Quick scan number: QS. Ent.2013.05

	Quick scan date: 29-08-2013	
1	What is the scientific name (if possible up to species level + author, also include (sub)family and order) and English/common name of the organism? *Add picture of organism/damage if available and publication allowed*.  *Batocera lineolata* (wikimedia.org)	Batocera- species (longhorn beetles). Coleoptera family: Cerambycidae, Subfamily: Lamiinae, Tribus: Batocerini, Genus ***Batocera* Dejean, 1835** The genus *Batocera* now has 55 recognised species, and more than 50 subspecies and varieties are known (Tavakilian & Chevillotte, 2013; Liu et al., 2012). Recently, species of the genus *Megacriodes* Pascoe, 1866 have been assigned to the genus *Batocera* (Perger & Vitali, 2012). Five species are so-called *incertis sedae*. *Batocera* species are large longhorn beetles, ranging from 30 to 85 mm (*B. hercules*) in size. For most species, only collection data are available, often without host plant records. Some species are common, others are very rare. Few species are known to cause (significant) economical damage (Sorauer, 1954; Duffy, 1968; Yang et al., 2012). Here we provide a quick scan of the possibly 12 most harmful species: species of which host records exist, that are either being intercepted in or introduced into another region of the world, and are known to cause damage. 1. *Batocera davidis* Deyrolle, 1878 2. *Batocera gigas* (Drapiez, 1819) 3. *Batocera hector* Thomson, 1858 - Orange spotted longhorn beetle, Dadap boktor, Dadap Longhorn Beetle 4. *Batocera hercules* Boisduval, 1835 5. *Batocera horsfieldi* (Hope, 1839) - Walnut longhorn beetle 6. *Batocera lineolata* Chevrolat, 1852 - White striped longhorn beetle, Populus longicorn beetle 7. *Batocera numitor* Newman, 1842 – Mango-tree Longhorn Borer, Stem borer 8. *Batocera parryi* (Hope, 1845) 9. *Batocera roylei* (Hope, 1833) - Stem borer 10. *Batocera rubus* (Linnaeus, 1758) - White spotted longhorn beetle, Rubber stem borer, Rubber root borer, Lateral banded Mango longhorn, Panterboktor 11. *Batocera rufomaculata* (Degeer, 1775) – Red-spotted longhorn beetle, Mango tree borer, Tropical fig borer, Fig root borer, Jackfruit Trunk Borer, Violin, Rubber-root borer, Lateral-banded Mango Longhorn 12. *Batocera wyliei* Chevrolat, 1858 For pictures of *Batocera* species see, e.g. http://www.zin.ru/Animalia/Coleoptera/eng/ziarko2.htm, www.flickr.com, http://www.cerambycoidea.com/specie.asp?Id=32&Tipo=T
2	What prompted this quick scan? *Organism detected in produce for import, export, in cultivation, nature, mentioned in publications, e.g. EPPO alert list, etc.*	A finding of live *Batocera* specimens in Wood Packaging Material, imported from China on the April 10th 2013, i.c. a living adult and larva of *Batocera lineolata* (PD nr. 4825288, ex. WPM IPPC Stamp Code CN004MB39, origin Fujian).

3	What is the (most likely) area of distribution?	The origin of distribution for 53 species is Eastern Asia, 2 species (*B. granulipennis, B. wyliei*) originate from Africa (Hill, 2008; CABI CPC, 2013; Tavakilian & Chevillotte, 2013). Some species have expanded their range to other provinces (*B. horsfield, B. lineolata* in China), countries and / or continents (*B. davidis, B. rufomaculata*). 1. *Batocera davidis* Deyrolle, 1878 - China (13 prov. incl. Henan, Shaanxi), India, Laos, Taiwan, Vietnam; Thailand (SIZ, 2010); Hawaii: Oahu (Nishida, 2002); 2. *Batocera gigas* (Drapiez, 1819) - Indonesia (Sumatra, Java); 3. *Batocera hercules* Boisduval, 1835 - Indonesia (Java, Sulawesi, Moluccas: Ambon), Philippines; 4. *Batocera horsfieldi* (Hope, 1839) – Bhutan, China (19 prov. incl. Hebei, Henan, Jilin, Shaanxi, Shandong, Xizang), India (Assam, Punjab, Uttar Predesh, West Bengal), Nepal, Myanmar, Korea, Taiwan Vietnam, Japan?; 5. *Batocera lineolata* Chevrolat, 1852 – China (15 prov, incl. Hebei and Shaanxi) (Chen et al., 1959), Laos, Japan (Kyushu, Honshu), South Korea, Quelpart Isl., Myanmar, Taiwan; Hawaii (Nishida. 2002; Ohbayashi & Niisato, 2007); 6. *Batocera maculata* (Schönherr, 1817) – Cambodja, Indonesia (Borneo, Java, Sumatra), India, Malaysia, Thailand; 7. *Batocera numitor* Newman, 1842 - Cambodja, India (Andhra Pradesh, Orissa, Madras, Arunachal Pradesh, Maharastra, West Bengal), Indonesia (Borneo, Java, Sulawesi, Sumatra), Laos, Myanmar, Nepal, Philippines (Luzon, Palawan), Sri Lanka, Vietnam; China (Hainan, Sichuan, Yunnan, Xizang); Thailand (SIZ, 2010); 8. *Batocera parryi* (Hope, 1845) - China, India, Indonesia (Borneo, Java, Sumatra), Malaysia, Myanmar, Vietnam 9. *Batocera roylei* (Hope, 1833) – China (3 southern prov.), India (Assam. Sikkim, Uttar Pradesh, West Bengal), Indonesia (Borneo), Korea, Malaysia, Myanmar, Nepal, Thailand, Vietnam; 10. *Batocera rubus* (Linnaeus, 1758) - Bangladesh, Brunei, Cambodia, China (11 prov.), India (8 prov.), Indonesia (Borneo, Sarawak, Java, Sumatra, Lombok), Japan (Ruykyu, Okinawa), Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines (Luzon), Korea, Sri Lanka, Taiwan, Thailand, Vietnam (SIZ, 2010); New Guinea (Gressitt, 1952); incursion in Italy 2011 (EPPO, 2013); 11. *Batocera rufomaculata* (Degeer, 1775) - Andaman & Nicobar Isl., Burma, China (Hainan, Xizhang), India (Assam, Bihar, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Punjab, Tamil Nadu, Uttar Pradesh), Indonesia (Java, Sumatra), Myanmar, Malaysia, Nepal, Pakistan, Sri Lanka, Thailand, Tibet, Vietnam (Anonymous, 1994; Hill, 2008); Egypt (Sinai), Israël, Iraq, Jordan, Lebanon, Oman, Syria, Turkey, Yemen (Girgis et al., 1997; Tozlu & Özbek, 2000), Solomon Islands (Cocquempot, 2006). America: Barbados, Br. Virgin Isl. Isl. St. Croix, Isl. S. John, Isl. St. Thomas, Puerto Rico (Monné & Bezark, 2012); Africa: Comores Isl., Réunion, Mauritius, Madagascar, Maldives, Rodriguez, Seychelles, Socotra (Tavakilian & Chevillotte, 2013; Anonymous, 1994); 12. *Batocera wyliei* Chevrolat, 1858 - Africa: Angola, Cameroun, Gabon, Ghana, Eq. Guinée, Ivory Coast, Liberia, Nigeria, Uganda, Central African Republic, DR Congo (Zaire), Congo (Kinshasha).
