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## NEWS OF THE ASSOCIATION

### THE BOARD OF TRUSTEES

The Board of Trustees met on Thursday 30<sup>th</sup> October 2003. One item on the agenda was of utmost importance as it concerned a proposal to keep on the activities of the President of the association Jacques Hardouin, who has decided to resign in September 2004 as announced in the previous Bulletin editorial.

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### BOOK PUBLISHED BY BEDIM

Next to the video-cassette "Minilivestock in the Tropical Forest Habitat" and the several "Technical Guides for Breeding" (only in French), BEDIM decided to publish its first book. It comes out as a Special Issue of the Semestrial Bulletin, and has to be considered as an evidence (with some regretted delay) of the tenth anniversary of the Bulletin's first issue. More details are provided further and in the Survey of Literature.

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### BEDIM DATA BASE : BDB

The BEDIM data base (BDB) can be reached through the BEDIM web site <http://www.bib.fsaqx.ac.be/bedim/> Our BDB is growing, as expected. You can see indeed that most of the documents mentioned in the Survey of Literature part of the Bulletins are now specially identified as "BEDIM + 3 ciphers" for easier access to the Data Base. At mid October 2003, a total of +/- 220 documents were entered in the BDB.

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### MEMBERSHIPS

It is time drawing your attention to the need for the members to be in order with membership. Payment is required indeed to vote at the General Assembly, which will occur in the first semester of 2004 (one every second year). The amounts due per annum are :

- Effective members : € 15,00 (right to vote)
- Adherents members : € 3,00 (no right to vote)
- Members from developing countries : € 2,00 (no right to vote)

Payments to be made at the name of BEDIM Association Internationale as follows :

- a) For the holders of a bank account in Belgium : on the account  
n° : 000-0574065-19 at "Banque de la Poste"
- b) For the holders of a bank account in the rest of the Euroland : on the  
account n° 001-2949595-95 at Fortis Bank;  
IBAN CODE : BE76 0012 9495 9595; BIC/SWIFT CODE : GE BA BE BB.

Payments can be made for more than one year indeed.

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## NEWS UPDATE

### CORRIGENDUM

Two typing mistakes were not discovered by the control of the draft in the Note by T. Munyuli Bin Mushambanyi “Vers de compost”, issued in the Bulletin 2003, 12, 1, page 11.

In the 3<sup>rd</sup> line (Extrait de ...), the name “Kivu” should take the place of “Kine”. In the penultimate line, “Excerpt” should replace “Except” indeed.

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### THE MAIN POINTS IN GRASS-CUTTER BREEDING

Our friends Dr Guy Apollinaire MENSAH Ph.D. and Ir Marius Rodrigue Mensah EKUE have recently produced a very interesting book (160 p.) in French (“L’Essentiel en Aulacodiculture”), setting up the present stage of knowledges on *Thryonomys swinderianus* in Bénin and elsewhere (reference Bedim 235). The document is analysed in the Survey of Literature. It is clear nowadays that grass-cutter breeding is sufficiently known to allow any small farmer undertaking such a production with very limited risks. Even more, grass-cutter breeding could today go out of the minilivestock sector and enter into the classical animal production in Sub-Saharan Africa.

As soon as regular and routine education on grass-cutter breeding is provided by African education institutions, our BEDIM association will be pleased to celebrate this first move from the field of non-classical animal production, i.e. from minilivestock to ordinary livestock production.

BEDIM hopes even that other species will soon follow the same move. When will it be the case for another animal? And which one?

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### STEP BY STEP IN PICTURES FOR GRASS-CUTTER BREEDING

Extension for small farmers requires specific means, and the document issued recently (“Le pas-à-pas en images en élevage d’aulacodes”) by G.A. MENSAH, M.R.M. EKUE and E. AGUÉSSY will surely be most welcome by small breeders, technicians, extensionists, economists, ... It is very peculiar by the fact that the bilingual text is made of French and Fon, the most vernacular language of Bénin. The specific Fon alphabet is even used, which is a plus for local use. A similar approach had already been adopted some years ealier for the “Guide pratique” produced in the framework of a training project of women in snail production, funded by UNDP/FAO and run by FSA/UNB in Bénin (document exhausted). However, the “Step-by-step” document is a poster based mainly on colour pictures with some text. It is analysed in the Survey of Literature; its BDB ref is BEDIM 236.

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## WHO WOULD LIKE WRITING A BREEDING MANUAL ?

This Bulletin mentions the issue of Breeding Manuals for two groups of animals belonging to the minilivestock : the grass-cutters (Mensah & Ekue; The Main Points in Grass-cutter Breeding) and the insects (Hardouin & Mahoux, Zootechnie d'Insectes), both written in French. The previous bulletin gave comments on two booklets written in French also on the breeding of giant snails in Bénin (Codjia & Noumonvii; Nobime). Would readers like preparing (alone or with colleagues) other specialized manuals, the association BEDIM will be pleased to be informed accordingly in order to analyze the situation.

The Secretariat would most welcome the issue of specialized booklets like "Breeding Manual of Manure Worms", "Breeding Manual of Cricetomas", "Breeding Manual of Cavia for Meat", "Breeding Manual of Snakes", "Breeding Manual of Palm Grubs", "Breeding Manual of Termites"... The translation in English of the two recent books mentioned above could also be envisaged. For the giant snails, there is already a very good booklet issued by C.T.A. in 1994 and written by J.R. Cobbinah under the title "Snail Farming in West Africa" which deals however essentially with *Achatina achatina*.

More specialized booklets are not excluded, like "Breeding Manual of the Asiatic manure worm *Perionyx excavatus*" or "Breeding Manual of the African manure worm *Eudrilus eugeniae*" instead of one single manual covering several different species of manure worms. The same is valid for giant snails, frogs, snakes, ...

One could also think of booklets on Latin America rodents, probably in Spanish (with a translation in English?). But why not expect a Breeding Manual of the capybara, or of the paca, the agouti, the mara,...

Any suggestion, even still very preliminary, will be welcome and carefully examined.

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## ANOTHER NEW RODENT OF INTEREST ?

The previous Bulletin mentioned that the Nile rat *Arvicanthis niloticus* represents an appreciated source of bushmeat in Nigeria. We are looking for more information. More recently the Secretariat heard that the mole rat *Cryptomys meshowi* is overexploited on large scale in the Democratic Republic of Congo. Luckily enough attempts to breed this very small rodent have spontaneously been undertaken locally. Here also we are waiting for more information (capture, breeding, consumption, processing, ...).

## EDUCATION IN MINILIVESTOCK

The BEDIM Secretariat would like knowing the institutions where courses are organized on the various aspects of minilivestock (animal species, production techniques, uses, veterinary aspects, ...). Nowadays indeed, animal production specialists, developers, economists, ... in tropical countries cannot

anymore ignore the potentialities of minilivestock if they expect to be reliable and well informed. Such a competence means a preliminary education on the topic, alike what is currently set up for cattle, sheep, goat, pig, poultry farming.

BEDIM asks all the people in charge of or the former participants to minilivestock courses/education to write to the Secretariat and provide corresponding information (where, when or since when? species?...). A list of institutions already involved in routine minilivestock education could be foreseen... unless it would seem more useful to set up a list of institutions where such courses do not exist yet.

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## **NOUVELLES DE L'ASSOCIATION**

### **CONSEIL D'ADMINISTRATION**

Le Conseil d'Administration s'est réuni le jeudi 30 octobre 2003. Parmi les points à l'Ordre du Jour figurait un sujet fort important puisqu'il concernait une proposition concrète pour assurer la continuité des activités assurées par le Président de l'Association Jacques Hardouin qui a décidé de démissionner en septembre 2004, comme annoncé dans l'Editorial du précédent Bulletin.

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### **LIVRE PUBLIE PAR BEDIM**

Après la vidéo-cassette « Le Mini-élevage en Milieu Tropical » et les divers « Guides Techniques d'Elevage », BEDIM a décidé de publier son premier livre. Celui-ci sort comme numéro spécial du Bulletin Semestriel, et constitue avec un peu de retard (dont nous ne sommes pas responsables) un témoignage spécial pour le dixième anniversaire de la parution de ce Bulletin. Plus de détails sont fournis plus loin, ainsi que dans le « Survey of Literature » ; sa référence BDB est BEDIM 236.

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### **BASE DE DONNEES BEDIM : BDB**

La Base de Données BEDIM (BDB) est accessible à partir du site web de BEDIM <http://www.bib.fsagx.ac.be/bedim/> L'encodage des documents se poursuit. Vous pouvez voir effectivement que la plupart des articles mentionnés dans la partie « Survey of the Literature » des Bulletins portent une référence sous la forme « BEDIM + 3 chiffres », qui permettra un accès facile à la Base de Données. A mi-octobre 2003, un total de +/- 220 documents avaient déjà été encodés.

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## COTISATIONS

Il est temps d'attirer l'attention des membres sur la nécessité d'être en règle de cotisation pour pouvoir voter à l'Assemblée Générale, prévue dans le premier semestre de 2004 (une assemblée tous les deux ans). Les montants annuels dus sont :

- Membres effectifs : € 15,00 (avec droit de vote)
- Membres adhérents : € 3,00 (sans droit de vote)
- Membres des pays en développement : € 2,00 (sans droit de vote)

Paiements à faire au nom de BEDIM Association Internationale comme suit :

- a) Titulaires d'un compte bancaire en Belgique : au compte n° 000-0574065-19 à la Banque de la Poste
- b) Titulaire d'un compte bancaire dans un autre pays de l'Euroland : au compte n° 001-2949595-95 à la Banque Fortis.  
Code IBAN : BE76 0012 9495 9595, Code BIC/SWIFT : GE BA BE BB.

Les paiements peuvent être effectués pour plus qu'une seule année.

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## ACTUALITES

### CORRIGENDUM

Deux fautes de frappe ont échappé aux corrections dans la Note de T. Munyuli Bin Mushambanyi « Vers de compost » parue dans le Bulletin 2003, 12, 1 en page 11. En 3<sup>ème</sup> ligne (Extrait de ...), il faut évidemment lire « Kivu » au lieu « Kine ». A l'avant-dernière ligne, il faut lire « Excerpt » (= extrait, citation) au lieu de « Except ».

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## L'ESSENTIEL EN AULACODICULTURE

Nos amis Dr Guy Apollinaire MENSAH et Ir Marius Rodrigue Mensah EKUE viennent de sortir un très intéressant « petit bouquin » (160 p. !) faisant le point sur l'élevage d'aulacodes au Bénin et ailleurs en Afrique (référence BEDIM 235). Ce document est analysé dans le « Survey of Literature ». Tout cela contribue à rendre de moins en moins risqués les élevages moyens ou industriels du *Thryonomys swinderianus*. Pratiquement, grâce à un ouvrage comme celui-ci, l'élevage de l'aulacode pourrait sortir de la sphère du mini-élevage pour entrer dans celle de la zootechnie classique d'Afrique tropicale. Dès qu'une telle formation sera assurée dans les établissements d'enseignement africains, notre association BEDIM sera heureuse de célébrer ce premier changement de secteur avec le passage du non-classique au classique.

