



Date: October 4, 2010

From: WHO Collaborating Center for  
Research, Training and Eradication of Dracunculiasis

Subject: GUINEA WORM WRAP-UP #200

To: Addressees

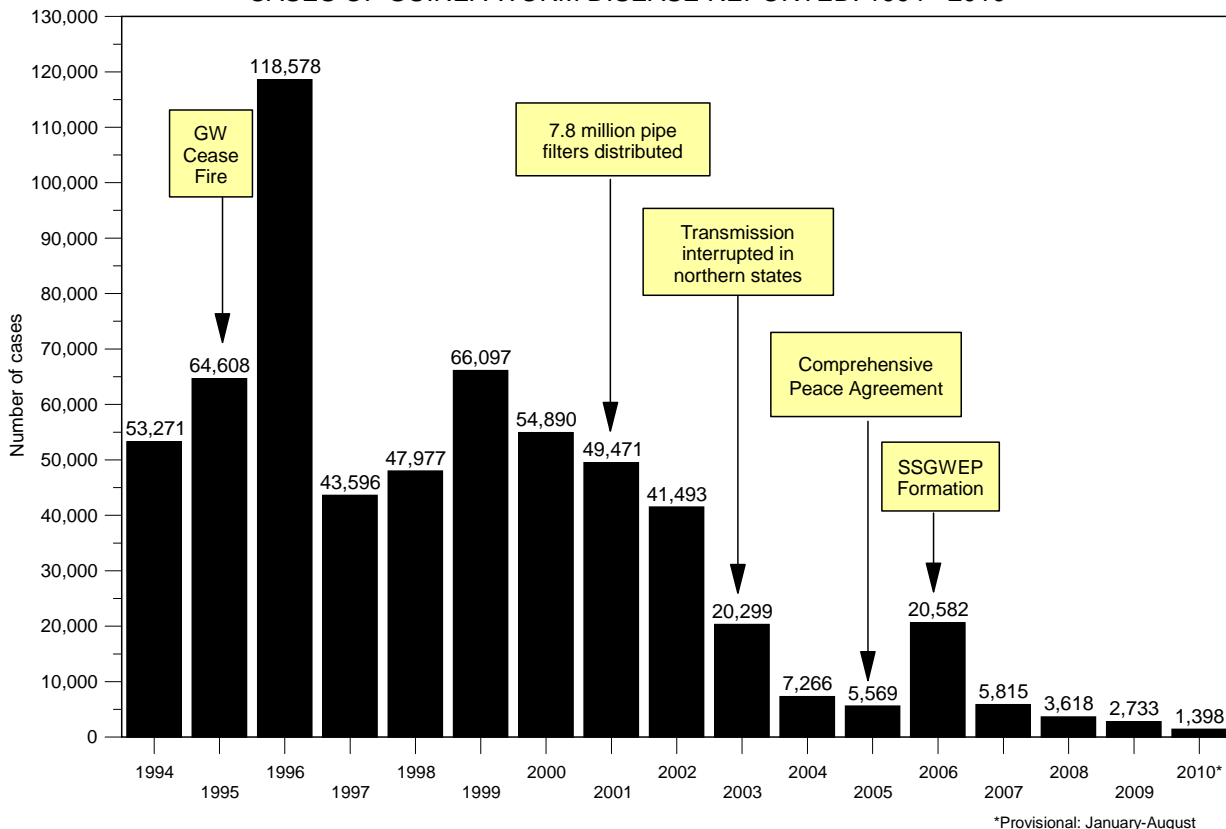
**Detect Every Case! Contain all transmission! Explain every source!**

**SUDAN: CONTINUING TO TIGHTEN SURVEILLANCE AND CONTAINMENT**

Figure 1 shows the history of cases of Guinea worm disease (GWD) reported from Sudan since 1994, when the national effort to eradicate the disease was launched. Indigenous transmission of GWD in the northern states of Sudan was interrupted in 2003 and the remaining endemic areas are in Southern Sudan. The Southern Sudan Guinea Worm Eradication Program (SSGWEP) was organized in early 2006, following the signing of the Comprehensive Peace Agreement that ended the civil conflict in that country. During 2006 the first comprehensive assessment ever of the extent of GWD in Southern Sudan was completed and 20,582 cases were recorded from 3,137 villages. Interventions against transmission of GWD during 2006 – 2009 reduced cases by 87% (Table 1).

Figure 1

SUDAN GUINEA WORM ERADICATION PROGRAM  
CASES OF GUINEA WORM DISEASE REPORTED: 1994 - 2010\*



With most of the 2010 transmission season nearly over, the current status of Guinea worm disease in Southern Sudan and the full impact of the Southern Sudan Guinea Worm Eradication Program's work in 2009 are becoming clearer. During January–August 2010, a total of 1,398 cases of GWD were reported from 639 villages, a reduction in cases of 38% from the 2,248 reported during the same period in 2009 (Table 1). Provisional reports for January – September 2010 are shown in Figure 2 and Table 2. Transmission is localized, with the disease now concentrated in three main foci (Table 3, Figures 4, and 5):

- Warrap – Western Bahr Al Ghazal States;
- Lakes – Central Equatoria States; and
- Eastern Equatoria State.

