

Memorandum

**Date:** December 15, 2023**From:** WHO Collaborating Center for Dracunculiasis Eradication, CDC**Subject:** GUINEA WORM WRAP-UP #304**To:** Addressees

**ROSALYNN CARTER (1927-2023)  
MENTAL HEALTH ADVOCATE, INFLUENTIAL GUINEA WORM WARRIOR,  
FORMER FIRST LADY OF THE UNITED STATES**



[Photo credit: L. Gubb/The Carter Center]

She was there. Before, during, and after her husband's service as Thirty-ninth President of the United States. Helping and advising with his and their shared projects, while effectively pursuing her own causes, most notably her enduring efforts to reduce stigma and promote parity for mental health before, during, and after her service as First Lady of the United States. A year and a half after committing to help eradicate Guinea worm disease, she saw their first Guinea worm patients in person in 1988. Multiple trips to Africa, visits to villages, meetings, note taking, and ceremonies at The Carter Center followed. Dancing to the music of a Louis Armstrong impersonator at the president's house in Burkina Faso during a visit to five endemic French-speaking African countries in 1992. In 1995 she personally persuaded the wife of the head of state to join a visit to a Guinea worm village, where the shocked Nigerian First Lady shed tears. Days later, an announcement in Khartoum with that country's head of state of an unprecedented "Guinea Worm Cease-Fire" in Sudan's civil war. Distressed on witnessing a devastating Guinea worm outbreak in Ghana in February 2007, she was photographed while comforting a crying child with Guinea worm disease. In a statement issued soon after she died on November 19, 2023, former President Jimmy Carter, her husband

of more than 77 years said, “Rosalynn was my equal partner in everything I ever accomplished.” She saw Guinea worm reduced from more than 3 million estimated cases in 1986 to less than ten cases during her final days in 2023.

Now and then, we earthlings are blessed by a soft-spoken human exemplar who radiates compassion, works tirelessly, and produces beneficent change. Rosalynn Smith Carter was such a person. She was also a devoted mother, grandmother, and great-grandmother. She lived her faith. May she rest in peace. We miss her and extend our deepest condolences to her family.

*DETECT immediately! CONTAIN completely! SOURCE specifically!*

## ETHIOPIA AND SOUTH SUDAN: ONLY 4 GWs FOUND IN 2023



**Ethiopia** has reported 1 GW infection (contained, source unknown) so far in 2023, in August in a dog in Atheti village (see previous issue), where the most recent known GW infection was in a dog in 2021. Ethiopia reported 4 GW infections (1 human, 1 dog, 2 baboons; 2 contained) in 2 villages and 1 non-village area (commercial farm) in 2022, and 4 infections (1 human, 2 dogs, 1 cat; 3 contained) in 4 villages in 2021. All of Ethiopia’s GW infections over the past five years have occurred in mostly in Gog district and less so in Abobo district of Gambella Region. The 2023 worm specimen has not yet been compared genetically to specimens from 2022.

The Ethiopia Dracunculiasis Eradication Program (EDEP) had 198 villages and 229 non-village areas (farms, fishing, and hunting settlements, etc.) under active surveillance in two districts, investigated 37,988 rumors in 2022 and 20,941 rumors so far in 2023. The estimated awareness of the cash reward for reporting GW in endemic areas in 2022 was 96%, and in 2023 is 97%. The EDEP inspected 345 dead or trapped baboons in endemic areas in January–October 2023 and 253 dead or trapped baboons in 2022. The main remaining challenge of infected baboons is being addressed by intensive Abate application, proactive tethering of dogs and cats, and trapping and visual inspection of baboons in areas with GW infections in humans or animals by veterinarians. *Hotspot: Gog district.*



**South Sudan** has reported 3 GW infections (uncontained, sources of infection unknown) so far in 2023: 2 human cases and 1 infection in a genet (genus *Genetta*). The South Sudan Guinea Worm Eradication Program (SSGWEP) reported 6 GW infections (5 humans, 1 dog; 67% contained) in 3 villages in 2022, and 4 human GW infections (25% contained) in 4 villages in 2021. The 2023 cases are a 13-year-old cattle herder from Aliet village in Tonj East County of Warrap State, whose worm emerged on August 14, 2023, and a 4-year-old boy from Rumchap village in the same county whose worm emerged on September 14, 2023, and who visited Aliet (about 10 miles away) during his period of infection in 2022. The infected genet was detected with a hanging worm on November 19, 2023, in Malnyang village of Eastern Equatoria State’s Lafon County, where an uncontained human case occurred in that county in July 2022. The SSGWEP treated 56 local water sources in and around Malnyang village, which has safe drinking water, within three days. Aliet has a borehole well; Rumchap has no safe source of drinking water. The older boy was exposed by *drinking unfiltered surface water* and *eating potentially under-cooked fish* he caught and prepared while tending cattle away from home. Abate was applied since the infections were discovered. This area of Tonj East County received 5 new borehole wells in 2023. The worm specimens from 2023 have not yet been compared genetically to specimens from 2022.

