

# Matenda a Likodzo M'nyanja ya Malaŵi - Zoono Zenizeni ndi Ziti?



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Chikalatachi chinalembedwa ndi thandizo la ndalama zochokera ku mabungwe awiri a NSF/NIH mogwirizana, mu pologalamu yawo yogonjetsa matenda (DEB-0224958), ndipo tinachilemba mogwirizana ndi University ya Malaŵi, Department ya Fisheries, ndiponso National Parks ndi Wildlife ku Malaŵi.

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## Mau a Chidule

*Madoko ena a nyanja ya Malaŵi okhala ngati limene tikuonetsa pa Chithunzi No. 1 anali kuwaganizira kuti analibe tizirombo toyambitsa nthenda ya likodzo mpaka mkati mwa zaka za mma 1980. Koma tsopano anthu akutenga likodzoli mmadoko a nyanjayi, amene akupezeka chaqummwera kwa nyanjayi (mdera la Nankumba Peninsula). Zimenezi zikuchitika chifukwa cha usodzi opitilira muyezo. Mitundu yambiri ya nsomba, kuphatikizapo nsomba zimene zimadya nkhoŵo za m'madzi yayamba kuchepa kwambiri m'nyanja ya Malaŵi masiku ano. Poonjezera kuti likodzo limabweretsa mabvuto akulu pa miyoyo ya anthu amene akukhala m'mbali mwa nyanja ya Malaŵi, kuchulukila chulukila kwa likodzo kumasokonezanso ntchito zokopa alendo ku Malaŵi. Cholinga cha chikalatachi ndi chakuti tifotokoze mwa chidule zomwe zikudziwika za katengedwe ka likodzo m'nyanja ya Malaŵi, kuti alendo ambiri ndi anthu ena athe okha kuona chochita kuti alipewe likodzoli koma mosawapatsa nkhwawa. Malo amene tiri kuwafotokoza pano ndi a "Nankumba*



Chithunzi No. 1: Doko la Chembe pomwe anthu amatenga likodzo.

*Peninsula*”, chifukwa ndi kumene kunachitika kafukufuku wambiri. Tili kudziwa kuti kulinso malo ena ambiri ofunika m’nyanja imemeyi kumene anthu angathenso kutenga likodzo. Ngakhale anthu amatenga likodzoli, tili ndi chikhulupiliro kuti atatsatira malangizo osabvuta amene tawalemba mu chikalatachi, kutenga likodzo kungathe kuchepa. Maganizo onse omwe tawalemba mu chikalatachi ndi a ife alembi.

## Mau Oyamba

Likodzo (*Schistosomiasis*) ndi nthenda yomwe imayambika ndi tizirombo ta mtundu wa nyongolotsi zing’ono zing’ono, zazifupi, komanso zamaonekedwe aphwanthi-phwanthi. Nthendayi inafalikila kale m’madera ambiri otentha, kapena kuti ofunda, a pa dziko lonse. Kachiroombo kamene kamayambitsa likodzo kamakhala m’malo awiri m’nkho ndi m’thupi la munthu. Kali mu mtundu wina wa nkho, kachiroomboka kamabeleka ana. Ana amenewa ndi omwe amalowa pa khungu la munthu. Ana a tizirombowa akatuluka mnkhono, amalowa mmadzi. Tiri mmadzimo, tiziromboti timalowa pa khungu la munthu amene akusamba kapena amene waima mmadzi amenewo. Tiri mkati mwa m’nofu wa munthu, tiziromboti timabelekananso.

Ngakhale kuti likodzo la mchikhodzodzo (*bilharzia*) lomwe limayambika ndi tizirombo ta mtundu wa *Schistosoma haematobium* ndi limene lakhala likubvutitsa anthu amene ali m’malo ozungulira nyanja ya Malaŵi kwa zaka zambiri, pali umboni kuti likodzo lakhala liri kufalikira ku madera ena pa zaka 20 zapitazi. Kafukufuku amene anachitika kwa Chembe m’chaka cha 1999 anaonetsa kuti pafupifupi ana a

sukulu a pulaimale 88 mwa ana 100 ali onse, komanso pafupifupi anthu a mmudzi 58 mwa anthu 100 ali onse a ku dera limenelo, anapezeka ali ndi likodzo.

Poyamba, madoko ena a nyanja ya Malaŵi ngati limene tikuonetsa pa Chithunzi No. 1 amawaganizira kuti analibe tizirombo toyambitsa likodzo, koma anthu amanena kuti malo ena a m’nyanjayi omwe anali ndi zomera mmadzi, komanso amene anali pafupi ndi mitsinje yomwe imalowa m’nyanjayi, ndi kumene tizirombo toyambitsa likodzo tinali kupezeka. Nkhono za mtundu wa *Bulinus globosus*, zomwe zimakhala ndi tizirombo toyambitsa likodzo, ndi zimene zimapezeka m’malo amenewa.

Mkati mwa zaka za mma 1980, malipoti onena kuti anthu amatenga likodzo m’nyanja ya Malaŵi anayamba kutuluka. Mwa chitsanzo, m’modzi wa alembi a lipoti lino, a Jay R. Stauffer, anadwala nthenda ya likodzo m’chaka cha 1987. Analitenga likodzoli pa nthawi imene amachita kafukufuku atamila m’nyanjayi.