BEDIM espère que d'autres espèces suivront bientôt le même parcours. A quand un autre animal ? et lequel ?

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## LE PAS-A-PAS EN IMAGES EN ELEVAGE D'AULACODES

En complément au livre « L'Essentiel en Aulacodiculture », G.A. MENSAH, M.R.M. EKUE et E. AGUESSY ont également sorti un dépliant-poster de vulgarisation par l'image à destination des producteurs, techniciens, vulgarisateurs, ONG, ... La grande particularité de ce document est que son texte est bilingue, mais en français et en Fon. Cette dernière langue locale est la plus répandue au Bénin, et elle possède son propre alphabet. Une approche similaire avait déjà été adoptée pour un opuscule publié dans le cadre d'un projet ponctuel financé par le PNUD/FAO et réalisé par la FSA/UNB pour la formation des femmes en achatiniculture.

A la différence de l'ouvrage cité plus haut, ce document montre en images et dessins avec légendes des actes courants en élevage d'aulacodes. Un vocabulaire simple est utilisé, ce qui n'exclut pas des recommandations écrites pour le calcul de la rentabilité par exemple. Le document est analysé dans le « Survey of Literature ».

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## QUI AIMERAIT REDIGER UN MANUEL D'ELEVAGE ?

Ce Bulletin signale la parution de Manuels d'élevage pour deux groupes d'animaux relevant du mini-élevage : les aulacodes (Mensah & Ekue, « L'Essentiel en Aulacodiculture ») et les insectes (Hardouin & Mahoux, « Zootechnie d'Insectes »). On dispose depuis longtemps déjà (1994) du petit livre de J.R. Cobbinah « Snail Farming in West Africa – A Practical Guide », qui traite surtout d'*Achatina achatina*. Un « Guide Technique d'Élevage d'Escargots Géants Africains » a été publié en 2001 par Codjia & Noumonvi, et un opuscule sur « Élevage d'Escargots Géants au Bénin » en 2002 par Nobime. Si certains lecteurs sont en mesure de préparer, seuls ou avec des collègues, d'autres manuels spécialisés, l'association BEDIM serait heureuse d'en être informée afin de voir ce qui peut être intéressant et comment s'y prendre.

Le Secrétariat verrait très favorablement la parution de livres spécialisés comme « ZOOTECHNIE DES VERS DE COMPOST », « ZOOTECHNIE DES ESCARGOTS GEANTS », « ZOOTECHNIE DU CRICETOME », « ZOOTECHNIE DU COBAYE DE BOUCHERIE », « ZOOTECHNIE DES SERPENTS », « ZOOTECHNIE DES VERS DE PALMIER », « ZOOTECHNIE DES TERMITES », etc.

Il n'est pas exclu qu'un auteur prépare des ouvrages plus spécialisés, par exemple un « Manuel d'Élevage du ver de compost asiatique *Perionyx excavatus* », qu'un autre rédige un « Manuel d'Élevage du ver de compost africain *Eudrilus eugeniae* au lieu d'un seul Manuel d'Élevage pour diverses espèces du même groupe. C'est vrai aussi pour les escargots, les grenouilles, les serpents,...

On pourrait aussi songer sérieusement à lancer un ou des ouvrage(s) de synthèse sur les rongeurs latino-américains, pour lesquels il serait sans doute préférable de les rédiger en espagnol (avec une traduction en anglais ?). Mais il n'est pas interdit de songer à un Manuel d'Élevage du Capybara, à un autre pour le paca, ou l'agouti, ou le mara, ... Toute proposition, même encore sommaire, sera bienvenue et examinée avec attention.

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## UN AUTRE NOUVEAU RONGEUR INTERESSANT ?

Le Bulletin précédent signalait que le rat du Nil *Arvicanthis niloticus* constitue une source appréciée de viande de brousse au Nigéria. Nous attendons encore des informations complémentaires à ce sujet.

Plus récemment, le Secrétariat a entendu parler du rat-taupe *Cryptomys mechowii* qui serait exploité et consommé intensivement en République Démocratique du Congo. Heureusement, des tentatives spontanées sont apparues sur place pour élever sous contrôle ce très petit rongeur. Ici aussi, nous attendons des informations plus précises de quiconque en posséderait (élevage, consommation, traitement, ...).

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## ENSEIGNEMENT DU MINI-ELEVAGE

Le Secrétariat de BEDIM aimerait connaître les institutions dans lesquelles un enseignement est organisé sur le mini-élevage et les techniques de production correspondantes. Actuellement en effet, les zootechniciens, planificateurs, économistes... des pays tropicaux ne peuvent plus ignorer les potentialités du mini-élevage s'ils veulent être pris au sérieux. Cela suppose une formation adaptée, similaire à ce qui est enseigné pour l'élevage bovin, caprin, ovin, porcin,...

BEDIM demande aux responsables et/ou participants concernés par l'enseignement du mini-élevage d'écrire au Secrétariat pour fournir les informations détaillées à ce propos. La liste des établissements déjà engagés dans cette voie pourrait être publiée ... à moins qu'il soit nécessaire d'établir celle des institutions où cet enseignement n'existe pas encore !

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**PRODUCTION ANNEXE DE PROIES VIVANTES POUR L'ELEVAGE  
DES GRENOUILLES : 2. ENTOMOFAUNE ET ALEVINS  
par T. Munyuli Bin Mushambanyi**

Extrait de l'article « Elevage contrôlé des grenouilles au Kivu (République démocratique du Congo) » paru dans Cahiers Agricultures 2002, 11, p. 269-274. Avec la permission de l'auteur et du rédacteur en chef de la revue.

« Le régime alimentaire des grenouilles en captivité est mal connu ; les adultes sauvages consomment des proies mobiles et vivantes. Différents dispositifs de production de proies ont été installés sur les terrasses pour produire la ration alimentaire de base. Des composts similaires aux compostières de pisciculture sont réalisés dans de petites caisses (1x0,4x2m) de bois où les déchets, sous-produits agricoles et ordures ménagères sont déposés après avoir été débarrassés des éléments susceptibles d'intoxiquer les animaux. Parmi les sous-produits, on utilise surtout les feuilles vertes de haricot, de chou, de papaye, de manioc, de *Tithonia diversifolia*, les mauvaises herbes récoltées dans les champs voisins, etc.

Occasionnellement, des épluchures de manioc, troncs de bananiers en décomposition et divers déchets végétaux sont disposés en divers endroits, au bord des étangs. Après transformation sur place, ces résidus attirent une entomofaune aquatique, utilisable la nuit par les grenouilles. Dans ces résidus en transformation, on a aussi élevé des mille-pattes (iules) dont le lot de départ est obtenu par fouille dans les résidus végétaux stockés aux alentours des champs.

Dans certains cas, des contenus de panse de bovins sont récoltés sur les marchés locaux, puis déposés autour de l'étang ; ils attirent des mouches, donnant ainsi une production d'asticots consommés *in situ* par les grenouilles.

Des petits gobelets (5x5x5cm) de couleur verte sont placés dans la végétation. On y met occasionnellement 5 à 20 g de mélange de larves de coléoptères ou de termites, des araignées, des larves de mouche, des fourmis, des sauterelles et criquets, des crabes, des mollusques et larves de papillons, attrapés dans les zones agricoles ou dans les marais. Les larves de mouche étaient obtenues après élevage des adultes sur morceaux de viande de rats en milieu naturel (jachère). On place parfois dans ces gobelets des alevins ou larves vivantes de poissons (*Limnotrisa miodon*, *Clarias* sp., *Limnotrisa tanganicae*, *Tilapia* sp.) du lac Kivu. Deux hommes du village ont été rémunérés pour la recherche des insectes, mollusques et autres invertébrés ainsi que pour la surveillance des étangs ».

Summary : Side production of Live Preys for Frog Breeding. Excerpt from a larger article analysed in Bulletin 11/2 p. 31  
First part : see Bulletin 12/1 p. 11  
BDB reference : BEDIM 84

## **INSECTS BREEDING FOR THE BENEFIT OF MAN AND GIVEN ANIMALS**



An unconventional book has just been issued by our international organization BEDIM. It is written in French with title “Zootchnie des Insectes au bénéfice de l’Homme et de certains Animaux », which is slightly provocative though fully in line with what is advocated by BEDIM since the beginning. It aims indeed letting know production techniques of given insects in order to improve people diet in some cases (palm grubs, termites, caterpillars,...) but more often feeding of monogastrics like pigs, poultry, some fish, ... Many insects represent an excellent animal protein source, most important in the wild but too often forgotten in commercial or traditional breeding. Other uses exist as well, like maggots

to clean bad wounds, nice-looking beetles in plastic blocs, butterflies nymphae (“chrysalides”) for international trade from tropical countries to “butterfly farms” for tourists in temperate areas,...

The two authors, Guy Mahoux and Jacques Hardouin are reknown tropical animal production specialists, the last being also the true protagonist of minilivestock.

“Insecticulture” exists now, alike caviaculture for guinea pigs, achatiniculture for giant snails, raniculture for frogs, aulacodiculture for grass-cutters,...

The book is on sale “cash and carry” for 10,00 € (ten euro) at Gembloux, or sent by post in Belgium for 15,00 € (fifteen euro) or in European Union for 17,00 € (seventeen euro) and in the rest of the world for 20,00 € (twenty euro). Payments only on the account “BEDIM – Livres”, n° 340-1436468-33 at ING Bank (ex BBL), Brussels, IBAN Code BE79 3401 4364 6833, and BIC/SWIFT code BB RU BE BB.

Payments by banknotes in Euro sent by letter are made at the full risks of the senders.

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## ZOOTECNIE D'INSECTES AU BENEFICE DE L'HOMME ET DE CERTAINS ANIMAUX



Un livre original vient de sortir de presse, produit par notre association internationale BEDIM. Son titre un peu provocateur devrait attirer l'attention, mais il est bien dans la ligne soutenue depuis toujours par BEDIM. Il s'agit en effet de faire connaître des techniques de production de certains insectes afin de contribuer à une meilleure alimentation de l'homme dans certains cas (vers du palmier, termites, chenilles, ...) et d'animaux monogastriques comme les porcins, les volailles et certains poissons. Beaucoup d'insectes constituent en effet une excellente source de protéines animales. D'autres usages sont encore moins connus : asticots pour traiter des plaies anfractueuses guérissant mal, scarabées multicolores en inclusions de plastique comme

porte-clés, chrysalides vivantes de papillons tropicaux pour des « fermes de papillons » attirant des touristes dans des pays tempérés.

Les deux auteurs Guy Mahoux et Jacques Hardouin sont des zootechniciens tropicalistes renommés, et le dernier est en plus le grand protagoniste du mini-élevage. On accède dorénavant à l'« insecticulture » tout comme sont apparues déjà la cuniculture (lapins), l'héliciculture (escargots européens), l'achaticulture (escargots géants), la caviaculture (cobayes de boucherie), la raniculture (grenouilles), l'aulacodiculture (aulacodes),...

