

INVERTEBRATE GROUP

This subgroup started two years ago with huge goals and high expectations that simply could not be met with the limited human resources. Starting afresh with a new intake of volunteers in July 1998, the subgroup members decided to undertake just a few modest and straightforward projects.

Currently, the Invertebrate Group is running 2 projects:

Macro-GastroDod Reference Collection

The aim of this project is to produce a field guide to the commonly encountered Mud-whelks of the Townsville/Thuringowa Coastal Plains. A wet-preserved reference collection is completed for the estuarine macro-gastropod species and stored at the Museum for Tropical Queensland - rare occurrences are still added.

The "Notes on the Most Common Macro-Gastropods in the Ross River Estuary" present a pre-view of the group's acquired knowledge of the local mudwhelks and estuarine molluscs.

The Invertebrate Group receives generous assistance from the Museum as well as from the Department of Zoology, James Cook University.

Macro-GastroDod Survey of the Ross River Estuary

On a fortnightly basis, volunteers search sections of the Ross River Estuary at low tide for macro-gastropods. Surveys are conducted in series of 20 minute periods, so species densities can be described as 'catch-per-unit efforts'. Notes are made about weather conditions, build-up of canopy and understorey, soil moisture, substrate, height off the ground and local abundance. Data are stored in a relational database to be analysed for habitat preferences and species distribution patterns.

Fig IG-01 presents a map with the sections marked and numbered where the Invertebrate Group conducted its surveys. Table IG-02 shows the distribution of the eight most common species over the sites, and Table IG-03 highlights that some mudwhelk species, instead of crawling around in the mud; seek higher ground (now and again).

The Group still needs more data to discover statistical trends in local abundance of species (patchiness) in relation to habitat, humidity and weather patterns.

Short Field Studies

The Invertebrate Group has undertaken a few short field studies to get an idea of movement patterns of some of the mudwhelks:

1) The height of *Cedthidea anticipata* has been measured in a *Cedops australis* patch at Three Mile Creek (circa 200 m from the bridge) and after discovering that far majority of the marked individuals in trees did not move for 72 hours, twelve individuals were taken from their spot and put on the ground between the roots of the tree and twelve were moved up to the next fork in the tree. The results of these experiments - depicted in Figure IG-04 to IG-06 - indicate that

a) the average height of *C. anticipata* in trees is slightly increasing with the distance from the creek edge

- b) *C: anticipata* individuals who are put on the floor, are climbing up within 24 hours to almost the same height as the original location (horizontal movement means in a neighbouring tree)
- c) *C: antic,pata* individuals who are moved upwards, do relocate themselves but only move definitely downwards when raised more than 60 cm from the original position.

2) In a shady area at Three Mile Creek, that will only be inundated at spring tides, a simple line transect was set-up covering a group of 17 *Telescopium telescopium* individuals. The animals were marked and numbered and their coordinates in the grid recorded. The transect was visited every 24 hours for four days and the coordinates of the 17 *Telescopium*s measured. Figure IG-07 shows the movement patterns of the mudwhelks. The distance moved increased slightly by the day, but was an average circa 1 m. Tracks of the mudwhelks revealed however that the animals didn't crawl in straight lines but in curvy search/feeding patterns. The Invertebrate Group wants to repeat this experiment over a full day with hourly measurements, including more species.

Invert Group Members

Graeme Buckley
 Mike Fulloon
 Bonita Pilling
 Floris van der Leest

Past Members

Veronica Farina
 Ben Johnston
 Tanya Korn
 Brenda McDonald

Fleur O' Neill

Jane Orr
 JoAnn Resing
 Rebecca Ross
 Denise Seabright

Experts called upon:

Dr Peter Arnold, Curator, Museum for Tropical Queensland, Townsville

Dr John D Collins, Lecturer, Marine Biology, James Cook University, Townsville

Dr Marcus] Sheaves, Associate Lecturer, Marine Biology, James Cook University, Townsvi lie

Pr6f JC. Placiat, Lab Hydrologie et Geochemie Isotopique, Universite Paris Sud - France

Most Significant Achievement

- That the distribution mapping continued even though the number of volunteers at the site could sway from 7 on one Sunday to 2 the next fortnight.
- Learning on the way, from experts and from each other, about species identification and observation methods.
- Gathering data about the distribution of gastropods in the mangrove communities in the Ross River estuary that will enable us to make a field guide and educational displays featuring local mudwhelk shells, photos, drawings and a habitat description.