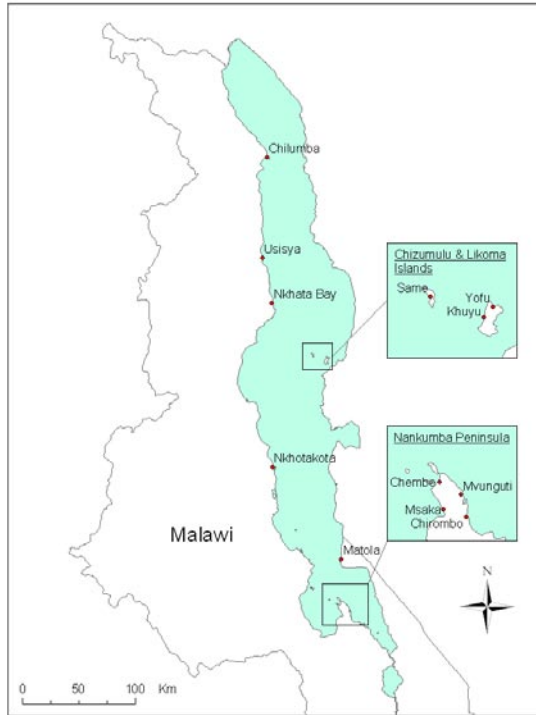
Tsopano zadziwika kuti ku m’mwera kwa nyanja ya Malaŵi (Nankumbba Peninsula), pa malo



amene tawaonetsa pa mapu a Chithunzi No. 2, anthu akutenganso likodzo m'madoko ena amene ali ndi mchenga pansi pake (ngati omwe tawaonetsa pa Chithunzi No. 1). Ku malo amenewa, m'modzi winanso wa alembi a chikalatachi, a "Henry Madsen" anapeza kuti nkhoŋo ya mtundu wa *Bulinus nyassanus* yomwe taiwonetsa pa Chithunzi No. 3, imakhalanso ndi tizirombo toyambitsa likodzo.

Poonjezera kuti likodzo limayambitsa mabvuto akulu pamiyoyo ya anthu, nthendayi imasokonezanso ntchito ya zokopa alendo yomwe imathandiza dziko la

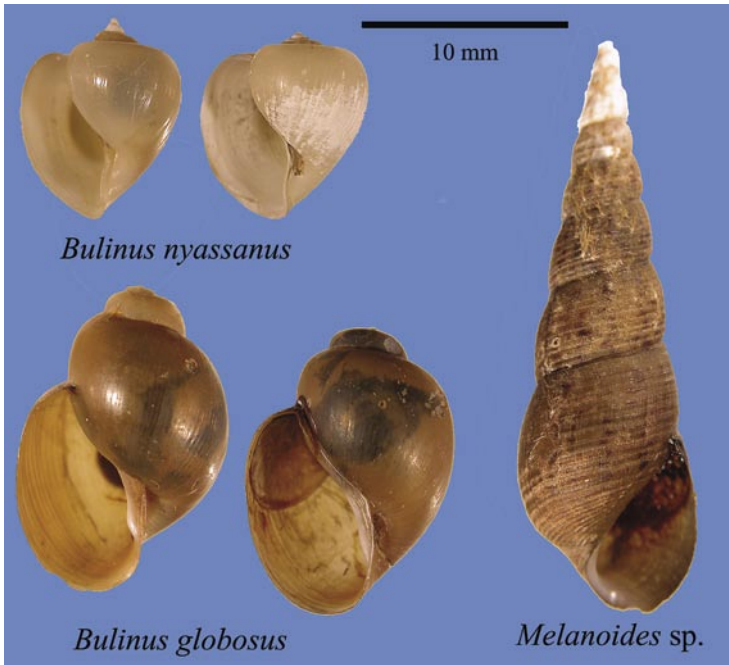
Malaŋi kuti lipeze ndalama za maiko ena. Ku Cape Maclear ndi kotchuka kwambiri pa dziko lonse, chifukwa alendo ambiri amapita kumeneko kukacheza chaka chiri chonse. Koma vuto ndi lakuti, kumeneko alendo ena amatengako likodzo, kotero kuti mabungwe a za umoyo, monga limodzi la ku America lodziwika ndi dzina loti CDC mwa chidule, lomwenso limagwira ntchito yogonjetsa matenda osiyana siyana, linachenjeza anthu kuti asamapite kukacheza ndi kukasamba m'nyanja



Chithunzi No. 2: Mapu a nyanja ya Malaŋi pomwe tikuonetsa malo omwe tawatchula mu chikalatachi.

ya Malaŋi.

Chimene chinayambitsa kuti matengedwe a nthenda ya likodzo asinthe chonchi mwina ndi usodzi opitilira muyezo umene wakula kwambiri pa nyanja ya Malaŋi, mwina chifukwa cha kuchuluka kwa anthu okhala mmudzi wa Chembe. Zinadziwika kale kuti nsomba zambiri za mitundu mitundu za mbanja la chambo, mbaba, ndi kambuzi, kuphatikizapo nsomba zina zimene zimadya nkhoŋo za mmadzi, nazonso zachepa kwambiri



Chinthunzi No. 3. Zikhokhombe za mitundu iwiri ya nkono zomwe zimakhala ndi tizirombo talikodzo todziwika ndi dzina lakuti *Schistosoma haematobium* timene timayambitsa likodzo ku Nankumba Peninsula: Nkhonozi ndi *Bulinus globosus* ndi *Bulinus nyassanus*, komanso zikhokhombe za nkono zina zotchedwa *Melanoides* zomwe siziyambitsa likodzo zimene ziri mmadera ambiri pa nyanja ya Malaŵi.

mnyanja ya Malaŵi chifuka cha usodzi opitilira muezowu.

Izi zachititsa kuti nkono zimene zimatulutsa tizirombo toyambitsa likodzo nazonso zichuluke. Chifukwa cha kuchuluka kwa nkonozi, bvuto la likodzo nalonso lakula. Zotsatila

zake ndi kuchulukanso kwa anthu odwala nthendayi. Ife tiyesetsa kufotokoza momveka za mgwirizano omwe ulipo pakati pa usodzi opitilira muyezo, kuchuluka kwa nkono za m’madzi, ndi katengedwe ka likodzo.

## Matenda a likodzo m’nyanja ya Malaŵi

Pali mitundu iwiri ya nkono za mtundu wa *Bulinus* zomwe zimadziwika kuti zimatulutsa tizirombo ta mtundu wa *Schistosoma haematobium* timene timayambitsa

likodzo mnyanja ya Malaŵi. Mitundu iwiri imeneyi ndi *Bulinus globosus*, ndi *Bulinus nyassanus*.