L'ouvrage est disponible au prix de 10,00 € (dix euro) à Gembloux (chez Mme A. Roubinkova, administratrice, Centre de documentation/Bibliothèque à la Faculté), ou 15,00 €, 17,00 € ou 20,00 € avec envoi postal à destination respectivement de la Belgique, du restant de l'Union Européenne et du restant du monde. Pour les commandes avec expédition par la poste, paiements uniquement au compte BEDIM-Livres de la Banque ING (ex BBL) Bruxelles au compte n° 340-1436468-33, Code IBAN : BE79 3401 4364 6833 ; Code BIC/SWIFT : BB RU BE BB.

Les éventuels paiements en billets envoyés par la poste se font aux risques des expéditeurs.

## MOONGOSE MUNGOS MONGO BREEDING AND CONSUMPTION T. Munyuli Bin Mushambanyi

Investigations undertaken on hippopoyamuses *hippopotamus amphibious* in Uganda lead to learn that people around Queen Elizabeth National Park (Uganda) and Virunga National Park (R.D. Congo) are used to eat meat of the mangoose Mungos mongo as a substitute to hippo meat.

After one year preliminary trial, it appears that mangoose farming is possible, as these animals are easily kept under control in specially made holes, accept cassava, beans, bananas, insects, etc. As feed and become tame rather quickly.

Amongst the first results collected, the followings can be pointed out: reproduction age: 8-10 months for female and 12 months for males; pregnancy duration: 2 months; 4-8 kids/birth; 2-3 births/year; weaning at 8 weeks; adult weight 900-1400 g.

More information will be provided later.

Note from the secretariat: Carnivore meat consumption is usually not very frequent

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## ÉLEVAGE ET CONSOMMATION DE LA MANGOUSTE MUNGOS MONGO T. Munyuli Bin Mushambanyi

Des recherches effectuée sur l'hippopotame *Hippopotamus amphibius* en Uganda et en R.D. du Congo ont montré que la population autour du Parc National Queen Elizabeth et du Parc National des Virungas consomment la viande de mangouste comme un produit de remplacement pour la viande d'hippo.

Après une année d'essais préliminaires, il semble que l'élevage de mangoustes est possible, et que ces animaux peuvent être facilement gardés en captivité dans des tanières artificielles. Ils mangent sans problème du manioc, des haricots, des bananes, des insectes, etc. Et s'apprivoisent rapidement.

Parmi les premiers résultats, on peut noter ceux-ci : âge à la reproduction: 8 à 10 mois pour les femelles et 12 mois pour les mâles ; durée de gestation : 2 mois ; 4 à 8 jeunes par nichée ; 2 à 3 parturitions par an ; sevrage à 8 semaines ; poids adulte : 900 à 1400 g.

D'autres informations devraient être fournies plus tard.

Note du secrétariat : La consommation de viande de carnivore n'est habituellement pas fréquente.

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## **NOVEDADES DE LA ASOCIACION**

El Consejo de Administración de BEDIM se reunió el pasado 23 de Mayo de 2003. Su presidente el Dr. Jacques HARDOUIN, manifestó su intención irrevocable de retirarse de sus actividades voluntarias que ejerce en nuestra asociación internacional. La fecha fatídica para su retirada será el próximo 27 de Septiembre, fecha de su 75° aniversario.

Los socios activos, participantes y lectores de BEDIM saben que su Presidente asume la coordinación de actividades desde hace mas de quince años. Desde hace varios meses, ha llevado a cabo varios tramites a diferentes niveles con el objetivo de conseguir alguna institución interesada en mantener viva la continuidad de BEDIM, dentro de su estructura. Desgraciadamente, hasta ahora ninguna iniciativa a dado sus frutos de forma objetiva y concreta, a pesar de que han habido ciertas demostraciones de interés concretizadas por una ampliación de los miembros del Consejo de Administración.

El principal argumento esgrimido es casi siempre que la continuidad de la Asociación necesita una persona experimentada en la minicria y con una cierta experiencia igualmente en el medio rural y la producción animal tradicional tropical, y por tanto se necesitan fondos para pagar a esta persona, a pesar de que esta actividad no requiere una persona a tiempo completo.

Este editorial pretende informar a toda la comunidad de BEDIM de esta situación. Pretende también solicitar cualquier sugerencia imaginable que pueda garantizar la continuidad del boletín y la Asociación, asumiendo la posibilidad de que el nombre y marco de la asociación actual pudieran ser modificados.

Cualquier sugerencia sobre este tema puede ser transmitida a la dirección habitual de la Universidad de Gembloux o por correo electrónico a la Secretaria Técnica de redacción ([goorickx.m@fsagx.ac.be](mailto:goorickx.m@fsagx.ac.be)) o al Sr. Eric THys, Secretario de la Asociación ([ethys@itq.be](mailto:ethys@itq.be)).

Muchas gracias de antemano. Pero no tardéis, el tiempo apremia....

Eric Thys, Jacques Hardouin.

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## **La minicria sigue generando interes en amazonia**

La zocrianza o minicria, sigue generando interés en varios países de la Cuenca Amazónica. He aquí dos ejemplos de iniciativas en Guyana Francesa y en la Provincia de Loreto en Perú que sin consultarse entre si, están llevando a cabo con apoyo de los Gobiernos Regionales para coordinar el desarrollo de actividades relacionadas con la cría des especies silvestres locales

### **1ª SESION ORDINARIA SOBRE LA PROMOCION DE LA ZOOCRIANZA EN LA PROVINCIA DE LORETO, PERU.**

Durante el 3 de Septiembre 2003 y bajo la iniciativa del IIAP (Instituto de Investigaciones de la Amazonia Peruana) tuvo lugar una primera reunión pluridisciplinar para coordinar e impulsar el desarrollo de la minicria en la

Provincia de Loreto. Las especies de mayor interés son los roedores silvestres amazónicos, los pecaris, las mariposas y los pequeños reptiles.

Participaron diferentes instituciones regionales y nacionales como el IIAP, la Universidad Nacional para la Amazonia Peruana (UNAP), el INRENA, PROMEX, IVITA, el Colegio Veterinario de la Provincia de Loreto y la Dirección Regional de Comercio Exterior Turismo y Artesanía. La reunión consiguió formar 4 grupos de trabajo: Investigación y manejo de Fauna, Diagnóstico, Política y Normatividad, y Mercado y Transformación de productos de la derivados de la minicria.

### 1ª REUNION DEL GRUPO DE TRABAJO SOBRE LA CRIA DE ANIMALES SILVESTRES EN CAYENNE, GUYANA FRANCESA.

El 14 de Noviembre, y bajo la iniciativa de la DIREN (Dirección Regional de Guyana para el Medio Ambiente) tuvo lugar una primera reunión en la cual participaron representantes de la Cámara Agrícola (Chambre d'Agriculture), Dirección de lo Servicios de Caza y Fauna Silvestre (ONCFS), Responsables de los Servicios veterinarios y ONGS locales para discutir en torno al desarrollo de la cria de animales silvestres para aprovisionar la importante demanda que existe en los restaurantes de Guyana Francesa.

Las especies seleccionadas para desarrollar la cría son el pecari de collar, la iguana verde, los agutis y el capibara, todas ellas sometidas a un comercio legalmente autorizado. Los aspectos veterinarios y la calidad y restreabilidad del origen de la carne son áreas prioritarias para garantizar una calidad de la carne adaptada a las exigencias de restauradores y consumidores.

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## CONGRESOS Y EVENTOS

### VI CONGRESO INTERNACIONAL DE MANEJO DE FAUNA SILVESTRE EN AMAZONIA Y LATINOAMÉRICA

La Universidad Nacional de la Amazonía Peruana (UNAP), el Durrell Institute of Conservation and Ecology (DICE) de la University of Kent, Canterbury y la Wildlife Conservation Society (WCS) organizan el VI Congreso Internacional sobre Manejo de Fauna Silvestre en la Amazonía y Latinoamérica, que se celebrará entre el 05 al 10 de setiembre del 2004 en la ciudad de Iquitos, capital Amazónica del Perú.

Este evento dará la oportunidad de presentar y discutir los logros alcanzados hasta la fecha sobre las acciones de manejo de fauna silvestre, con el objetivo de poder aplicarlas en el diseño, formulación, implementación y evaluación de metodologías y de planes de manejo de fauna silvestre. Las áreas temáticas se focalizarán en aportes que resulten en un mejor entendimiento de las lecciones aprendidas, comparando los éxitos y fracasos de diferentes aproximaciones de conservación con el propósito de diseñar estrategias para el futuro en las siguientes áreas temáticas: conservación *in situ* y áreas naturales protegidas, conservación *ex situ* de fauna silvestre, preservación del hábitat, metodologías aplicadas para el manejo de fauna silvestre con comunidades, criterios para el uso sostenible de fauna silvestre, indicadores de sostenibilidad, ecología aplicada al manejo, fisiología y etología, uso, comercio, política y legislación de fauna silvestre.

Para mayor información, podéis dirigiros a la pagina Web del congreso:  
<http://www.vicongreso.com.pe/>

### **SIMPOSIO SOBRE EL MANEJO EXTENSIVO DE FAUNA EN PARIS, JULIO 2004**

La Fundación internacional para la Conservación de la Fauna (International Foundation for the Conservation of Wildlife anuncia la celebración de el 6° Symposium Internacional sobre el Manejo Extensivo de Fauna (Wildlife Ranching) entre el 5 y el 9 de Julio 2004 en Paris.

El tema de esta edición del Symposium es “ La Fauna silvestre como recurso natural”. Va dirigido a Propietarios públicos y privados, Universidades / Facultades y estudiantes, Miembros de asociaciones zoológicas y de criadores de fauna, Expertos en biología de la conservación, Personas vinculadas a la caza y la conservación de la Naturaleza, Gestores de ranchos privados y cotos de caza, Ecológicos y geneticistas., Empresarios del sector de la fauna y cualquier persona vinculada al mundo de la conservación de la fauna

#### **TEMAS ESCOGIDOS**

Los temas siguientes serviran de base para cubrir diferentes aspectos de la conservación de la fauna como herramienta para un desarrollo sostenible.

