2023 FIRST CONSULTATION

1 July – 30 September 2023

Compiled comments for 2023 First Consultation: 2021-004 Revision of DP27 Ips spp

Summary

Participants

Name	Summary
Barbados	Barbados supports this protocol.
European Union	The comments on the draft standard are submitted by the European Commission on behalf of the European Union and its 27 Member States.
Gabon	document validée
Malawi	We support Draft Revision of DP 27
Singapore	Singapore is supportive of this draft standard.

T (Type) - B = Bullet, C = Comment, P = Proposed Change, R = Rating
S (Status) - A = Accepted, C = Closed, O = Open, W = Withdrawn, M = Merged

Para	Text	T	Comment
G	(General Comment)	C	*Category : SUBSTANTIVE* **(148) Argentina (1 Oct 2023 4:15 AM)** Argentina supports the COSAVE comments
G	(General Comment)	C	*Category : SUBSTANTIVE* **(147) Barbados (30 Sep 2023 6:27 PM)** Barbados has no objections to the approval of this protocol.
G	(General Comment)	C	*Category : SUBSTANTIVE* **(146) Costa Rica (30 Sep 2023 1:43 AM)** We have no comments
G	(General Comment)	C	*Category : SUBSTANTIVE* **(145) Peru (29 Sep 2023 11:48 PM)** Peru agrees with the comments agreed upon as COSAVE
G	(General Comment)	C	*Category : EDITORIAL* **(144) Paraguay (29 Sep 2023 8:49 PM)** Paraguay de acuerdo con los comentarios de COSAVE.
G	(General Comment)	C	*Category : SUBSTANTIVE* **(125) Russian Federation (29 Sep 2023 4:38 PM)** General Comment: The Russian

			Federation would like to formally endorse the EPPO comments submitted via the IPPC Online Comment System.
G	(General Comment)	C	*Category : SUBSTANTIVE* **(124) Russian Federation (29 Sep 2023 4:38 PM)** General Comment: The Russian Federation would like to formally endorse the EPPO comments submitted via the IPPC Online Comment System.
G	(General Comment)	C	*Category : SUBSTANTIVE* **(123) Belarus (29 Sep 2023 4:10 PM)** General comment: Republic of Belarus, would like to formally endorse the EPPO comments submitted via the IPPC Online Comment System
G	(General Comment)	C	*Category : EDITORIAL* **(122) Switzerland (29 Sep 2023 3:15 PM)** Switzerland would like to formally endorse the EPPO comments submitted via the IPPC Online Comment System.
G	(General Comment)	C	*Category : SUBSTANTIVE* **(121) Philippines (29 Sep 2023 4:48 AM)** The PH has no further comments on Draft annex to ISPM 27: Revision of DP 27 - Ips spp.
G	(General Comment)	C	*Category : SUBSTANTIVE* **(98) Australia (27 Sep 2023 8:44 AM)** Australia has reviewed and is supportive of this current text
G	(General Comment)	C	*Category : SUBSTANTIVE* **(96) United Kingdom (26 Sep 2023 5:19 PM)** The UK supports the comments the EPPO secretariat have submitted on behalf of those EPPO member countries which are not part of the European Union.
G	(General Comment)	C	*Category : SUBSTANTIVE* **(83) IPPC Regional Workshop Africa (23 Sep 2023 3:54 PM)** We support the draft revision of DP 27
G	(General Comment)	C	*Category : TECHNICAL* **(82) IPPC Regional Workshop Africa (23 Sep 2023 3:54 PM)** Revision useful.