*Bulinus globosus* ndi mtundu wa nkono zimene zinadziwika



Chinthunzi No. 4: Doko lochedwa “Same Bay” pa chilumba cha Chizumulu komwe anthu amatenga likodzo kudzera mu mtundu wa nkhoŋo yotchedwa *Bulinus globosus*, yomwenso ikupezeka kwambiri kumeneko maka maka m’ malo momwe muli miyala kapena zomera mmadzi.

kale kwambiri kuti zimatulutsa tizirombo ta mtundu wa *Schistosoma haematobium* timene timayambitsa likodzo mmaiko a mu Africa, kum’wera kwa chipululu cha Sahara. Zochita za nkhoŋo zimenezi mmalo ozungulira nyanja ya Malaŵi zakhala ziri Pali mitundu iwiri ya nkhoŋo za mtundu wa *Bulinus* zomwe zimadziwika kuti zimatulutsa tizirombo ta mtundu wa *Schistosoma haematobium* timene timayambitsa likodzo mnyanja ya Malaŵi. Mitundu iwiri imeneyi ndi *Bulinus globosus*, ndi *Bulinus nyassanus*.

*Bulinus globosus* ndi mtundu wa nkhoŋo zimene zinadziwika kale kwambiri kuti zimatulutsa tizirombo ta mtundu wa *Schistosoma haematobium* timene timayambitsa

likodzo mmaiko a mu Africa, kum’wera kwa chipululu cha Sahara. Zochita za nkhoŋo zimenezi mmalo ozungulira nyanja ya Malaŵi zakhala ziri zodziwika kale kwa nthawi yaitali. Koma zochita za nkhoŋo za mtundu wachiwiri wa *Bulinus nyassanus* ngati gwero la tizirombo toyambitsa likodzo ndi zinthu zachilendo, popeza kuti zangodziwika posachedwapa.

Mnyanja ya Malaŵi, nkhoŋo za mtundu wa *Bulinus globosus* zimapezeka mmadzi omwe ali ndi zomera mmadzi kapena miyala. Malo amenewa amathandiza kuteteza nkhoŋozo ku mafunde komanso ku adani. Nkhoŋo za mtundu wa *Bulinus nyassanus* zomwe kweni kweni zimapezeka mnyanjayi, zikupezeka



Chithunzi No. 5: Bernard akufufuza nkono za mtundu wa *Bulinus globosus*, pa malo pomwe zingathe kupezeka m'mudzi mwa a Chembe.

mmadoko ena amene ali ndi mchenga kapena miyala yaing'ono ngati ya gelevulo pansa pa madzi.

Anthu amatenga likodzo m'madoko otetezedwa bwino, momwensho maboti amafikila, munga limene tikulionetsa pa Chithunzi No. 4 komwe nkono za mtundu wa *Bulinus globosus* zimathandiza kufalitsa likodzo. Nkhono izi zimapezekanso m'madoko owoneka bwino kwambiri munga doko limene talionetsa pa Chithunzi No. 1, komwe nkono za mtundu wa *Bulinus nyassanus* zimafalitsanso likodzo.

Kuti munthu atenge likodzo, pamafunika kuti munthuyo alowe mmadzi (kudzera mu mkozo) momwe muli tizirombo toyambitsa likodzo. Mazira a tiziromboti akalowa mmadzi amatulutsa ana odziwika ndi dzina lakuti *miracidia*, amene amasambira kumafunafuna nkono, komanso tizirombo tina tochedwa *cercariae* timenenso timafunafuna kulowa

mthupi la munthu. Kuonjezera apo, anthu angathenso kutenga likodzo kudzera mtizirombo timeneti ta mtundu wa *cercariae* tikalowa m'nyanja ya Malaŵi kuchokera mmitsinje. Anthu amatenga likodzo pa njira imeneyi maka maka pa nthawi ya mvula. Komanso mvula ikatha, mitsinje yambiri imasiyana ndi madzi a ku nyanja ya Malaŵi nkupanga zithaphwi pafupi ndi gombe la nyanjayi. Zithaphwi zimenezi ndi zodziwika kwambiri kuti zimakhalanso gwero la likodzo chifukwa madzi ake amakhala ataima (atasiya kuyenda) kwa nthawi yaitali ya chilimwe. Awa ndi malo amene amakhalanso ndi nkono za mtundu wa *Bulinus globosus* munga zomwe ziri pa zithunzi Nos. 5, 6, ndi 7. Kutenga likodzo kwa mtundu uwu kumachitika m'malo ambiri a mmbali mwa nyanja ya Malaŵi. Komanso anthu amalowa m'madzi amenewa kawiri kawiri. Ku malo





Chithunzi No. 6: Malo omwe ali ndi nkhoza za mtundu wa *Bulinus globosus* ku Msaka.

ena a pafupi ndi nyanja ya Malaŵi, kungathenso kukhala madzi omwe angathe kukhala ndi tizirombo toyambitsa likodzo.