Table 1

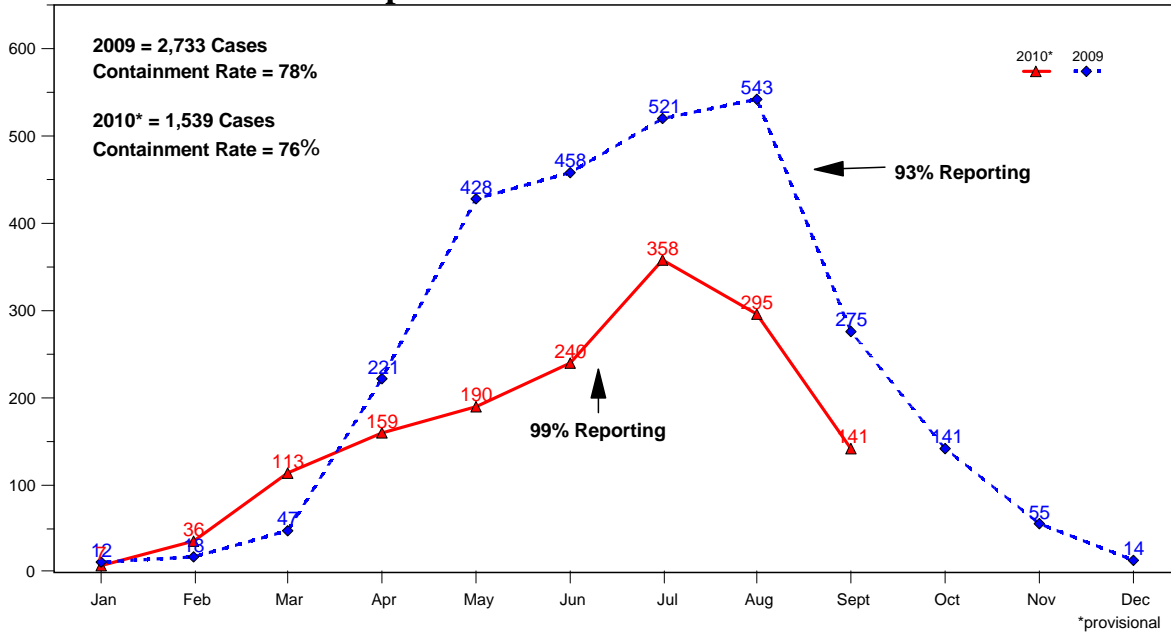
**Southern Sudan Guinea Worm Eradication Program  
Selected Parameters and Status of Program Indicators:2006-2010\***

Parameter	Year				
	2006	2007	2008	2009	2010*
Villages Reporting Indigenous Cases	3,137	1,765	947	584	232
Number of Endemic Villages	3,137	3,023	2,301	1,283	682
Number of Cases Reported	20,582	5,815	3,618	2,733	1,398
Percent of Cases Contained	49%	50%	49%	78%	75%
Program Indicators: Endemic Villages					
Percent Reporting Monthly	63%	70%	87%	94%	99%
Percent Provided Health Education	71%	93%	96%	67%	92%
Percent with Cloth Filters in All Households	47%	38%	79%	98%	97%
Percent with Pipe Filters Distributed to All Res	25%	38%	52%	46%	60%
Percent Protected with ABATE Larvicide	6%	11%	34%	45%	58%
Percent with One or More Sources of Safe Wa	16%	16%	15%	16%	23%