Tonj East County has reported one GW infection of unknown source for 4 consecutive years, 2020–2023 (3 humans, 1 dog) in villages less than 29 miles (48 km) apart. The case in 2020 was also a cattle herder; the 2021 case was a 53-year-old woman. South Sudan has found only one other dog with a Guinea worm infection ever, in a different state, in 2015. In 2022 South Sudan’s GWEP had 2,237 villages under active

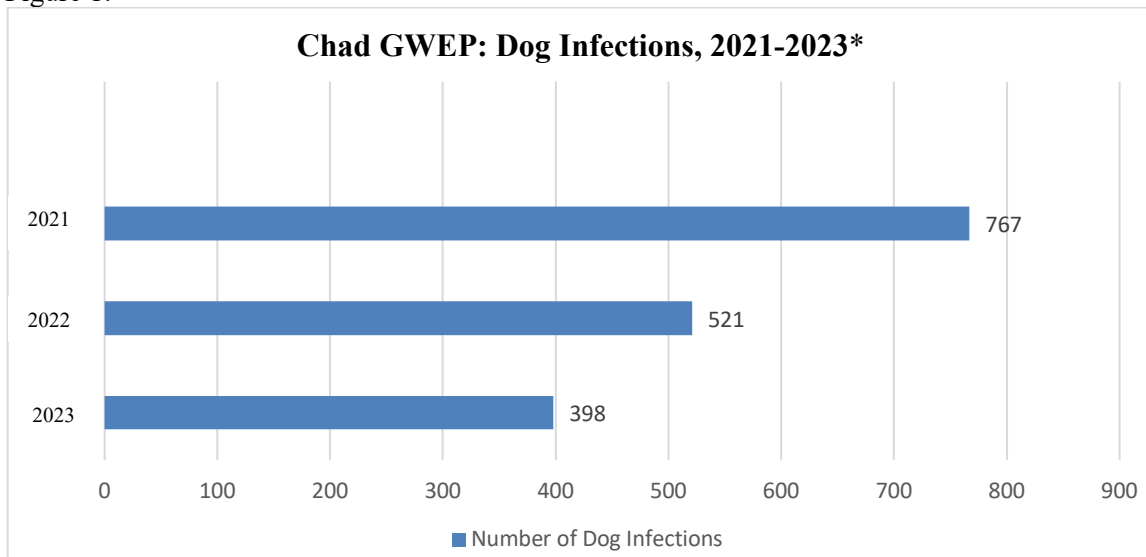
surveillance, investigated 68,899 rumors, and the estimated awareness of the cash reward for reporting GW in endemic areas was 78%. Sporadic insecurity and highly mobile male cattle herders are special challenges. Pipe filters can help protect the latter. Consistent, strong national political support and technical leadership are favorable factors. Genetic analysis showed some shared maternal lineages between Guinea worm specimens from 2021 and 2022. The 2023 worm specimens have not yet been analyzed genetically. *Hotspot: Tonj East County.*

**CHAD: -22% DOG INFECTIONS, 8 HUMAN CASES**



Chad’s Guinea Worm Eradication Program (CGWEP) has reported a provisional total of 398 dogs with Guinea worm infections (78% contained) and 88 infected cats (65% contained) in January-November 2023. This 22% reduction in dog infections so far in 2023

Figure 1:



\*Provisional, January-November 2023

compared to the same period of 2022 follows a 32% reduction in dog infections in Chad in 2022 and a 49% reduction in dog infections in 2021 (Figure 1). Review of data from 2022 shows that only 94 (39%) of the 239 endemic villages contained about 71% of Chad’s dog infections that year, while the remaining 29% of infected dogs were spread out in 145 endemic villages that each had only 1 infected dog.

**Table 1: Chad Guinea Worm Eradication Program: Line List of Confirmed Human Cases, January – November 2023**

#	Age (Years)	Sex	Ethnicity	Occupation	Province	District	Zone	Village of Detection	Date of Detection	Date of Emergence	Contained? (Yes/No)	Entered Water?	Total # of worms
1	9	M	Boua	Child not attending school	Moyen-Chari	Korbol	Korbol	Balwai 1	27-May	31-May	Yes	No	1
2	14	M	Boua	Fisherman, Hunter, Farmer	Moyen-Chari	Korbol	Korbol	Balwai 1	05-June	19-June	Yes	No	1
3	6	F	Gam	No Occupation	Chari-Baguirmi	Bailli	Kelengue	Goudoum Goudoum	07-July	07-July	No	Yes	1
4	25	F	Boua	Fisherwoman, Farmer	Moyen-Chari	Korbol	Korbol	Balwai 1	12-July	17-July	Yes	No	1
5	8	M	Massa	Student	Mayo-Kebbi Est	Guelendeng	Guelendeng 1	Garwaye	29-July	29-July	No	No	1
6	50	F	Sara Kaba	Housewife	Moyen-Chari	Kyabe	Marabe	Kousseri	07-July	15-Aug	Yes	No	1
7	42	F	Toumak	Housewife, Farmer	Moyen-Chari	Korbol	Korbol	Balwai 1	14-Aug	11-Sep	Yes	No	1
8	5	M	Nangtchere	Child not attending school	Tanjile	Bere	Kalme	Kidjimina 2	20-Sep	21-Sep	No	Yes	1

