

1.5.1.4. Additional Features Useful for Identification

There are a few key features that are used for identification of most species, for example, the superior claspers can distinguish all species of male *morsitans* group flies, the inferior claspers distinguish the *palpalis* group males, whilst the shape of the signa is characteristic of all *fusca* group female tsetse. *Palpalis* group and *fusca* group tsetse are best identified by examination of the genitalia rather than using the key in 1.5.1.1. The females of the *morsitans* group must be identified by use of the key in 1.5.1.1. The females of the subspecies of *G. pallicera* and *G. p. newsteadi* cannot be separated by their external genitalia, but are easily distinguished from each other by external characters (1.5.1.1.). Some species or groups of tsetse can be distinguished by the colour of the thecal bulb (**Figure 1.39**). *Fusca* group tsetse, except for *G. longipennis*, have a very pale brown thecal bulb when viewed from underneath; that of *G. longipennis* has a darker apex, in contrast to *G. brevipalpis*, whilst the thecal bulb of *morsitans* and *palpalis* group tsetse is dark brown or nearly black. This is a useful feature as the latter two species occur in the same habitat.

1.6. GLOSSARY OF TERMS

The terms used here, although apparently obscure words often have precise meanings and are commonly used in botanical and zoological keys.

Apical	At the tip, or apex
Bifid	Divided by a deep cleft into two parts
Bifurcated	Divided into two branches (two forked)

Cordiform	Heart shaped
Distal (distally)	Situated away from the centre, or point of attachment (terminal/ distant)
Dorsal	On the top (back) surface (opposite of ventral)
Fuscous	Dark coloured (sombre)
Glabrous	Free from hair (bristles), smooth cuticle
Hamate	Hook shaped
Infuscation	Darkness
Lyriform	Shaped like a harp (musical instrument)
Median	Situated in the middle
Ochraceous	Pale brownish-yellow colour
Recurved	Bent backwards
Rotund (subrotund)	Rounded (partly rounded)
Setulose	Having small bristles (setae)
Sporran shaped	Pouch shaped
Squamiform	Scale like
Suffusions	A colour spreading out from a central point
Testaceous	Hard continuous shell; of brick-red colour
Truncated	Ending abruptly as if cut off at the tip
Ventral	On the lower surface of the abdomen (stomach)
Vestiture	Hair/scales/bristles covering a surface

Abbreviations

The following abbreviations are for commonly used terms, from the Latin, in zoological or botanical systematics:

- s.l. *sensu lato*, meaning in the broad sense, for example, this could be used for all subspecies of *Glossina fuscipes*
- s.s. *sensu stricto*, meaning in the strict sense; this could be used to refer to just *G. fuscipes fuscipes*, and not the other subspecies

1.7. TSETSE DISTRIBUTION

The ultimate objective of these guidelines is to facilitate the development of baseline data collection strategies that will result in data on tsetse presence, absence, densities, ecology and possibly population dynamics. In that respect, the production of fairly precise tsetse distribution maps is particularly important for AW-IPM approaches. As described in the second section of these guidelines, a starting point at the planning stage is to make use of existing distribution maps to roughly determine the area in which to carry out a survey. Distribution maps are available at the continental level, based on patchy historical data, and clearly not of a high resolution. Maps at the country level are often available that are more accurate, although sometimes of localized accuracy according to where work has been carried out and sometimes out-dated. The latter maps should be readily available within a country. There may often be fairly accurate maps available for specific sites within a country where there have been previous projects; again, these may not be published and therefore not readily available except within a country where they will usually be available

TABLE 1.1.

List of the tsetse species and subspecies that have currently been described.

Scientific name	Authority
Genus <i>Glossina</i>	Wiedemann, 1830
Subgenus <i>Austenina (fusca)</i> group	Townsend, 1921
<i>G. brevipalpis</i>	Newstead, 1910
<i>G. frezili</i>	Gouteux, 1988
<i>G. fusca congolensis</i>	Newstead and Evans, 1921
<i>G. fusca fusca</i>	Walker, 1849
<i>G. fuscipleuris</i>	Austen, 1911
<i>G. haningtoni</i>	Newstead and Evans, 1922
<i>G. longipennis</i>	Corti, 1895
<i>G. medicorum</i>	Austen, 1911
<i>G. nashi</i>	Potts, 1955
<i>G. nigrofusca hopkinsi</i>	Van Emden, 1944
<i>G. nigrofusca nigrofusca</i>	Newstead, 1910
<i>G. schwetzi</i>	Newstead and Evans, 1921
<i>G. severini</i>	Newstead, 1913
<i>G. tabaniformis</i>	Westwood, 1850
<i>G. vanhoofi</i>	Henrard, 1952
Subgenus <i>Glossina (morsitans)</i> group	(Zumpt, 1935)
<i>G. austeni</i>	Newstead, 1912
<i>G. longipalpis</i>	Wiedemann, 1830
<i>G. morsitans centralis</i>	Machado, 1970
<i>G. morsitans morsitans</i>	Westwood, 1850
<i>G. morsitans submorsitans</i>	Newstead, 1910
<i>G. pallidipes</i>	Austen, 1903
<i>G. swynnertoni</i>	Austen, 1923
Subgenus <i>Nemorhina (palpalis)</i> group	Robineau-Desvoidy, 1830
<i>G. caliginea</i>	Austen, 1911
<i>G. fuscipes fuscipes</i>	Newstead, 1910
<i>G. fuscipes martini</i>	Zumpt, 1935
<i>G. fuscipes quanzensis</i>	Pires, 1948
<i>G. pallicera newsteadi</i>	Austen, 1929
<i>G. palpalis gambiensis</i>	Vanderplank, 1949
<i>G. palpalis palpalis</i>	(Robineau-Desvoidy, 1830)
<i>G. tachinoides</i>	Westwood, 1850