4	Has the organism been detected, sighted and/or has it established itself in nearby countries (DE, BE, LU, FR, UK) *Yes/no. If 'yes', provide details. No interceptions*	Yes, several *Batocera* species have been intercepted in EU in the past (Europhyt, 2013, see #10), but few have been detected in a natural or production environment in the EU. In Munster's Zoo (Germany) a population of *B. rufomaculata* has sustained on a fig tree for several years (refs in Cocquempot, 2006). The same species has invaded parts of the eastern Mediterranean Area (Turkey, Lebanon, Israel, Egypt) (Tozlu & Özbek, 2000; Cocquempot, 2006). At the end of summer 2011 (EPPO, 2011), a single adult beetle of *Batocera rubus (albofasciata)* of unknown origin was found on the trunk of a tree in a forest of *Quercus* and *Castanea* in Merola di Carpineti (Emilia-Romagna region), Italy (EPPO, 2013).

5	Does the organism cause any kind of plant damage in the current area of distribution and/or does the consignment demonstrate damage suspected to have been caused by this organism? *Yes/no + host plants + short explanation of symptoms.* *Please indicate also when the organism is otherwise harmful (e.g. predator, human/veterinary pathogen vector, etc.).*	Yes, *Batocera* adults feed on leaves (main veins), buds, branches and bark of living trees; adults in most species are nocturnal (Sorauer, 1954; Duffy, 1968). Eggs are laid under the bark of branches and twigs, or at the base of the trunk. Larvae first feed subcortically, before tunnelling into the heart of the tree. Some species tunnel downward to the roots others upwards. Frass-ejection holes may occur in the bark of the tree. Larvae can grow up to 8-10 cm. Pupation takes place just above ground surface. *Batocera* spp. primarily attack and develop in full-grown trees which are either dying, or recently dead, as well as fresh wooden logs and stored timber (Duffy, 1968; Kalshoven 1981). Also living trees that are under stress are attacked, e.g. softwood trees which are injured, e.g. wounds caused by harvesting plant parts (kapok, durian, mango, rubber, etc.) are sites for successful oviposition (Nair, 2007). Healthy trees can be seriously damaged but generally not killed by *Batocera* spp. Damage is similar to that caused by other Lamiinae: galleries in wooden parts of trees, loss of quality to wood and die-back of branches and whole trees. Damage inflicted can yet differ between plant cultivars (*B. horsfieldi* in poplar: Liang et al., 2008). • *Batocera rufomaculata* has a very broad host range, larval development being recorded for more than 50 plant species. Oviposition takes place in old trees, usually dead, but also in trunks and branches of more than 80 mm diameter in living trees. Beetles prefer to oviposit in already infested wood. Such trees weaken progressively and die after 2-3 years. When several larvae infest the same trunk at the same height above ground level, they are liable to kill the tree within 2-3 months. *B. rufomaculata* was responsible for killing many trees in plantations such as rubber, fig, kapok, mango, etc. during the early years of 20th century, with a high economic impact (Hill, 2008; Nair, 2007; Ahmed et al., 2013). Also during recent years *B. rufomaculata* is considered an important pest in plantations and nurseries in the Virgin Islands, Israel, India, Mauritius and Malaysia causing economic loss because of yield and fruit losses. An infestation is correlated with trees showing reduced vigour, usually brought about by age, disease, suppression and injury such as latex tapping and harvest (Sorauer, 1954; Duffy, 1968), heavily attacked trees may die (Hill, 2008); • *Batocera rubus* is widespread in the Oriental and known to attack more that 25 host plant species. Larvae (6-8 cm) also feeds and develops on freshly felled timber (FAO, 2007). *B. rubus* is of local importance as a pest of *Mangifera indica* (mango) and *Ficus elastica* (rubber tree) (Duffy, 1968; Kalshoven, 1981). It damages trees in rubber plantations (*Hevea brasiliensis*) in Thailand, particularly those damaged by fire and lightning (FAO, 2007); • *Batocera lineolata* also has a very wide host range (Li et al., 2009). It generally oviposits and develops in the lower parts of the trunks of old trees (> 30 years, > 15 cm diameter) (Kojima, 1929) boring wide galleries about 20 cm long. *Batocera* species may attack and damage also ancient trees of conservation value (Xu et al., 2010; Zhong et al., 2011) and as such a threat to biodiversity. However, oviposition in seedlings has been observed in chestnut (Kotobuki et al., 1982). It causes great damage in chestnut seedlings and old oak trees in Japan (Kotobuki et al., 1982; FAO, 2007), in chestnut in South Korea (Lee at al., 2002) and walnut in India (Rahman & Khan, 1942);

		• *Batocera horsfieldi,* is an important forest trunk borer, causing serious economic losses to China's forestry development (Liang et al., 2008; Ji et al., 2011). It has a broad host range, including commercially important species such as walnut, alder, oak, apple, pear, chestnut, etc. It is the main wood-boring insect on *Populus* spp. and affects the growth of the trees, reduces timber quality, and causes significant economic losses in wood production (Li, 1996; Mei et al., 1998). Due to the damage caused by *B. horsfieldi* larvae, *Populus* trees may become weak or even die, which negatively affects the construction of forestry eco-environment and the development of the industry (Chen & Luo 2001). The production of *Juglans regia* in northern China, the major production area of this plant, has been severely hampered by *B. horsfieldi* with over 70% of the trees being infested (Wang et al. 2004). *B. horsfieldi* can rapidly adapt to and damage new, introduced non-native host species: a PRA carried out by Li et al. (2009) qualified *B. horsfieldi* as a high risk organism for China: the wide host range of *B. horsfieldi*, its wide distribution, high adaptability and the difficulty of eradication makes it one of the most important forestry pests in China; • *Batocera horsfieldi*, *B. numitor* and *B. rufomaculata* are also known to attack *Citrus* trees, but there are no consistent data about the rate and impact of their attack.