Chad has reported 8 human cases (5 contained) of GW disease so far in 2023 (Table 1), which is more than the 6 human cases Chad reported in all of 2022. Three of the human cases (#3, #5, #8) are believed to have been infected from an indigenous source in the same village (Kidjimina 2 village had 3 uncontained animal infections in August-September 2022); the sources of infection of the other human cases in 2023 are unknown. Balwai 1 village, which reported 4 of the 8 human cases in 2023, is a fishing village that does not have a safe source of drinking water. Seven of the 11 villages with human cases in Chad in 2022-2023 each had an average of 4 animals with Guinea worm infections in the previous year (26 dogs, 1 cat), 4 of the 11 villages had no known animal or human infections in the previous year, and 7 (64%) of the 11 villages do not have a safe source of drinking water.

*Prioritizing villages with 2 or more dog infections for interventions, more frequent supervision, supplies, and monitoring, with special attention to villages near international borders, fishing villages<sup>1</sup>, and villages without safe drinking water, could increase the efficiency of Chad’s program and accelerate Guinea worm elimination.*

## MALI



The remaining area reporting Guinea worm infections in Mali involves 6 districts (Macina, Markala, Tominian, San, Djenne, and Mopti) in the inland delta of the Niger River which share similar riverine ecology to the larger endemic area of Chad, and endemic areas of both countries are hypothesized to include a newly recognized mode of Guinea worm transmission by consuming raw or poorly cooked aquatic animals such as fish or frogs, in addition to drinking contaminated water. Mali has not reported a

human Guinea worm case since September 2021, and it reported no human case for four consecutive years in 2016-2019.

Twenty-seven (71%) of Mali’s 38 animal infections (33 dogs, 5 cats; 76% contained) reported in January-October 2023 have occurred in Macina district of Segou Region (Table 2). Mali reported 41 animal infections in 2022. Dogs are sustaining Guinea worm infections in Mali and insecurity in parts of Mali’s endemic area is a compounding challenge. All of Mali’s 16 villages with GW infections in 2023 have at least one source of safe drinking water. The program applies Abate in eligible water bodies in all villages with GW infections. Mali began proactive tethering of some infected dogs and cats in at-risk villages late in 2021, and expanded it to parts of Macina, Markala, and Djenne districts by 2023. With Carter Center

<sup>1</sup> A village near water in which a majority of inhabitants fish.

assistance, Mali's Ministry of Health and regional and local authorities engaged with local communities in a popular Peace Through Health Initiative<sup>2</sup> in Tenenkou district of Mopti Region in 2020 and extended it to Youwarou district in Mopti Region and Macina and Tominian districts in Segou Region in 2023.

The National Program Coordinator of Mali's Guinea Worm Eradication Program (MGWEP), Dr. Cheick Oumar Coulibaly, and Carter Center Country Representative Mr. Sadi Moussa made a supportive mission to Macina and Markala districts on November 13-18, 2003. They met with regional and local public health and veterinary officials and visited the endemic villages of Ke-bozo, Kayo-Bozo, Lelegre, and Nemabougou, where they observed proactive tethering and examination of dogs and cats, and disposal of fish guts. The MGWEP data manager, Mr. Yacouba Traore and Carter Center consultant Dr. Gebriel Guindo made a similar mission to visit Gomitogo and other endemic and at-risk villages in San, Tominian, Djenne, and Mopti districts on November 9-18, 2023.

## ANGOLA AND CAMEROON: INCREASED DOG INFECTIONS



**Cameroon** has reported a 222% increase in dogs with GW infections since 2022, to 87 dogs (94% reportedly contained) (plus 1 human and 5 cats) in January-November 2023. Cameroon was certified GW-free by WHO in 2007, after a decade-long eradication campaign that began in 1987 and ended indigenous transmission in 1997. It reported no GW infections in 2008-2018, then a total of 62 dogs, 1 cat, and 3 human cases in 2019-2022. All the recent infections have occurred in Cameroon's Guere district, where extended families living on both sides of the border with Chad's Bongor district share markets, festivities, and take their dogs to Chad regularly. Genetic analysis of mitochondrial DNA from worm specimens shows shared ancestral history of worms from the two districts but is unable to determine since when. Microsatellite data confirms cross border transmission as well as internal transmission in Cameroon. Cameroon expanded active surveillance in Guere district in January 2022, and is cooperating closely with Chad's GWEP. WHO has assisted Cameroon since 2019, and The Carter Center since 2022. *With its peak transmission season arriving in January-April, Cameroon should start intensive and expanded surveillance, proactive tethering of dogs, and increased, evidence-based and thorough Abate application in December 2023 through 2024.*