G	(General Comment)	C	*Category : TECHNICAL* **(81) IPPC Regional Workshop Africa (23 Sep 2023 3:54 PM)** Revision useful.
G	(General Comment)	C	*Category : TECHNICAL* **(80) IPPC Regional Workshop Africa (23 Sep 2023 3:54 PM)** Revision useful.
G	(General Comment)	C	*Category : TECHNICAL* **(79) IPPC Regional Workshop Africa (23 Sep 2023 3:54 PM)** Revision useful.
G	(General Comment)	C	*Category : SUBSTANTIVE* **(78) Malawi (23 Sep 2023 2:50 PM)** We support Draft Revision of DP 27
G	(General Comment)	C	*Category : SUBSTANTIVE* **(55) Mexico (15 Sep 2023 7:09 PM)** Mexico has reviewed and supports the Draft annex to ISPM 27: Revision of DP 27 - Ips spp. (2021-004) in its current format.
G	(General Comment)	C	*Category : EDITORIAL* **(24) Guyana (4 Sep 2023 12:48 AM)** Guyana welcomes the revision of the annex to ISPM 27 (Diagnostic protocols for regulated pests)
G	(General Comment)	C	*Category : TECHNICAL* **(16) Congo (23 Aug 2023 9:33 AM)** i agree with this annex of ISPM 27. Nothing to add
G	(General Comment)	C	*Category : SUBSTANTIVE* **(15) Thailand (22 Aug 2023 5:35 AM)** Thailand agreed with the proposed draft revision of DP◦27: Ips spp.
45	*Ips* species (Coleoptera: Curculionidae: Scolytinae: Ipini), commonly known as bark beetles, are subcortical phloem feeders in Pinaceae (conifer trees), especially *Pinus* (pine), *Picea* (spruce) and *Larix* (larch or tamarack) species (Cognato, 2015). In non-outbreak times, *Ips* beetles mainly inhabit weak or dead trees (Cognato, 2015). Adults and larvae kill healthy trees during outbreaks (Cognato, 2015) by destroying the phloem and cambium in tree trunks and limbs when feeding and tunnelling (Furniss and Carolin, 1977). Outbreaks can destroy thousands of hectares of healthy trees (Cognato, 2015). Some or all *Ips* bark beetles also transmit pathogenic fungi (Krokene and Solheim, 1998; Meng *et al.*, 2015), in particular blue stain fungi (genera *Grosmannia* and *Ceratocystis*, Ascomycota: Sordariomycetes, Figure 1). *Ceratocystis* fungi from *Ips* beetles	P	*Category : TECHNICAL* **(85) New Zealand (25 Sep 2023 11:10 PM)** To delete. Probably not relevant for this ISPM. Co-occurrence of Ips and Dendroctonus species is quite specific to North America.