6	Indicate the (provisional) probability of establishment of the organism in the Netherlands regarding climate and ecology. a. In greenhouses (low, medium, high) b. Outdoors (low, medium, high) c. Otherwise (e.g. storage facilities, human environment) *Please illustrate with information/references*	Most of the host plants of *Batocera* spp. (see #8). are not cold-hardy and will not survive outdoors in large parts of Europe. For most *Batocera* species, the probability of establishment in the Netherlands and in the major part of Europe is low. *Batocera* species in general seem to have high temperature requirements, as they are mainly present in areas with an accumulated number of degree days above 10°C of 3,000 or more, where a generation is completed in 1(2) years. Such high numbers of accumulated degree days (DD) only occur in a very small part of Europe. The probability of establishment for some species (such as *Batocera horsfieldi* and *B. lineolata*), however, is estimated as medium due to their distribution in subtropical as well as palaearctic regions with low winter temperatures and their presence at high altitudes in the tropics (Rhaman & Khan, 1942; Xu et al., 2010), areas where the accumulated number of degree days above 10°C is 1,500 or more. The Dutch winter temperatures could allow fpr survival. However, the number of DD-base 10°C in the Netherlands is much lower, between 500 and 1000, resulting in much longer generation times than in the current area of distribution and summer conditions may be less favourable for mating and oviposition than in the current area of distribution. *B. horsfieldi* and *B. lineolata* have a broad host plant range (see #8) which includes trees that are common in urban, natural and agricultural environments), parks and private gardens in the Netherlands, such as *Alnus, Betula, Castanea, Fagus, Malus, Quercus, Salix, Ulmus*. The host range of *B. davidis* also includes species that are present in the Netherlands (see #8). Some of the host plant species known for *Batocera* spp. (e.g. *Ficus*) are grown in greenhouses, in botanical or zoological gardens, in parks and private gardens and Batocera species may be able to establish in (sub)tropical greenhouses if host plants are continuously present.
7	If the organism would become established in the Netherlands, what kind of damage would it likely cause? *Indicate whether damage is expected to be comparable or different to that in area of present distribution : see question 5.*	Damage is similar to that caused by other Lamiinae, such as *Anoplophora chinensis, A. glabripennis*, *Apriona germari* and Cerambycinae such as *Aromia bungii*. *Batocera* spp. primarily attack and develop in full-grown trees which are either dying, or recently dead, as well as living trees that are under stress. Healthy trees can be seriously damaged but will generally not be killed by *Batocera* spp. Galleries in wooden parts of living trees, could lead to loss of quality to wood and die-back of branches and individual trees. In particular trees that are damaged or injured, as a result of harvesting, pruning, etc. could be subject to attacks: ornamentals and trees in nurseries and in urban environments.