1. *El manejo de fauna como herramienta de conservacion*  
Uso consumativo y no consuntivo de la fauna
2. *El manejo de fauna como herramienta de desarrollo rural*  
Produccion de fauna silvestre en zonas templadas.  
Produccion de fauna silvestre en zonas tropicales.
3. *Tecnología aplicada a la fauna*  
Nuevas tecnologías para el manejo de fauna  
Nuevos enfoques para el manejo comunitario de la fauna  
La fauna como fuente de proteina  
Productos derivados de la fauna  
Aspectos legales de la producción extensiva
4. *El futuro de la producción de fauna silvestre*

Para mayor información , pueden visitar la pagina web  
<http://www.wildlife-conservation.org/>

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NOTICIAS – NOTICIAS – NOTICIAS – NOTICIAS – NOTICIAS – NOTICIAS

**MANEJO SUSTENTABLE DEL CARPINCHO (*Hydrochoerus hydrochaeris*, Linnaeus 1766) EN ARGENTINA: UN APORTE AL CONOCIMIENTO DE LA BIOLOGÍA DE LA ESPECIE DESDE LA CRÍA EN CAUTIVERIO.**

**Resumen de la Tesis Doctoral, defendida en la Universidad de Buenos Aires hace escasos meses.**

**Dr. Martín Álvarez, Departamento de Ciencias Agrarias e Ambientais, Universidade Estadual de Santa Cruz, Rodovia Ilhéus Itabuna, Km16, CEP 46 650 000 Ilhéus, BA, Brazil.**

El carpincho es un recurso natural que no está sometido a planes de manejo sustentable en Argentina. Actualmente, este roedor es catalogado como “Especie Potencialmente Vulnerable” y, aunque se encuentra protegido en ocho Parques Nacionales y no figura en los Apéndices I o II de CITES, la intensa explotación de este caviomorfo en los últimos 20 años haría suponer que se debería encontrar bajo alguna forma de amenaza de extinción o en proceso de regresión numérica. El enfoque general de esta Tesis ha estado dirigido fundamentalmente a contribuir al desarrollo de una estrategia de manejo sustentable del carpincho en Argentina. Este trabajo se desarrolló en el Criadero de Carpinchos, ubicado en la E.E.A. Delta del Paraná – INTA (Otamendi, Partido de Campana, Provincia de Buenos Aires, Argentina). La evaluación de los sistemas de manejo desarrollados en el Criadero puso de manifiesto que el Módulo 3 (corrales de 30 x 10 m, divididos en sectores de reproducción y parideras) fue el mejor para la fase reproductiva, incorporando la práctica de “Destete temporario”. Con este manejo disminuyeron los conflictos sociales entre las hembras, por tener más espacio para que los subordinados huyan y no se llegue a la agresión, y por mantenerse la identidad grupal; hubo una menor mortandad al destete dado que se realiza con crías mayores disminuyendo la duración del período entre partos. Se calculó una eficiencia reproductiva de 6,5 crías destetadas vivas / año \_ madre. de esta manera se alcanzan los parámetros reproductivos necesarios para utilizar el potencial productivo del carpincho en cautiverio. En cuanto a la alimentación, se pone de relieve el gran potencial zootécnico de esta especie para su crianza en cautiverio, siendo las respuestas observadas superiores a los valores encontrados en la literatura mundial para carpinchos en vida silvestre. Se evaluaron las implicancias biológicas de la selección del alimento por este herbívoro monogástrico, concluyéndose que habría una macro-selección del lugar de pastoreo, previo al refuerzo dado por el valor nutritivo del alimento finalmente consumido. La primer reacción ante un alimento es de macro-reacción ante la forma (arquitectura) vegetal. La segunda reacción es de calidad intrínseca del alimento, determinada por la relación Fibra:Proteína y la concentración de Vitamina C. Por eso los carpinchos distinguen entre parches de pastoreo, y dentro de ellos seleccionan las especies vegetales por la calidad nutritiva de cada una. Los mecanismos de reconocimiento posteriores a la ingestión del alimento se fundamentan en sus resultados metabólicos, que están relacionados estrechamente con las características anatómicas y fisiológicas del animal; y a la vez, se vinculan con la maximización de la

ingesta de energía digestible y la metabolización eficiente de los otros nutrientes. La experiencia previa influiría sobre las preferencias y los patrones de alimentación diaria. En el caso del carpincho, la economía del nitrógeno parece ser la mayor restricción en la selección de la dieta. Asociado a ello, aparecen mecanismos comportamentales de economía de nitrógeno: la cecotrofia. Hemos concluido que la cecotrofia en el carpincho es facultativa, produciéndose en respuesta a un bajo aporte dietario de proteínas. Asimismo, se evaluó la distribución geográfica presente de poblaciones silvestres de este roedor, ofreciendo una interpretación biogeográfica y productiva, evaluando los factores que pudieran influir sobre su distribución actual, así como sobre la permanencia de las poblaciones actuales y futuras, y la potencialidad de distintas zonas de nuestro país para implementar distintos sistemas de manejo productivos sustentables. De nuestros resultados no puede señalarse a la caza comercial controlada y a la cría en cautiverio como estrategias antagónicas e incompatibles. Así, proponemos un modelo integrado para el manejo sustentable del carpincho en la Argentina, donde convivan las alternativas actuales de producción y un sistema de fiscalización centrado en los intereses regionales, con la finalidad de dar un paso al frente en el mantenimiento de las poblaciones naturales de este roedor, aún no amenazado a escala global, pero cuya sobreexplotación podría conducir a un agotamiento del recurso, conllevando su tan temida extinción.

Palabras claves: Carpincho, *Hydrochoerus hydrochaeris*, Cría en Cautiverio, Reproducción, Nutrición, Alimentación, Forrajeo, Selección de dieta, Distribución geográfica, Manejo sustentable, Evaluación económica.

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#### COMO EVITAR INFANTICIDIOS Y PELEAS MORTALES EN CRIADEROS DE CAPIVARAS (*HYDROCHOERUS HYDROCHAERIS*)?

Nogueira, S.S.C; Lopes, A.P.S. and Nogueira-Filho S.L.G.

Universidade Estadual de Santa Cruz,. Rodovia Ilhéus Itabuna, km 16, Ilhéus Bahia, Brazil, CEP 45650-000 e-mail: selene@uesc.br

Los capibaras (*Hydrochoerus hydrochaeris*) están siendo criadas comercialmente en Brasil desde finales de los años 90 principalmente para producción de carne. Actualmente, se están realizando pruebas para explotar también su cuero. La elevada tasa reproductiva de esta especie, con aproximadamente seis crías por año y hembra se considera una ventaja para su producción. Sin embargo, uno de los problemas con la cría de este roedor es la frecuente aparición de infanticidios hasta doce horas después del parto, en situaciones de manejo semi-intensivo, cuando las hembras no están aisladas en áreas de maternidad. En algunas granjas se han llegado a registrar pérdidas de hasta el 30% de la producción. Estos infanticidios ocurren cuando los grupos están formados por hembras no emparentadas. Estas hembras viven juntas aparentemente sin conflictos hasta la época del parto, durante la cual, pueden matar a las crías ajenas, comprometiendo la productividad de la explotación (Nogueira et al, 1999). Estos problemas se han registrado en varios explotaciones rurales de Brasil y parece tener su importancia en la motivación de los criadores y la promoción de esta nueva actividad. Debido a estos problemas, la UESC ha trabajado en el desarrollo de un método que permite al productor rural identificar si los animales del grupo reproductor de reciente

adquisición están emparentados y de esta forma, permite prevenir o impedir la aparición de peleas entre hembras. Para desarrollar esta técnica, se estudió el comportamiento de un grupo de capibaras de la Fazenda Villas de São José, en el Estado de Bahia, Brasil. Su propietario había adquirido un grupo de 20 capibaras y estaba teniendo problemas de mortalidad por infanticidio y peleas mortales en su rebaño, perdiendo tres animales adultos y dos camadas. La metodología es muy simple, y consiste en analizar la proximidad entre individuos, ya que los capibaras emparentados forman grupos muy cohesionados y permanecen siempre próximos entre si. En este contexto, el resto del plantel, compuesto por 15 hembras y dos machos fue marcado con tintura atóxica para identificar los individuos a distancia. Después de un periodo de habituación dos de siete días, se realizaron observaciones diarias de los individuos entre las 15h00 y las 17h00., registrándose la proximidad entre individuos en base al método de *scan-sampling* cada 15 minutos (Altmann, 1974). Las frecuencias de proximidad entre individuos fueron analizadas estadísticamente. Los resultados revelaron que el plantel de animales se dividía en varias parejas y animales aislados, indicando una clara actitud esquiva entre grupos durante los momentos de la alimentación y otras actividades generales del plantel, mostrando ausencia de parentesco entre individuos, lo cual causaba conflictos mortales e infanticidios. Para este productor, se recomendó aislar a las hembras durante parto y lactación, y reiniciar un plantel de reproducción con las crías destetadas que serían colocadas al mismo tiempo en áreas de reproducción, sustituyendo de esta forma el plantel inicial.

Con pocas horas de observación y el análisis de frecuencias de proximidad entre individuos, este método es un sistema fácil de aplicar y seguro para evaluar el grado de parentesco entre individuos de un plantel y conseguir un buen rendimiento zootécnico en las explotaciones de capibaras. También se recomienda, en el momento de la compra del plantel reproductor, exigir un certificado del grado de parentesco de los individuos comprados.

Altmann, J. 1974. Observational study of behaviour: sampling methods. *Behaviour*, 49: 223-265.

Nogueira, S.S. da C.; Nogueira-Filho, S.L.G. Otta, E. Dias, C.T.dos S. & Carvalho, A.1999. Determination of the causes of the infanticide in capybara (*Hydrochoerus hydrochaeris*) groups in captivity. *Applied Animal Behavior Science* 62 (4) 351-357.

## SURVEY OF THE LITERATURE

**BDB ref. :** Corresponds to the identification code of the document in the BEDIM DATA BASE.

## HUMAN NUTRITION

**Froment A. – Santé et nutrition des régions forestières [Health and Nutrition in Forest Regions].**

**Language :** French (an English version of the book with the title “Future of Rainforest Peoples FRP” seems exist)

**Source :** Les peuples des forêts tropicales aujourd’hui, Vol II Approche thématique (APFT) ; 177-184

**Address :** CAC/ULB, avenue Jeanne 44, B-1000 Bruxelles (Belgique) anthcult@ulb.ac.be

**Abstract :** Nutritional evaluation have been undertaken in Cameroon, Guyana and Vanuatu together with public health analyses. In forest areas, the balance between protein and glucide intake is usually not appropriate, but in towns children attending private and expensive schools have a much better body development than those issued from poor groups. Bush meat is highly appreciated, but also priced, and a solution should be found to replace the traditional source of meat which was covered previously by hunting/poaching. In forestry areas, parasitic and infectious diseases are much more important for the welfare than food supply, but it is the opposite in dried zones.

**BDB ref :** BEDIM 248

**Paoletti M.G., Buscardo E., VanderJagt D.J., Pastuszyn A., Pizzoferrato L., Huang Y.S., Chuang L.T., Millson M., Cerda H., Torres F., Glew R.H. – Nutrient content of earthworms consumed by Ye’Kuana Amerindians of the Alto Orinoco of Venezuela.**

**Language :** English

**Source :** Proceedings Royal Society London 2003, 270, 249-257

**Address :** Departement of Biology. University of Padova, via U. Bassi, 58/B, I - 35100 Padova, Italy.

**Abstract :** For the Makiritare (Ye’Kuana) native people of the Alto Orinoco (Venezuela), earthworms (Anellida: Glossoscolecidae) are an important component of the diet. Two species in particular are widely consumed: “kuru” (*Andiorrhinus kuru* n. sp.) and “motto” (*Andiorrhinus motto*). The authors analysed eviscerated kuru body proper, and whole and smoked preparations of motto for their content of proteins and amino acids, fatty acids and 20 minerals with trace elements. The samples contained large amounts of protein (64.5-72.9% of dry weight), essential amino acids, calcium and iron together with notable quantities of other important elements, indicating that these earthworms contain potentially useful quantities of many nutrients that are critical to the health of the humans who consume them.