	also interfere with biological control of the conifer pest *Sirex noctilio* Fabricius (Hymenoptera: Siricidae) (Yousuf *et al.*, 2014). Certain climatic conditions may promote *Ips* outbreaks (Wermelinger, 2004; Breshears *et al.*, 2005; Marini *et al.*, 2017). ~~Trees injured in outbreaks are sometimes later killed by *Dendroctonus* bark beetles (Furniss and Carolin, 1977).~~		
45	*Ips* species (Coleoptera: Curculionidae: Scolytinae: Ipini), commonly known as bark beetles, are subcortical phloem feeders in Pinaceae (conifer trees), especially *Pinus* (pine), *Picea* (spruce) and *Larix* (larch or tamarack) species (Cognato, 2015). In non-outbreak times, *Ips* beetles mainly inhabit weak or dead trees (Cognato, 2015). Adults and larvae kill healthy trees during outbreaks (Cognato, 2015) by destroying the phloem and cambium in tree trunks and limbs when feeding and tunnelling (Furniss and Carolin, 1977). Outbreaks can destroy thousands of hectares of healthy trees (Cognato, 2015). Some or all *Ips* bark beetles also transmit pathogenic fungi (Krokene and Solheim, 1998; Meng *et al.*, 2015), in particular blue stain fungi (genera *Grosmannia* and *Ceratocystis*, Ascomycota: Sordariomycetes, Figure 1). *Ceratocystis* fungi from *Ips* beetles also interfere with biological control of the conifer pest *Sirex noctilio* Fabricius (Hymenoptera: Siricidae) (Yousuf *et al.*, 2014). Certain climatic conditions may promote *Ips* outbreaks (Wermelinger, 2004; Breshears *et al.*, 2005; Marini *et al.*, 2017). Trees injured in outbreaks are sometimes later killed by *Dendroctonus* bark beetles (Furniss and Carolin, 1977).	C	*Category : TECHNICAL* **(19) Kenya (28 Aug 2023 3:06 PM)** Details for these climatic conditions
45	*Ips* species (Coleoptera: Curculionidae: Scolytinae: Ipini), commonly known as bark beetles, are subcortical phloem feeders in Pinaceae (conifer trees), especially *Pinus* (pine), *Picea* (spruce) and *Larix* (larch or tamarack) species (Cognato, 2015). In non-outbreak times, *Ips* beetles mainly inhabit weak or dead trees (Cognato, 2015). Adults and larvae kill healthy trees during outbreaks (Cognato, 2015) by destroying the phloem and cambium in tree trunks and limbs when feeding and tunnelling (Furniss and Carolin, 1977). Outbreaks can destroy thousands of hectares of healthy trees (Cognato, 2015). ~~Some or all~~ *Ips* bark beetles can also transmit pathogenic fungi (Krokene and Solheim, 1998; Meng *et al.*, 2015), in particular blue stain fungi (genera *Grosmannia* and *Ceratocystis*, Ascomycota: Sordariomycetes, Figure 1). *Ceratocystis* fungi from *Ips* beetles also interfere with biological control of the conifer pest *Sirex noctilio* Fabricius (Hymenoptera: Siricidae) (Yousuf *et al.*, 2014). Certain climatic conditions may promote *Ips* outbreaks (Wermelinger, 2004; Breshears *et al.*, 2005; Marini *et al.*, 2017). Trees injured in outbreaks are sometimes later killed by *Dendroctonus* bark beetles (Furniss and Carolin, 1977).	P	*Category : EDITORIAL* **(5) New Zealand (9 Aug 2023 11:58 PM)** "Some or all" is a bit confusing. For most of these fungi the relationship with Ips species is deemed to be more opportunistic and even facultative (unlike the obligate symbiotic association for ambrosia beetles). It would read better as "Ips bark beetles can also transmit pathogenic fungi" Good discussion on fungal associates in this reference: Six, D. L. (2012). Ecological and Evolutionary Determinants of Bark Beetle—Fungus Symbioses. Insects, 3(1), 339–366. https://doi.org/10.3390/insects3010339
45	*Ips* species (Coleoptera: Curculionidae: Scolytinae: Ipini), commonly known as	P	*Category : TECHNICAL*