8	Which commercially grown host plants are present and which host plants are present in the natural	For most of the 55 *Batocera* species known, only collection records exist, often without any host plant records; some species are common, others are very rare. *Batocera* species in general have a wide host plant range of which most host plants will only be present in botanical an zoological gardens. For some species, host plants are present in the natural

	environment in the Netherlands? *If establishment is restricted to greenhouse climate, list only host plants in greenhouses.*	agricultural and/or urban environment, in parks and private gardens, such as *Alnus, Betula, Castanea, Fagus, Malus, Quercus, Salix* and *Ulmus* spp. For the species of which a more extended host plant range is known, details are given below (Duffy, 1968; Tavakilian & Chevillotte, 2013 with additions): 1. *Batocera davidis* Deyrolle, 1878 - Diospyros kaki – EBENACEAE; Vernicia fordii, Aleurites spp. (Qian, 1983) – EUPHORBIACEAE; Castanea mollissima– FAGACEAE; Quercus sp – FAGACEAE; Juglans regia – JUGLANDACEAE; Melia azedarach – MELIACEAE, Eucalyptus sp. – MYRTACEAE; Pinus massoniana – PINACEAE; Malus pumila - ROSACEAE (Tavakilian & Chevillotte, 2013; Hua Li-Zhong, 2002); *Batocera gigas* (Drapiez, 1819) – Ficus spp., MORACEAE (Dammerman & Groenendijk, 1921) 2. *Batocera maculata* (Schönherr, 1817) = *B. hector* Thomson, 1858 – Albizia lebbeck, Spondias dulcis, Erythrina indica (Dadap) (Dammerman & Groenendijk, 1921) - FABACEAE; Ficus spp., MORACEAE; Coffea - RUBIACEAE; Odina gummifera – ANACARDIACEAE; Myristica fragrans (nutmeg) - MYRISTICACEAE 3. *Batocera hercules* Boisduval, 1835 - Myristica fragrans (nutmeg) – MYRISTICACEAE (Sorauer, 1954) 4. *Batocera horsfieldi* (Hope, 1839) – Rhus typhina, Toxicodendron vernicifluum – ANACARDIACEAE; Alnus nepalensis, Betula luminifera, Betula platyphylla, Betula sp., - BETULACEAE; Catalpa ovata – BIGNONIACEAE; Trema amboinensis, Trema orientalis – CANABACEAE; Viburnum sp., Viburnum odoratissimum var. awabuki – CAPRIFOLIACEAE (Hill, 2008); Casuarina spp. – CASUARINACEAE; Diospyros kaki - EBENACEAE; Sapium sebiferum, Vernicia fordii - EUPHORBIACEAE; Millettia pachycarpa – FABACEAE; Castanea mollissima, Castanea sp., Fagus sp., Quercus sp., Quercus acutissima, Quercus incana, Q. variabilis - FAGACEAE; Carya cathayensis, Juglans regia, Pterocarya stenoptera - JUGLANDACEAE; Ginkgo biloba – GINKGOACEAE; Tectona grandis (teak) - LAMIACEAE; Ficus carica, F. microcarpa, Ficus sp., Morus alba - MORACEAE; Fraxinus spp., Ligustrum spp., Ligustrum lucidum, Ligustrum sp., Olea europaea - OLEACEAE; Platanus x acerifolia – PLATANACEAE; Eriobotrya sp., Eriobotrya japonica Malus pumila, Malus domestica, Pyrus sorotina, Pyrus sp., Rosa sp. and R. multiflora (for nutrition)- ROSACEAE; Citrus sp., - RUTACEAE; Populus adenopoda, P. cathayanna, P. simonii, P. tomentosa, P. yunnanensis, Populus x dakuanensis, P x euamericana, Salix sp., Salix tetrasperma - SALICACEAE; Paulownia sp., Paulownia fortunei, Paulownia taumentosa - SCROPHULARIACEAE; Ailanthus altissima – SIMAROUBACEAE; Schima superba – THEACEAE; Ulmus pumila, Ulmus sp., ULMACEAE (Tavakilian & Chevillotte, 2013. Duffy, 1968; Hua Li-Zhong, 2002); Eucalyptus spp.- MYRTACEAE (Nair, 2007); Cunninghamia lanceolata - CUPRESSACEAE; Pinus yunannensis - PINACEAE (Li et. al, 2009; Liang et al., 2008) 5. *Batocera lineolata* Chevrolat, 1852 – Alnus sp., Betula luminifera - BETULACEAE; Trema amboinensis - CANABACEAE, Viburnum awabuki - CAPRIFOLIACEAE; Sapium sebiferum; Vernicia fordii - EUPHORBIACEAE; Castanea sp., C. crenata, C. dentata, C. mollissima, Castanea sativa, Cyclobalanopsis myrsinaefolia and C. multinervis, Fagus sp., Fagus engleriana, Fagus japonica, Pasania cuspidata, Quercus acutissima, Quercus acuta, Q. acutissima, Q. glauca, Q. dentata, Q. ilex, Q. glandulifera, Q. griffithii, Q. grossoserrata, Q. serrata - FAGACEAE; Carya illinoensis, Juglans regia - JUGLANDACEAE; Phoebe zhennan - LAURACEAE; Ficus sp., Ficus carica, Morus sp. - MORACEAE; Ligustrum lucidum, Ligustrum sinense - OLEACEAE; Setaria sp. - POACEAE; Eriobotrya sp., Eriobotrya japonica, Rosa multiflora (= microcarpa) (for nutrition) - ROSACEAE; Populus sp., Salix sp. - SALICACEAE; Paulownia sp., Paulownia taumentosa - SCROPHULARIACEAE; Schima superba - THEACEAE; Ulmus sp., Ulmus americanus L. (Hill, 2008), Zelkova sp., ULMACEAE (Gressitt, 1951; Duffy, 1968; Tavakilian & Chevillotte, 2013; Hua Li-Zhong, 2002; Qian, 1983); 6. *Batocera numitor* Newman, 1842 - Bombax malabaricum (kapok), Ochroma pyramidale (balsam) - BOMBACACEAE; Hodgsonia heteroclita - CUCURBITIACEA; Citrus sp. - RUTACEAE (Tavakilian & Chevillotte, 2013; Hua Li-Zhong, 2002); Mangifera indica (mango), Lannea coromandelica - ANACARDIACEAE; Anthocephalus cadamba – RUBIACEAE, Quercus griffithii – FAGACEAE (BioLib CZ, 2013); Durio zibethinus (durian) (Sudhi-Aromna et al., 2008), Sterculia villos – MALVACEAE. 7. *Batocera parryi* (Hope, 1845) - Mangifera indica (Mango)- ANACARDIACEAE (Qian, 1983; Tavakilian & Chevillotte, 2013). 8. *Batocera roylei* (Hope, 1833) – Mangifera indica (mango) - ANACARDIACEAE (Tavakilian & Chevillotte, 2013)