**Angola** has reported a 357% increase in dogs with GW infections since 2022, from 7 to 32 dogs by November 2023. Angola discovered its first Guinea worm infection ever in 2018, in a girl with no history of foreign travel. It then reported Guinea worm infections in another human and 1 dog in 2019, 1 human in 2020, no GW infection in 2021, and 7 infected dogs in 2022. All infections have occurred in Cunene Province in southern Angola. Genetic analysis shows that these Guinea worms are unique to Angola. How long transmission has been occurring in Angola and whether it was imported from a now-eliminated source in another country are unknown. *As Angola's peak transmission season (January-May) rapidly approaches, a period when villages are isolated by floods during the rainy season, Angola should get supplies, training, and personnel in place to implement active surveillance, proactive tethering of dogs, and targeted Abate application in its endemic areas.*

From October 25th to 28th, Dr. Humphrey Karamagi, the WHO Acting Representative, led the joint mission in collaboration with the Ministry of Health (MoH) for 2-day field visit to Cunene, Angola to accelerate the ongoing efforts to eradicate Guinea worm disease in Angola, which WHO has been involved in locally since 2020 with the support of The Carter Center. The mission demonstrated the spirit of cooperation among WHO, the Angolan government, the Carter Center, and the communities of Cunene and conveys a potent message globally. When solidarity aligns with resolve, even the toughest health challenges can be resolved.

<sup>2</sup> [https://www.cartercenter.org/resources/pdfs/peace/conflict\\_resolution/mali-baseline-study-report-011023.pdf](https://www.cartercenter.org/resources/pdfs/peace/conflict_resolution/mali-baseline-study-report-011023.pdf)





## WHO : FOURTH BIENNIAL MEETING OF GUINEA WORM CERTIFIED COUNTRIES, 16-17 NOVEMBER 2023, DOUALA, CAMEROON



**World Health Organization**

As of January 2023, 188 Who Member States have been certified as “free of dracunculiasis transmission.” Upon certification, the Director General of WHO recommended that these countries continue dracunculiasis surveillance activities until global eradication is declared. Recently, the emergence of Guinea worm infection in animals, particularly in dogs, in the five remaining endemic countries, has raised serious concerns about the risk of spread of the disease to countries already certified but at risk due their proximity to endemic countries. Between 2016 and 2022, WHO increased its support to eight post-certified countries (Burkina Faso, Cameroon, Central African Republic, Kenya, Niger, Nigeria, Uganda, and Namibia) at high risk of re-infestation to improve Guinea worm surveillance in both animals and humans. Among others, WHO supported these countries to conduct active field surveys to assess animal Guinea worm infections. Results of these surveys were described in international review meetings and previous *Guinea Worm Wrap Up* issues. In continuation of support to certified countries, WHO organized the fourth biennial review meeting of certified countries including those at high risk of Guinea worm reintroduction except for Namibia and Nigeria, whose delegations were not able to attend.

The meeting was attended by 14 delegates from health, environment, livestock sectors, and 12 certified countries (Benin, Burkina Faso, Cameroon, Central African Republic, Ghana, Kenya, Mauritania, Niger, Uganda, Democratic Republic of Congo, Senegal, and Togo) as well as Chad and Ethiopia (endemic countries) which have been specially invited to share their experiences regarding surveillance and response vis-à-vis Guinea worm infection among animals and displaced populations. In addition, WHO respective country offices, WHO/AFRO (Dr. Andrew S. Korkor, and Ms. Yetema N. Nikiema Nidjergou) and WHO HQ (Dr. Dieudonné P. Sankara) coordinated and facilitated the meeting.

The WHO representative in Cameroon, Dr. Phanel Habimana, who attended the two-day meeting, underlined WHO's efforts to support countries and urged participants to reflect during the proceedings on the innovations to be made to strengthen surveillance of this disease, and to integrate it into the context of the "One-Health" approach for greater efficiency. He insisted on the need to interrupt transmission. Dr. Georges Nko' Ayissi, representing Cameroon's Minister of Public Health, recalled the context of the resurgence of the disease in Cameroon and the multi-sectoral nature of the Guinea worm eradication campaign with WHO participants.

The meeting achieved the following:

1. Post-certification activities carried out from 2022 - 2023, including the results of surveillance particularly for animal infection were reviewed country by country, and constraints identified. No unreported animal infections were discovered.
2. Experiences were shared about surveillance and management of suspected Guinea worm cases and

infections, including integration, intra and intersectoral collaboration to strengthen Guinea worm surveillance among animals (One Health approach), and insecure situations (among refugees and internally displaced populations).

