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Cardylomera spinicornis in kosipo - wood imported in Poland from Africa

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Abstract: Recently, to Poland often get exotic species of insects in the wood brought from Africa, Asia and South America. A dead imago were identified in wood Kosipo (*Entandrophragma condollei* Harms) adventive to Poland from Africa. It was *Cardylomera spinicornis* (Cerambycidae, Coleoptera). Cause of insect death is unknown.

Keywords: exotic wood damages, *Cardylomera spinicornis*, *Entandrophragma condollei* Harms.

INTRODUCTION

Over recent years increasing popularity of exotic wood species is visible, especially in Poland (Kozakiewicz et al. 2008). With the growing timber trade to Poland exotic insects are brought in the wood from other continents (Krajewski and Mazurek, 2010). The most of the insects are dead beetles, which identification is possible. Death of these insects is caused by various factors. Also dead larvae get to Poland in exotic wood. Identification of the species in this case is usually not possible due to the distribution of bodies of insects.

One of the popular exotic wood in Poland is mahogany. Mahogany is a commercially important timber prized for its beauty and color, and used for paneling and to make furniture, musical instruments, boats, and other items. By the end of the 19th century, American mahogany (genus *Swietenia*), becoming more and more difficult to gain and expensive to deliver across Atlantic, was replaced with African mahogany (species from genus *Khaya* and species from genus *Entandrophragma*) known since the 18th century. In Poland significant amounts of African mahogany timber occurred in 1970s. Nowadays it accounts for most of the wood exports from Africa. Unfortunately there is quite common problem with incomplete and incorrect description of imported wood. (Dzbeński 1998, Kozakiewicz and Szkarłat 2003).

MATERIAL AND METHODS

The object designation was dead green beetle, a length of about 20 mm, which was characteristic of antennae. This beetle had been found in the timber brought from Central Africa (probably from Congo). The insect species has been identified by studies Schabel (2006) and Wagner et al. (2008).

The wood genus is marked inter alia by Atlas Wagenführ (2007). To identify the species it was necessary to make microscopic examination. Slides were prepared with cross- and longitudinal sections (radial and tangential) from African timber. The sledge microtome was used to cut samples in slices of 10-30 μm thickness each. Slides were cross-dyed with a solution of safranine and observed in the passing light with an Olympus microscope BX41 with a digital camera Olympus DP25 attachment linked to a computer with specialists software Cell*B with possibility of measurement of the anatomical structure elements.

RESULTS AND DISCUSSION

Recognized genus of wood is *Entandrophragma* (family *Meliaceae*), one of African mahogany (table.1). *Entandrophragma* wood has got heartwood basically brown to red. Sapwood is rather wide and its color is lighter than heartwood color (light brown to light red). When exposed to light, the wood's color deepens even to dark reddish-brown.

In *Entandrophragma* wood appears well-developed parenchyma. Its greater contribution influences on the greater fracture vulnerability and lower natural durability of *Entandrophragma* wood. This wood has a lower resistance to destructive impact of fungus and beetles (EN 350-2:2000). Thereupon some scientists consider it mahoganylike wood (Sallenave 1955, Wagenführ 2007, Dzbeński 1998) but in trade it is perceived as sterling mahogany (Wood Database „PROSPECT" 1997, Helińska-Raczkowska 1999, Bartkowski 2000). It is largely justified becouse *Entandrophragma* wood has interlocked grain (ribbon figure), storied structure and color identical to "true" mahogany.

Table 1. The list of species of African mahogany (EN 13556:2003, Kozakiewicz, Szkarłat 2003)

Genus	Latin name of species	Trade name of wood	Provenance
Khaya	*K. ivorensis* A.Chev	Acajou d'Africue	West Africa, for ex. Cameron, Gabon, Ghana
	K. anthotheca C.DC	Acajou blanc, Sassandra, Krala, Khaya	West and East Africa, for ex. Ghana
	K. nyasica Stapf.ex E.G.Baker	Acajou umbaua, Mozambique mahogany, Umbaua	East Africa, for ex. Mozambique, Tanzania
	K. senegalensis A.Juss	Gambia mahogany, Guinea mahogany	West and Central Africa, for ex. Guinea, Gambia
	K. grandifoliola C.DC	Senegal mahogany, Benin mahogany, Beninwood	West Africa, for ex. Nigeria
Entan-drop-hragma	*E. cylindricum* Sprague	Sapeli, Sapele	West and Central Africa, for ex. Angola, Ghana, Nigeria, Congo, Cameron, Zaire
	E. utile Sprague	Sipo, Utile	
	E. angolense C.DC	Tiama, Gedunohor	
	E. candollei Harms	Kosipo, Omu	

The wood species was recognized on the basis of the identification attributes visible under the microscope on three basic anatomical sections of wood: transverse section, radial section, and tangential section. (fig.1).

