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SELECTION OF RELEASE SITE AND POPULATION SURVEY PLANS

BY D. B. GATES
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[illegible] been selected as [illegible] release sites. This is a N.A.C.O. ranch located about 70 air miles West of Tanga. The closest airstrip is near Kimbo, 25 miles north of the ranch headquarters. Travel time by road takes 2 hours. Alternate release sites include Azimio and Mkwaja Ranches as outlined in the Tsetse Research Project semi-annual report issued June 30, 1974. Mzeri Hill Ranch covers about 160 square miles. Much of the area to the north is sisal plantation and tsetse free. A barrier zone of 1 - 2 miles wide will be constructed around the rest of the ranch. Some barrier clearing was attempted on the western side about 3 years previously but has regenerated to the point where it is heavily infested with flies again. Ring barking and bush clearing is presently being carried out in several locations within the ranch.

At the present time field crews are occupied with pupal collection at Mzeri, and Swagilo. The first collection made at Mzeri between August 6 and 12 produced 40 pupae per man day. This is an acceptable figure for this time of year and indicated that pupal collections could be made in the area that other survey work was to be conducted. During the period of August 30 to September 12 separate 11 man crews were assigned to Mzeri and Swagilo. During the first week the crew at Mzeri averaged 18 per man day while at Swagilo the average was 47. The second weeks collections showed even greater differences with averages of 11 and 128 per man day for Mzeri and Swagilo respectively.

One possible reason for the low pupal numbers at Mzeri is the presence of a pupal parasite tentatively identified as Thyridanthrax abruptus. By September 20, 200 of these bombyliid flies had emerged from 3327 morsitans pupae. T. abruptus has been recorded as remaining inside the puparium of G. morsitans for up to 197 days before emerging so the remaining pupae are being kept past the usual 5 week period. No parasites have emerged from the Swagilo collection.

Pupal collections are scheduled to continue through November. During December, weather permitting, fly rounds will be constructed by clearing path where necessary and marking stops with spray paint. The actual population surveys will begin January 1, 1975. According to published information the average distance traveled by male G. morsitans in one week is ½ mile in any direction from a given point. It is also known that the net distance traveled in its lifetime seldom exceeds a ½ mile. Females travel somewhat further but the number of males present in any given locale is of primary interest to this project when sterile males are to be released. Although it is recognized that G. morsitans tends to concentrate along areas where one vegetative type is replaced by another the fly rounds will not be used only to find these concentrations but also to determine where flies are very scarce or even absent. This can make possible a more efficient use of the sterile males by concentrating released flies in accordance with wild fly population distribution.

Using the ½ mile average the fly rounds will be laid out as near to 1 mile apart as is possible. This will theoretically give us the opportunity to collect any male fly within the population sometime during its lifetime. A crew of 2 men, possibly leading a bait animal, will make a survey of about 6 miles each day. At this rate 5 crews can survey the entire ranch in one week. Fly rounds will be designed to travel from one road or fire breaks to another so that no wasted effort will be made in walking to or from the survey route. Fly rounds will start when the temperature has reached 68°F and attempt to finish before it reaches 96°F. Nash has shown that in Nigeria approximately equal numbers of flies are caught within these limits but that catches fall off rapidly outside this range. The time of day will also be taken into consideration as a possible factor in planning the surveys. A permanent 20 man field staff would allow 10 men to stay at the site for 2 weeks and then return to Tanga for 2 weeks. Other survey techniques such as stationary traps will also be investigated for possible use.

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It should also be assumed that sterile males will not normally travel more than ½ mile so that fly releases if made from the ground, will have to be made on a 1 mile grid pattern. Releases of marked sterile males for recapture are planned to determine if this distance should be altered for the entire ranch or for certain vegetative situations. Since the ranch covers about 160 square miles there would have to be 160 release points. As previously mentioned the number of flies released at each point would depend on the male population in that "section" at that particular time of year.

As time permits the ranch is being accurately mapped to show all existing roads and fire breaks to aid in the constuction of fly rounds and access to release stations.