The gas attracts female mosquitoes in search of a bloodmeal that respond to the carbon dioxide as if it is produced from a warm blooded animal such as a human, cow or kangaroo. The release rate of the gas can be important, with relatively high release rates generally resulting in greater mosquito collections although very high concentrations can be counterproductive).

The mode of gas generation can vary, from dry ice (an expensive option usually reserved for traps used in scientific studies), gas cylinder, combustion of propane and other novel sources (e.g. fermentation of yeast). A release rate of approximately 300-500 ml/minute is often considered ideal and while some alternatives to dry-ice or cylinders may be appealing, such release rates can often be very low or difficult to maintain for long periods without a considerable increase in running costs. Units that rely on the combustion of propane can produce appropriate release rates, and are popular due to the availability and familiarity of propane usually used to power the family BBQ.



Light is often used in combination with CO₂ in mosquito traps but it does not significantly increase collections. Commercial units that use light often collect large numbers of insects other than mosquitoes, including some which closely resemble mosquitoes, and, to the untrained eye, may appear to be effective when they are not. Units that use light alone to attract mosquitoes (e.g. blue light electrocutors) have been shown to have little impact on nuisance biting rates and often kill many more harmless, and environmentally beneficial, insects than mosquitoes.

Photo: http://img.alibaba.com/photo/11279008/Master_Mosquito_Trap.jpg

Laboratory studies have identified over 300 chemical compounds exuded by human skin that may play a role in attracting mosquitoes. Determining the specific compounds that are most attractive to mosquitoes is a complex puzzle to unravel and develop an effective mosquito lure or alternative attractant. While these chemical lures may play a synergistic role in attracting mosquitoes when used in combination with CO₂, their use alone is generally not an alternately effective method of mosquito collection. The scenario becomes even more complex when you consider that, in Australia alone, we have over 300 species of mosquito, each with their own specific biological and ecological requirements and no doubt individual triggers and trackers for finding hosts.

The relationship between sound and host seeking mosquito behaviour has been investigated extensively, mostly in an attempt to develop repellent devices. Sonic buzzers (and mobile phone ringtones) have not been shown to be effective at repelling host seeking mosquitoes.

Heat has been identified as one of the stimuli for host seeking by mosquitoes, particularly with regard to blood feeding on humans. The incorporation of heat into traps has not been extensively studied but, while heat alone is unlikely to collect substantial numbers of mosquitoes, when used in combination with CO₂ and other attractants there may be an increase in trap collections.

The response of mosquitoes to colour has been investigated and, although darker colours are generally considered more attractive to many mosquitoes, there is little scientific evidence available that indicates the significance of trap colour in the effective collection of most mosquitoes.

Once the traps have attracted mosquitoes, they need to collect or kill them in some way, and this is usually achieved through a fan operated suction device (with mosquitoes collected into a net or other container), onto an adhesive surface (e.g. sticky paper), or into a liquid with detergent added to reduce surface tension. A mosquito collected into liquid is usually not suitable for scientific studies as identification is made difficult (apart from being a little messy). Generally, the most effective collection method is via an updraft, fan operated suction device that delivers mosquitoes into a catch bag or container where they die due to dehydration.



Photo: <http://www.mosquitocontrol.com.au/images/newflow.gif>



Photo: <http://www.bantix.com.au/images/singlenightcatch.jpg>

Electrocuting devices (i.e. bug zappers) have been shown to be relatively ineffective at killing mosquitoes. Studies have shown that mosquitoes and other biting flies represent a very small proportion (often less than 10%) of total insects killed.

There is no doubt that commercial traps will collect mosquitoes. However, the quantity of mosquitoes (and non-target insects) collected in the trap will vary greatly depending on the design features and attractant used. Traps that use CO₂ with a relatively large release rate, have a chemical lure such as octenol, and collect mosquitoes with an updraft suction device will typically collect more mosquitoes.

Traps that have bright lights, especially in the absence of CO₂ will generally collect smaller numbers of mosquitoes and a relatively large proportion of the catch will be non-biting insects. Many of these non-target insects are beneficial to the environment and a reduction in their populations may be counterproductive to the homeowner.



Unfortunately, when it comes to stopping the backyard bite, no matter the attractants used, a human is always likely to be a more attractive target for many pest mosquitoes. Regardless of the type or number of traps used, it may not be possible to completely eliminate biting mosquitoes from your backyard.

The greatest potential for the traps will be in urban or semi-rural locations where the most common biting mosquitoes are present only in low numbers. The reduction in nuisance biting problems can be further improved if strategies are undertaken to reduce the availability of potential mosquito breeding sites around the property (e.g. removing water holding containers, placing mesh on water tanks, placing native fish in ornamental ponds, and maintaining local drainage systems).

In residential areas located close to wetlands, it should be expected that some mosquitoes will be active during the summer months and personal protection measures, in combination with the use of commercial mosquito traps, should be employed to minimise exposure to mosquitoes.



Photo: http://static.flickr.com/6/7232391_67e42e8a95_m.jpg

INSECT OF THE MONTH

Christmas Beetles - Garry Levot

Christmas is coming so it is timely to have a look at Christmas beetles – so called because the adults beetles are active during the warm months. Christmas beetles belong to the family Scarabaeidae ('scarabs'), subfamily Rutelinae and particularly to the genus *Anoplognathus*. There are several species (see photographs below). As adult beetles most feed on *Eucalyptus* leaves and damage can be severe. Some species are particularly attractive with iridescent metallic like colours that vary with the angle from which the specimen is viewed. The tarsal claws of the Rutelinae are large and movable and characteristically uneven with one claw either toothed or slender, and the other simple. Larvae are typical 'curl grubs' that feed on the roots of grasses, decaying wood etc. There seems to have been a reduction in the number of the really attractive species, at least around where I grew up (around Como on the Georges River) and certainly the brilliant metallic species don't fly to lights around my current home in Toongabbie. It has been suggested that more common insecticide treatment of lawns may be responsible but other species that should also been affected by such practices remain plentiful. If you have any answers to this dilemma please share them with other members.

The photographs were taken from books written or co-written by Society member. Both are worth having a look. They are:

Insects of Australia. Nature Guide. by George Hangay and Pavel German

What Garden Pest or Disease is That? by Judy McMaugh

Christmas Beetles on
Eucalyptus leaves



Typical scarab 'curl grub' larva →



HAVE A SAFE AND HAPPY CHRISTMAS AND NEW YEAR!

From the Circular Editor

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