**BDB ref. :** BEDIM 200

**Klemens M.W., Thorbjarnarson J.B. – Reptiles as a food resource.**

**Language :** English

**Source :** Biodiversity and Conservation 1995, 4, 281-298

**Address :** Wildlife Conservation Society. 185<sup>th</sup> Street and Southern Boulevard, Bronx, NY 10460, USA.

**Abstract :** Reptiles have served as an important source of protein for human populations around the world. Exploitation for food is heaviest in the tropical and sub-tropical regions, but also occurs in temperate areas. Of all reptiles, turtles are the most heavily exploited for human consumption. Crocodylians, snakes and lizards may be locally important food sources; however, with the exception of a few lizards species, they are exploited in a less intense and generally non-commercial manner for human consumption. In comparison, the commercial skin trade poses a far greater threat to the survival of crocodylians as well as certain large snakes and lizards. Recent field reports have implicated the south east Asian medicinal trade as a growing threat to reptiles, especially turtles and snakes. There are few unequivocal examples of managed harvest programmes for reptiles that are economically and culturally viable, as well as biologically sustainable. Given the economic importance of reptiles as sources of protein and other highly valued commodities, it is imperative that more attention be focused on the development of sustainable use programmes for these species.

**BDB ref. :** BEDIM 179

**Neumann Ch., Harris D. M., Rogers L.M. – Contribution of animal source foods in improving diet quality and function in children in the developing world.**

**Language :** English

**Source :** Nutrition Research 2002, 22, 193-220

**Address :** School of Public Health and Department of Pediatrics, University of California at Los Angeles Medical Center, Los Angeles, CA, USA.

**Abstract :** Throughout the developing world, children are particularly susceptible to malnutrition. Micronutrient deficiencies frequently exist. The ability of a given diet to provide the entire complement of high-quality protein, energy, minerals, trace metals, and vitamins necessary to meet requirements, is as significant as diet quantity alone. Animal source foods supply readily digested protein and energy, but are also a compact and efficient source of readily available micronutrients. This review covers information derived from field studies, both observational and interventions, regarding intake of animal products and also the major constituent micronutrients, iron, zinc, vitamins B12 and A and their role on child growth, cognitive development and health.

**BDB ref. :** BEDIM 154

Fa J.E., Justa J., Burn R.W., Broad G. – Bushmeat Consumption and Preferences of Two Ethnic groups in Bioko Island, West Africa.

Language : English

Source : Human Ecology 2002, 30, 3, p. 397-416

Address : Durrell Wildlife Conservation Trust, Les Augrès Manor, Trinity, Jersey JE3 5BP, Channel Islands, United Kingdom

Abstract : Preference and consumption of the Fang reflected exposure to animals found in the continent as well as on Bioko. A total of 55 different bushmeat species was identified as preferred or consumed by interviewees. Principal component analyses of stated consumption and preference indicated differences between ethnic groups in their general responses amongst which three main species (blue duiker *Cephalophus monticola*, Emin's rat or cricetoma *Cricetomys eminii*, and brush-tailed porcupine *Atherurus africanus* were mentioned response data.

BDB ref. : BEDIM 146

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## EDIBLE AND USEFUL RODENTS

Malekani M. – Influence of reproductive cycle and behaviour on the fertility of captive *Cricetomys gambianus*.

Language : English

Source : Thesis submitted for the degree Philosophiae Doctor in Zoology to the Potchefstroomse Universiteit vir Christelike Hoër Onderwys, 2003, 182 p.

Address : Projet Cricétomes, Département Biologie, Faculté des Sciences, Université de Kinshasa, B.P. 218, Kinshasa XI, République Démocratique du Congo <jbahate@yahoo.fr>

Abstract : Under the conditions prevailing in the breeding colony, *C. gambianus* females behaved like induced ovulators, rather than spontaneous ovulators with a regular cycle. Irregular oestrus cycling was re-established four to thirty days after weaning. Groups of females became synchronized in oestrus and the frequency of oestrus was enhanced in a harem. However, female fertility in a harem was lower than in one-on-one matings. Increased sexual activity and subsequently higher fertility occurred during the rainy seasons. In the breeding colony, *C. gambianus* males remained fertile for nine years or more while the females could still reproduce efficiently after six years. The document is full of data and tables.

BDB ref. : BEDIM 170

Ramirez-Herrera O., Rodriguez-Vivas R.I., Montes-Perez R., Felipe Torres-Acosta J. – Seguimiento anual de la parasitosis gastrointestinal del tepezcuintle, *Agouti paca* (Rodentia: Agoutidae) en cautiverio en el tropico mexicano [Annual follow-up of the gastrointestinal parasitosis by *Agouti paca* (Rodentia: Agoutidae) in captivity in the tropical Mexico].

Language : Spanish

Source : Revista Biol. Trop 2001, 49, 3-4, 1171-1176

**Address :** Facultad de Medicina Veterinaria y Zootecnia . Universidad Autonoma de Yucatan. Km 15.5 carretera Merida-Xmatkuil. CP. 97000. Mérida, Yucatan, Mexico.

**Abstract :** The tepezcuintle *Agouti paca* is commonly infested by gastrointestinal parasites. Two orders of parasites were determined: Strongylida and Eucoccidiida. Two genera of nematodes were also determined: *Strongyloides* and *Trichuris*. Tepezcuintles kept under captivity in Yucatan are parasited with *Strongyloides* sp. Throughout the year, but only occasionally had oocysts of Eucoccidiida and eggs of Strongylida sp.

**BDD ref. :** BEDIM 230

**Leirs H. – Population Ecology of *Mastomys natalensis* (Smith, 1834). Implications for rodent control in Africa.**

**Language :** English

**Source :** Agricultural edition n°35, 1995, 268p., by Belgian Administration for Development Cooperation. 15, rue des Petits Carmes. B-1000 Bruxelles. Belgium

**Address :** University of Antwerp. Belgium

**Abstract :** This book is a report from the Tanzania-Belgium Joint Research Project 1986-1989 (Projectleader: Prof. Dr W. N. Verheyen), which started with an extensive population-dynamical study of the local multimammate rat *Mastomys natalensis*. Though the project aimed at better rodent control, the book provides a lot of useful data (reproduction, diet composition, growth, ...).

**BDB ref. :** BEDIM 158

**Paschoaletto Michi de Barros Ferraz K.M., Lechevalier M.A., Zarate do Couto H.T., Verdade L.M. – Damage caused by capybaras in a corn field.**

**Language :** English

**Source :** Scientia Agricola 2003, 60, 1, 191-194

**Address :** Depto. De Produção Animal – Lab. De Ecologia Animal – USP/ESALQ C.P. 9 – CEP: 13418-900 – Piracicaba, SP., Brazil <lmv@esalq.usp.br>

**Abstract :** Systematic sampling indicated that 26% of the planted area where damaged by capybaras, and the highest percentage of damage occurred on the border of the corn field suggesting that the strategy of area utilization for feeding was relating to the proximity of the resources “forest” and “water”.

**BDB ref. :** BEDIM 144

**Miglino M.A., Carter A.M., dos Santos Ferraz R.H., Fernandes Machada M.R. – Placentation in the capybara (*Hydrochaeris hydrochaeris*), agouti (*Dasyprocta aguti*) and paca (*Agouti paca*).**

**Language :** English

**Source :** Placenta 2002, 23, 416-428

**Address :** Department of Physiology and Pharmacology. University of Southern Denmark, Winsloewparken 21, DK-5000 Odense, Denmark. acarter@health.sdu.dk

**Abstract** : The characteristics of the placentae of three hystricimorph rodents-capybara, agouti and paca- were examined in details and results are provided

**BDB ref.** : BEDIM 149

**Van Zyl A., van der Merwe M., Blignaut A.S.** - Meat quality and carcass characteristics of the vondo *Thryonomys swinderianus*.

**Language** : English

**Source** : South African Journal of Animal Sciences 1999, 29, 3, 120-123

**Address** : 244 Carinus Street, Meyerspark 0184, South Africa

**Abstract** : The meat of females tended to have higher lipid contents than that of males. The cholesterol content of vondo meat was low compared to values for beef and goat.

**BDB ref.** : BEDIM 148

**Mensah G.A., Ekue M.R.M.** – L’essentiel en aulacodiculture [ The main points in grass-cutter breeding].

**Language** : French

**Source** : Réseau Rongeurs et Environnement (RéRE) with the support of the Dutch Royal Tropical Institute (KIT), the Netherlands Committee of the IUCN and the Centre Béninois pour le Développement Durable (CBDD), 2003, 160 p., 78 photographs, 23 figures, 24 tables ; 15 × 20,5cm.

**Address** : RéRE, 01 BP 2359 R.P. Cotonou, Bénin [mensahguy55@yahoo.fr](mailto:mensahguy55@yahoo.fr)  
Bank account of RéRE at Bank of Africa, Bénin, Agence centrale de Cotonou, compte 01511511571

**Abstract** : Grass-cutter breeding is nowadays a reality in several African countries, and appropriate extension requires means and ways to help small farmers. The present booklet provides most of the existing information on the topic through 10 chapters from the description of a true grass-cutter breeder, the behaviour of the animal and its biology, the infrastructures required, the feed requirements, troubles and diseases with main treatments, practical recommendations, grass-cutter meat processing, accounts and expected returns in a medium-scale farm, ... Precise dates are frequent in the text, showing that the authors are most familiar with what happens in the field. The two Dutch organizations and the CBDD are right in supporting the RéRE initiative. The booklet is on sale at the cost of FCFA 5,000 in Bénin and 10,000 out of Bénin ; mailing cost is worth extra FCFA 5,000.

**BDB ref.** : BEDIM 235

**Mensah G.A., Ekue M.R.M., Aguessy E.** – Les pas-à-pas en images de l’élevage d’aulacodes [Step by step in pictures for grass-cutter breeding].

**Language** : French & Fon

**Source** : Réseau Rongeurs et Environnement (RéRE) with the support of the Dutch Royal Tropical Institute (KIT), the Netherlands Committee of the IUCN and the Centre Béninois pour le Développement Durable (CBDD), 2003, one sheet 60 × 42 cm printed recto/verso fold 3 times, giving 2 × 8 “pages”, 58

pictures, 4 drawings, some pages of written text and other information.

**Address** : RÉRE, 01 BP 2359 R.P. Cotonou, Bénin [mensahguy55@yahoo.fr](mailto:mensahguy55@yahoo.fr)  
Bank account od RÉRE at Bank of Africa, Bénin, Agence centrale de Cotonou, compte 01511511571

**Abstract** : This poster is a very short illustrated summary of the important factors in grass-cutter breeding. It is some sort of synthesis of the book "The main points in grass-cutter breeding" issued at the same time and analyzed in this Bulletin (see BDB ref : BEDIM 235). The true peculiarity is that the caption and the few texts are provided not only in French but also in Fon, the most vernacular language in Bénin and even written in the specific fon alphabet. However, being printed on both sides of the poster, presentation on a wall makes only one size visible. The poster is on sale at the cost of FCFA 2,000 in Bénin and FCFA 5,000 out of Bénin. Weighting less than 50 g (without envelope), it could probably be sent as a letter.

