MINUTES OF THE 902nd MEETING OF THE BRODIE CLUB

March 21, 1995

The meeting was held in the Faunal Lab of the South Borden Building, U.of T.

CHAIR: Norma Martin

SECRETARY: Bill Carrick

MEMBERS PRESENT: 17

GUESTS: Maudie Reynolds - guest of Keith Reynolds
John Kreiger - guest of Frank DeMatteis
Hugh Currie, George Bryant, Sidney Daniels - guests of B. Falls

APPROVAL OF MINUTES:

Reynolds noted, the minutes of the 900th meeting did not include the name of the secretary - Ann Falls.
Also include an addition to the 901st minutes, complimenting Ann for the excellent 900th meeting minutes.
Correction from 'Minutes Approved' to 'Motion to Approve' made by Carrick.

Under Club Business, Lumsden reported attending a Federation of Ontario Naturalists Council meeting in Orillia on March 5 - nineteen delegates from affiliated clubs were present. Restructuring and rebuilding the Federation was discussed with a number of proposals being submitted, including regional divisions, a procedural manual for clubs and publication of a speaker's roster.

A further proposal included the hiring of a part-time worker to improve services to individual clubs and finance this service with an increased annual assessment to clubs for two years. Brodie members discussed this and other proposals and agreed to further discussions at the next meeting.

For our records, Lumsden provided his notes and copies of the F.O.N. leaflets and proposals regarding Rebuilding the Federation.

ANNOUNCEMENTS

Martin drew attention to the recent copy of Bird Trends - a Birds to Butterflies brochure - and a petition to stop the Spring Bear Hunt.

SPEAKER & TOPIC

Aird introduced the speaker Dr. Tim Myles - Faculty of Forestry, U.of T. Myles concise outline of his talk 'Journey to the Termite' is included as part of the minutes.

Bendell expressed thanks on behalf of the club.

OBSERVATIONS

LUMSDEN - Commented on the remarkably early spring break-up.

BERTIN -Added similar break-up at Thunder Bay and a record opening date for the Seaway.

AIRD - has written a series of animal fables and presented members with copies of the Saw-Whet Owl Song.

SPEAKMAN - reported weather has produced an excellent Maple sap flow.

BENDELL - observed bullfrog emerging onto ice from pond where it became instantly immobilized.

AIRD - reported treasurer cleared $5.00 on Banquet expenses and receipts.

- MEETING ADJOURNED AT 10:20 PM -

Journey To the Termite
by Tim Myles
Brody Club -- March 21, 1995

I. Termites in the City, termites as pests, applied entomology, protection of "wood in service"

1. Non-Chemical Physical Barrier, "Termite Sand"
   -eastern subterranean termite *Reticulitermes flavipes* intro. to Toronto 1938
   -colonies mainly spread by budding and nymphoid reproductives
   -do not fly or crawl into houses
   -enter through subterranean tunnels, entry points
   -studies on effective particle sizes: 1.4 to 2.8 mm
   -allowable percentage of particles outside effective size range
   50% above or 25% below
2. Trap-Treat-Release with Groomable Coatings
   -advantages of groomable coatings over baits
      -cuticle application = insertion into sociospace (grooming)
      -termites used as delivery system
      -loading is nonvoluntary and much greater than bait ingestion
   -sulfluramid: a waxy, epicuticle-compatible, slow-acting toxicant
   -arithmatic of control, termites do nano-dosing, miracle kill ratios
   -how traps are made and installed
   -how termites are extracted, treated, and released
   -5,000 fold reduction in pesticide useage compared to chemical barriers
   -colony level control achieved
   -field results 1993 and 1994
   -block trials planned for 1995 througout Metro; Winnipeg(?), B.C. US, Austral.
3. Biocontrol
   -*Metarhizium anisopliae*, entomogenous fungus = green muscardine disease
   -a locally-occuring, natural control mechanism, perhaps most potent
   -also introduced to colony by Trap-Treat-Release
   -currently working scaling up conidia production and lab transmission tests
   -major obstacle is alarm and defense responses of termites
   -need to apply below alarm threshold or mask

II. Termites in Nature, uniquely important detritivores, production ecology, "termiticulture"

1. Ecological Functions
   -less than 10% of termite species are structural or agricultural pests
   -termites are the *principal animal consumers of lignocellulosic matter,* sound wood, rotten wood, dry plant litter, humus, and dung
   -analogous to leguminous plants with gut symbionts that fix nitrogen
   - major conduit for bioconversion of plant cell walls to animal protein
   - keystone role in tropical and subtropical carbon (& nitrogen?) cycles
   - termites are extremely abundant, estimates often = ungulate biomass
   - termites divert plant biomass from bacterial and fungal decomposition into vertebrate food chains

- many (probably most) terrestrial vertebrates are actually part of the detritus food chain rather than the herbivore-carnivore food chain, anurans (frogs & toads), squamata (lizards), many birds, monotremes (echidnas), marsupials (armadillos), edentates (anteaters, pangolins), aardvark, insectivora (shrews & moles), chiroptera (bats), prosimians (bush babies) and predators and necrovores of these (snakes, owls, mustellids)

2. Potential for Benefical Human Use

-major macroevolutionary steps often involve symbiosis

-human symbiose by learning how to culture other organisms

-always extract from nature then learn how to cultivate

-agriculture, animal husbandry, forestry, aquaculture, decompiculture

-decompiculture

-vermiculture

-termiticulture

-mycoculture

-mollusciculture

-Benefits of termticulture

-municipal and agricultural waste mass reduction

-save land fill space

-nitrogen enriched termiti-composte

-upgrade low quality organic wastes to poultry or fish feed

-methane capture

-bioaccumulation/detoxification (?)

-novel biochemical extracts (e.g. soldier defensive secretions)

III. Termites in the Cosmos, A Pinnacle of Social Complexity, Objects of Contemplation

1. Natural Entities

Biodiversity is a part of the Diversity of Natural Entities

Termites are an entire insect order, at least 2,500 described species.

Termites are of special interest because of their ancient and advanced sociality

- importance of kinship, subsocial route, colonies really big families

-interests of the individual versus the society

-intergroup conflict, soldier caste, orginal standing defense force

-intragroup conflict. siblicidal replacement battles

-altruism, self sacrifice and cooperation for a higher group purpose

-longevity, hyper-reproductive castes longest lived insects