Highest Personal Achievement

- Implementation of a phased approach to the highly diverse group of invertebrates that inhabit the mangroves.
- Greatly improving our ability to identify mudwhelks and other gastrQpods of the Ross River mangroves.
- Greatly improving our ability to withstand attacks by members of another major invertebrate phylum, the Arthropods: spiders, ants, mosquitoes and the occasional paper wasps.
- Meeting and working with a colourful handful of stimulating fanatics.
- Raising the esteem for muddy grey snails and even elevate their cuteness factor a little with increasing numbers of local people.

Figure IG-04: **The average Height of *Cerithidea anticipata* in trees is slightly increasing with the distance from the creek edge**

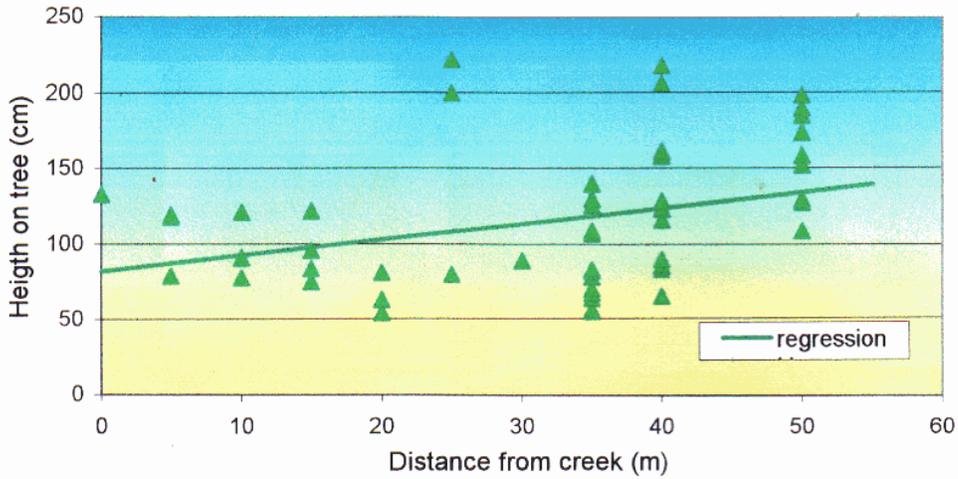


Figure IG-05: **Movement of *C. anticipata* over 24 hrs after being put at the bottom of the tree**

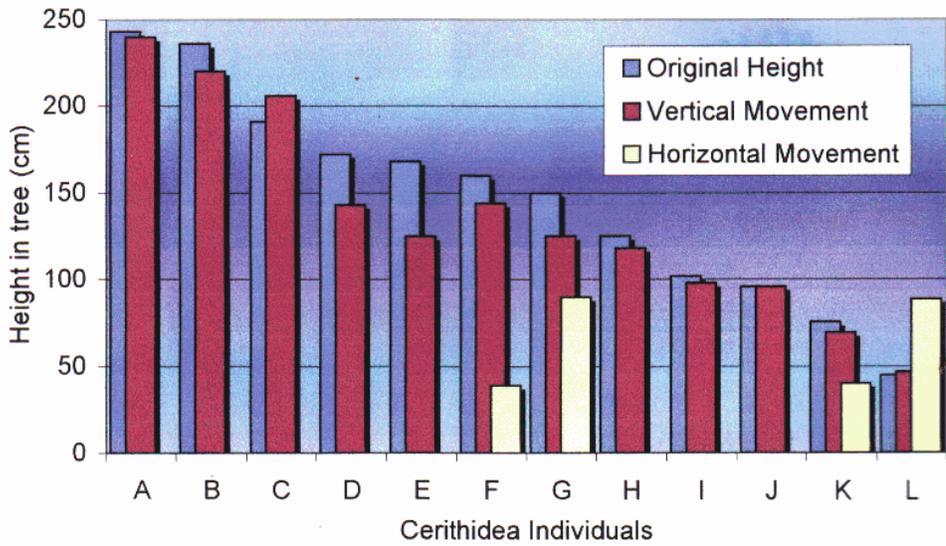


Figure IG-06: **Movement of *C. anticipata* after being put up to the next fork in the tree**