**BDB ref.** : BEDIM 236

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#### WILD PIGS

Dutertre C. – Reproductive functional anatomy and oestrus cycle pattern of the female brush-tailed porcupine (*Atherurus africanus*, Gray 1842) from Gabon.

**Language** : English

**Source** : Animal Reproduction Science 2003, 77, 247-259

**Address** : Departament de Sanitat i d'Anatomia Animals, Facultat de Veterinaria, Unversitat. Autonoma de Barcelona, Edifici V, E-08193, Bellaterra, Barcelona, Spain.

[manel.lopez.bejar@uab.es](mailto:manel.lopez.bejar@uab.es)

**Abstract** : In the present study, we examined certain features of the functional anatomy of the female genital tract of the wild brush-tailed porcupine (*Atherurus africanus*) to obtain data on its reproductive biology. Two consecutive experiments were performed; a) to establish macroscopic and microscopic features of the genital organs, and to explore correlations between predominant ovarian structures and vaginal contents In 20 wild, mature females b) to inspect the external genitalia and vaginal smears of a further 10 females in captivity on a daily basis for 90 days. The uterus of the brush-tailed porcupine is bicornuate and composed of two separated uterine horns, a uterine body and cervix. The genital tract does not present a vaginal vestibule. Thus, there is no portion common to genital and urinary tracts. Females in the follicular phase of the oestrous cycle showed increased cornification of the vaginal epithelium and a high density of osinophilic cells. The vulva and vaginal opening were open, reddish and tumefacted. In luteal phase or in pregnancy, histological changes were detected and the vagina presented a pale, non-tumefacted vulva and a vaginal closure membrane. Females in captivity showed spontaneous

cycles, a polyoestrous reproduction pattern and, their oestrous cycle length was 27.1+6.4 days (n=12).

BDB ref. : BEDIM 243

Dutertre C., Dubost G., Feer G., Henry O., Mauget R. – Behaviours of collared and white lipped peccaries (*Tayassu tajacu* and *T. Pecari*) in relation to sexual receptivity of the female.

Language : English

Source : Acta Theriologica 2001, 46, 3, 305-318

Address : Laboratoire de Conservation des Especies Animales, Museum National d'Histoire Naturelle, 57, rue Cuvier, 75005 Paris, France  
E-mail: [gdubost@mnhn.fr](mailto:gdubost@mnhn.fr)

Abstract : Changes in behaviours of the two peccary species, between non-receptive and receptive periods were followed by presenting females to males daily for 15 minutes. In *T. tajacu*, the rank order of behaviours, similar in both sexes, differs during receptivity. Sexual behaviour increases and inhibited bites replace markings of partner as the most common behaviour in both sexes. In *T. pecari*, the rank order of behaviours always differs between sexes, when females become receptive, there is little difference in behaviour with non-receptive periods. The only behaviour that increases are those related to copulation and those of an agonistic nature. In both species, females show more agonistic behaviours than males. In receptive periods, males of *T. pecari* become less active while both sexes double their activity in *T. tajacu*. In *T. tajacu*, behaviours vary significantly in relation with progesterone levels, which appears correlated to herd composition and organisation.

BDB ref. : BEDIM 249

Dubost G., Dutertre C., Henry O. – Body weight increase in the two peccary species of the genus *Tayassu* (*Tayassuidae*, *Artiodactyla*).

Language : English

Source : Mammalia 2003, 67, 1, 55-63

Address : Laboratoire de Conservation des Especies Animales, Museum National d'Histoire Naturelle, 57, rue Cuvier, 75005 Paris, France  
E-mail: [gdubost@mnhn.fr](mailto:gdubost@mnhn.fr)

Abstract : Changes in behaviours of the two peccary species, between The developmental characteristics of two congeneric species, the collared peccary *Tayassu tajacu* (L.) and the white-lipped peccary *T. pecari* (Link), were studied from birth to adulthood in captive-born animals at a field station in French Guiana. Both sexes and both species show several accelerations and decelerations of the mean daily weight increase. Four maxima of weight increase coincide well with the 4 crucial stages of development: weaning, tooth eruption or replacement, and onset of sexual maturity. Following the von Bertalanffy equation, peccary females show a coefficient of catabolism  $k$  equal or superior to males, as in most artiodactyls. Consequently, as in many artiodactyls, females are initially heavier than males; then, in a complete reversal of body weights, males continue their fast growth and become

progressively heavier than females. Like the European wild boar, the coefficient  $k$  is greater in peccary species than in the other artiodactyls of comparable body weight; conversely, peccaries attain their adult weight faster. The percent birth weight to maternal weight, the coefficient of catabolism  $k$  and the time to reach adult weight place the peccaries between the suids and the ruminants. This is consistent with the features shown by their morphology, anatomy and physiology.

BDB ref. : BEDIM 245

Hoon T.H., Hefflinger J.R., Olding R.J., Wesche S.L., Reggiardo C. – Serologic survey for antibodies to canine distemper virus in collared peccary (*Tayassu tajacu*) populations in Arizona.

Language : English

Source : Journal of Wildlife Diseases 2003, 39, 1, 221-223

Abstract : In 1989, a disease outbreak was observed among collared peccaries (*Javelina Tayassu tajacu*) in southern Arizona (USA) and canine distemper virus (CDV) was isolated from affected animals. Subsequently, 364 sera were collected from hunter-harvested javelina over a 4 years period (1993-96) and were tested for antibody to CDV. Neutralizing antibody to CDV was detected in 58 of the serum samples suggesting that CDV infection is probably enzootic in the collared peccary populations of southern Arizona.

BDB ref. : BEDIM

Pinheiro M.J.P., Da Silva F.N., Da Silveira Azevedo C.M. – Reproductive parameters evaluation in the collared peccary (*Tayassu tajacu*) in captivity.

Language : Português

Source : Caatinga 2001, 14, 1-2, 71-74

Address : ESAM, Caixa Postal 137, 59600-970, Mossoro, RN, Brazil.

Abstract : The performance of peccary groups kept in captivity was evaluated in relation to male/female ratio using the following traits: gestation period, parity interval, number of parities/female/year, litter size, weight at birth, lactation period, weight at weaning, and stillbirth percentage. The experiment was carried out at the Wild Animals Multiplication Centre (CEMAS), Escola Superior de Agricultura de Mossoro (ESAM), Mossoro, Rio Grande do Norte, Brazil. Two groups of animals were utilized, one wild and the other the control with sex ratios of 1:3, 2:6, 3:9, 4:12 and 5:15. The comfort areas ( $m^2/\text{animal}$ ) were 156.25, 78.31, 52.08, 39.06 and 31.25, respectively. The total number of animals included 45 males and 141 females. Since the reproductive performance of the peccary groups studied were exploratory, the data were not analysed, however, some general inferences could be drawn from the data (a) in captivity, reproduction occur in any sex ratio; (b) the size of the comfort area affect mortality from birth to weaning; (c) lactation period affect weight at birth.

BDB ref. : BEDIM 247

Andrade Figueira M. L. O., Orlandelli Carrer C. R., Bezerra Silva Neto P. – Ganho de peso e evolução do rebanho de queixadas selvagens em sistemas de criação semi-extensivo e extensivo, em reserva de cerrado [Weight gain and evolution of a wild white-lipped peccaries under extensive and semi-extensive systems, on a savanna area].

Language : Português

Source : Revista Brasileira de Zootecnia 2003, 32, 1, 191-199

Address : Departamento de Ciências Básicas, caixa postal 23, Pirassununga-SP, CEP: 13635-900. Brasil.

[lfcaf@uninet.com.br](mailto:lfcaf@uninet.com.br) ou [recarrer@usp.br](mailto:recarrer@usp.br)

Abstract : The use of automatic feeder with corn grain as a methodology to mark, recapture and manage herds of white-lipped peccaries (*Tayassu tajacu*) reintroduced on a Savannah area located in Mato Grosso do Sul State was tested. The weight gain of animals managed on extensive free ranging conditions and on semi-extensive systems (15 ha enclosures) could be compared and the reproductive performances in both systems was examined. The management of white-lipped peccaries on extensive conditions provided a greater weight gain of the animals. The automatic feeding barrel dispensing corn grain showed to be efficient and to attract and aggregate the white-lipped peccaries, but also provided supplemental energy. Using the mark and recapture method, we could note that these animals reproduced all year long, breeding 1, 57 piglets/female /year. Gross productivity was 1,4 and gross fecundity was 0,4. The adoption of extensive systems.

BDB ref. : BEDIM 246

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#### GUINEA PIGS

Sanchez-Villagra M.R., Aguilera O., Horovitz I. – The anatomy of the world's largest extinct rodent.

Address : Universität Tübingen, Spezielle Zoologie, Auf der Morgenstelle 28, D-72076 Tübingen, Germany.

[marcelo.sanchez@uni-tuebingen.de](mailto:marcelo.sanchez@uni-tuebingen.de)

Source : Science 2003, 301, 5640, 1708-1710

Language : English

Abstract : *Phoberomys* is reported to be the largest rodent that ever existed. Reliable body mass estimates yield ~ 700 kilograms, more than 10 times the mass of the largest living rodent, the capybara. The authors describe a fossil skeleton recently discovered in Venezuela.

BDB ref. : BEDIM 231

Alexander R.M.N. – A rodent as big as a buffalo.

Address : Department of Pure and Applied Biology, University of Leeds, Leeds LS2 9JT, U.K. [r.m.alexander@leeds.ac.uk](mailto:r.m.alexander@leeds.ac.uk)

Source : Science 2003, 301, 5640, 1678-1679

Language : English

- Abstract : Fossils have recently been found of the skeleton of a giant rodent (probable weight around 700 kg), which name is *Phoberomys*. Surprisingly it belongs to the Caviomorpha, as the guinea pig *Cavia porcellus*.
- BDB ref. : BEDIM 232

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## FROGS

Kok Ph., Jooris R., Percsy Ch., Lenglet G. – Dangers pour la faune indigène de l'introduction d'espèces animales à des fins ornementales: *Rana bedriagae* (Amphibia: Anura: Ranidae), un futur cas d'école ? [Danger for the local fauna of animal species introduced for ornamental purposes : *Rana bedriagae* (Amphibia :Anura : Ranidae), a future case study ?].

Language : French

Source : Bulletin de l'Institut Royal des Sciences Naturelles de Belgique, Biologie, no 72 suppl., 219-221.

Address : Institut royal des Sciences naturelles de Belgique. 29, rue Vautier. 1000 Bruxelles. Belgium.

Abstract : *Rana bedriagae*, a green frog native of the Middle East and Egypt, is very similar to the green frog species present in Belgium where it has been massively imported. The presence of *Rana bedriagae* in nature was feared, but is today reinforced by the discovery of a green frog population in Chaumont-Gistoux. The main dangers of this introduction are genetic pollution, transmission of pathologies and competition. The threat must be regarded as serious. Various solutions are proposed.

BDB ref. : BEDIM 163

Decocq O., Hofmans K. – Apprenons à reconnaître la grenouille agile [Let us learn how to identify *Rana dalmatina*].