\* Provisional: January - August

Figure 2

### Sudan Guinea Worm Eradication Program Number of Reported Cases of Dracunculiasis: 2009 - 2010\*



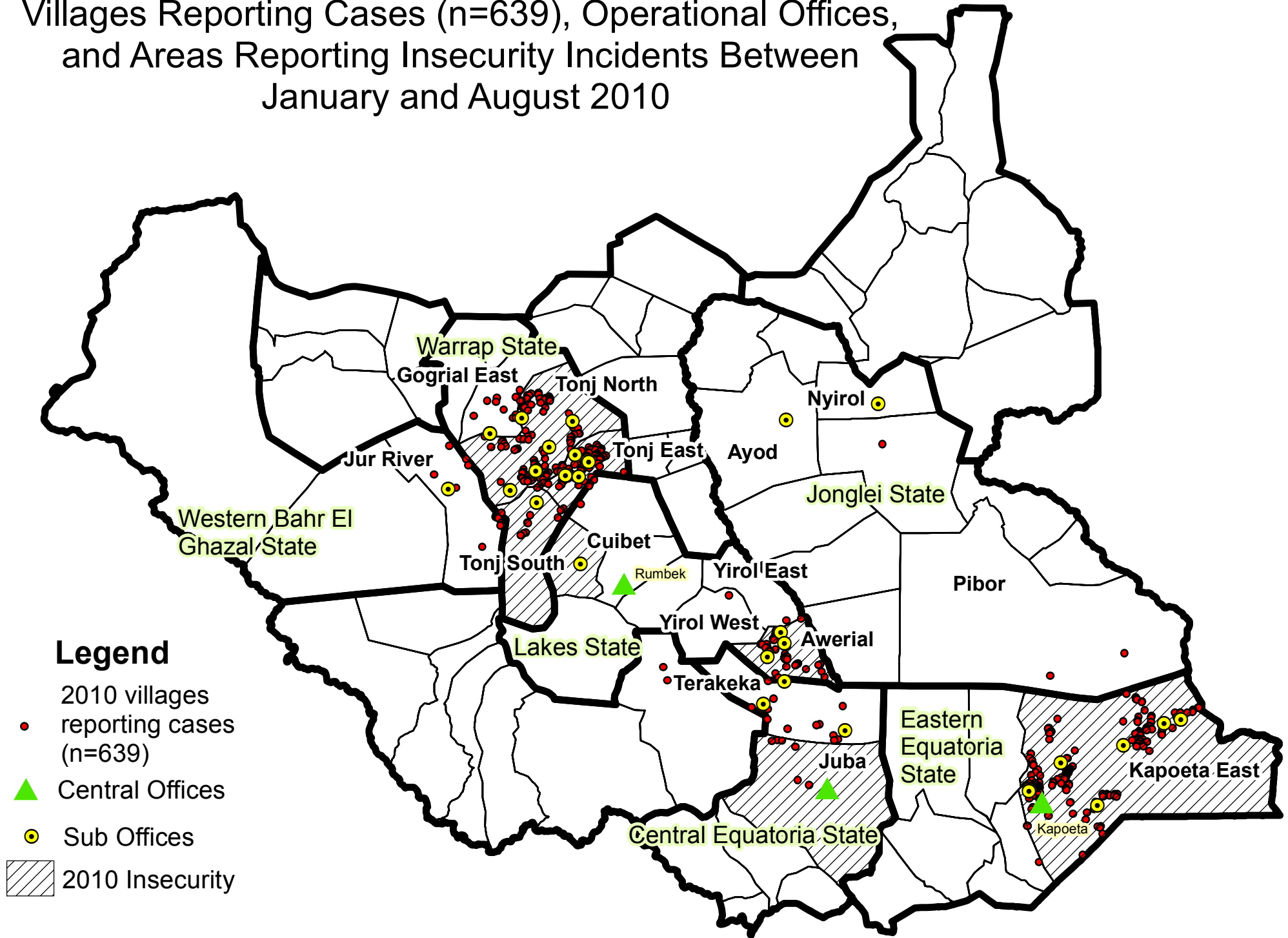
The status of interventions in the three foci is summarized in Table 3. In 2009, 94% of cases occurred in only 10 of Southern Sudan's 79 counties under active surveillance which have reported 1,344 (96%) of cases in 2010 (Figure 6). Five of these counties are in the Warrap-W. Bahr Al Ghazal focus (Tonj N, Tonj S, Tonj E, Jur River, Gogrial E), three in Eastern Equatoria focus (Kapoeta N, S, E) and two in Central Equatoria/Lakes focus (Terekeka, Awerial). The main transmission season is April-October in all three foci, but in 2009 and 2010 cases peaked earlier in the Greater Kapoeta focus of Eastern Equatoria state (April-May) than in the other two foci (July-August, respectively) (Figure 4). An 86% increase in Southern Sudan's cases during the first quarter of 2010 (143 cases, vs. 77 cases in January-March 2009) resulted from insecurity incidents in the Eastern Equatoria focus during the first quarter of 2009, but cases were reduced by 44% in April-August 2010.

Table 2

#### Sudan Guinea Worm Eradication Program Reported Cases of Guinea Worm Disease by State and Month: January - August 2010\*

State	Cases Reported by Month												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
Eastern Equatoria	2	27	109	141	136	102	68	39	23				647
Warrap	1	4	2	13	19	93	221	167	77				597
Lakes	0	1	0	4	26	33	49	64	37				214
Central Equatoria	2	3	2	0	1	2	11	14	2				37
Jonglei	0	1	0	0	2	8	6	10	2				29
W. Bahr Al Ghazal	1	0	0	1	5	2	3	1	NR				13
Western Equatoria	1	0	0	0	1	0	0	0	0				2
<b>Total</b>	<b>7</b>	<b>36</b>	<b>113</b>	<b>159</b>	<b>190</b>	<b>240</b>	<b>358</b>	<b>295</b>	<b>141</b>				<b>1539</b>

Figure 3: Southern Sudan Guinea Worm Eradication Program Villages Reporting Cases (n=639), Operational Offices, and Areas Reporting Insecurity Incidents Between January and August 2010



The SSGWEP has improved case containment rates in 2009 and 2010 to 78% and 75% respectively, compared to 49-50% in the three years before, and the improved case containment rate is reflected in the increased percentage reduction in cases achieved between 2009 and 2010, 39% (1,368 vs. 2,248 cases), compared to the 24% reduction (2,733 vs. 3,618 cases) achieved between 2008 and 2009. The program operated only 3 case containment centers (CCCs) in 2009, and managed to contain 8% of 2,733 cases at a CCC, whereas during January-August 2010 it operated 12 CCCs and managed to contain 20% of the 1,398 reported cases. However, although the trend in year to year reduction of cases in Group I and Group II villages (villages that reported cases in the first year and either continued to report cases in the second year or reported zero cases in the second year, and where all interventions were applied both years) decreased from an 82% reduction in 2006-2007 to 69% reduction in (2007-2008), and 61% reduction in (2008-2009), it has increased to a 75% reduction in 2009-2010. Monthly reporting from known endemic villages continues to improve, from 63% (2006), to 70% (2007), 87% (2008), 93% (2009), and 99% (January-August 2010)

Table 3

**Sudan Guinea Worm Eradication Program**  
**Cases Reported, Percent Containment, and Intervention Delivery Across Three Focal Areas: January - August 2010\***

Parameters	Focal Area		
	Warrap and Northern Bahr Al Ghazal States (N = 295 EVS)	Lakes and Central Equatoria States (N = 144 EVS)	Eastern Equatoria State (N = 230 EVS)
Number of cases reported	533	213	624
Percent of cases contained	80%	77%	72%
<b>Indicators: Percent of Endemic Villages (EVS)</b>			
reporting monthly	99%	96%	97%
provided monthly health education	91%	85%	98%
with a safe sources of drinking water	24%	22%	18%
with cloth filters in all households	96%	98%	98%
with pipe filters provided to residents	68%	38%	65%
Protected with ABATE Larvicide	64%	43%	57%