	bark beetles, are subcortical phloem feeders in Pinaceae (conifer trees), especially *Pinus* (pine), *Picea* (spruce) and *Larix* (larch or tamarack) species (Cognato, 2015). In non-outbreak times, *Ips* beetles mainly inhabit weak or dead trees (Cognato, 2015). Adults and larvae kill healthy trees during outbreaks (Cognato, 2015) by destroying the phloem and cambium in tree trunks and limbs when feeding and tunnelling (Furniss and Carolin, 1977). Outbreaks can destroy thousands of hectares of healthy trees (Cognato, 2015). Some or all *Ips* bark beetles also transmit pathogenic fungi (Krokene and Solheim, 1998; Meng *et al.*, 2015), in particular blue stain fungi ~~(genera~~ (including several species in the genera *Ceratocystis*, *Ceratocystiopsis*, *Grosmannia*, and *Ophiostoma*, Ascomycota: Sordariomycetes, (Ramanenka, Ugwu, and Ivashchanka, 2021)~~*Grosmannia* and~~ , Figure 1). ~~*Ceratocystis*, Ascomycota: Sordariomycetes, Figure 1).~~ *Ceratocystis* fungi from *Ips* beetles also interfere with biological control of the conifer pest *Sirex noctilio* Fabricius (Hymenoptera: Siricidae) (Yousuf *et al.*, 2014). Certain climatic conditions may promote *Ips* outbreaks (Wermelinger, 2004; Breshears *et al.*, 2005; Marini *et al*., 2017). Trees injured in outbreaks are sometimes later killed by *Dendroctonus* bark beetles (Furniss and Carolin, 1977).		**(4) New Zealand (9 Aug 2023 11:55 PM)** The taxonomy of blue stain fungi is complex. It would be on the safe side with a statement such as : "....in particular blue stain fungi (including several species in the genera Ceratocystis, Ceratocystiopsis, Grosmannia, and Ophiostoma, Ascomycota: Sordariomycetes, (Ramanenka, Ugwu, and Ivashchanka, 2021))". And refer to this article: Ramanenka, M. O., Ugwu, J. A., & Ivashchanka, L. O. (2021). Mycobiota of Bark Beetles of the Genus Ips DeGeer, 1775 (Coleoptera, Curculionidae: Scolytinae: Ipini) and Its Economic Impact. Entomological Review, 101(8), 1113–1125. https://doi.org/10.1134/S0013873821080078 There is a more recent and authoritative publication by De Beer and colleagues, who redefine the whole Ophiostomales group where most blue stain fungi belong (but not Ceratocystis). It is less accessible than the previous reference, although it also has numerous examples from Ips beetles. Ramanenka, M. O., Ugwu, J. A., & Ivashchanka, L. O. (2021). Mycobiota of Bark Beetles of the Genus Ips DeGeer, 1775 (Coleoptera, Curculionidae: Scolytinae: Ipini) and Its Economic Impact. Entomological Review, 101(8), 1113–1125. https://doi.org/10.1134/S0013873821080078
45	*Ips* species (Coleoptera: Curculionidae: Scolytinae: Ipini), commonly known as bark beetles, are subcortical phloem feeders in Pinaceae (conifer trees), especially *Pinus* (pine), *Picea* (spruce) and *Larix* (larch or tamarack) species (Cognato, 2015). In non-outbreak times, *Ips* ~~beetles mainly inhabit weak or dead trees (Cognato, 2015). Adults and larvae kill healthy trees during outbreaks (Cognato, 2015) by destroying the phloem and cambium in tree trunks and limbs when feeding and tunnelling (Furniss and Carolin, 1977). Outbreaks can destroy thousands of hectares of healthy trees (Cognato, 2015). Some or all~~ beetles	P	*Category : EDITORIAL* **(3) New Zealand (9 Aug 2023 7:14 AM)** moving this sentence here for better logic. Outbreaks of such scale would only occur following extreme events such as windthrows or droughts (mentioned below about climatic conditions).

	mainly inhabit weak or dead trees (Cognato, 2015). Adults and larvae kill healthy trees during outbreaks (Cognato, 2015) by destroying the phloem and cambium in tree trunks and limbs when feeding and tunnelling (Furniss and Carolin, 1977). Certain climatic conditions may promote Ips outbreaks (Wermelinger, 2004; Breshears et al., 2005; Marini et al., 2017). Outbreaks can destroy thousands of hectares of healthy trees (Cognato, 2015). Some or all *Ips* bark beetles also transmit pathogenic fungi (Krokene and Solheim, 1998; Meng *et al.*, 2015), in particular blue stain fungi (genera *Grosmannia* and *Ceratocystis*, Ascomycota: Sordariomycetes, Figure 1). *Ceratocystis* fungi from *Ips* beetles also interfere with biological control of the conifer pest *Sirex noctilio* Fabricius (Hymenoptera: Siricidae) (Yousuf *et al.*, 2014). ~~Certain climatic conditions may promote *Ips*~~ Trees injured in outbreaks ~~(Wermelinger, 2004; Breshears~~ are sometimes later killed by ~~*et al.*, 2005; Marini *et al.*, 2017). Trees injured in outbreaks are sometimes later killed by~~ *Dendroctonus* bark beetles (Furniss and Carolin, 1977).		
45	*Ips* species (Coleoptera: Curculionidae: Scolytinae: Ipini), commonly known as bark beetles, are subcortical phloem feeders in Pinaceae (conifer trees), especially *Pinus* (pine), *Picea* (spruce) and *Larix* (larch or tamarack) species (Cognato, 2015). In non-outbreak times, *Ips* beetles mainly inhabit weak or dead trees (Cognato, 2015). Adults and larvae may kill healthy trees during outbreaks (Cognato, 2015) by destroying the phloem and cambium in tree trunks and limbs when feeding and tunnelling (Furniss and Carolin, 1977). Outbreaks can destroy thousands of hectares of healthy trees (Cognato, 2015). Some or all *Ips* bark beetles also transmit pathogenic fungi (Krokene and Solheim, 1998; Meng *et al.*, 2015), in particular blue stain fungi (genera *Grosmannia* and *Ceratocystis*, Ascomycota: Sordariomycetes, Figure 1). *Ceratocystis* fungi from *Ips* beetles also interfere with biological control of the conifer pest *Sirex noctilio* Fabricius (Hymenoptera: Siricidae) (Yousuf *et al.*, 2014). Certain climatic conditions may promote *Ips* outbreaks (Wermelinger, 2004; Breshears *et al.*, 2005; Marini *et al.*, 2017). Trees injured in outbreaks are sometimes later killed by *Dendroctonus* bark beetles (Furniss and Carolin, 1977).	P	*Category : EDITORIAL* **(2) New Zealand (9 Aug 2023 7:11 AM)** Current wording is very absolute and would question whether this occurs every outbreak
45	*Ips* bark beetles~~species~~ (Coleoptera: Curculionidae: Scolytinae: ~~Ipini), commonly known as bark beetles,~~ Ipini) are subcortical phloem feeders in Pinaceae (conifer trees), especially *Pinus* (pine), *Picea* (spruce) and *Larix* (larch or tamarack) species (Cognato, 2015). In non-outbreak times, *Ips* beetles mainly inhabit weak or dead trees (Cognato, 2015). Adults and larvae kill healthy trees during outbreaks (Cognato, 2015) by destroying the phloem and cambium in tree trunks and limbs when feeding and tunnelling (Furniss and Carolin, 1977).	P	*Category : TECHNICAL* **(1) New Zealand (9 Aug 2023 7:09 AM)** Not all bark beetles are in the genus Ips.