Pa ntchito ya zokopa alendo, kuipa kotenga nthenda ya likodzo m'madoko abwino amene ali ndi mchenga, ndi chinthu chofunika kuchisinkhasinkha mozama, chifukwa m'madzi amene ali pafupi ndi madoko amenewa ndi momwe alendo ambiri amakonda kusambila. Katengedwe ka likodzo ka njira imeneyi ndi kamene kali katsopano komanso ka chilendo m'nyanja ya

Malaŵi. Padakali pano, katengedwe ka likodzo kotere kadziwika ku m'mwera kokha kwa nyanja ya Malaŵi (Nankumba Peninsula). Kumeneko, nkhoza za mtundu wa *Bulinus nyasanus* zomwe tikuonetsa pa Chithunzi No. 8, zimapezeka mmalo ozama pang'ono, okwanila theka la mita imodzi. Koma ngakhale anthu akutenga likodzoli, sikuti alendo onse angasiye kukacheza ndi kukasamba ku nyanja ya Malaŵi. Anthu amatenga likodzo m'madzi momwe anthu amalowamo kawiri kawiri. Choncho ngati anthu atapewa

kulowa m'madzi amene ali pafupi ndi midzi, madzi omwe ali ndi zomera mmadzi, ndiponso madzi amene ali pafupi ndi pomwe mtsinje walowa mnyanja, anthuwa angathe kuchepetsa mavuto a likodzo, koma osati kuwathetseratu. Kusambira m'madzi amene ali ndi miyala mozungulira zilumba za m'nyanjayi, kumenenso



Chithunzi No. 7: Nkhono zochuluka kwambiri za mtundu wa *Bulinus globosus* mu mtsinje umene taonetsa pa Chithunzi No. 6.

anthu ambiri safikako kungathandize kwambiri kuchepetsa likodzo. Mavuto a likodzo angathenso kuchepa ngati anthu ataleka kulowa m'madzi kuyambila 11 koloko m'mawa mpaka 2 koloko madzulo chifukwa pa nthawi imeneyi, nkhozi tachulazi zimakhala zikutulutsa tizirombo talikodzo tamtundu wa *cercariae*.

Nkhono za m'nyanja ya Malaŵi zilipo za mitundu mitundu monga zimene tikuzionetsa pa Chithunzi No. 9, koma zambiri ndi za mtundu wa *Melanoides* monga zimene tikuonetsa pa zithunzi Nos. 3, 9 ndi 10. Kuchulukuka kwa nkhozi za mtundu umenewu wa *Melanoides* ndi kotere. Pa nkhozi 100 ziri zonse

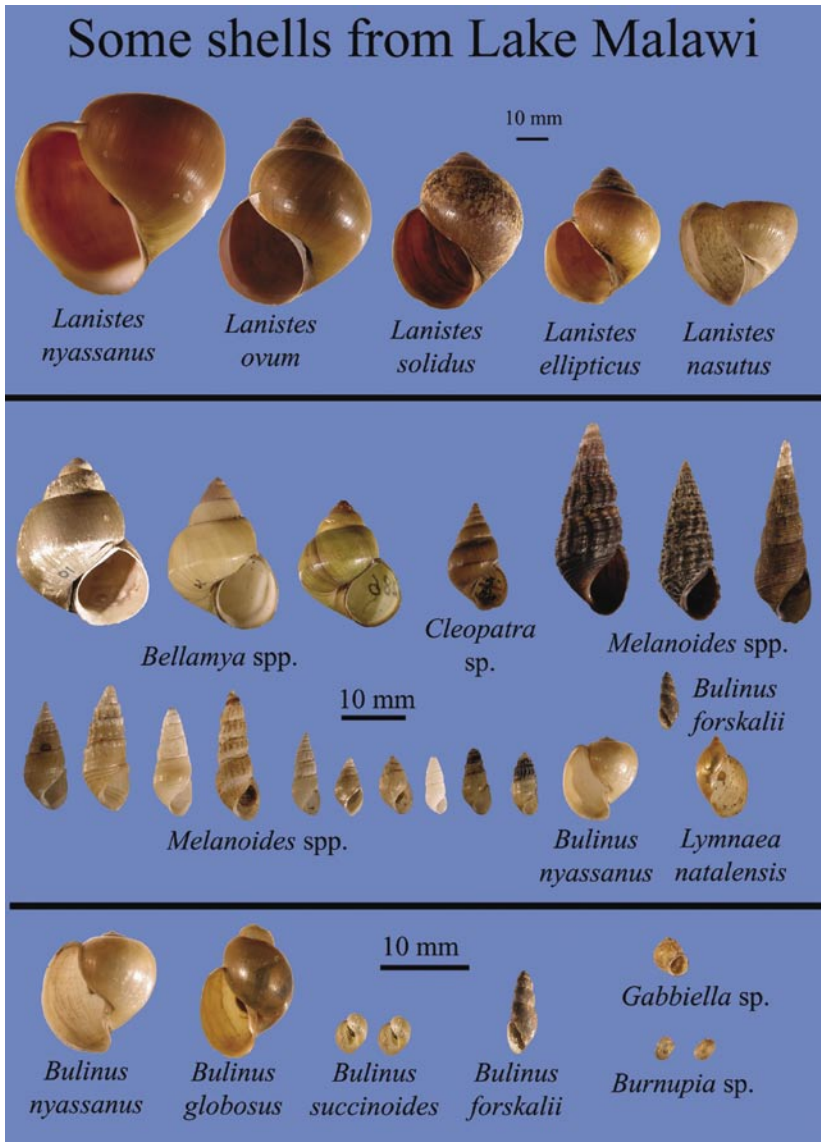
za mnyanja ya Malaŵi, nkhozi 90 ndi za mtundu wa *Melanoides*, pamene pa nkhozi 100 ziri zonse za m'nyanjayi, nkhozi zochepera 5 zokha ndi za mtundu wa *Bulinus nyassanus*.

Chiwerengerochi chingathe kusinthika malingana ndi kusiyanasiyana kwa malo komwe kukupezeka nkhozi. Nkhono za mtundu wa *Bulinus nyassanus* zimakhala m'madoko amene ali ndi mchenga kapena miyala ya gelevulo pansi pake, monga momwe tikuonetsera pa Chithunzi No. 11. Nkhono zimenezi zimakumba pang'ono pansi pa nyanja pomwe zimadya zinthu zosiyana siyana. Nkhono za mtundu umenewu ziri ndi chikhokhombe cholimba kuyelekeza



Chithunzi No. 8: Nkhono ya mtundu wa *Bulinus nyassanus* yomwe ikutulutsa tizirombo ta mtundu wa *Schistosoma haematobium*, tomwe timayambitsa likodzo.