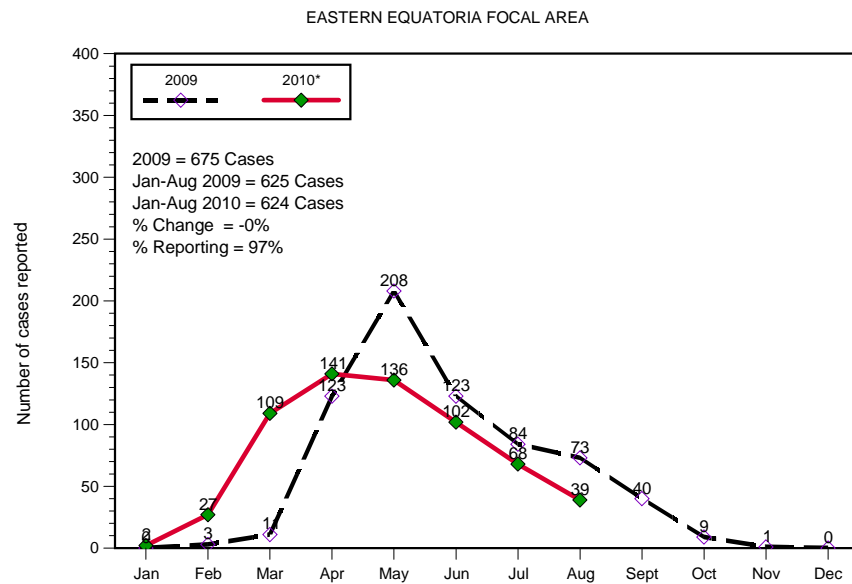
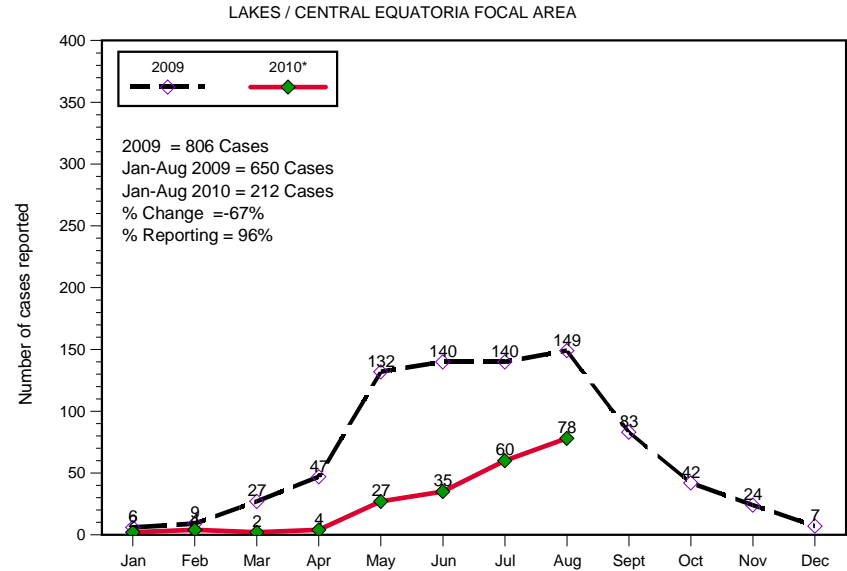
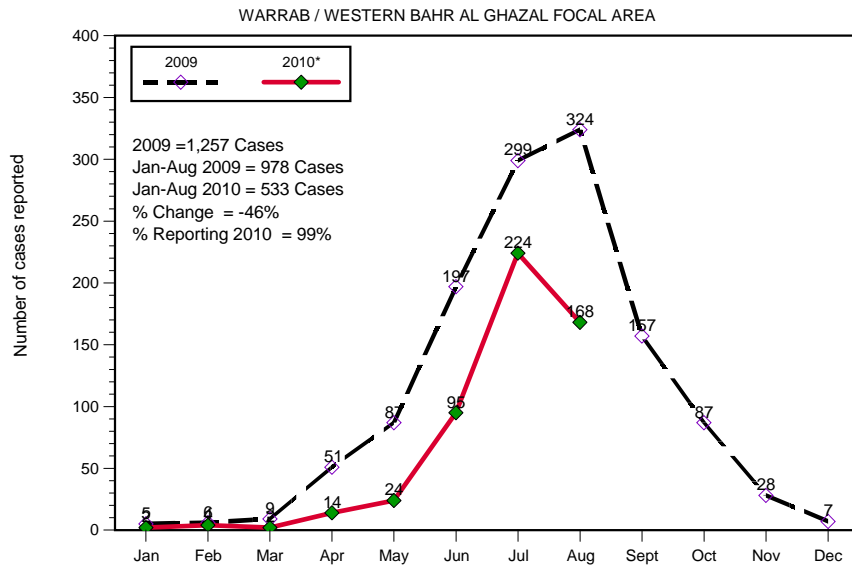
\* Provisional: January - August

Since 2006 the SSGWEP has maintained an active surveillance system in a large number of villages considered at-risk, because of their proximity to other known endemic villages in areas with endemic transmission. Below is the breakdown by year of villages under active surveillance, including villages with endemic transmission of Guinea worm disease.

- 2006: 19,152 villages under active surveillance, including 3,137 endemic villages.
- 2007: 22,434 villages, including 1,765 endemic villages
- 2008: 15,382 villages, including 947 endemic villages
- 2009: 10,539 villages, including 584 endemic villages
- 2010: 6,038 villages (only 232 villages have reported indigenous cases so far this year).