	Outbreaks can destroy thousands of hectares of healthy trees (Cognato, 2015). Some or all *Ips* bark beetles also transmit pathogenic fungi (Krokene and Solheim, 1998; Meng *et al.*, 2015), in particular blue stain fungi (genera *Grosmannia* and *Ceratocystis*, Ascomycota: Sordariomycetes, Figure 1). *Ceratocystis* fungi from *Ips* beetles also interfere with biological control of the conifer pest *Sirex noctilio* Fabricius (Hymenoptera: Siricidae) (Yousuf *et al.*, 2014). Certain climatic conditions may promote *Ips* outbreaks (Wermelinger, 2004; Breshears *et al.*, 2005; Marini *et al*., 2017). Trees injured in outbreaks are sometimes later killed by *Dendroctonus* bark beetles (Furniss and Carolin, 1977).		
46	Indigenous *Ips* species are present in North America and Eurasia, in all countries where *Pinus* and *Picea* occur naturally (Cognato, 2015). Five *Ips* species (*I. apache*, *I. calligraphus*, *I. grandicollis*, *I. subelongatus* and *I. typographus*) also occur as non-indigenous species, especially where *Picea* and *Pinus* are introduced (Knižek, 2011; Cognato, 2015) and where *Pinus* has been planted. Some *Ips* species use *Larix* as the principal host genus in their native range (Table 1). A few species use *Abies* (fir) and *Cedrus* (true cedar) as hosts during outbreaks (Wood and Bright, 1992). *Ips* species are not limited to the principal host genera provided in Table 1, as other conifers could be attacked when a principal host is not available.	P	*Category : TECHNICAL* **(29) United States of America (15 Sep 2023 4:11 PM)**
47	There are 37 valid *Ips* species worldwide (Table 1), distinguished mainly by the number and the shapes of spines on the elytral declivity (the apical, downward sloping part of the ~~elytra) and the shapes of those spines~~elytra). Phylogenetic analyses of the Ipini prompted transfer of several species to the genera *Pseudips* (Cognato, 2000) and *Orthotomicus* (Cognato and Vogler, 2001). Cognato (2015) ~~reviews~~ reviewed the phylogeny, taxonomy, diagnosis and biology of all *Ips* species.	P	*Category : TECHNICAL* **(30) United States of America (15 Sep 2023 4:12 PM)**
195	Eurasia ~~(north and west)~~(widespread)	P	*Category : TECHNICAL* **(77) Japan (22 Sep 2023 7:14 AM)** Ips typographu is widely distributed in Eurasia (Crop Protection Compendium, EPPO Global database).
202	* South = tropical and subtropical parts of North America. North America refers to the North American continent including countries north of Colombia. Widespread may not include all countries in the continent.	C	*Category : SUBSTANTIVE* **(25) Canada (7 Sep 2023 7:41 PM)** This statement is misleading as North America includes Mexico, the United States and Canada. The sentence should be modified to reflect this
204	Most attacks are initiated by male beetles, who create a nuptial chamber under the bark and release semiochemicals to attract males and females to colonize the	P	*Category : EDITORIAL* **(126) European Union (29 Sep 2023 6:46 PM)**