3. Opportunities for strengthening guinea worm disease surveillance through integration, intra- and inter-sectoral collaboration (OneHealth) were identified.
4. Recommendations formulated for strengthening post-certification surveillance activities, including among animals, in certified countries, particularly about areas at high risk of re-infestation.

#### Conclusion

The Fourth Biennial Meeting focused on reviewing and evaluating post-certification activities regarding the eradication programs of dracunculiasis in different countries. It highlighted the resurgence of infections, especially among animals (dogs, cats) in some remaining endemic countries and neighboring certified countries (Cameroon and CAR for instance), posing a serious challenge to global eradication efforts.

Throughout the meeting, presentations and discussions underscored the need for continued surveillance, especially among animals and in insecure contexts like refugee camps and cross border areas. Identified challenges included security concerns, insufficient funding, the scale of required surveillance, and in collaboration with animal health experts, animal (dogs) population control using contraception as one plausible path to reducing dog population in endemic zones and the risk of Guinea worm spread.

Key recommendations emerged, urging the integration of Guinea worm disease surveillance with other health interventions, harmonization of efforts in transborder regions, and the incorporation of animal health into the One Health approach. Additionally, there were calls for increased resource mobilization, updated guidelines, and collaboration between diverse health programs. The meeting concluded by emphasizing that while eradication seems possible, the final steps are crucial. Lack of funding for post-certification surveillance particularly in countries at high risk of Guinea-worm reintroduction- associated with the high level of populations displacement- have the potential of jeopardizing over 3 decades of hard-earned gain. Sustained efforts, financial support, and a collaborative, multi-sectoral approach was highlighted as essential to achieve the goal of global dracunculiasis eradication.

#### IN MEMORIUM



We regret to report that **Guinea Worm Warrior Dr. Bamia Garibou**, former Senior Technical Assistant to Mali's Guinea Worm Eradication Program (MGWEP), passed away on November 8, 2023. Supported by The Carter Center, Dr. Bamia worked for the MGWEP in Mopti, Gao, and Timbuktu Regions from 1995 to 2018. As supervisor of three other Malian physicians in Gao and Timbuktu Regions after 2001, he oversaw the MGWEP's successful response to an unexpected outbreak of hundreds of Guinea worm cases in 2007-9 following contamination of a village water supply by a single itinerant student in adjacent

Kidal Region. We extend our condolences to his family and former colleagues. Rest in Peace, Dr. Bamia, and thank you.

## DEFINITION OF A PRESUMED SOURCE OF GUINEA WORM INFECTION

A presumed source/location of a human dracunculiasis case is considered identified if:

The patient drank unsafe water from the same source/location (specify) as other human case(s) or an infected animal 10-14 months before infection, or

The patient lived in or visited the (specify) household, farm, village, or non-village area of a (specify) Guinea worm patient or infected domestic/peri-domestic animal 10-14 months before infection, or

The patient drank unsafe water from a (specify) known contaminated pond, lake, lagoon or cut stream 10- 14 months before infection.

If none of the above is true, the presumed source/location of the infection is unknown. Whether the patient's residence is the same as the presumed source/locality of infection or not should also be stated in order to distinguish indigenous transmission from an imported case.

## DEFINITION OF A CONTAINED CASE\*\*

A case of Guinea worm disease is contained if all of the following conditions are met:

1. The patient is detected before or within 24 hours of worm emergence; and
2. The patient has not entered any water source since the worm emerged; and
3. A village volunteer or other health care provider has properly managed the case, by cleaning and bandaging until the worm is fully removed and by giving health education to discourage the patient from contaminating any water source (if two or more emerging worms are present, the case is not contained until the last worm is pulled out); and
4. The containment process, including verification that it is a case of Guinea worm disease, is validated by a supervisor within 7 days of the emergence of the worm, and
5. ABATE<sup>®</sup> is used if there is any uncertainty about contamination of the source(s) of drinking water, or if a source of drinking water is known to have been contaminated.

*\*\*The criteria for defining a contained case of Guinea worm disease in a human should be applied also, as appropriate, to define containment for an animal with Guinea worm infection*