Figure 4

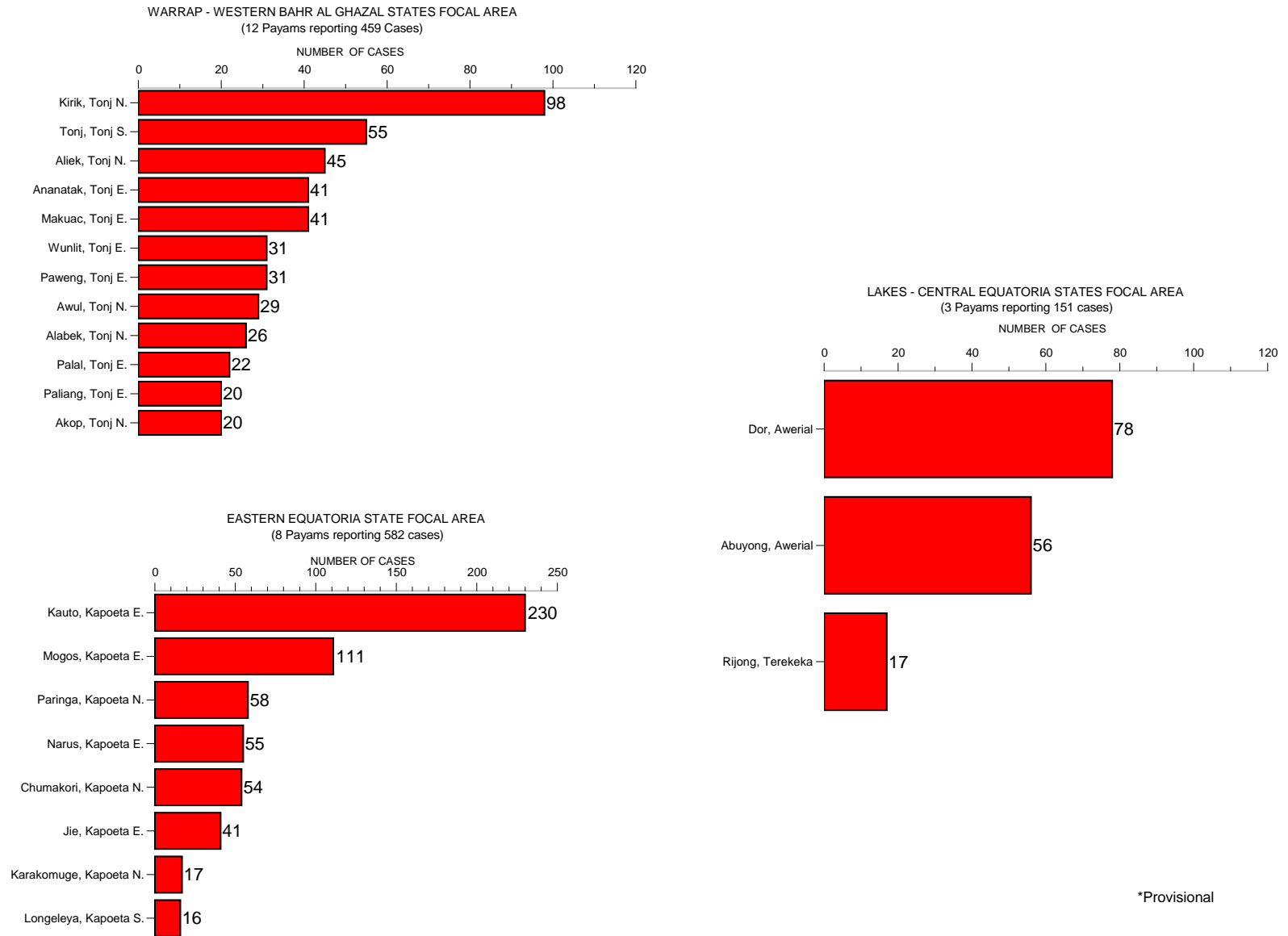
SOUTHERN SUDAN GUINEA WORM ERADICATION PROGRAM  
 NUMBER OF CASES OF DRACUNCULIASIS REPORTED FROM THREE FOCAL AREAS DURING 2009 AND 2010\*



\* Provisional: January-August

Figure 5

SOUTH SUDAN GUINEA WORM ERADICATION PROGRAM  
 23 PAYAMS AND COUNTIES REPORTING 1,192 (85%) OF 1,398 CASES OF DRACUNCULIASIS BY FOCAL AREA: JANUARY-AUGUST 2010\*