	same tree. The polygynous males attract up to six females to the nuptial chamber (diameter: 7–15 mm). Females mate with the resident male and then create radiating egg galleries along the inner bark (Cognato, 2015; Figure 2 and Figure 3). Females each lay eggs along their tunnel, these hatching after about seven days (Chararas, 1962). Larval galleries radiate from the "H"- or "Y"-shaped egg galleries (Figure 2 and Figure 3), extending over a span of 10–30 cm. Development requires six weeks in warm temperatures, allowing up to five generations per year in warm areas. In cooler areas, development requires up to two years (Furniss and Carolin, 1977). Adult beetles overwinter within parental breeding galleries, in ~~forest litter,~~ litter or in living wood tissue (Chansler, 1964; Lanier, 1967).		
204	Most attacks are initiated by male beetles, who create a nuptial chamber under the bark and release semiochemicals to attract males and females to colonize the same tree. The polygynous males attract up to six females to the nuptial chamber ~~(diameter: 7–15 mm)~~. Females mate with the resident male and then create radiating egg galleries along the inner bark (Cognato, 2015; Figure 2 and Figure 3). Females each lay eggs along their tunnel, these hatching after about seven days (Chararas, 1962). Larval galleries radiate from the "H"- or "Y"-shaped egg galleries (Figure 2 and Figure 3), extending over a span of 10–30 cm. Development requires six weeks in warm temperatures, allowing up to five generations per year in warm areas. In cooler areas, development requires up to two years (Furniss and Carolin, 1977). Adult beetles overwinter within parental breeding galleries, in forest litter, or in living wood tissue (Chansler, 1964; Lanier, 1967).	P	*Category : SUBSTANTIVE* **(103) China (28 Sep 2023 4:19 AM)** Miller, D.R. and Borden, J.H. 1985. LIFE HISTORY AND BIOLOGY OF IPS LATIDENS (LECONTE) (COLEOPTERA: SCOLYTIDAE). The Canadian Entomologist, Vol. 117, Issue. 7, p. 859.
204	Most attacks are initiated by male beetles, who create a nuptial chamber under the bark and release semiochemicals to attract males and females to colonize the same tree. The polygynous males attract ~~up~~ many females（generally two-six, sometimes eight) to ~~six females to~~ the nuptial chamber (diameter: 7–15 mm). Females mate with the resident male and then create radiating egg galleries along the inner bark (Cognato, 2015; Figure 2 and Figure 3). Females each lay eggs along their tunnel, these hatching after about seven days (Chararas, 1962). Larval galleries radiate from the "H"- or "Y"-shaped egg galleries (Figure 2 and Figure 3), extending over a span of 10–30 cm. Development requires six weeks in warm temperatures, allowing up to five generations per year in warm areas. In cooler areas, development requires up to two years (Furniss and Carolin, 1977). Adult beetles overwinter within parental breeding galleries, in forest litter, or in living wood tissue (Chansler, 1964; Lanier, 1967).	P	*Category : SUBSTANTIVE* **(102) China (28 Sep 2023 4:19 AM)** 1. J. B. Thomas. 1961. The life-history of Ips pini (Say) (Col. Scolytidae). Can. Ent. 93: 384–390. 2. Wood, D.L., and R.W. Stark. 1968. The life history of Ips calligraphus (Coleoptera: Scolytidae) with notes on its biology in California. Can. Ent. 100: 145-15 1. 3. Ips spp. (Insecta: Coleoptera: Curculionidae: Scolytinae)http://entnemdept.ufl.edu/creatures/trees/beetles/ips_beetles.htm
204	Most attacks are initiated by male beetles, who create a nuptial chamber under	C	*Category : TECHNICAL*