# Some shells from Lake Malawi



Chithunzi No. 9: Zikhokhombe za nkhoza za m'nyanja ya Malaŵi.

ndi nkhoza za mitundu ina ya mugulu la *Bulinus*. Mwina chikhokhombe ichi chimateteza nkhozoyi ku zinyalala zomwe ziri panso pa

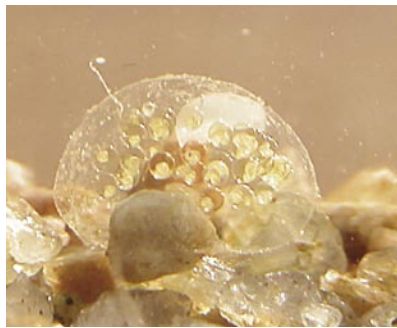
nyanja, maka maka pa nthawi ya mafunde. Nkhonoyi imaikila mazira amene amaphimbidwa pang'ono ndi zinthu zina zoundana koma zomwe



Chithunzi No.10: Nkhono zamoyo za mtundu wa *Melanoides tuberculata*, zimene ziri zochulukwa kwambiri pa nyanja ya Malaŵi, koma siziyambitsa likodzo.



Chithunzi No. 11: Nkhono ya mtundu wa *Bulinus nyassanus*, pansi pa nyanja. Kawiri kawiri nkhoŵoyi imakumba pansi pa nyanja pomwe imabisala.



Chithunzi No. 12: Mazira a nkhoŵo za mtundu wa *Bulinus nyassanus* pansi pa nyanja

zimatha kugwedezeke. Zinthu izi zimathandiza mazirawa (Chithunzi No. 12) kuti adzitha kumatilira ku zinthu zimene ziri pansi pa nyanja.

Mazirawo amatulutsa ana pakapita masiku a pakati pa 6 ndi 8.

## Mitundu ya nsomba m'nyanja ya Malaŵi

Nsomba zimene ziri m'nyanja ya Malaŵi ziripo za mitundu yoposa 850, ndipo ndi zochititsa chidwi kwambiri, komanso ndi zachilendo kwa anthu ambiri a ku maiko ena. Nsomba zambiri za mbanja

la chambo, mbaba, ndi kambuzi zimapezeka pafupi ndi madoko, m'malo ozama pang'ono. Zambiri mwa nsomba zimenezi zimapezeka ku Malaŵi kokha pa dziko lonse. Monga tanenera poyamba, anthu

amatenga likodzo m'madoko omwe ali ndi mchenga kapena miyala pansi. M'malo amenewa, mumapezekanso mitundu yambiri ya nsomba zimene zimadya nkho. Imodzi mwa nsomba zimenezi ndi *Trematocranus placodon*, yomwe tikuonetsa pa Chithunzi No. 13. Ngakhale *Trematocranus placodon* amadya mitundu yambiri ya nkho, nsombayi imakonda nkho za mtundu wa *Bulinus nyassanus*.

Nsomba za mtundu umenewu ziri ndi mano amphamvu amene amathandiza nsombazi kuti zidzitha kuphwanya zikhokhombe za nkho. Mitundu ina ya nsomba monga *Metriaclima lanisticola* yomwe imadyanso nkho kuphatikizapo *Bulinus nyassanus*, imalephera kuphwanya zikhokhombe za nkho, koma imangokoka m'nofu wa nkhozo omwe nsombayi imautulutsa nkuumeza.



Chithunzi No. 13: Nsomba yamphongo ya mtundu wa *Trematocranus placodon* imene imadya nkho.

## Vuto loyenera kuthana nalo

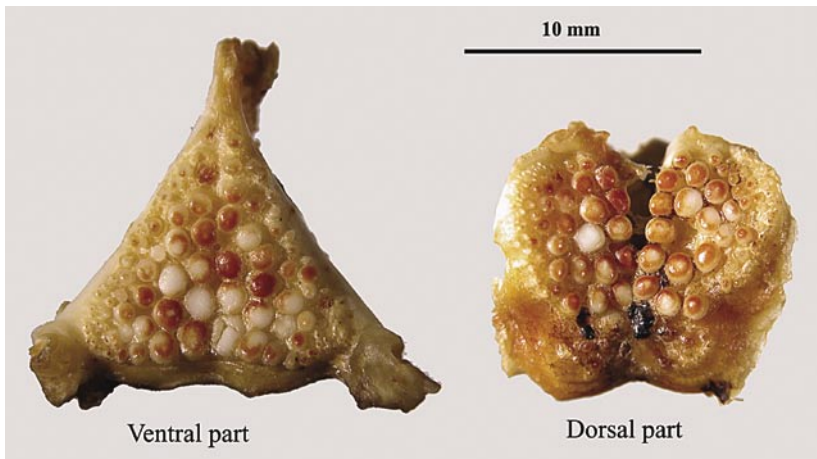
M'mbali mwa nyanja ya Malaŵi ndi m'mene ana a nsomba za mitundu mitundu amakhala komanso kubisala, ndiye kusodza nsomba m'madzi amene ali pa mtunda ochepera ma mita 100 kuchokera pa doko ndi

kosaloledwa konse ku malo a nyanja ya Malaŵi omwe ali otetezedwa ndi malamulo a Lake Malaŵi National Park. Komanso asodzi ena amapha nsomba m'madoko a m'nyanjayi pogwiritsa ntchito makoka amene





Chithunzi No. 14: Zakudya zotsala m'mimba mwa nsomba yomwe imadya nkho. Apa tikuona tizidutswa tambiri ta zikhokhombe za nkho ya mtundu wa *Melanoides* zomwe nsombayi imadya, komanso zikhokhombe zosweka pang'ono chabe za nkho ya mtundu wa *Bulinus nyassanus*.



Chithunzi No. 15: Nsomba imene imadya nkho ili ndi mano amphamvu kwambiri amene amatha kuswa chikhokhombe cha nkho mosabvuta.

ali ndi maso ochepa kwambiri ngati a ukonde wa masikito. Izi ndi zodziwikilatu kuti asodziwa amapha ana ochuluka a nsomba amene sanayenera kuphedwa, ndipo izi ndi zomwe zingachititse kuti nsomba zidzilephera kuchuluka m'nyanja ya

Malaŵi.