\*Provisional

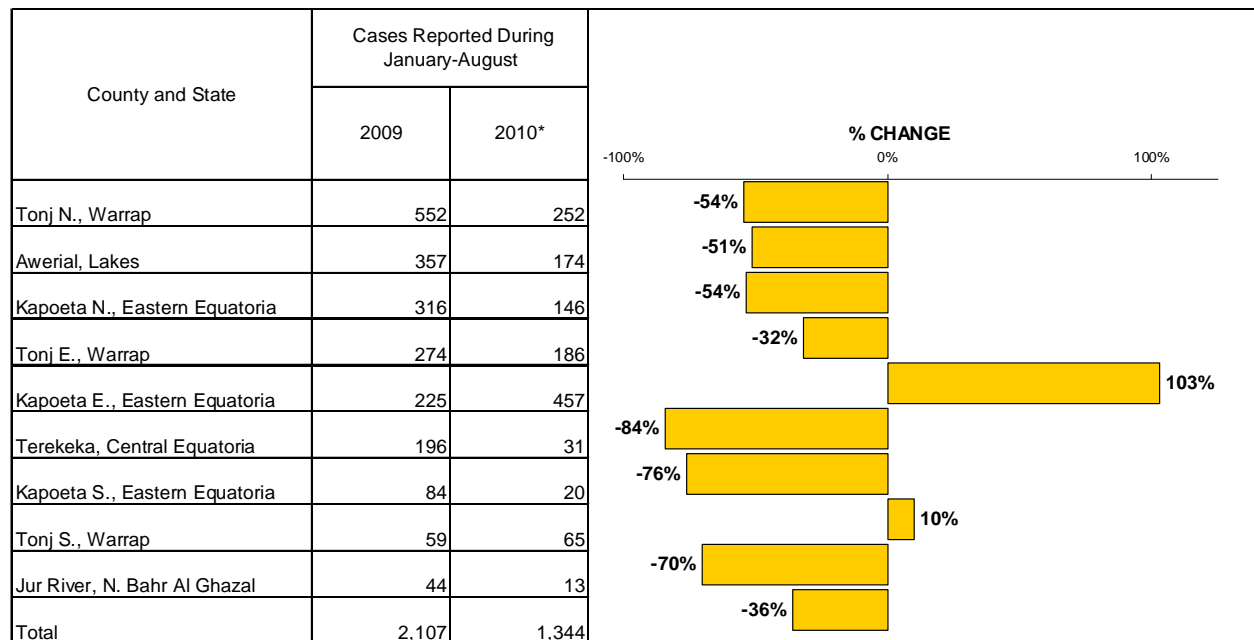
The broad extent of the surveillance system has been necessary because of the seasonal patterns of population movements in Southern Sudan. The prominence of Group III and Group IV villages (villages under surveillance that reported zero cases in the first year but reported cases in the second year, and villages not under surveillance in the first year that reported cases in the second year) requires more attention. The percentage of all villages reporting cases that were Group III/IV villages was 69% (2007), 60% (2008), 63% (2009), and 60% in 2010, so far, while the percentage of all cases that occurred in Group III/IV villages was 50% (2007), 45% (2008), 53% (2009), and 53% (2010). Group III/IV villages reported an average of 2.1 cases per village, compared to an average of 4.2 cases per village in Group I villages. Seasonal movements of significant segments of populations to attend to cattle, farming and domestic chores and sudden displacements of populations because of cattle raids, or other violence are important determinants of these patterns, the latter two beyond the control of the SSGWEP.

At this end stage of the campaign the Southern Sudan Ministry of Health, the SSGWEP and their partners, especially The Carter Center and the World Health Organization, will need to improve the quality of case detection and case containment in known endemic villages and in areas of Southern Sudan that appear to be Guinea worm-free.

Figure 6

SOUTH SUDAN GUINEA WORM ERADICATION PROGRAM

Percent Change in Cases Reported Among the Top 10 Counties Reporting 2,107 (94%) of 2,248 Cases During January-August 2009, and Reporting 1,344 (96%) of 1,398 Cases during January-August 2010\*



\* Provisional



## **IN BRIEF**

During January-September 2010 the four remaining endemic countries provisionally reported 1,596 cases (76% contained) of GWD (Table 4), a reduction of 45% from the 2,926 indigenous cases reported during the same period in 2009 (Figure 7).

Ethiopia reported 2 cases, both of whose worms emerged on August 1<sup>st</sup>, from Wadmaro and Abawiri villages, and one case, contained, whose first Guinea worm emerged on September 27, from Wicini Village of Gog Woreda in Gambella Region.

Ghana has reported zero cases for four consecutive months (June-September).

Mali has provisionally reported 32 cases in January-September 2010, 25 (78%) of them contained, for a reduction in cases of 77% compared to the 142 cases (73% contained) reported in the same period of 2009.

## **UPDATE: CHAD**

The World Health Organization (WHO) reports that surveys conducted in follow up to rumors and the two cases of dracunculiasis that occurred in April and June 2010 (see previous issue of the *GW Wrap-Up*), but were detected in mid-August, led to detection of five additional persons (4 from Abba Limane village and one from Moulkou village, Guelendeng District) with signs and symptoms compatible with the disease, but confirmation of GWD (meeting the case definition) is pending. Moulkou village, in Guelendeng District of Mayo Kebbi East Region, had reportedly been visited by the two initial cases a year ago, and is in the same district as the villages of those two cases. We await further details about the on-going investigation being conducted by Chadian authorities and WHO.

Chad reported its last known case of dracunculiasis in 1998, and has been in the pre-certification stage since 2001. The International Certification Team (ICT) that visited Chad in December 2008 reported surveying 229 people in 23 villages of Mayo Kebbi East Region as part of their investigation, but did not survey in the same district where this year's cases have been found. According to the ICT report, 99% (226/229) of villagers surveyed in that region knew how to prevent Guinea worm disease, 97% (223/229) knew the mode of transmission of the parasite, and 91% (21) of the 23 villages surveyed had a source of safe drinking water. However, only 44% (101/229) of persons surveyed were aware of the reward scheme for reporting a case of Guinea worm disease; the reward scheme had been implemented only in two districts in Salamat and Moyen-Chari Regions. The ICT found no records of rumored cases maintained at national level, and could not assess the status of surveillance of Guinea worm disease in Chad because the archives were not sorted by year or by region. No computerized data were available because no program computers had been operable since 2003.

