

## DESCRIPTION OF A SLEDGE FOR TICK SAMPLING (ACARIDA : IXODIDA) <sup>1</sup>

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COLLECTING METHOD	ABSTRACT : A new collapsible sledge used for collecting ticks with a dragged blanket is described. Twelve different tick species are sampled by this method routinely in the Central African Republic. A density index (number of ticks/100 m <sup>2</sup> ) is proposed and various uses of the sledge are presented.
TECHNIQUE DE RÉCOLTE	RÉSUMÉ : Description d'un traîneau comme moyen standardisé d'échantillonnage des tiques (A. I.). Un traîneau démontable conçu pour la récolte de tiques à l'aide d'une couverture est décrit. Douze espèces différentes de tiques ont ainsi été régulièrement récoltées en République Centrafricaine. Un indice de densité (nombre de tiques/100 m <sup>2</sup> ) est proposé et diverses utilisations du traîneau sont envisagées.

Since the beginning of tick collections in Central African Republic for arbovirological purposes, the only sampling method used was the collection on cattle's hides. Although this method gave good results for discovering some arboviruses in ticks (SUREAU *et al.*, 1976) it presents many shortcomings for the study of wild arboviruses : 1) the places where the vectors come from are unknown, 2) only a few species of ticks are sampled, 3) the isolated strains are for the most bovine-associated viruses and may result from viremic animals. This method is thus badly suited to the study of tick-borne arboviruses in wild ecosystems.

The method of sampling ticks *in natura* by dragging a blanket has been used by many authors (MERMOD, AESCHLIMANN & GRAF, 1973)

but yet no device has been designed to provide a standardized method of sampling.

Following is the description of a collapsing sledge used for dragging a blanket.

### DESCRIPTION AND ASSEMBLY OF THE SLEDGE (Fig. 1)

The collapsible sledge is made up of four separate parts : 1) a frame (A<sub>1</sub>-B-A<sub>2</sub>-B<sub>1</sub>), 2) two feet (C) with a runner (D) on each, and 3) a handle (E). These parts are made of 3 cm × 3 cm square iron bars but the runners, handle — fixtures and the stiffening plates (F) are hoop — iron made.

The upper part of each foot can fit with a downward — projecting square iron bar which is welded at

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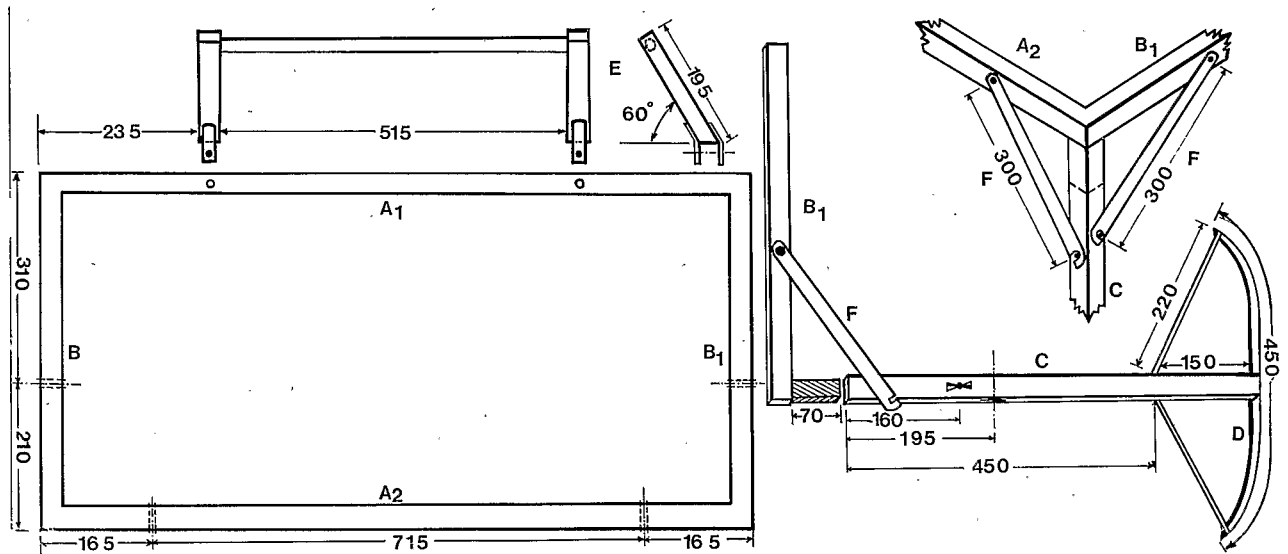