		9. *Batocera rubus* (Linné, 1758) - Mangifera indica (mango) - ANACARDIACEAE; Bombax malabaricum (=ceiba), Ceiba pentandra; Ochroma lagopus - BOMBACACEAE; Carica papaya – CARICACEA; Casuarina equisetifolia - CASUARINACEAE; Bischofia javanica, Hevea brasiliensis, Vernicia fordii - EUPHORBIACEAE; Erythrina variegata, Albizia lebbeck - FABACEAE; Pterocarya stenoptera - JUGLANDACEAE; Durio zibethinus (durian) – MALVACEAE (Sudhi-Aromna et al., 2008); Artocarpus sp., Ficus cunia, Ficus sp. (fig), Ficus carica, Ficus elastica (rubber tree) (BioLibCZ, 2013), Ficus auriculata (Yang et al., 2010) - MORACEAE; Careya arborea – LECYTHIDACEAE; Malus pumila - ROSACEAE (Hua Li-Zhong, 2002; Qian, 1983); Sorauer (1954) also mentions Persea - LAURACEAE; Musa (banana) - MUSACEAE, Theobromia cacao (cacao) – MALVACEAE; Castilloa - MORACEAE and Dyera rostulata – APOCYNACEAE as hosts and also cottonwool (where probably cottontree, Bombax ceiba – MALVACEAE, is meant). 10. *Batocera rufomaculata* (Degeer, 1775) - Lannea grandis, Mangifera indica, Semecarpus anacardium, Spondias cytherea, Spondias dulcis, Spondias pinnata, Anacardium occidentale, Rhus typhina, Pistachia chinensis - ANACARDIACEAE; Asimina sp. - ANNONACEAE; Dyera costulata - APOCYNACEAE; Cocos nucifera - ARECACEAE; Bombax malabaricum, Ceiba pentandra, Ochroma lagopus - BOMBACACEAE; Garuga pinnata Roxburgh, BURSERACEAE; Bauhinia acuminata - CAESALPINIACEAE; Carica papaya - CARICACEAE; Shorea robusta (Sal tree) (Khatua, 1996) - PTEROCARPACEAE; Hevea brasiliensis - EUPHORBIACEAE; Dalbergia sissoo, Erythrina indica - FABACEAE; Persea sp. - LAURACEAE; Barringtonia acutangula - LECYTHIDACEAE; Durio zibethinus (durian) – MALVACEAE; Acacia sp., Albizia lebbeck - MIMOSACEAE; Artocarpus altilis, Artocarpus heterophyllus, Artocarpus integrifolia, Broussonetia papyrifera, Ficus benghalensis, Ficus carica, Ficus elastica, Ficus glomerata, Ficus infectoria, Ficus religiosa, Ficus sp., Ficus tsjakela, Morus alba, Morus indica - MORACEAE; Moringa pterygosperma - MORINGACEAE; Musa sp. - MUSACEAE; Eugenia jambolana, Syzygium cumini - MYRTACEAE; Platanus orientalis, - PLATANACEAE; Saccharum sp. (sugarcane) - POACEAE; Adina cordifolia, Sterculia colorata - STERCULIACEAE; Sterculia villosa - STERCULIACEAE (Tavakilian & Chevillotte, 2013; Hua Li-Zhong, 2002; Nair, 2007); Citrus sp. - RUTACEAE (Abdul-Kahdr, 1978); Ficus carica (fig), Carica papaya (papaya), Mangifera indica (mango) (Duffy, 1968; Balachowsky, 1962; Sudhi-Aromna et al., 2008); Malus spp. – ROSACEAE; Quercus spp - FAGACEAE; Persea americana - LAURACEAE; Acer pseudoplatanus - ACERACEAE, Punica granatum (pomegranate) - LYTHRACEAE; Casuarina equisetifolia - CASUARINACEAE (Singh et al., 2001); Careya arborea – LECYTHIDACEAE; Ailanthus excelsa – SIMAROUBACEAE (Nair, 2007) 11. *Batocera wyliei* Chevrolat, 1858 - Alstonia congoensis - APOCYNACEAE (Tavakilian & Chevillotte, 2013; Drumont, 2000)); Aucoumea klaineana - BURSERACEAE (Cola,1971)
9	Provide a provisional estimation of type and probable amount of direct and indirect economic damage (e.g. lower quality, lower production, export restrictions, threat to biodiversity, etc.) likely to occur if the organism would become established?	Damage inflicted by *Batocera* spp. is similar to that caused by other Lamiinae, such as *Anoplophora chinensis, A. glabripennis*, *Apriona germari* and Cerambycinae such as *Aromia bungii*: galleries in wooden parts of trees, loss of quality to wood and die-back of branches and whole trees. *Batocera* larvae tunnel in wooden parts, and cause die-back of branches and trees. Wood of trees in production sites, shelterbelts, etc. is of low quality and not suited for timber but for firewood only. An important difference with for example *Anoplophore chinensis* and *A. glabripennis* (which are both regulated in the EU) is that *Batocera* spp. mainly affect weakened and injured trees while the *Anoplophora* species attack healthy trees. From the *Batocera* species discussed above, only *B. horsfieldi* and *B. lineolata* may be able to establish in the Netherlands. Damage to trees may occur if these species would become established but the amount of damage is highly uncertain. They have a broad host range and may potentially affect fruit orchards, tree nurseries and trees in the urban and natural environment. However, the climatic conditions in the Netherlands do not seem highly favourable for reproduction and development of these species and may limit the amount of damage. On the other hand, trees species or cultivars in the Netherlands may be more susceptible than the species or cultivars in the current area of distribution and certain species/cultivars may be attacked and injured even if they are healthy.