*It now appears this outbreak resulted either from an imported case(s) that contaminated local water sources in 2009 or before, or, less likely, is an endemic focus that has smoldered undetected since 1998. Other countries already certified and those still in the precertification stage should recognize the risks of inadequate surveillance in Guinea worm-free areas until GWD is eradicated everywhere.*

Table 4

**Number of Cases Contained and Number Reported by Month during 2010\* (Countries arranged in descending order of cases in 2009)**

COUNTRIES REPORTING CASES	NUMBER OF CASES CONTAINED / NUMBER OF CASES REPORTED													% CONT.
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL*	
SUDAN	6 / 7	22 / 36	80 / 113	119 / 159	147 / 190	177 / 240	273 / 358	230 / 295	108 / 141	/	/	/	1162 / 1539	76
GHANA	2 / 2	3 / 3	1 / 1	1 / 1	1 / 1	0 / 0	0 / 0	0 / 0	0 / 0	/	/	/	8 / 8	100
MALI	0 / 0	0 / 0	0 / 0	0 / 0	1 / 1	0 / 0	4 / 6	6 / 6	14 / 19	/	/	/	25 / 32	78
ETHIOPIA	0 / 0	1 / 1	2 / 2	6 / 6	2 / 3	0 / 1	1 / 1	2 / 2	1 / 1	/	/	/	15 / 17	88
TOTAL*	8 / 9	26 / 40	83 / 116	126 / 166	151 / 195	177 / 241	278 / 365	238 / 303	123 / 161	/	/	/	1210 / 1596	76
% CONTAINED	89	65	72	76	77	73	76	79	76				76	
% CONT. OUTSIDE SUDAN	100	100	100	100	80	0	71	100	75				84	

\* provisional

Shaded cells denote months when zero indigenous cases were reported. Numbers indicate how many imported cases were reported and contained that month.

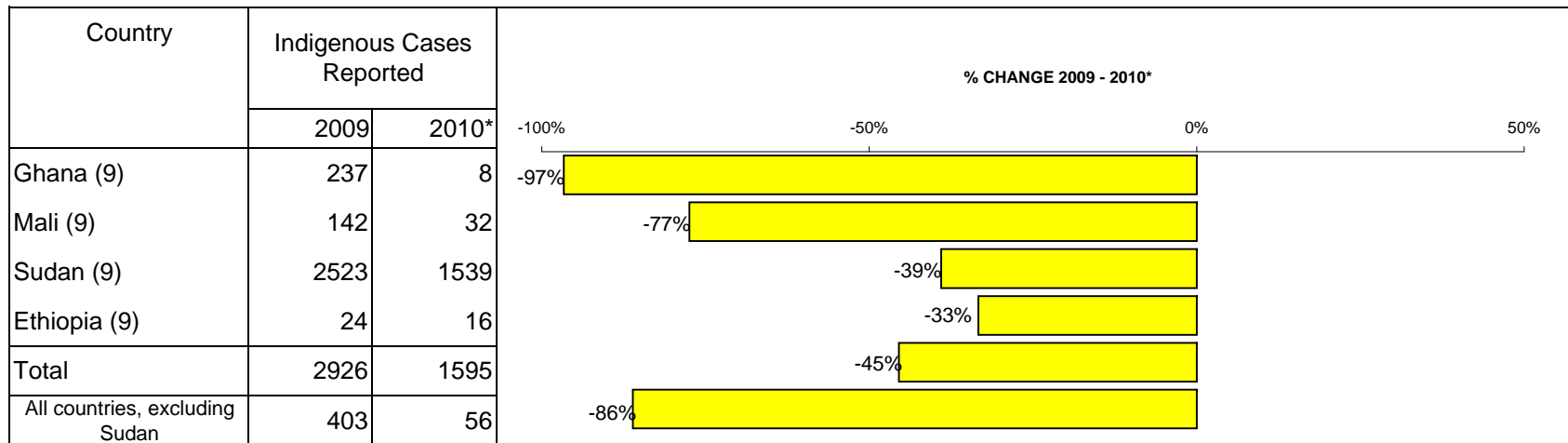
**Number of Cases Contained and Number Reported by Month during 2009\* (Countries arranged in descending order of cases in 2008)**

COUNTRIES REPORTING CASES	NUMBER OF CASES CONTAINED / NUMBER OF CASES REPORTED													% CONT.
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL*	
SUDAN	4 / 12	12 / 18	39 / 47	134 / 221	277 / 428	388 / 458	434 / 521	452 / 543	240 / 275	104 / 141	39 / 55	11 / 14	2134 / 2733	78
GHANA	40 / 45	49 / 50	50 / 52	27 / 28	30 / 34	18 / 19	6 / 7	1 / 1	1 / 1	2 / 3	0 / 0	1 / 2	225 / 242	93
MALI	0 / 0	0 / 0	0 / 0	0 / 0	1 / 1	7 / 7	14 / 23	34 / 43	48 / 68	23 / 34	5 / 7	3 / 3	135 / 186	73
ETHIOPIA	0 / 0	0 / 0	2 / 2	6 / 6	2 / 5	6 / 8	2 / 2	1 / 1	0 / 0	0 / 0	0 / 0	0 / 0	19 / 24	79
NIGERIA	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	0
NIGER	0 / 0	0 / 0	0 / 1	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	1 / 2	0 / 1	1 / 1	0 / 0	2 / 5	40
TOTAL*	44 / 57	61 / 68	91 / 102	167 / 255	310 / 468	419 / 492	456 / 553	488 / 588	290 / 346	129 / 179	45 / 63	15 / 19	2515 / 3190	79
% CONTAINED	77	90	89	65	66	85	82	83	84	72	71	79	79	
% CONT. OUTSIDE SUDAN	89	98	95	97	83	91	69	80	70	66	75	80	83	

\* provisional

Shaded cells denote months when zero indigenous cases were reported. Numbers indicate how many imported cases were reported and contained that month.