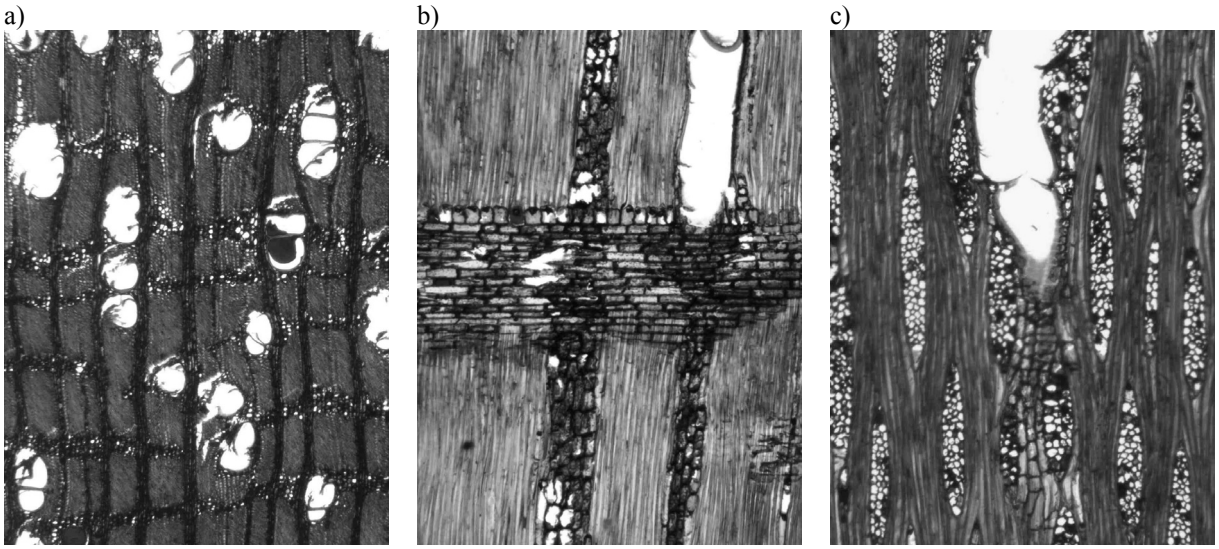

Fig.1. Microstructure of kosipo wood (*Entandrpragma candollei* Harms.): a) transverse section, b) radial section, c) tangential section

Wood is diffuse-porous. Vessels are distributed in multiples, commonly short (2–3 vessels) radial rows. Fibres are characterized of medium wall thickness. Paratracheal axial parenchyma makes tangential bands much wider than rays, coarse, more than three cells wide (fig.1a). Perforation plates are simple. Tyloses in vessels is absent. Other deposits in heartwood vessels are present (dark reddish-brown color). Rays are heterocellular. They are composed of two or more cell types (fig.1a). Paratracheal axial parenchyma is vasicentric, confluent, and unilateral. Rays are multiseriate (also if only few) and 3–6 cells wide. Recognized genus of wood is *Entandrophragma candollei* Harms. This species is known as Kosipo (the German trade name according EN 13556:2003) or omu (the English trade name according EN 13556:2003).

Kosipo is found in Central and West Africa and is attacked by *Cerambycidae*, *Bostrichiidae* (including *Lyctinae*) and *Lamellibranchiata* (Wagenführ 2007). Recognized species of insect is *Cardylomera spinicornis* (Fabricius, 1775) in var. *saturalis*.

It is recognized frequently in timber yards from West through East Africa, Zanzibar and down to Malawi (Schabel 2006**,** Wagner et al.2008). *Cardylomera spinicornis* in recent years has been found in the wood brought to Italy. The adult of the beetle 13 – 25 mm long attack mature living trees and recently falled log of various species of mahogany. Groups of about 30 eggs are tightly packed in fissures of bark. The larvae feed at first as engravers of the sapwood, later enter the outer 5 cm of sapwood, and for pupation dip into the heartwood. Their development probably takes years. Infested trees exhibit slight gum flow (Schabel 2006). This species has several color varieties. In all varieties the elytra are shinning metallic to some extent. The antennae of beetles are carry strong spines (fig.2).

Fig.2. Imago of *Cardylomera spinicornis* (pic. Adam Krajewski)

The cause of death of the individual *Cardylomera spinicornis* is unknown. Unpublished results of the author's research on Lyctus sp from Africa indicate that the climate change had to be the only cause.

Other somewhat similar species of beetles *Cerambycidae* of green color and 17 - 35 mm length from Africa are: *Philematium festum*, *Euporus varides*, *Chromazilus leucorrhapis* or *Xystroces dispar*. The most common species are common in the trade entomological stores. There are no known living *Cardylomera spinicornis* in Poland. The possibility of acclimatization of this species in Poland is at zero.

CONCLUSIONS

The following conclusions may be drawn on the basis of the identification and discussion:
1. African mahogany kosipo (*Entandrpragma candollei* Harms.) contain a lot of parenchyma cells. The presence of sapwood in imported timber increases the risk of attack of beetles.
2. The dead beetle found in kosipo wood is *Cardylomera spinicornis*, which natural habitat is tropical Africa. There is no possibility for *Cardylomera spinicornis* brought to Poland to live in cold temperate climate.

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Streszczenie: *Cardylomera spinicornis w kosipo – afrykańskim drewnie importowanym do Polski*. Drewno sprowadzane do Polski z innych kontynentów, m.in. z Afryki, niekiedy zawiera postacie doskonałe lub larwy owadów. Przynależność tych organizmów jest czasem trudna do ustalenia ze względu na ogromną liczbę ksylofagicznych gatunków. W publikacji podano wyniki oznaczeń przynależności taksonomicznej afrykańskiego gatunku z rodziny kózkowatych (*Cerambycidae*, *Coleoptera*), który przedostał się do Polski w transporcie tarcicy z centralnej Afryki. Oznaczony gatunek drewna to mahoń afrykański kosipo (*Entandrophragma condollei* Harms). Transportowana tarcica zawierająca część bielastą jest mniej odporna na atak owadów, czemu dodatkowo sprzyja znaczna zawartość komórek miękiszowych w strukturze drewna kosipo. Oznaczony gatunek chrząszcza to *Cardylomera spinicornis* (Fabr.), var. *saturalis.*

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