10	What are the possibilities of spreading, either by natural dispersal or human activity?	Spread as a result of natural dispersal of *Batocera* species of tropical and subtropical origin, will probably be limited to areas with similar climatic conditions. *B. rufumaculata* is currently gradually expanding its invaded range in the eastern Mediterranean area (Balachowsky, 1962; Duffy, 1968; Tozlu & Özbek, 2000; Cocquempot, 2006), *B. lineolata* and *B. horsfieldi* are expanding their native range in China. The most likely human assisted pathways are wood packaging material, trade of nursery plants (ornamentals, fruit tree species) and transplants of large trees (zoo's, botanical gardens, biospheres). Most records are the result of dispersal by human activity. Several *Batocera* species have been intercepted in dunnage, crating, wood, wood packaging material (WPM) or live plants in the past: • *B. rufomaculata* has been introduced into new geographical areas, with the trading of freshly felled timber, in particular logs with intact bark (Nair, 2007) and living plant material into the West Indies (Leng & Mutchler, 1917). It was first intercepted in England in 1933 in wood imported from the Andaman Islands; in 1983, it was intercepted in West Sussex in wood imported from India (Seymour et al, 1986 in Cocquempot, 2006), in 2012 in WPM in the Netherlands. In 2005 in the Netherlands a larva of *B. rufomaculata* was found in a bonsai plant (*Ficus*) originating from China (Potting et al., 2008; EPPO, 2011). In Munster's Zoo (Germany), a population sustained on a fig tree for several years (refs in Cocquempot, 2006); the pest had likely been introduced with *Ficus* plants from the tropics. • *Batocera davidis* in Hawaii in 1969 with WPM (Gressitt & Davis, 1973); • *B. rubus* has been intercepted in France in 2011 in a single bonsai plant (*Ficus microcarpa*), and at the end of summer 2011 (EPPO, 2011), a single adult beetle of *Batocera rubus (albofasciata)* of unknown origin was found on the trunk of a tree in a forest of *Quercus* and *Castanea* in Merola di Carpineti (Emilia-Romagna region), Italy (EPPO, 2013); • *B. lineolata* has been intercepted in Hawaï in 1959 (Nishida, 2002) and Australia (Biosecurity Australia, 2006) associated with WPM; in Paris-France (emerged from a solid-wood duck) in 1992 (Menier, 1992), in Germany in 2005, in Turnhout-Belgium in 2011, in Austria in July 2012 and in the Netherlands in 2013 (NVWA), all in WPM from China; • *B. wyliei* was found in 1955 in wood (*Aucoumea klaineana*) imported from Gabon in a sawmill in Mannheim (Germany) (Cola, 1971) • *Batocera* sp. has been intercepted in Germany and Austria in respectively 2004 and 2012 (EPPO, 2012; Europhyt, 2013). In the USA *Batocera* spp. have been intercepted twice in 1978-9, 1x from India and 1x from Japan (USDA-APHIS, 1981). During 1985-2013 in the US 25 interceptions were made of *Batocera* species associated with dunnage, crating, wood or fruits originating from the Philippines, China, India, Japan, Thailand (Haack, 2006; Honduras excluded: Joe Cavey, pers. comm. 2013). Most intercepted specimens were larvae which were not identified to species, but 1 adult *B. lineolata* from Asia and 1 *B. rufomaculata* from India were found (Robert Haack & Joe Cavey, pers. comm., 09/07/2013). • *Batocera horsfieldi* is expanding its range in China, but has not been intercepted outside Asia yet.
11	In what manner could the organism enter the Netherlands? *Mention pathways*.	Along pathways similar to other longhorn beetle species with similar biology: with living trees such as bonsais, and mature tree transplants, wooden logs and timber, Wood Packaging Material dunnage, crating, and/or wooden pallets.
12	Has the organism been detected on/in a product (cut flowers, fruit…) destined for the consumer market? *If "no", please go to question 14*	No

13	If the organism has been found on/in product other than plants for planting (e.g. cut flowers, fruit, vegetables), are there any risks of introduction and establishment in crop areas and/or natural environment in the Netherlands?	The risk of introduction (entry and establishment) in the Netherlands is low to very low for most *Batocera* species. Although *Batocera* species may regularly arrive with import of WPM, freshly felled logs or timber, the establishment potential in the Netherlands (and the major part of Europe) is generally low. Only a few species (*B. horsfieldi, B. lineolata)* may have the potential to establish in the Netherlands. Others (e.g. *B. davidis, B. rubus*) may potentially establish in the Mediterranean area. *B. rufomaculata* is already present in the Mediterranean area (e.g. in Israel and Turkey) and may gradually expand its range further to the west.
14	Additional remarks	*Batocera horsfieldi* and *B. lineolata* probably have been confused in the past. Liu et al. (2012) reviewed the morphological characteristics of these and 8 other *Batocera* species, allowing a proper identification.