Figure 7  
 Number of Indigenous Cases Reported During the Specified Period in 2009 and 2010\*, and Percent Change in Cases Reported



\* Provisional: excludes cases exported from one country to another  
 (9) Indicates months for which reports were received, i.e., Jan.-Sept.2010\*

## WHO EXTERNAL EVALUATION TEAM TO NIGER



In follow up to Niger's interruption of dracunculiasis transmission in 2008, the World Health Organization (WHO) dispatched an external evaluation team to visit Niger during September 15-27, 2010. The team is led by Dr. Aboulhassane Nadim, a member of the International Commission for the Certification of Dracunculiasis Eradication (ICCDE) and includes Adam Thomas of UNICEF/Ghana, Dr. Kimberly Mace of CDC, Dr. L.T. Kangoye of Burkina Faso, Alto Oumarou of CERMES/Niamey, Sadi Moussa and Mr. Adakal Aboubacar of the ministry of health of Niger, and Dr. Salissou Adamou of the onchocerciasis program of Niger. Facilitators included Drs. Alhouseini Maiga and Dieudonne Sankara of WHO, national GWEP coordinator Harou Oumarou, and others. An International Certification Team (ICT) will visit Burkina Faso on behalf of the ICCDE in October 2010.

## SHOWING OF NEW DOCUMENTARY

National Geographic will host a screening of the new Guinea worm documentary film "Foul Water Fiery Serpent" by Cielo Productions in its Grosvenor Auditorium at the National Geographic Center in Washington, DC on Monday, October 18, 2010 at 6:30 PM. The screening is open to the public, and admission is free of charge. Persons wishing to attend the screening at National Geographic must R.S.V.P. by October 12, 2010 to: [info@cieloproductions.org](mailto:info@cieloproductions.org) (415) 670-9600. See <http://events.nationalgeographic.com/events/locations/center/grosvenor-auditorium/> The preview of this film and the locations and dates of other screenings may be viewed at: [www.foulwaterfieryserpent.org](http://www.foulwaterfieryserpent.org)

## GUINEA WORM DISEASE IN PRINT, IN THE NEWS AND IN CYBERSPACE

Molyneux D. 2010. Film-Eradicating Guinea worm disease-a prelude to NTD elimination. Lancet 376:947-948. This review of the new documentary film "Foul Water Fiery Serpent" may be read at <http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2961437-7/fulltext>

Hopkins DR, Ruiz-Tiben E, Eberhard ML, Roy SL. 2010. Progress toward global eradication of dracunculiasis, January 2009-June 2010. MMWR 59:1239-1242.

World Health Organization, 2010. Monthly report on dracunculiasis cases, January–April 2010. Wkly Epidemiol Rec 85:247–248.

World Health Organization, 2010. Monthly report on dracunculiasis cases, January–May 2010. Wkly Epidemiol Rec 85:291-292.

World Health Organization, 2010. Monthly report on dracunculiasis cases, January–June 2010. Wkly Epidemiol Rec 85:327–328.

World Health Organization, 2010. Monthly report on dracunculiasis cases, January–July 2010. Wkly Epidemiol Rec 85:355–356).

## MEETINGS

The Carter Center and WHO will co-sponsor the annual joint program review for endemic countries and countries in the pre-certification stage, to be held at The Carter Center in Atlanta on February 15-18, 2011. Also, President and Mrs. Jimmy Carter will host the Fourth Carter Center Awards Ceremony in the evening on February 17 to honor Niger and Nigeria for achieving their first year with no indigenous case of dracunculiasis.

### **200<sup>TH</sup> ISSUE OF GUINEA WORM WRAP-UP!!**

On January 31, 1983, the Guinea Worm Wrap-Up was first printed and distributed quarterly, in English only, to a readership of less than 50 persons. Beginning with the 15<sup>th</sup> issue (March 30, 1987), the Guinea Worm Wrap-Up began to be translated and distributed to interested French-speakers in Africa and Europe, and issue # 52 (January 1996) marked the beginning of monthly issues. All issues of the Guinea Worm Wrap-Up are posted on the CDC web page (see web page address below) and on The Carter Center web site. With the 200<sup>th</sup> issue this month we mark exactly 27 years and 7 months of efforts to inform the readership (now close to 1,300) and the coalition of supporting organizations about the status of national efforts to eradicate dracunculiasis in affected countries in Africa and Asia. As the goal of achieving eradication of dracunculiasis looms closer and closer, we re-commit ourselves to continuing to inform all of you about the status of the global campaign. The editors of the Guinea Worm Wrap-Up thank the national coordinators of eradication programs in all the affected countries who continue to provide much of the substance of this publication and all others who, at one time or another, have helped to chronicle the history of this campaign. We hope not to need many more issues!

*Inclusion of information in the Guinea Worm Wrap-Up  
does not constitute “publication” of that information.  
In memory of BOB KAISER*

*For information about the GW Wrap-Up, contact the WHO Collaborating Center for Research, Training, and Eradication of Dracunculiasis, CGH, Centers for Disease Control and Prevention, F-22, 4770 Buford Highway, NE, Atlanta, GA 30341-3724, U.S.A. FAX: 770-488-7761.*

*The GW Wrap-Up web location is <http://www.cdc.gov/ncidod/dpd/parasites/guineaworm/default.htm>  
Back issues are also available on the Carter Center web site English and French 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)*



CDC is the WHO Collaborating Center for Research, Training, and Eradication of Dracunculiasis.