in the government department responsible for tsetse and trypanosomosis activities. Older maps are usually available only as hard copies, whilst more recent maps are increasingly available in digital format and as GIS data layers. In addition to the maps based on existing knowledge of tsetse distribution, there are now maps available showing the predicted suitability for tsetse species based on a variety of factors, principally climatic ones, as described

FIGURE 1.40
 Predicted suitability for the *palpalis* group tsetse species

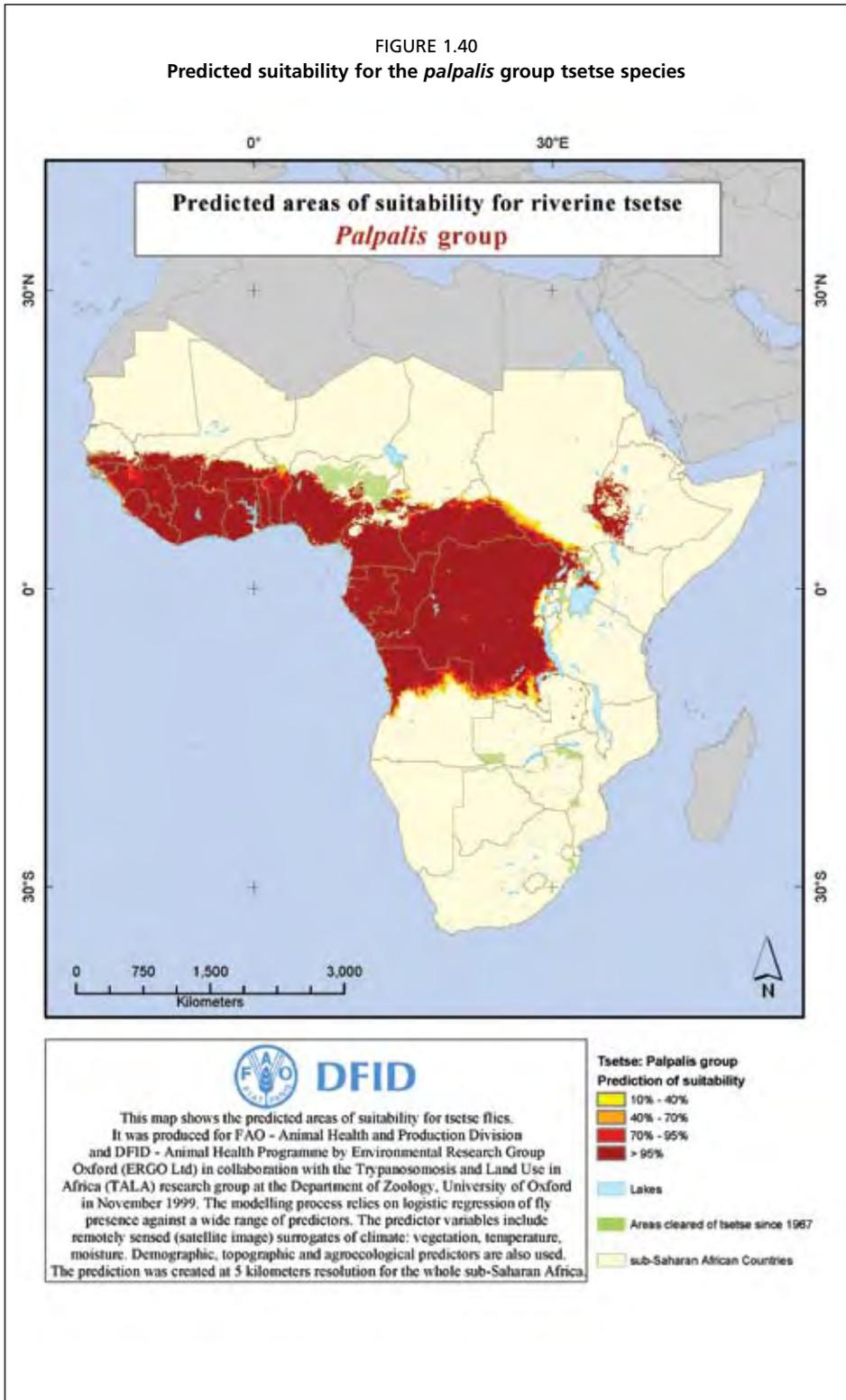


FIGURE 1.41
 Predicted suitability for the *morsitans* group tsetse species