Pakali pano, tikuchita kafukufuku amene analandira thandizo la ndalama kuchokera ku mabungwe awiri mogwirizana a NSF/NIH omwe amalimbana ndi matenda osiyana siyana. Kuchokera mkafukufuku

ameneyu, tapeza kuti kuchepa kwa nsomba mdela lina la nyanja ya Malaŵi kukugwirizana kwathunthu ndi kuchuluka kwa tizirombo timene timayambitsa likodzo mnyanjayi, ndipo tikuganiza kuti likodzo lingathenso kuchepa ngati patakhalala dongosolo lina la kasamalidwe ka nsomba.

Nkutheka kuti pali zinthu zina zimene zikuyambitsa bvuto la likodzoli, ndiye ife tiri kuyesa-yesa kufufuza zimenezo. Mwa chitsanzo, tingathe kufunsa motere: Ndi chifukwa chiyani nkhozi za mtundu wa *Bulinus nyassanus* zangoyamba kudziwika kuti nazonso zimakhala ndi tizirombo toyambitsa likodzo ku m'mwera kwa nyanja ya Malaŵi? Kodi nkutheka kuti nkhozi za mtundu umenewu *Bulinus nyassanus* tsopano zachuluka chifukwa cha usodzi opitilira muyezo, ndi chifukwa cha zinthu zina za chilengedwe zomwe zachititsa kuti nkhozi nazonso ziyambe kukhala ndi tizirombo

tambiri toyambitsa likodzo? Kodi mwina zingatheke kuti alendo amene amakacheza ku nyanja ya Malaŵi, kufupi ndi Nankumba Peninsula, ndi amene anabwera ndi mtundu wina wa tizirombo toyambitsa likodzo tomwe tikumatha kulowa mu *Bulinus nyassanus*?"

Popeza kutenga likodzo m'madoko kukukhudzana ndi kuchepa kwa nsomba zimene zimadya nkhozi, tingathe kusintha zimenezi poteteza nsombazi. Tsopano takhala tikutsatila machulukidwe a nsomba ndi nkhozi kwa zaka zitatu, kotero kuti mudzi wa Chembe tsopano wayamba kuletsa asodzi kuti asamasodze nsomba m'mbali mwa nyanja ya Malaŵi kumeneko. Anthuwo akugwira ntchito yokhwimitsa chitetezo cha nsombazi mogwirizana ndi m'modzi wa alembi a chikalatachi, a "Peter Makaula" komanso mothandizana ndi alangizi aboma a mdera limenelo.

## Malangizo kwa alendo ozacheza ku nyanja ya Malaŵi

Ngati anthu atatsatira malangizo osabvuta ameneta lemba m'munsimu, mabvuto a likodzo angathe kuchepa, koma osati kuthelatu.

Mukakacheza ndi kulowa m'madzi a m'nyanja ya Malaŵi, muyenela kumvelela mthupi, kuti muone ngati mwayamba kuwona zizindikiro za chimfine, ndipo muonenso ngati mwayamba kutopa. Ngati mukumva zizindikiro zimenezi

mthupi mwanu, muyenera kupita kukaonana ndi a dokotala nsanga kuti akakuyezeni.

Mulewe kulowa m'madzi a m'madoko ena momwe mumafikira ma sitima a mmadzi, komanso malo ena a mnyanjayi kumene anthu ambiri amakasamba.

Mulewe kulowa mmadzi a mmitsinje ndi mdzithaphwi kuseli kwa gombe la nyanja, chifukwa



Chithunzi No. 16: Kuwedza kapena kupha nsomba ndi khoka pa doko la Msaka.

malo amenewa ndi komwe mungathe kutenga nsanga likodzo monga momwe zimakhalira m'maiko ena a muno mu Africa.

Musamalowenso mmadzi oima a m'mitsinje yomwe ikulowa m'nyanja ya Malaŵi. Pa nthawi ya mvula, musalowe mmadzi amene ali pafupi ndi midzi, popeza midzi yambiri ili ndi madzi otere.

Mukamasambila mnyanja ya Malaŵi pa mtunda okwana ma mita 200 kapena ma mita 100 kuchokera pa doko la nyanjayi, zingathandizenso

kuchepetsa likodzo, ngakhale kutakhala kunja kwa midzi yomwe anthu ake anatenga likodzo.

Kusamba mmbali mwa nyanja pa malo pomwe anthu ambiri safikako kungathenso kuthandiza kuti musatenge likodzo, kudzera mtizirombo ta mtundu wa *cercariae*.

Mudzikayezetsa likodzo ku chipatala patatha miyezi iwili kuchokera pa tsiku lomwe munakasambila ku nyanja ya Malaŵi. Musaisiye nthenda ya likodzo popanda kuimwera mankhwala.