## NATIONAL PROGRAM REVIEW MEETINGS

South Sudan: December 12-13, 2023

Chad: likely January 23-25

Mali: likely February 8-9

Ethiopia: likely February 26-27



Table 2

MALI GWEP LISTING OF CONFIRMED ANIMAL INFECTIONS: YEAR 2023															
#	Region	District	Health Zone	Village	Ethnicity	Profession	Host	Probable origin	Date of detection	Date of emergence	Entered water?	Abate Applied? (Y/N)	Abate Applied? (Y/N)	Contained ? * (Y/N)	Total # of GW
1	Segou	Macina	Kolongo	Kolongo Bozo	Bozo	Housewife	Dog	Kolongo Bozo	24-05-23	25-05-23	No	No	Yes	1	1
2	Segou	Macina	Kolongo	Kolongo Bozo	Bozo	Farming/fishing	Dog	Kolongo Bozo	24-05-23	25-05-23	No	No	Yes	1	1
3	Segou	Macina	Kolongo	Kolongo Bozo	Bozo	Housewife	Dog	Kolongo Bozo	24-05-23	25-05-23	No	No	Yes	1	1
4	Segou	Macina	Kolongo	Kolongo Bozo	Bozo	Farming/fishing	Dog	Kolongo Bozo / Barakabougou	06-05-23	06-05-23	No	No	Yes	1	1
5	Segou	Macina	Kolongo	Kolongo Bozo	Bozo	Farming/fishing	Dog	Kolongo Bozo	11-06-23	11-06-23	No	No	Yes	1	1
6	Segou	Macina	Kolongo	Kolongo Bozo Hamlet	Bozo	Farming/fishing	Dog	Barakabougou	11-06-23	11-06-23	No	No	Yes	1	1
7	Segou	Macina	Kolongo	Kolongo Bozo	Bozo	Farming/fishing	Dog	Kolongo Bozo	27-06-23	27-06-23	No	No	Yes	1	1
8	Segou	Macina	Macina Central	Nemabougou/ Macina town	Bozo	Farming/fishing	Dog	Nemabougou	16-06-23	20-06-23	Yes	Yes	No	1	1
9	Segou	Macina	Macina Central	Ke Bozo	Bozo	Farming/fishing	Dog	Ke Bozo	25-07-23	08-03-23	Yes	No	Yes	1	1
10	Segou	Macina	Macina Central	Nemabougou/ Macina town	Bozo	Farming/fishing	Dog	Nemabougou	08-08-23	08-08-23	Likely	Yes	No	1	1
11	Segou	Macina	Macina Central	Guenda	Minianka	Farming	Dog	Unknown	08-08-23	08-09-23	Likely	Yes	No	1	1
12	Mopti	Djenne	Djenne Central	Tolober/ Djenne town	Bozo	Fishing	Dog	Djenne	08-08-23	20-08-23	No	Yes	Yes	1	1
	Mopti	Djenne	Djenne Central	Tolober/ Djenne town	Bozo	Fishing	Dog	Djenne	08-08-23	20-08-23	No	Yes	Yes	1	1
13	Segou	Macina	Kolongo	Kolongo Bozo	Bozo	Farming/fishing	Cat	Kolongo Bozo	13-08-23	13-08-23	No	No	Yes	1	1
14	Segou	Macina	Kolongo	Kolongo Bozo	Bozo	Household	Dog	Kolongo Bozo	17-08-23	17-08-23	No	No	Yes	1	1
15	Segou	Macina	Macina Central	Guenda	Bozo	Fishing/Farming	Dog	Unknown	17-08-23	18-08-23	Likely	Yes	No	1	1
16	Segou	Macina	Macina Central	Ke Bozo	Bozo	housewife	Cat	Ke-Bozo	22-08-23	22-08-23	No	No	Yes	1	1