Language : French

Source : Erable, Revue Cercles des Naturalistes de Belgique, 2000, 1, 25-26.

Address : Centre Marie-Victorin, rue des Ecoles 21 ; B-5670 Vierves-sur-Viroin, Belgique.

Abstract : The authors refer to *Rana dalmatina*, present in France but not considered as indigenous in Belgium though mentioned. The text could be used for other frogs to be well described.

BDB ref. : BEDIM 207

Hedger S.B. – The coelacanth of frogs.

Language : French

Source : Nature, 2003, 425, 6959, 669-670.

Address : Department of Biology, NASA Astrobiology Institute. Pennsylvania State University, University Park, Pennsylvania 16802, USA [sbh1@psu.edu](mailto:sbh1@psu.edu)

Abstract : A living amphibian with unusually deep evolutionary roots has been discovered in the mountains of southern India recently. It belongs to a new species and only member of a newly designated family. The author relates the probable phylogenetic

story of this frog which has been described by Biju and Bossuyt.

BDB ref. : BEDIM 250

Biju S.D., Bossuyt F. – New frog family from India reveals an ancient biogeographical link with the Seychelles.

Language : English

Source : Nature, 2003, 425, 6959, 711-714.

Address : Tropical Botanic Garden and Research Institute, Palode, Thiruvananthapuram, 695562 Kerala, India. Biology Department, Unit of Ecology & Systematics, Vrije universiteit Brussel, Pleinlaan 2, B-1050 Brussels, Belgium.

Abstract : The authors report the discovery of a burrowing frog from India that is noticeably distinct from known taxa in all anuran families. They recognize this frog as a new family, named *Nasikabatrachus sahyadrensis*.

BDB ref. : BEDIM 233

Somsueb P., Boonyaratpalin M., Hardy RW., Koshio S., Watanabe T. – Optimum protein and energy levels for the Thai native frog, *Rana rugulosa* Weigmann.

Language : English

Source : Aquaculture-Research 2001, 32, Supplement 1, 33-38

Address : Feed quality control and development division, Department of Fisheries, Jatujak, Bangkok, 10900, Thailand.

Abstract : This study determined the effect of dietary protein and energy levels on growth and feed utilization of the Thai native frog *Rana rugulosa*. The frogs were fed four isocaloric diets (5300 kcal/kg) with four protein levels in experiment I, and with four isonitrogenous (37%) diets with four gross energy levels in experiments II. The frogs were fed to apparent satiation twice daily for 12 weeks in three replicate concrete ponds (30 frogs/pond); Average frog weight was 3.5 and 7.8 g for experiment I and II, respectively. Average weights, but not survival rates, were significantly different at the end of the study. Survival rate and body composition were similar in all treatments. The findings indicate that optimum dietary protein, energy and protein-to-energy ratio for the Thai native frog are 36.7%, 4900 kcal/kg and 74.89 mg/kcal, respectively.

NB: full text not available at BEDIM data base

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## EDIBLE TROPICAL SNAILS

Martinez Cristobal A.M. – Principales patologias de los caracoles [Main diseases of snails].

Language : Spanish

Source : Ganaderia 5 mai 2001, 53-56.

Abstract : En helicultura, al igual que en los demas sectores de las producciones animales, la aparicion de diferentes procesos patologicos repercute, directa o indirectamente, en la rentabilidad productiva y economica, que puede reducirse en un

25-30% de sus posibilidades. Las patologías de los caracoles se producen, la mayoría de las veces, por deficiencias en el manejo y en la higiene, siendo solamente en algunos casos causadas de altos porcentajes de mortalidad.

BDB ref. : BEDIM 165

Ebenso I. E. – Consumption and sales of domesticated snails *Archachatina* in rural southern Nigeria.

Language : English

Source : Trop. Sci. 2002, 42, 185-187

Address : Department of Animal Science, University of Uyo, PMB 1017, Uyo, Nigeria

Abstract : A survey of ten households in each of ten villages indicated that 83% of women used domesticated snails *Archachatina marginata* to supplement more costly sources of meat and 62% used them to augment family income. Of men, 38% kept snails for commercial purposes and 63% were involved in roadside sales only. Of the women, 8% and 97% were involved in hawking and market sales respectively.

BDB ref. : BEDIM 164

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#### MANURE WORMS

Paoletti M.G., Buscardo E., VanderJagt D.J., Pastuszyn A., Pizzoferrato L., Huang Y. S., Chuang L. T., Millson M., Cerda H., Torres F., Glew R. H. – Nutrient content of earthworms consumed by Ye'Kuana Amerindians of the Alto Orinoco of Venezuela.

For details, see under "Human Nutrition" same issue.

Mariani L., Bernier L., Jimenez J.J., Decaens T. – Diet of an anecic earthworm from the Colombian savannas : questioning ecological groups.

Language : French

Source : Comptes-rendus de l'Académie des Sciences, Série 3 Sciences de la Vie 2001, 324, 8, 733-742

Address : Institut de Recherche pour le Développement, Bondy (France). Laboratoire d'Ecologie des Sols tropicaux.

Abstract : The aim of the study was to check by stomach analyses the ecological classification of the earthworm *Martiodrilus carimaguensis*.

BDB ref. : BEDIM 159

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#### INSECTS

Munyuli Bin Mushambanyi T., Balezi N. – Utilisation des blattes et des termites comme substituts potentiels de la farine de viande dans l'alimentation des poulets de chair au Sud-Kivu, République démocratique du Congo – [Use of Cockroach and Termites as potential Substitutes of Meal Meat in Broilers feeding in South-Kivu, Democratic Republic of the Congo].

Language : French  
Source : Tropicultura 2002, 20, 1, 10-16  
Address : Laboratoire de Zoologie agricole, Département de Biologie, Centre de Recherche en Sciences naturelles (C.R.S.N./Lwiro), D.S. Bukavu, République démocratique du Congo. C/o Prof. Kachuka, Petit Séminaire de Mugeru, B.P. 02 Cyangugu, Rwanda.  
Abstract : Ab : The objective of this study is to compare some economic and zootechnical parameters obtained by broilers fed with locally prepared rations, with commercial ration or with a local ration with 20% meal meat. The meal meat is very expensive on the local market. The locally prepared and used rations contain 4.8 and 12% of incorporated cockroach meal or 4.8 and 12% of termites meal. The use of 4.8 and 12% containing cockroach meal rations and those containing 12% of termites meal give satisfactory result in terms of return on investment (ranging between 60 and 100%) and mean gain weight, both significant with respect to commercial rations from Tanzania and local rations containing 20% of incorporated meal meat. These rations are profitable, cheaper than commercial rations; they can be adopted by chickens breeders in order to improve profitability in the farming of birds in South-Kivu.  
BDB ref. : BEDIM 076

Loa Ch. – Production et utilisation contrôlées d'asticots – [Controlled production and use of maggots].

Language : French  
Source : Tropicultura 2000, 18, 4, 215-219  
Address : PNVRA de l'Est, B.P. 04 Bertoua, Cameroon  
Abstract : The tests have been undertaken in Maroua (North Cameroon), in the months of February and May 1998, in order to provide data concerning the production and use of maggots for poultry nutrition in traditional farm, this beyond the scope of minilivestock. Both tests have been carried out under shelter, with 7 plots each containing 2 kg of fresh rumen contents as substrate, packed in black plastic bag as container. The results showed that maggots are preferential food for poultry compared with cereals. Maggots from third to the fifth day are more interesting because of their size, their consistency and their weight. Temperature seems to have an influence on the maggots growth. In the same way, the substrate nature and its container size have an effect on the quantitative and qualitative production of maggots. The type of housefly preferred *Musca domestica* also has an effect on the quantitative production of maggots. Controlled production and use of maggots seem to be interesting in poultry farming and minilivestock in tropical area. It is now left to determine the nutritive value of maggots for their incorporation into various rations of different animals, in order to utilize it on a wide scale.  
BDB ref. : BEDIM 088

**Ekoue S.E., Hadzi Y.A. – Production d’asticots comme source de protéines pour jeunes volailles au Togo. Observations préliminaires – [Maggots production as proteins source for young poultry in Togo. Preliminary observations].**

**Language :** French

**Source :** Tropicultura 2000, 18, 4, 212-214

**Address\* :** Centre de Recherche Agronomique (CRAF), Station Avétonou. B.P. 27, Agou-Gare, Togo.

**Abstract :** Experiments on maggots production was conducted in Togo during December 1998. The substrate used was the rumen content in the open air ten hours before covered with mosquito-net. In the day-2, the authors observed small maggots but in the day-3, big maggots can be manipulated. The pupae appear in the day 4 and 5; flies begin growing up in the day-9. A total of 1200 maggots was obtained with a substrate weighing 6.5 kg. A sample of 220 maggots permitted to have 0.05 g as mean weight of one maggot. Those tests will show the veritable effect of maggots use as feed in poultry production.

**BDB ref. :** BEDIM 089

**Téguia A., Mpoame M., Okourou Mba J.A. – The production performance of broiler birds as affected by the replacement of fish meal by maggot meal in the starter and finisher diets.**

**Language :** English

**Source :** Tropicultura 2002, 20, 4, 187-192

**Address :** Faculty of Agriculture and Agricultural Sciences (FASA). University of Dschang, P.O. B. 70, Dschang, Cameroon.

**Abstract :** The effect of replacing fish meal with maggot meal in the starter and grower-finisher diets on the production performances of broiler chickens was studied. For both the starter and the grower-finisher periods, total weight gain in the control group receiving exclusively fish meal was significantly ( $P<0.05$ ) lower than that of birds receiving the diet containing the largest amount of maggot meal. No significant difference ( $P<0.05$ ) was detected among treatment groups for feed conversion ratio for both the starter and grower-finisher periods. No significant difference was detected among treatment groups for either hot carcass yield or proportion of different parts of the carcass, although increasing the amount of maggot meal in the diet tended to increased proportion of liver and gizzard. Although no significant difference was recorded among treatment groups for the feed cost for the production of one kg of live weight, there was a 4 to 16% reduction in cost of production as compared to the control group for both the starter and the grower-finisher periods. It was concluded that from the technical and economic point of view, maggot meal could replace fish meal, but that the earlier should be analysed for toxicity before it could be widely used for broiler chicken feeding.

**BDB ref. :** BEDIM 090

Sanchez P.A., Jaffé K., Hernandez J.V., Cerda H.– **Biología y comportamiento del picudo del cocotero *Rhynchophorus palmarum* L. (Coleoptera : curculionidae) – [Biology and behaviour of the palm grub *Rhynchophorus palmarum* L. (Coleoptera: curculionidae)].**

Language : Spanish

Source : Bol. Entomol. Venez. N. S. 1993, 8, 1, 83-93

Address : FONAIAP-CENIAP, Convenio FONAIAP-USB. Universidad Simon Bolivar. Dpto. De Biología de Organismos, Lab. De Comportamiento Animal, Apdo. 89000, Caracas, D.F., Venezuela

Abstract : *Rhynchophorus palmarum* L. is distributed practically all over Venezuela, in commercially exploited palm plantations and in natural forests with palms. The authors describe two rearing methods using artificial diets for reproducing the insect in the laboratory. The total life cycle spans from 4 to 6 months, including 1 to 2 months as adult. The female lays over two hundred eggs during her first month as adult. Larvae are cannibalistic. It has been observed aggressive interactions among females, but not among males. The male orients actively toward the female only after aggregation on a food source. The daily flying activity is influenced by light, humidity and temperature.