FIG. 1 : Tick collecting sledge : A<sub>1</sub>-B-A<sub>2</sub>-B<sub>1</sub>, upper view of the frame ; B<sub>1</sub>, side-face view of B bar ; C, lateral view of a foot with D, the runner ; E, upper and side-face views of the handle ; F, stiffening iron bars ; photograph : general aspect of assembled sledge with the blanket in operational position ; a 3/4 view of hind corner of assembled sledge is drawn at the right of fig. All measurements are in millimeters.

the angles made by A<sub>2</sub> and B bars of the frame. Near these angles 30 cm long hoop — iron bars are bolted for holding firmly the feet (see the detailed 3/4 diagram on the fig.).

Amovable parts are bolted down with wing — bolts. The binding — irons of the handle are also bolted on the A<sub>1</sub> bar of the frame.

The assembled sledge is shown on the photograph. The blanket (100 cm × 150 cm) is attached with safety pins on the A<sub>2</sub> bar of the frame.

The sledge can be assembled of dis-assembled very quickly. Its total weight is 9 kg.

#### USE AND RESULTS

The sledge is dragged slowly (at a speed of 1,5 km/h) by one man along the grassy edges of a road or a footpath on a known distance of 100 to 300 m. Then, the blanket is turned up on the frame and thoroughly examined for crawling ticks. With the collecting pauses included, the dragging of the blanket during 4 hours (16 h-20 h) allows the covering of a 5,6 km distance.

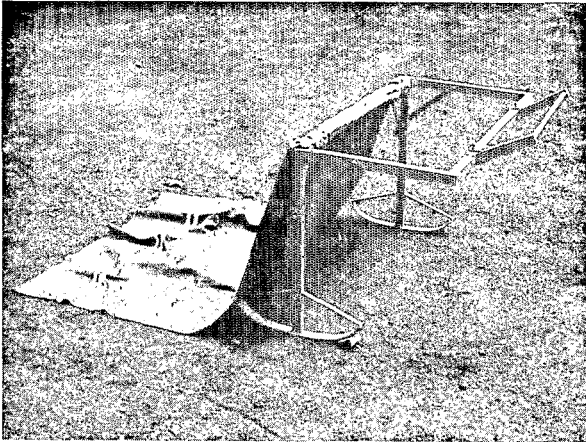
4. Include males and females.

This sledge has been used for more than a year near the village of BOZO (5°08'N ; 18°29'E) located in the sub-sudanese savannah belt in the southern part of Central African Republic.

Tick species collected by this mean are :

- Amblyomma variegatum* (Fabr., 1798) : nymphs (N) & adults<sup>4</sup> (A)
- Rhipicephalus muhsamae* Morel & Vassiliades, 1965 : A
- R. lunulatus* Neumann, 1907 : A
- R. senegalensis* Koch, 1844 : A
- R. simus* Koch, 1844 : A
- R. compositus* Neumann, 1897 : A
- R. sulcatus* Neumann, 1908 : A
- R. sanguineus* Latreille, 1806 : A
- Haemaphysalis hōuyi* Nuttall et Warburton, 1915 : A
- H. leachii* (Audouin, 1827) : A
- Haemaphysalis* n. sp. : A
- H. punctaleachi* Camicas, Hoogstrall et El Kammah, 1973 : A

During the study of seasonal variations of tick densities, we have used a tick index which is the number of ticks collected on the 1 m-wide blanket dragged on a 100 m-distance (i.e. the number of ticks/100 m<sup>2</sup>) :



$$\text{T.I.}^5 = \frac{\text{tick number}}{\text{distance (meters)}} \times 100$$

In any comparative samplings it is advisable to use blankets of standardized size, since the length of the flag may influence the chances of ticks to attach to the blanket (J. L. CAMICAS & M. GERMAIN, pers. comm.).

This index proved very useful for ecological studies and may be a useful tool for comparing tick faunas or prevalences between different countries or/and seasons.

It is also more accurate than the time-based index defined by CHATELAIN & ARDOUIN (1978). For a better standardization the same man ought

to carry the sledge throughout the studies but no special technical talent is required for this work.

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5. "Indice tiques" in french language.