17	Segou	Macina	Kolongo	Kolongo Bozo	Bozo	Fishing/Farming	Dog	Kolongo Bozo	08-09-23	22-08-23	No	No	Yes	1	1
18	Segou	San	Lafiabougou	Lafiabougou	Bomou	Housewife	Cat	Unknown	24-08-23	24-08-23	Likely	Yes	No	1	1
19	Segou	Macina	Macina Central	Ke-Bozo	Bozo	Housewife	Cat	Ke-Bozo	28-08-23	28-08-23	No	No	Yes	1	1
20	Segou	Macina	Kolongo	Kolongo Bozo	Bozo	Fishing/Farming	Dog	Kolongo Bozo	18-08-23	02-9-23	No	No	Yes	1	1
21	Segou	Tominian	Fangasso	Sokoura	Bobo	dog trader	Dog	Medina Coura, quartier of Mopti town	04-09-23	04-09-23	No	No	Yes	1	1
	Segou	Tominian	Fangasso	Sokoura	Bobo	dog trader	Dog	Medina Coura, quartier of Mopti town	04-09-23	04-09-23	No	No	Yes	1	1
	Segou	Tominian	Fangasso	Sokoura	Bobo	dog trader	Dog	Medina Coura, quartier of Mopti town	04-09-23	04-09-23	No	No	Yes	1	1
22	Segou	Macina	Soumouni	Kama	Bozo	Fishing/farming	Dog	Unknown	09-05-23	09-05-23	Likely	Yes	No	1	1
23	Segou	Macina	Kolongo	Kayo(Bozo)	Bambara	Fishing/farming	Cat	Kayo Bozo	09-11-23	09-11-23	No	No	Yes	1	1
24	Segou	Macina	Macina Central	Nemabougou/Macina town	Sonrhai	Farming	Dog	Nemabougou	09-12-23	09-12-23	Likely	Yes	No	1	1
25	Segou	Macina	Kolongo	Kolongo Bozo	Soninke	Farming/fishing	Dog	Kolongo Bozo	09-12-23	09-12-23	No	No	Yes	1	1
26	Segou	Markala	Konou	Konou	Bozo	Farming	Dog	Unknown	09-12-23	13-09-23	Yes	Yes	No	1	1
27	Segou	Macina	Kolongo	Kolongo Bozo	Bozo	Fishing/farming	Dog	Kolongo Bozo	09-02-23	14-09-23	No	No	Yes	1	1
28	Segou	Macina	Kolongo	Kolongo Bozo	Bozo	Fishing/farming	Dog	Kolongo Bozo	31-08-23	14-09-23	No	No	Yes	1	1
29	Segou	Markala	Babougou	Barakabougou	Bozo	Fishing	Dog	Barakabougou	18-09-23	18-09-23	No	No	Yes	1	1
30	Segou	Markala	Gomakoro	Gomakoro	Bambara	Farming	Dog	Unknown	17-09-23	18-09-23	No	Yes	Yes	1	1
31	Segou	Tominian	Fangasso	Sokoura	Bobo	Teacher	Dog	Nataga (Mopti)	20-09-23	20-09-23	No	Yes	Yes	1	1
	Segou	Tominian	Fangasso	Sokoura	Bobo	Teacher	Dog	Nataga (Mopti)	26-09-23	26-09-23	No	Yes	Yes	1	1
32	Mopti	Mopti	Komoguel	Nataka	Tamashek	Teacher	Dog	Unknown	23-09-23	23-09-23	Yes	Yes	No	1	1
33	Segou	Markala	Konou	Konou	Bambara	Farming	Dog	Unknown	24-09-23	25-09-23	No	Yes	Yes	1	1
34	Segou	Macina	Macina Central	Macina/Oulofobougou	Bambara	Teacher	Dog	Macina	29-09-23	29-09-23	Likely	Yes	No	1	1
35	Segou	Macina	Macina Central	Ke-Bozo	Bozo	Fishing/farming	Dog	Ke Bozo	02-10-23	02-10-23	No	Yes	Yes	1	1
36	Segou	Macina	Macina Central	Ke-Bozo	Malinke	Housewife	Dog	Ke Bozo	02-10-23	02-10-23	No	No	Yes	1	1

37	Segou	Markala	Sibila	Nakry	Bozo	Fishing/Farming	Dog	Unknown	05-10-23	06-10-23	No	Yes	Yes	1	1
38	Segou	Markala	Diamarabougou u	Diamarabougou	Bozo	Fishing/Farming	Dog	Unknown	08-10-23	08-10-23	No	Yes	Yes	1	1

Table 3

<b>Number of Laboratory-Confirmed Human Cases of Guinea Worm Disease, and Number Reported Contained by Month during 2023*</b>														
<b>(Countries arranged in descending order of cases in 2022)</b>														
COUNTRIES WITH TRANSMISSION OF GUINEA WORMS	NUMBER OF CASES CONTAINED / NUMBER OF CASES REPORTED													% CONT.
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL*	
CHAD	0/0	0/0	0/0	0/0	1/1	1/1	1/3	1/1	1/2	0/0	0/0		5/8	63%
SOUTH SUDAN	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/1	0/1	0/0	0/0		0/2	0%
ETHIOPIA	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0		0/0	N/A
CENTRAL AFRICAN REPUBLIC	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0		0/0	N/A
MALI	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0		0/0	N/A
CAMEROON					1/1				0/0				1/1	100%
TOTAL*	0/0	0/0	0/0	0/0	2/2	1/1	1/3	0/0	0/0	0/0	0/0		7/11	64%
% CONTAINED	N/A	N/A	N/A	N/A	100%	100%	33%	50%	33%	N/A	N/A	N/A	64%	
<i>*Provisional</i>														
Cells shaded in black denote months when zero indigenous cases were reported. Numbers indicate how many cases were contained and reported that month.														
Numbers indicate how many cases were contained and reported that month.														
<b>Number of Laboratory-Confirmed Human Cases of Guinea Worm Disease, and Number Reported Contained by Month during 2022</b>														
<b>(Countries arranged in descending order of cases in 2021)</b>														
COUNTRIES WITH TRANSMISSION OF GUINEA WORMS	NUMBER OF CASES CONTAINED / NUMBER OF CASES REPORTED													% CONT.
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL	
CHAD	0/0	1/2	0/0	0/0	0/0	0/1	0/1	1/2	0/0	0/0	0/0	0/0	2/6	33%
SOUTH SUDAN	0/0	0/0	0/0	0/0	0/0	0/0	0/1	1/1	1/2	1/1	0/0	0/0	3/5	60%
MALI	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	N/A
ETHIOPIA	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	1/1	0/0	0/0	0/0	1/1	100%
CENTRAL AFRICAN REPUBLIC	0/0	0/0	0/0	0/0	0/0	0/0	1/1	0/0	0/0	0/0	0/0	0/0	1/1	100%
CAMEROON	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	N/A
TOTAL	0/0	1/2	0/0	0/0	0/0	0/1	1/3	2/3	2/3	1/1	0/0	0/0	7/13	54%
% CONTAINED	N/A	50%	N/A	N/A	N/A	0%	33%	67%	67%	100%	N/A	N/A	54%	
Cells shaded in black denote months when zero indigenous cases were reported. Numbers indicate how many cases were contained and reported that month.														
Numbers indicate how many cases were contained and reported that month.														