15	References: Websites last accessed June 2013	• Abdul-Khader JBMM (1978) A note on the occurrence of destructive cerambycid root grubs in citrus and mango. Food farming and agriculture, 9(7): 214-215. • Ahmed KU, Rahman MM, Alam MZ, Hossain MM, Miah MG (2013) Effect of seasonal variations on Jackfruit trunk borer (*Batocera rufomaculata* De Geer) infestation. Pakistan Journal of Biological Sciences, 16(7): 339-344 • Akutsu K, Kuboki M (1981) Bahavior of the whites striped longicorn beetle batocera lineolata Coleoptera Cerambycidae. Japanese Journal of Applied Entomology & Zoology, 25(3): 156-161. • Anonymous (1994): *Batocera rufomaculata.* [Distribution map]. - Distribution Maps of Plant Pests (June): Map 542. • Balachowsky AS (1962) Entomologie appliquée à l'agriculture. Tome I, Coléoptères. Famille des Cerambycidae, Masson & Cie Editeurs, Paris 1(1): 394-434. • BioLib CZ, 2013 Taxonomic tree of plants and animals with photos. (*Batocera*). http://www.biolib.cz/ • Biosecurity Australia (2006). Technical Justification for Australia's Requirement for Wood Packaging Material to be Bark Free. Biosecurity Australia, Canberra, Australia. 123 pp. http://www.daff.gov.au/__data/assets/pdf_file/0013/12361/2006-13a.pdf • CABI Crop Protection Compendium (2013) *Batocera rubus, Batocera rufomaculata*. www.cabi.org/cpc • Chen J Y, Luo YL (2001) The harmful characters and control countermeasure of poplar long-homed beetle in Jianghan Plain. China Forest. Science Technology, 16: 46–48. • Chen SH (1959) Cerambycidae I. Economic Insect Fauna of China, Beijing Science Press 1: 1-119. • Cocquempot C (2006) Alien longhorned beetles (Coleoptera Gerambycidae): original interceptions and introductions in Europe, mainly in France, and notes about recently imported species. Redia, 89: 35-50, • Cola L (1971) Mit fremden Hölzern eingeschleppte Insekten, ins besondere Scolytidae und Platypodidae. Anzeiger für Schädlingskunde und Pflanzenschutz, 44(5): 65-68. • Dammerman KW, Groenendijk JJ (1921) The Agricultural Zoology of the Malay Archipelago: the animals injurious and beneficial to agriculture, horticulture and forestry in the Malay Peninsula, the Dutch East Indies and the Philippines. Amsterdam, 484 pp. • Drumont A (2000) Contribution à l'étude des *Batocera* africains avec la confirmation de *Batocera granulipennis* comme bonne espèce (stat. n.) (Coleoptera, Cerambycidae, Lamiinae). Entomologia Africana, 2(5): 4-12. • Duffy EAJ (1968) A Monograph of the immature stages of Oriental Timber Beetles (Cerambycidae). - British Museum, Natural History, Ed., London, 434 pp. • EPPO (2011) 2011/140 Batocera rubus detected in a bonsai plant in France. EPPO Reporting Service PARIS • EPPO (2012) 2012/194 EPPO report on notifications of non-compliance. EPPO Reporting Service PARIS, 9: 2012-09-01 • EPPO (2013) 2013/051 Incursion of *Batocera rubus albofasciata* in Italy. EPPO Reporting Service PARIS, 3: 2013-03-01 • Europhyt (2013) European Union Notification System for Plant Health Interceptions, http://ec.europa.eu/food/plant/plant_health_biosafety/europhyt/index_en.htm

- FAO (2007) Overview of forest pests Thailand. Forest Health & Biosecurity Working Paper FBS/32E. http://www.fao.org/docrep/012/al021e/al021e00.pdf
- Girgis GN, Batt AM, Haggag SM, Okil AM (1996) Field experiments for control of fig root borer, Batocera rufomaculata de Geer in North Sinai [Egypt]. Egyptian Journal of Agricultural Research, 75(1): 61-67.
- Gressitt JL (1951) Longicorn Beetles of China. Longicornia Volume II. Paul Lechevalier, Paris, France, 667p.
- Gressitt JL (1952) Longicorn Beetles from New Guinea and the South Pacific (Coleoptera: Cerambycidae). Part III. Annals of the Entomological Society of America, 45(1): 44-58.
- Gressitt JL, Davis CJ (1973) Seasonal occurrence of the Hawaiian Cerambycidae (Col.). Proceedings of the Hawaiian Entomological Society, 21(2): 213-221.
- Haack RA (2006) Exotic bark- and wood-boring Coleoptera in the United States: recent establishments and interceptions. Canadian Journal of Forestry Research, 36: 269–288.
- Hill DS (2008) Pests of Crops in Warmer Climates and Their Control. Springer- 740 p.
- Hua Li-Zhong (2002) List of Chinese Insects: Volume 2, Huayu Nature Book Trade Co.Ltd, 612 pp.
- Ji L, Wang Z, Wang X, An L (2011) Forest Insect Pest Management and Forest Management in China: an Overview. Environmental Management, 48: 1107–1121.
- Kalshoven LGE (1981) Plagen van de Cultuurgewassen in Indonesie / Pests of Crops in Indonesia. Van Hoeve, Jakarta : P. T. Ichtiar Baru, xix+701pp.
- Khatua AK (1996) Adult availability, larval density and penetrability of some important cerambycid beetles associated with *Shorea robusta* in Midnapore, West Bengal, India. Indian Forester, 122(9): 823-830.
- Kojima T (1929) The habits of *Batocera lineolata*, Chevr. Journal of Applied Zoology, 1(1): 43-45.
- Kotobuki K, Machida Y, Kozono, T (1982) Differences in oviposition frequencies of the white-striped longicorn beetle, *Batocera lineolata* Chevrolat, observed on seedlings of Chinese and Japanese chestnut species Infestation index. Kaju Shikenjo hokoku = Bulletin of the Fruit Tree Research Station. Series A., 10: 57-72.
- Lee CK, Lim JT, Choi JS, Kim OR, Park JD, Lee SM (2002) Seasonal occurrence and damage by three cerambycid borers in chestnut trees. Journal of Korean Forestry Society, 91(6): 701-705.
- Leng CW & Mutchler AJ (1917) Supplement to Preliminary List of the Coleoptera of the West Indies. Bulletin of the American Museum of Natural History, New York 37(5): 191-220.
- Li JQ; Yang ZQ; Mei ZX; Zhang YL (2009) Pest risk analysis and control countermeasure of *Batocera horsfieldi*. Forest Research, 22(1) 148-153.
- Li KZ (1996) Poplar stem-boring pests and their control. Journal of Northeast Forestry University (English Edition), 7(1): 51-53.
- Liang XY, Yang W, Yang YL, Yang CP, Yang Y (2008) Preference of *Batocera horsfieldi* for adults to feeding plants. Chinese Bulletin of Entomology, 45(1): 78-82.
- Liu Y, Xiong S, Ren JQ, Zhang XX, Chen L (2012) Comparative morphological study on genus *Batocera* (Coleoptera, Cerambycidae, Lamiinae, Batocerini). Acta Zootaxonomica Sinica, 37(4): 701-711.