BDB ref. : BEDIM 092

Cerda H., Martinez R., Briceno N., Pizzoferrato L., Hermoso D., Paoletti M. – **Cria, analisis nutricional y sensorial del picudo del cocotero *Rhynchophorus palmarum* (Coleoptera: curculionidae), insecto de la dieta tradicional indigena amazonica – [Rearing, nutritional composition, and sensorial analysis of the *Rhynchophorus palmarum* (coleoptera: curculionidae) palm weevil as a food eaten by the Amazonian indians].**

Language : Spanish

Source : Ecotropicos 1999, 12, 1, 25-32

Address : Universidad Simon Rodriguez, Apartado Postal 47.925, Caracas 1041-A, Venezuela; present address : Department of Biology, Imperial College at Silwood Park, Ascot, SL% 7PY UK. E-mail: [h.cerda@ic.ac.uk](mailto:h.cerda@ic.ac.uk)

Abstract : The larvae of the *Rhynchophorus palmarum* L. (Coleoptera: Curculionidae) palm weevil play an important role as a source of protein for the Amazonian Indians, and are viewed as a tasty food by the population of the tropical Amazonian areas. These larvae make up a valuable resource for the Indian population. The Indians collect them from rotten palm stems and eat them boiled or raw. The paper describes the development of a small-scale growing system to be used by the rain forest Indian communities. Larvae are bred using wild plants and traditional Indian crops. We study larval survival and density in each palm. Following topics were studied: a) the larvae's nutritional composition, b) the nutritional composition of some substrates, c) a taste test with tourists, d) larval survival, e) density in each palm substrate.

BDB ref. : BEDIM 091

**Hardouin J. – Production d’insectes à des fins économiques ou alimentaires. Mini-élevage et BEDIM – [Insect breeding for economic or nutritive uses. Minilivestock and BEDIM].**

**Language :** French

**Source :** Notes fauniques 2003, 50, 15-25

**Address :** c/o BEDIM, Bibliothèque, FUSAGx, Passage des Déportés 2, B-5030 Gembloux, Belgique

**Abstract :** Animal production technique focused on insects is emerging, as it has already been the case with the guinea pig for meat, with frogs and with several other small animals. In many tropical countries indeed, insects are consumed by local people or used for other purposes. These insects are however collected in the wild without any control by simple gathering. “Palm grubs”, several caterpillars, termites and many other insects constitute first class food for people in many countries, while maggots are sometime given to young poultry or piglets in village breeding. In industrialized countries, a non-food use of given species of meat-eating maggots is coming back in human surgery where they are able to definitively clean nasty wounds refractory to usual treatments (antiseptics, antibiotics, etc.). It should not be forgotten either that coloured nice-looking insects are used in handicraft for foreign tourists. The international sale of living tropical chrysalides to “tropical butterflies farms” in temperate countries and of well mounted adult lepidoptera or other insects represent a very high output as well. Developing rational and sustainable insects production techniques to replace uncontrolled capture in the wild and to help keeping biodiversity in tropical countries represent one of the objectives of the international association BEDIM (Bureau for Exchange and Distribution of Information on Minilivestock) located at Gembloux, Belgium.

**BDB ref. :** BEDIM 206

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## CULTURAL ANTHROPOLOGY

**Mignon J. – L’entomophagie: une question de culture ? – [Entomophagy : a cultural matter ?].**

**Language :** French

**Source :** Tropicultura 2002, 3, 151-155

**Address :** Unité de Zoologie générale et appliquée. Faculté universitaire des Sciences agronomiques de Gembloux. Passage des Déportés, 2. B-5030 Gembloux, Belgique

[mignon.j@fsagx.ac.be](mailto:mignon.j@fsagx.ac.be)

**Abstract :** Entomophagy, the eating of insects, is not a curiosity but is practiced throughout the world, except in Europe and North-America. For many Europeans, the consumption of insects is considered as a primitive and repugnant comportment. An experiment, conducted in Belgium (Gembloux) has shown that, informed about the cultural, the nutritional and the ecological aspects of entomophagy, Westerners are able to surmount their

aversion. Could insects become common dish in European and American restaurants.

BDB ref. : BEDIM 103

Mignon J. – FIFI 2001. Les insectes au menu du 4ème Festival International du Film de l’Insecte (Narbonne-Gembloux, du 17 au 21 octobre 2001) – [FIFI 2001. Insects on the menu of the 4th International Insect Film Festival (Narbonne-Gembloux, 17-21 October 2001)].

Language : French

Source : BEDIM Bulletin 2002, 11, 1, 14-16

Address : Unité de Zoologie générale et appliquée. Faculté universitaire des Sciences agronomiques de Gembloux. Passage des Déportés, 2. B-5030 Gembloux, Belgique  
[mignon.j@fsagx.ac.be](mailto:mignon.j@fsagx.ac.be)

Abstract : During the same period, the towns of Narbonne (France) and Gembloux (Belgium) were full of insects and insect specialists. Not only exhibitions but also films were attended by around 3000 persons. A dozen of naturalists associations met in the premises of the Faculty at Gembloux and commented field visits. The scientific collections of the Unité de Zoologie générale et appliquée were open for visits. Finally, the organizers invited the visitors to a special meal based on several insects : some hundreds people accepted the challenge ... and appreciated the dishes.

BDB ref. : BEDIM 87

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#### MINILIVESTOCK

Paoletti MG. – Biodiversity, traditional landscapes and agroecosystem management

Language : English

Source : Landscape and Urban Planning 1995, 31, 117-128

Address : Department of Biology, Padova University, via Triestre, 75, I-35122 Padova, Italy

Abstract : Most of the terrestrial environment, up to 95%, is affected by human activities, including agriculture, and this terrestrial habitat provides up to 98% of human food on the planet. Sustainable strategies in food production in agriculture improve the existing biodiversity and include the following items: increased porosity of the landscape through natural vegetation, proper management, better use and recycling of organic residues, introduction of integrated farming systems, reduced tillage, rotation, biological control, increased number of biota involved in human foodwebs. Attention must be paid to non-conventional food such as insects and other terrestrial invertebrates in Western countries. Such minilivestock, like the case of palm weevils in Papua New Guinea, can offer a model of sustainable use of rain forests in which most of the diversity on the planet represented by insects is concentrated.

BDB ref. : BEDIM 153

Ngandjui G., Blanc C.P. – Effects of hunting on mammalian (Mammalia) populations in the western sector of the Dja reserve (Southern Cameroon).

Source : Game and Wildlife Science 2000, 17, (2), 93-113

Language : English

Address : University of Montpellier 3, Laboratory of Zoogeography, Route de Mende, F-34199 Montpellier Cedex 5, France. [cblanc@bred.univ-montp3.fr](mailto:cblanc@bred.univ-montp3.fr)

Abstract : Demographic and socio-economic mutations affecting the lifestyle of human populations living in African forests have increased the hunting pressure on wildlife. Market hunting now exceeds subsistence hunting. Hunting and trapping practices in a village in the western part of the Dja reserve was studied. The village hunters used a 300 km<sup>2</sup> hunting area. *Cephalopus* spp. (4 species) accounted for most captures (64% of 419 captures, and 77.6% of biomass harvest) among 28 small and medium-sized mammal species hunted. Game waste occurred when animals were left in traps laid more than 15km from the village. Villagers hunted primarily for market purposes and secondarily for subsistence. The harvesting level observed for *Cephalopus* spp., *Cercopithecus pogonias* and *Atherurus africanus* in the hunting zone closest to the village cannot be sustained: these species were overharvested.

BDB ref : BEDIM 145

Gonzalez Marin RM., Montes Pérez R., Santos Flores J. – Caracterizacion de las unidades para la conservacion, manejo y aprovechamiento sustentable de fauna silvestre en Yucatan, Mexico – [Characterization of the units for the conservation, management and sustainable use of wildlife, in Yucatan, Mexico].

Source : Tropical and Subtropical Agroecosystems 2003, 2, 13-21.

Language : Spanish

Address : Universidad Autonoma de Yucatan, Facultad de Medicina Veterinaria y Zootecnia, Km 15.5 carret. Mérida-Xmatkuil, Mérida, Yucatan, Mexico [mperez@tunku.uady.mx](mailto:mperez@tunku.uady.mx)

Abstract : In 1997, wild animal farms, tree nurseries and open areas with wild life were decreed as units for the conservation, management and sustainable use of wildlife (UMAs) by the Mexican Secretariat of Environment, Natural Resources and Fisheries (SEMARNAP) with the goal to provide a strategy for the conservation and sustainable use of wild life in Mexico. Up to date, very little information has been gathered and presented in regard of UMAs. The objective of this project was to characterize the units of wild animals in Yucatan. A list of units registered was obtained from SEMARNAP in November 2000. The authors obtained data through a questionnaire answered by the workers at the units. They received data about the objective of each unit, the kind of species and activities as well as the animal management and handling in the units. Thirty four UMAs were found of wild animals in different sites of Yucatan. 79% of units are close areas (intensive) and the 21% of units are open areas (extensive). Of the intensive units 63% had national fauna,

22% exotic fauna and 15% mixed fauna. The objectives in intensive units were: recreation 11%, ornate 11%, research 11%, conservation 15%, exhibition 19% and commerce 33%. The percentage in the animal handling and management of intensive units was: 13% reproductive, 19% nutritional, 26% sanity, 20% techniques of animal contention and 22% data records. The 86% of the extensive units were planning habitat management and monitoring of the animal population except one, 29% of these units were planning ecoturistic activities and 71% hunting activities. The most of the fauna in extensive units were native. In conclusion, little more than half of the wildlife units in Yucatan are contributing to the conservation simultaneously with sustainable use.

**BDB ref** : BEDIM 234

**Hardouin J., Thys E., Joiris D.V., Fielding D. – Minilivestock breeding with indigenous species in the tropics.**

**Source** : Livestock Research for Rural Development LRRD 2003, 15, 4, electronic issue only <http://www.utafoundation.org/lrrd154/hard>

**Language** : English

**Address** : c/o Bibliothèque, Faculté universitaire de Sciences agronomiques, Passage des Déportés, 2. B-5030 Gembloux, Belgique

**Abstract** : Minilivestock encompasses small indigenous vertebrates and invertebrates which can be produced on a sustainable basis for food, animal feed and as a source of income. It includes bush rodents, guinea-pigs, frogs, giant snails, manure worms and insects. Minilivestock production is suitable for backyard family production and can contribute to increased food security. Extension and research are still missing in many countries due to the lack of related training and education. However, it should be noted that some of these small animals can represent a serious threat as crop pests and any zoonotic implications need to be identified. Minilivestock development is associated with the desirable long-term preservation of biodiversity. Given the new information now available on these species it is time for increased investment in this form of sustainable production.

**BDB ref** : BEDIM 153

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