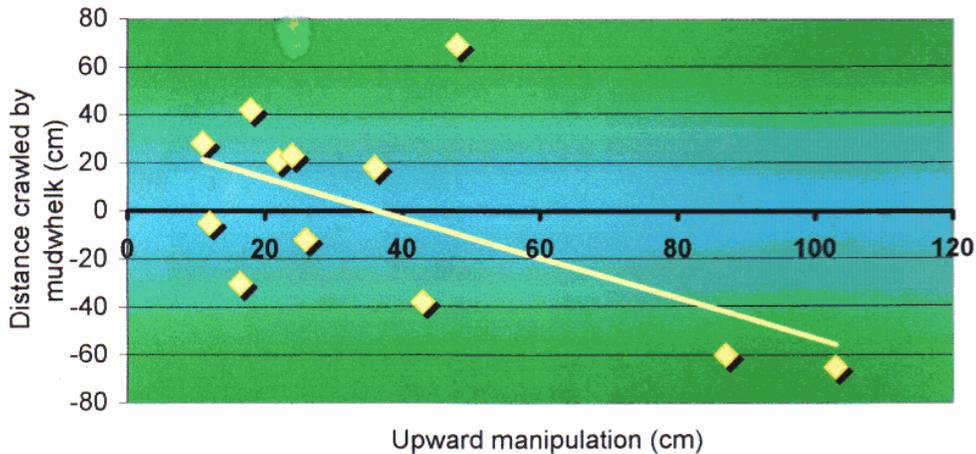


Figure IG-07: Daily Movement of *Telescopium telescopium* (n=17) over four days (in 24h intervals) in an area shaded by trees at Three Mile Creek

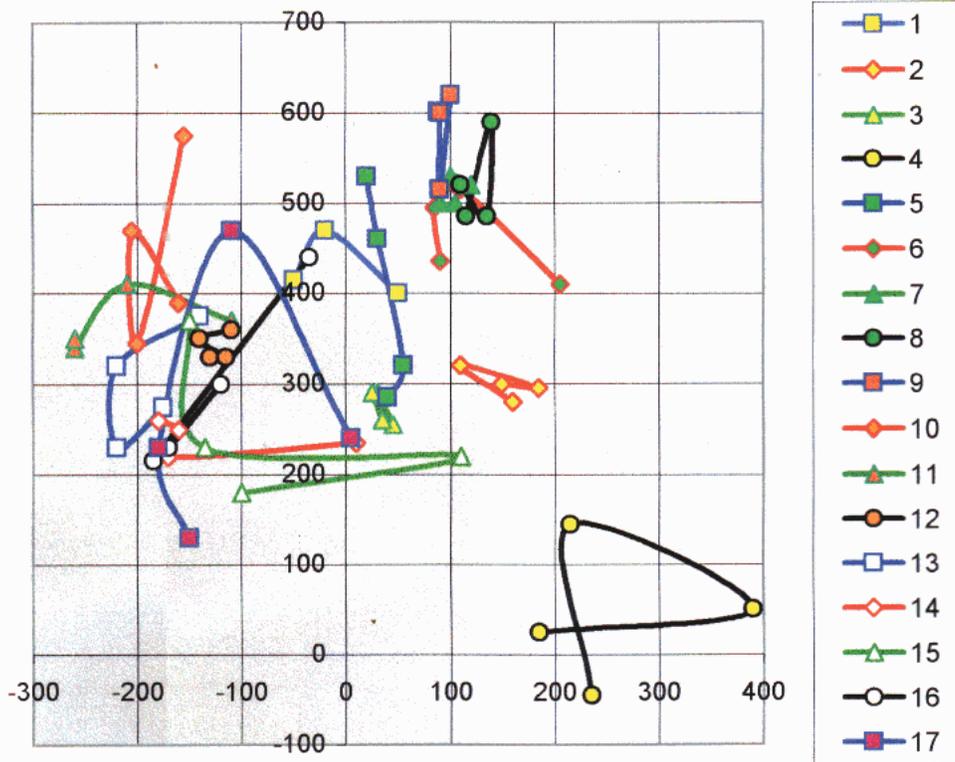
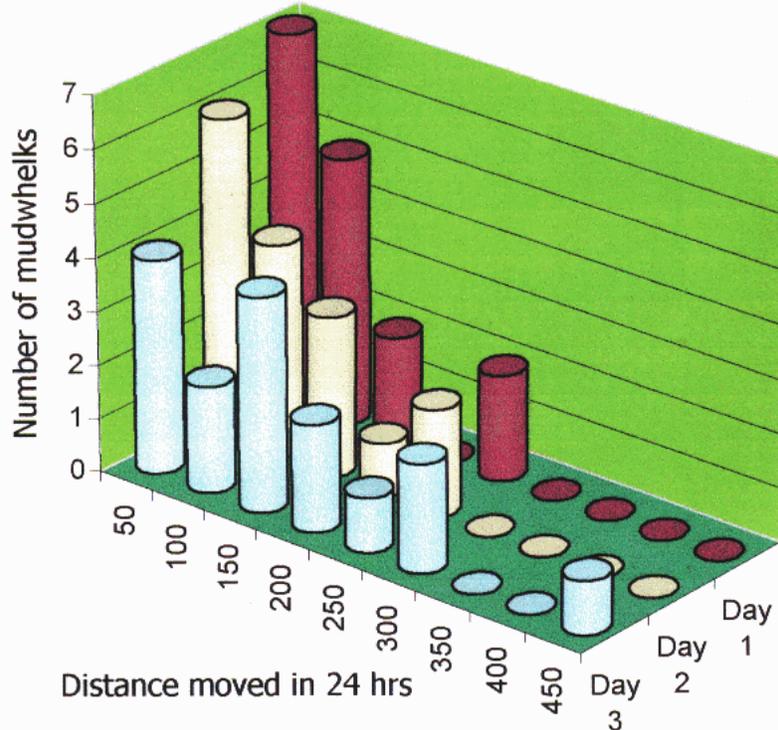
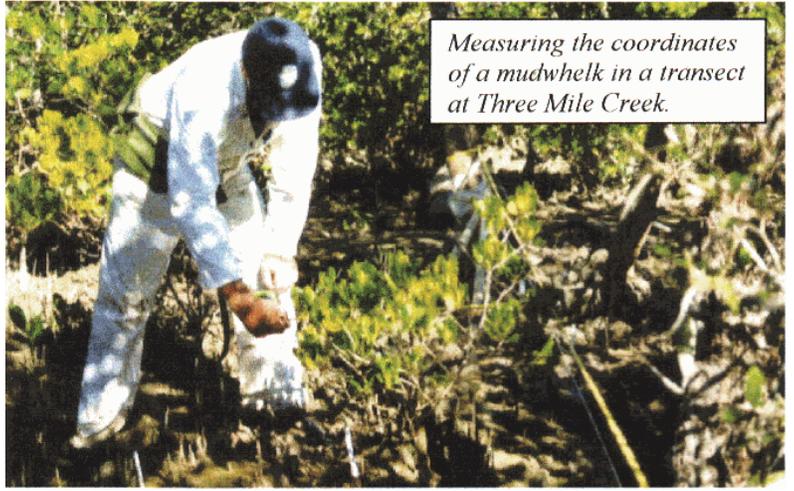