## 15 YEARS OF NO GUINEA WORM IN NIGERIA



**1988** Nigerian GW Eradication Program begins. National search reports 653,492 cases (more than any other country).

**1999** Former Nigerian Head of State General (Dr.) Yakubu Gowon joins the campaign.

**2008** (November 11) Last GW case in Nigeria.

**2013** WHO certifies Nigeria Guinea worm-free.

### **NIGERIA WON: GUINEA WORMS ZERO** (*Guinea Worm Wrap-Up* #194, January 12, 2010)

“The elders also told of how the loudness of each aircraft’s sonic boom was directly proportional to the numbers of cases of dracunculiasis that that country had at the beginning of the campaign.

So that when the Nigeria broke the sound barrier [indicating Nigeria had stopped GW transmission], the reverberating sound shook the earth all over Africa.”

(Excerpt from “The Boom Boom Game”. *Guinea Worm Wrap-Up* #48, May 1, 1995)



## RECENT PUBLICATIONS

Hopkins DR, Weiss AJ, Yerian S, Sapp SGH, Cama VA, 2023. Progress toward eradication of dracunculiasis—worldwide, January 2022–June 2023. *MMWR Morb Mortal Wkly Rep* 72(45):1230-1236. [Progress Toward Eradication of Dracunculiasis — Worldwide, January 2022–June 2023 | MMWR \(cdc.gov\)](#)

Roberts JD, 2023. Participating in eradication: how Guinea worm redefined eradication, and eradication redefined Guinea worm, 1985-2022. *Med Hist* 67(2):148-171. <https://doi.org:10.1017/mdh.2023.18>

### **Are the right people receiving the *Guinea Worm Wrap-Up*?**

We remind leaders of National Guinea Worm Eradication Programs to make sure all appropriate persons are receiving the *Guinea Worm Wrap-Up* directly, by email. With frequent turnover of government officials, representatives of partner organizations, and recruitment of new Guinea worm program staff, keeping desired recipients up to date is challenging. Frequent review of who is receiving the newsletter directly is advised. To add an addressee, please send their name, title, email address, and preferred language (English, French, or Portuguese) to Dr. Sharon Roy at CDC ([gwwrapup@cdc.gov](mailto:gwwrapup@cdc.gov)).

Note to contributors: Submit your contributions via email to Dr. Sharon Roy ([gwwrapup@cdc.gov](mailto:gwwrapup@cdc.gov)) or to Adam Weiss ([adam.weiss@cartercenter.org](mailto:adam.weiss@cartercenter.org)), by the end of the month for publication in the following month's issue. Contributors to this issue were: the national Guinea Worm Eradication Programs, Dr. Donald Hopkins and Adam Weiss of The Carter Center, Dr. Sharon Roy of CDC, and Dr. Dieudonné Sankara of WHO. Formatted by Jacqueline Mullen.

*WHO Collaborating Center for Dracunculiasis Eradication, Center for Global Health, Centers for Disease Control and Prevention, Mailstop H21-10, 1600 Clifton Road NE, Atlanta, GA 30333, USA, email: [gwwrapup@cdc.gov](mailto:gwwrapup@cdc.gov), fax: 404- 728-8040. The GW Wrap-Up web location is <https://www.cdc.gov/parasites/guineaworm/wrap-up>*

Back issues are also available on the Carter Center web site in English, French, and Portuguese and are located at

[http://www.cartercenter.org/news/publications/health/guinea\\_worm\\_wrapup\\_english.html](http://www.cartercenter.org/news/publications/health/guinea_worm_wrapup_english.html).

[http://www.cartercenter.org/news/publications/health/guinea\\_worm\\_wrapup\\_francais.html](http://www.cartercenter.org/news/publications/health/guinea_worm_wrapup_francais.html)

[http://www.cartercenter.org/news/publications/health/guinea\\_worm\\_wrapup\\_portuguese.html](http://www.cartercenter.org/news/publications/health/guinea_worm_wrapup_portuguese.html)



World Health  
Organization

CDC is the WHO Collaborating Center for Dracunculiasis Eradication.