## Appendix

### Matenda a likodzo kwa anthu

#### Moyo wa tizirombo toyambitsa likodzo ndi momwe tinabalalikila

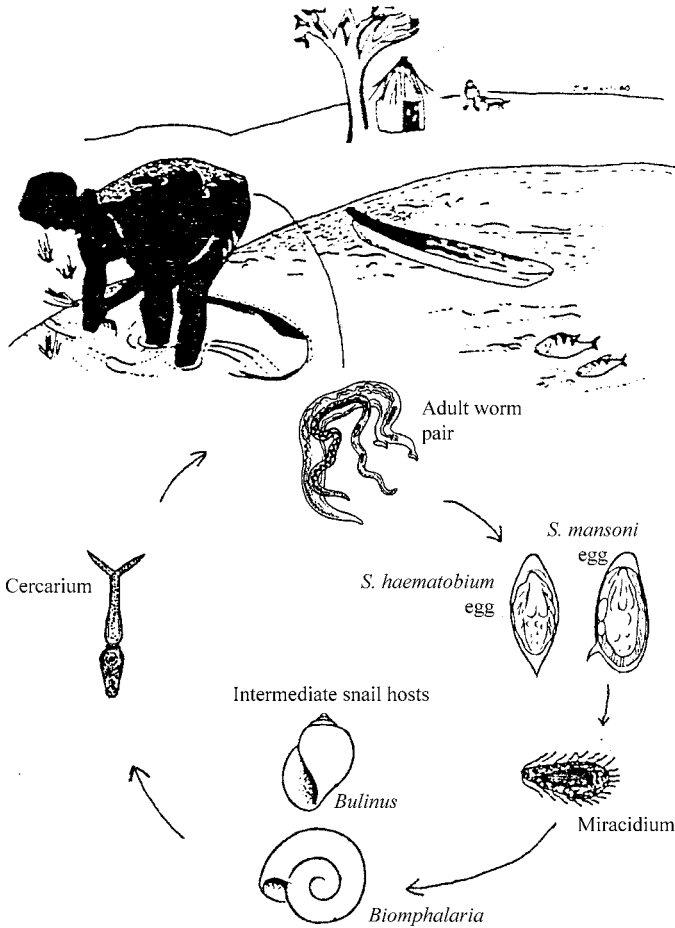
Likodzo ndi nthenda yomwe imayambika ndi tizirombo ta mtundu wa *Schistosoma* tomwe tinafalika, kapena kuti kuwanda mmaiko ambiri kummwera cha kummawa kwa Asia, komanso ku Middle East, ku Africa kuno, ndi ku South America. Bungwe la pa dziko lonse lomwe limagwira nchito yogonjetsa matenda la “WHO” linatulutsa lipoti lake lonena kuti anthu pafupifupi ma miliyon 200 pa dziko lonse ali ndi likodzo.

Kachirombo kamene kamayambitsa likodzo kamasintha malo okhala pa moyo wake, mthupi la munthu (momwe tiziromboti timaikira mazira), ndi mtundu wina wa nkho (momwe tiziromboti timapitilira kuchulukana). Tizirombo tikulu tikulu timakhala mkati mwa mitsempha ya magazi a munthu momwe timaikila mazira amene tikuwaonetsa pa Chinthunzi No. 18. Mazira amenewa amalowa mkhoma la mitsemphayi nkuyamba ulendo wopita ku matumbo, kapena ku chikhodzodzo, malingana ndi mtundu wa likodzo. Mazira akalowa mmadzi, amagomola ana ochedwa *miracidium*, omwe mmaora ochepa chabe ayenera kupeza nkho

kuti alowemo. Tili mkati mwa nkho, tiziromboti timasinthika nkukhala kholo la kachiromboka lomwe limadziwika ndi dzina loti *mother sporocyst*. Kholo limeneli ndi limene limayamba kubeleka ana ochuluka a mtundu otchedwanso *sporocyst*. Pa mapeto pake, anawa amasamukira ku mimba ya nkho komwe amakabelekanso ana ena a mtundu wina otchedwa *cercariae*, omwe tikuwaonetsa pa Chithunzi



Chithunzi No.17: Maonekedwe a mtundu umodzi wa kachirombo kamene kamaboola khungu la munthu ndi kumulowa



Chithunzi No. 18: Moyo wa tizirombo ta mitundu wa *Schistosoma haematobium* ndi *Schistosoma mansoni*.

No. 17. Ngati kutakhala kotentha kapena kofunda bwino, zimenezi zimachitika pa nthawi ya masabata 4 kapena 5. Ma *cercariae* amatuluka m'nkhozi muja koma pa maora ochepa kwambiri, amayenera kulowa pa khungu la munthu. Akapanda kupeza munthu, ma *cercariae* amafa. Koma akalowa pa khungu la munthu,

ma *cercariae* awa amaduka michira nkusanduka tizirombo ta mtundu wina totchedwa *schistosomulum* tomwe timayamba ulendo wao opita ku mapapo, misempha, komanso malo ena a mmisempha ozungulira matumbo kapena chikhodzodzo (molingana ndi mtundu wa likodzo).

Pali mitundu isanu ya tizirombo



tomwe timayambitsa likodzo. Kachiroombo ka mtundu uli onse kamalowa m'nkhono za m'madzi za mitundu ina. Mu Africa muno, tizirombo tomwe tiripo tambiri ndi timene timadziwika ndi dzina lakuti *Schistosoma mansoni* tomwe timayambitsa likodzo la mmimba, ndiponso tizirombo tina totchedwa *Schistosoma haematobium*, timene timayambitsa likodzo la m'chikhodzodzo. Tizirombo ta mtundu wa *Schistosoma mansoni* timalowa mnkhono za mtundu wa *Biomphalaria*, pamene tizirombo toyambitsa likodzo la m'chikhodzodzo totchedwa *Schistosoma haematobium* tima-yamba talowa m'nkhono za mtundu wa *Bulinus*. Tizirombo toyambitsa likodzo, ta mtundu wa *Schistosoma mansoni* timapezekanso ku South America, ndiponso mzilumba zina zomwe ziri pakati pake pa ku mpoto ndi ku m'wera kwa America (North America ndi South America). Ku Asia, tizirombo toyambitsa likodzo totchedwa *Schistosoma japonicum* ndi timene tili tochuluka kwambiri kumeneko. Tizirombo timeneti timalowa m'nkhono zosiyana siyana za mtundu wa *Oncomelania hupensis*.