Figure IG-08: Daily Effective Distance of *T. telescopium* plotted in 50 cm intervals (n=17)



Creepy-crawly stuff

- © Wading knee-deep in tidal drains close to the river on the South Bank, as local guides for a typical French professor, hunting down new species he could catch with his camera - a long distance friendship remains.
- © And this is only funny afterwards: a cry and a curse from a far, and on the question "Mike, what is wrong?" the answer:
"A bloody wasps' nest, don' t come near."
- © Finding the highest diversity at Three Mile Creek, just outside our target area.
- © Thinking through a follow-up field experiment, in the field, but forgetting the possibility that mudwhelks could, instead of homing in on their target, just as well be searching in circles.



Measuring the coordinates of a mudwhelk in a transect at Three Mile Creek.

Future directions

The Invertebrate Group wants to learn more about the movement of the most common mudwhelks. In the near future, the Group will set up a set of experiments to:

- a) trace the hourly and daily movements of *Telescopium telescopium*, *Terebralla* sp., *Cassidula anguilfera* and *Cedthidea anticipata*, in a drawn-out grid at Three Mile Creek.
- b) monitor the distribution of *C. anguilfera* on a weekly basis in a permanent grid at the Ross Island Barracks; this most common gastropod is generally found on firm mud but now and again in huge numbers on the trunks and aerial roots of mangrove trees. We hope to find a pattern in this peculiar behaviour.
- c) study the *Littonna scabra* species complex; recent literature has stated that the species known as *L. s~b~* is in fact a complex of at least 12 distinct species. The group will try to establish how many of these newly defined species occur in the Ross River estuaries.

Furthermore, the Invertebrate Group wishes to make a start with a Fiddler Crab Survey of the Ross River Estuary. The group will develop a survey method (run by volunteers) for crustaceans, especially fiddler crabs, and will be testing and trying video monitoring.