- Mei AH, Chen JY, Wu GY, Du XS, Luo FS (1998) The investigation of pests, causes of outbreak and control strategy of Poplar in Jianghan Plain. Forest Pest and Diseases, 2: 35–39 (abstract)
- Menier JJ (1992) Capture insolite d'un *Batocera lineolata* en région parisienne (Col. Cerambycidae). Entomologiste (Paris), 48(5): 221-223.
- Monné MA, Bezark LG (2012) Checklist of the Oxypeltidae, Vesperidae, Disteniidae and Cerambycidae, (Coleoptera) of the Western Hemisphere Chapter 1 2012 Version (updated through 31 December 2011). http://cerambycids.com/oncidid/OncidID-pubs/Monne&Bezark_2012.pdf
- Nair KFF (2007) Tropical Forest Insect Pests Ecology, Impact, and Management. Cambridge University Press, xviii+404 pp.
- Nishida, Gordon M., ed. (2002) Hawaiian Terrestrial Arthropod Checklist, 4th ed. Bishop Museum Technical Report no. 22 , iv + 313. Hawaii Biological Survey, Bishop Museum, Honolulu, Hawaii, USA . Contribution No. 2002-005 to the Hawaii Biological Survey

		• Ohbayashi N & Niisato T (2007) Longicorn Beetles of Japan. Tokai University Press, Kanagawa: v-xii + 1-818. • Perger R & Vitali F (2012) Revision of the genus *Megacriodes* Pascoe, 1866, a new synonym of *Batocera* Laporte de Castelnau, 1840 (Coleoptera, Cerambycidae, Lamiinae). Les Cahiers Magellanes [1624-1940], 7: 1-17. • Potting R, van der Gaag DJ, Wessels-Berk B (2008) Short PRA *Batocera rufomaculata*, Mango Tree Stem Borer. Plant Protection Service, Wageningen, 3pp. • Qian Ting-Yu (1983) Records of four species of Cerambycid larvae of the genus *Batocera* from Fujian Province (Coleoptera: Cerambycidae). Wuyi Science Journal, 3: 133-135. • Rahman KA, Khan AW (1942) A Study of the life-history and control of *Batocera horsfieldi* Hope (Lamiidae : Coleoptera) - a borer pest of walnut tree in the Punjab. Proceedings of the Indian Academy of Sciences, Section B, 15: 202-205 • Singh R, Sashidharan KR, Salarkhan AM, Mahalakshmi R (2001) *Batocera rufomaculata* (Coleoptera: Cermabycidae), a new insects record on Casuarina equisitifolia in India. Indian Forester 127(6): 723-724 • SIZ, 2008 Blogspot Siam Insect-Zoo and Museum. http://www.malaeng.com/blog/?cat=38 • Sorauer P (1954) HandBuch der Pflanzenkrankheiten. Fünfter Band: Tierische Schädlinge an Nutzpflanzen 2. Teil. Paul Parey, Berlin. • Sudhi-Aromna S, Jumroenma K, Chaowattanawong P, Plodkornburee W, Sangchote Y (2008) Studies on the biology and infestation of stem borer, *Batocera rufomaculata*, in Durian. Acta horticulturae, 787: 331-337. • Tavakilian G & Chevillotte H (2013) Base de données Tavakilian & Chevillotte, sur les Cerambycidés ou Longicornes. http://lully.snv.jussieu.fr/titan/index.html • Tozlu G & Özbek H (2000) The Tropical Fig Borer, *Batocera rufomaculata* (Coleoptera: Cerambycidae), new for Turkey. Zoology in the Middle East, 20(1): 117-120. • USDA-APHIS (1981) List of Intercepted Plant Pests, October 1, 1978 through September 30, 1979. APHIS 82-7. • Wang SL, Wang HQ, Xia MH, Dong SH (2004) Occurrence and control of *Batocera horsfieldi* Hope of *Juglans regia* L. Chinese Fruits 3: 11–13. • Xia JP, Dai JH, Liu LD, Hu XY (2005) Progress in research on *Batocera horsfieldi*. Journal of Hubei Forestry Science and Technology, 132: 42–44. • Xu T, Ji BZ, Zhang, QD, Wang HJ, Ju YW, Hua ZF (2010) Investigations on the damages of *Batocera lineolata* in high altitude oak forests of Sanqingshan Mountain. Forest Pest and Disease, 29(5): 23-25. • Yang H, Yang W, Yang CP, Yang MF, Wang BX, Zhu TH, Huang Q (2012) Behavioral responses of encountering adults of the white-striped longhorn beetle, *Batocera lineolata* (Coleoptera: Cerambycidae), in the laboratory conditions. Acta Entomologica Sinica, 55(1): 70-76. • Yang H, Yang W, Yang MF, Yang CP, Zhu TH, Huang Q (2010) Effects of plant volatiles on the EAG and behavioral responses of *Batocera horsfieldi* Hope (Coleoptera: Cerambycidae). Journal of Agricultural and Urban Entomology, 27(1): 20-32. • Zhong PS, Tang YJ, Zhang SS (2011) Investigations on the diseases and insect pests of the ancient and famous trees of West Lake scenic area in Huizhou and suggestions for their protection. Journal of Southern Agriculture, 42(4): 412-414.
16	**Conclusions**	The genus *Batocera* currently comprises 55 species of which 53 originate from Eastern Asia and 2 from Africa. Generally, *Batocera* species occur in (sub)tropical areas and the climate in the Netherlands is probably not suitable for establishment for most species. Only a few species (*B. horsfieldi, B. lineolata)* may have the potential to establish in the Netherlands and cause significant damage to plants including commonly occurring tree species.
17	**Follow-up measures**	A Pest Risk Assessment will be made for *B. horsfieldi* and *B. lineolata* for the Netherlands.