### Likodzo ndi zizindikiro zake

Likodzo limayamba pokhapokha ngati munthu ali ndi tizirombo toyambitsa nthendayi. Izi sizioneka kawiri kawiri pa gulu la

alendo amene amadzacheza ku Malaŵi kapena anthu ena amene amakasamba m'nyanja ya Malaŵi kwa nthawi yochepa. Zizindikiro za likodzoli zimagwirizana ndi momwe moyo wa tiziromboti ulili. Pakatha maora 24, kuyambila pomwe tiziromboti tinalowa pa khungu la munthu, odwala amatuluka timatuza pa khungu lake, komanso amamva kunyerenyetsa kumene kumatha masiku awiri kapena atatu. Pa nthawi yomwe tiziromboti tikusamukila ku madera ena a mthupi la munthu, zizindikiro zina monga kutentha thupi, kamwazi, kutsokomola, komanso zotupa zokhala ngati a mwanabele, zimatuluka. Izi zimamupweteka kwambiri munthu amene akudwalayo, ndipo kawiri kawiri zimayamba patatha masabata awiri kapena atatu kuchokera pa nthawi yomwe tiziromboti tinalowa pa khungu la munthu. Zizindikiro zimenezi zimakhalabe ziripo mpaka mwezi umodzi kapena miyezi iwiri. Mazira a tiziromboti akalowa mthupi la munthu, thupilo limayamba kudabwa ndiponso limavutika kwambiri. Izi zimayang'anila malingana ndi kuchuluka kwa tizirombo tomwe talowa mthupi la munthuyo.

Mu likodzo limene limayambika ndi tizirombo totchedwa *Schistosoma mansoni*, zironde za m'mimba ndi m'matumbo zimatuluka mziwalo zimenezi. Izi zimayambika ndi poizoni ochokera mmazira a tiziromboti. Mchiwindi, mazira

amene amatsakamila mmisempha ing'onoing'ono ya magazi imakutidwanso ndi zina zotchedwa *granulomes* zomwe zimazungulira dzira liri lonse. Zotsatila zake ndi zimene zimayamba kutseka mitsempha ya magazi. Izi ndi zimene zimakulitsa mphamvu (pulesha) ya kayendedwe ka magazi, maka maka mkati mwa mtsempha waukulu wa m'chiwindi. Thupi limayesetsa kulimbana ndi bvuto limeneli pokulitsa mitsempha ina ing'ono ing'ono ya magazi m'chiwindimo. Kasinthidwe kena ka mayendedwe a magazi kamene kamafanana ndi kameneka kamaonekanso m'magazi a kapamba. Mazira a tiziromboti angathe kutengedwa m'magazi mpaka kukafika ku ziwalo zina za thupi la munthu, monga mapapo ndi bongo.

Mu likodzo la mchikhodzodzo, kuchuluka kwa mazira mkhoma la njira yotulutsira nkodzo komanso mu chikhodzodzo m'mene, kumagwirizana ndi kutupa komanso zobvuta zina zomwe ku mapeto ake zimalepheretsa chikhodzodzo kuti chidzitha kumatamuka monga momwe zimayenera kukhalira. Komanso mphamvu (pulesha) ya kayendedwe ka nkodzo m'njira yake ndi mu ipsyo imakula. Odwala amamva kupweteka pokodza. Kansa ya mchikhodzodzo ingathenso kuyambika.

Chizindikiro choonekamosabvuta cha likodzo la mchikhodzodzo ndi magazi amene amatuluka pamodzi

ndi nkodzo. Chimodzimidzi, chimbudzi chimene chimaonetsanso magazi chimakhala chizindikiro chodziwika kwambiri cha likodzo la mmimba. Zizindikiro zina ndi kukula kwa chiwindi ndi kapamba, zimene zimachitika chifukwa mphamvu (pulesha) ya kayendedwe ka magazi imakula mziwalo zimenezi.

## Matengedwe a nthenda ya likodzo

Anthu amatenga likodzo akalowa m'madzi momwe tizirombo toyambitsa likodzo ta mtundu ochedwa *cercariae* tikupezeka. Malo amene amakhala ndi tiziromboti amakhala odziwika, chifukwa saliponseponse pa nyanja ya Malaŵi. Tiziromboti kweni kweni timapezeka m'malo momwe anthu ambiri amalowa m'madzi, monga tanena kale. Ku malo komwe nk'hono zimakonda kukhala, komanso kumene kuli anthu ambiri (mwa chitsanzo ku malo a sikimu ya ulimi othilira), anthu angathe kutenga likodzo nsanga. Komanso ku malo ena monga mitsinje, maiwe, ndi nyanja m'mene anthu ambiri amalowa, angathe kukhala malo omwe anthu angatenge likodzo. Nkhono zimene zimakhala ndi tizirombo toyambitsa likodzo kawiri kawiri sizikonda madzi othamanga, koma m'madzi momwe anthu ambiri amalowamo.

## Kachilitsidwe ka likodzo

Masiku ano kuli mankhwala a mphamvu a likodzo. Munthu odwalayo amapatsidwa mankhwala otchedwa *Praziquantel*, pa muyezo wa ma miligalamu 40 mpaka 60, pa kilogalamu ili yonse ya kulemera pa sikelo kwa munthu odwalayo. Koma zimayang'anila kukula kwa munthuyo, ndi mtundu wa tiziromboti. Mankhwala amawapeleka kamodzi kokha, koma angathenso kuwagawa kuti akhale matheka awiri omwe amamupatsa odwalayo pakapita maora 6 ali onse. Mankhwalawa amathandiza kuchepetsa kwambiri tizirombo

toyambitsa likodzo mthupi komanso zizindikiro za matendawa. Mmadera momwe tizirombo toyambitsa likodzo timapezeka tambiri, anthu omwe achizidwa ku matendawa amatha kugwidwanso ndi likodzo, koma zizindikiro zina zimaoneka mochedwa. Ndiye nkofunika kwambiri kuti poonjezera kulandira mankhwala, anthu atsatesno njira zina zothetsera likodzo, monga kupha nkhozi zimene zimanyamula tiziromboti, kuyambitsa ma kampeni ofotokozera anthu za mavuto a likodzo, kugwiritsa ntchito madzi abwino, komanso kufotokozera anthu za ubwino oti adzikhala anthu a ukhondo nthawi zonse.