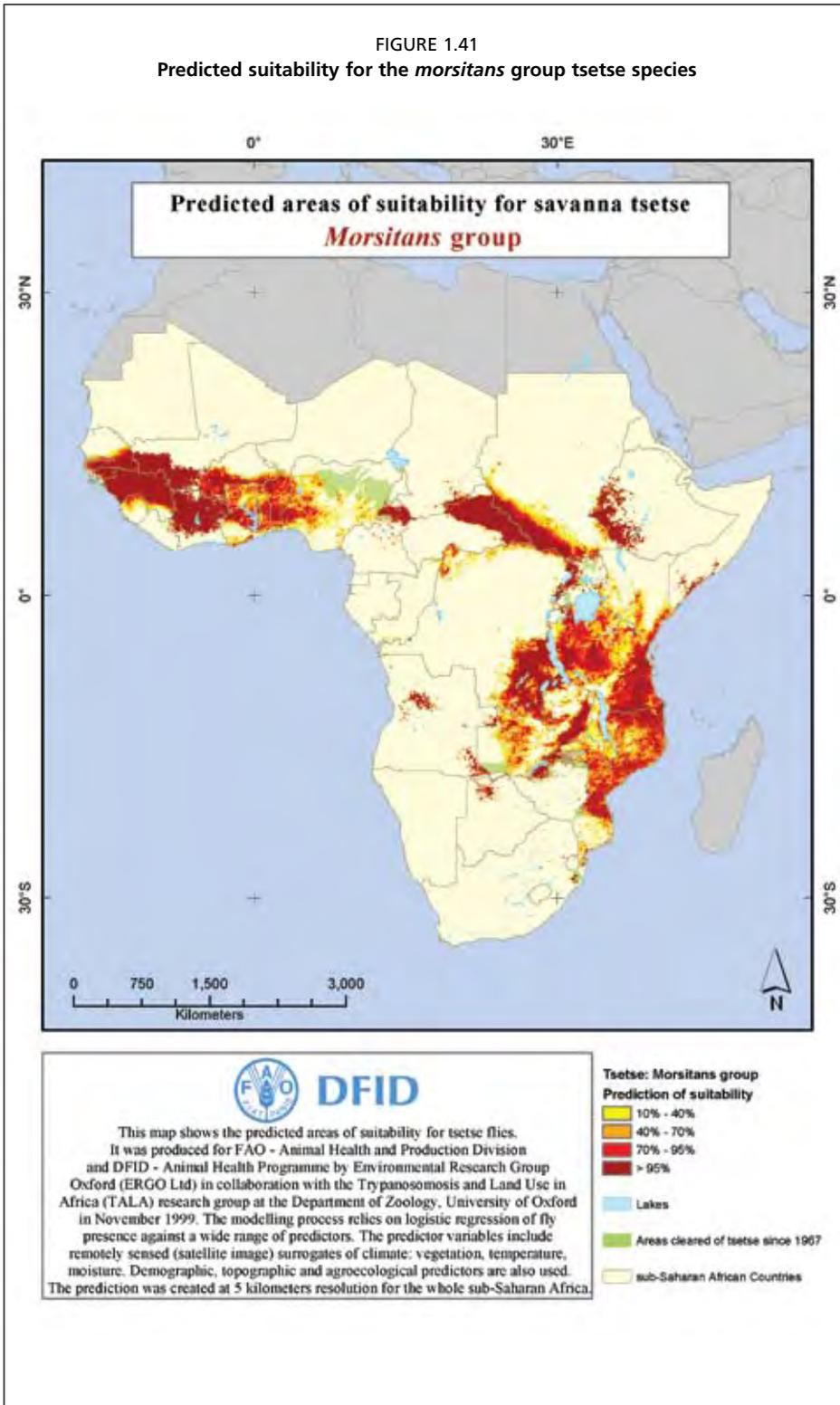
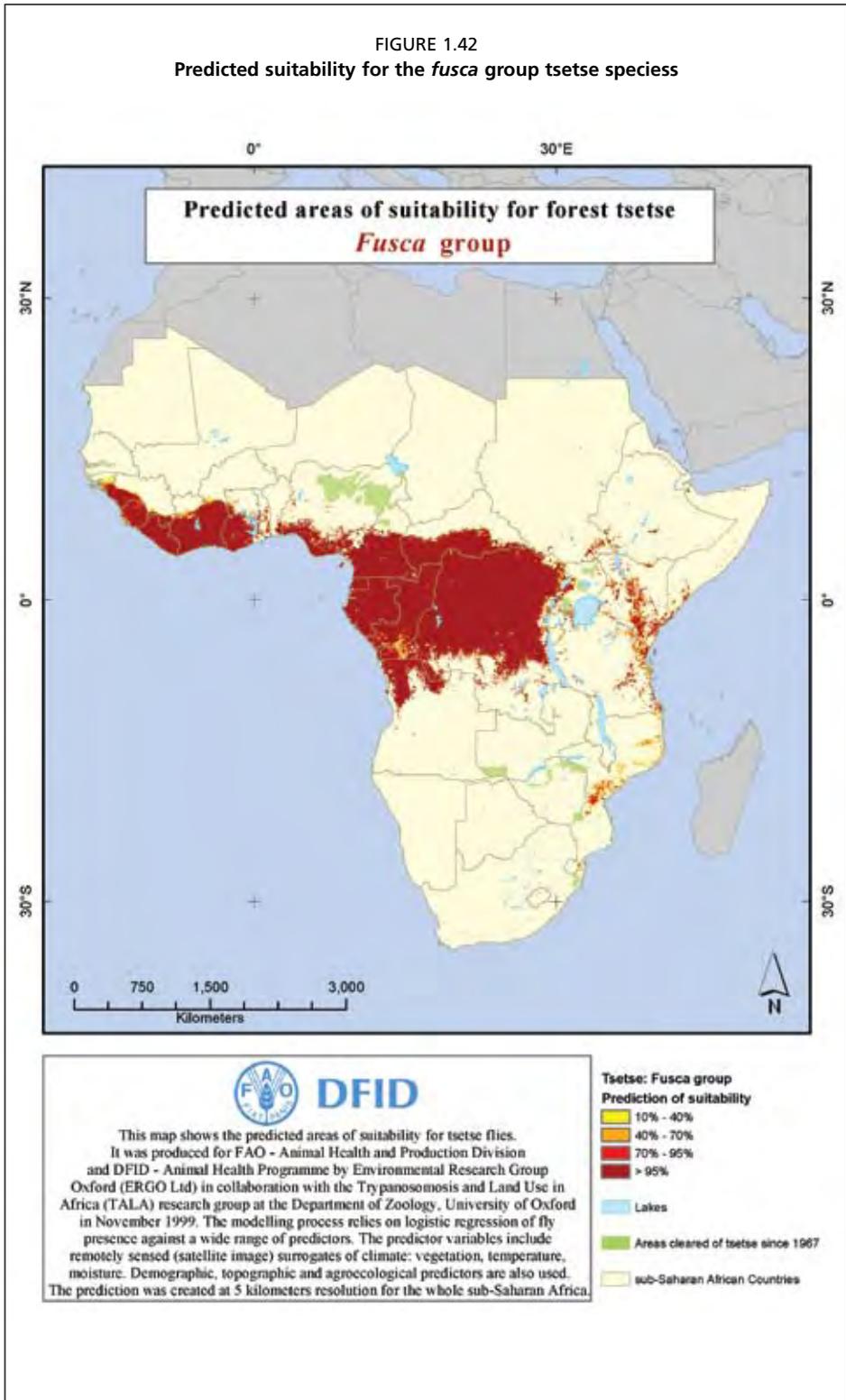


FIGURE 1.42
 Predicted suitability for the *fusca* group tsetse species



subsequently. These predictive maps are currently available at a relatively low resolution for the continent and at a more detailed resolution for some regions. Information is also available in the form of tables listing the known tsetse species in each infested country (Moloo 1985, 1993). These tables and maps will assist in focusing on the areas and target species for any given area prior to detailed surveys.

In the above species list, the names and dates following the name refers to the person who originally gave it its scientific name and the date of that naming. When the name appears in brackets it means that the species has been subject to re-naming after the original description; that may happen when subspecies are identified and named.

The predictive maps referred to above are available on the internet at the following link: <http://www.fao.org/ag/againfo/programmes/en/paat/maps.html>. A selection of the maps available from this site is illustrated in **Figures 1.40, 1.41, and 1.42**. The figures show the predicted suitability for the *palpalis* group or subgenus, the *morsitans* group or subgenus and the *fusca* group, or subgenus, all on a continental scale, respectively.