	the bark and release semiochemicals to attract males and females to colonize the same tree. The polygynous males attract up to six females to the nuptial chamber (diameter: 7–15 mm). Females mate with the resident male and then create radiating egg galleries along the inner bark (Cognato, 2015; Figure 2 and Figure 3). Females each lay eggs along their tunnel, these hatching after about seven days (Chararas, 1962). Larval galleries radiate from the "H"- or "Y"-shaped egg galleries (Figure 2 and Figure 3), extending over a span of 10–30 cm. Development requires six weeks in warm temperatures, allowing up to five generations per year in warm areas. In cooler areas, development requires up to two years (Furniss and Carolin, 1977). Adult beetles overwinter within parental breeding galleries, in forest litter, or in living wood tissue (Chansler, 1964; Lanier, 1967).		**(90) New Zealand (25 Sep 2023 11:38 PM)** There is missing information about the location of pupation. It would be good to precise if the location of overwintering for adults is a species specific trait or depending on other conditions.
204	Most attacks are initiated by male beetles, who create a nuptial chamber under the bark and release semiochemicals to attract males and females to colonize the same tree. The polygynous males attract up to six females to the nuptial chamber (diameter: 7–15 mm). Females mate with the resident male and then create radiating egg galleries along the inner bark (Cognato, 2015; Figure 2 and Figure 3). Females each lay eggs along their tunnel, these hatching after about seven days (Chararas, 1962). ~~Larval~~ Newly formed larval galleries then radiate from the ~~"H"- or "Y"-shaped egg~~ oviposition galleries ~~(Figure~~ bore by the females (Figures 2 and ~~Figure~~ 3)~~, extending over a span of 10–30 cm~~. ~~Development requires six weeks in warm temperatures, allowing up~~ Each larval galleries can extend over 10 to ~~five generations per year in warm areas~~30 cm. ~~In cooler areas, development requires up to two years (Furniss and Carolin, 1977).~~ Adult beetles overwinter within parental breeding galleries, in forest litter, or in living wood tissue (Chansler, 1964; Lanier, 1967).	P	*Category : TECHNICAL* **(89) New Zealand (25 Sep 2023 11:25 PM)** 1. But other shapes if 1, 2 or more than 4 females. Suggest to keep the mentions to the H and Y shapes in the figure captions, but keep it simple here. Could read as: "Newly formed larval galleries then radiate from the oviposition galleries bore by the females (Figures 2 and 3). Each larval galleries can extend over 10 to 30 cm. ". 2. to delete teh sentence starting with "Development...". This is also very absolute given the variability of species and hosts.
204	Most attacks are initiated by male beetles, who create a nuptial chamber under the bark and release semiochemicals to attract males and females to colonize the same tree. The polygynous males attract up to six females to the nuptial chamber (diameter: 7–15 mm). Females mate with the resident male and then create radiating ~~egg~~ galleries along the inner bark ~~(Cognato, 2015; Figure 2 and Figure 3). Females~~ where they each lay around 20–30 eggs in niches along ~~their tunnel, these hatching~~ the gallery walls (Chararas 1962). These eggs will hatch after about seven days ~~(Chararas~~(Cognato, ~~1962).~~ 2015; Figure 2 and Figure 3). Larval galleries radiate from the "H"- or "Y"-shaped egg galleries (Figure 2 and Figure 3), extending over a span of 10–30 cm. Development requires six weeks in warm temperatures, allowing up to five generations per year in warm areas. In cooler areas, development requires up to two years (Furniss and Carolin, 1977).	P	*Category : TECHNICAL* **(88) New Zealand (25 Sep 2023 11:19 PM)** Here could be some information about reproductive capacity. Such as: "...and then create radiating galleries along the inner bark where they each lay around 20–30 eggs in niches along the gallery walls (Chararas 1962). These eggs will hatch after about seven days. "

	Adult beetles overwinter within parental breeding galleries, in forest litter, or in living wood tissue (Chansler, 1964; Lanier, 1967).		
204	Most attacks are initiated by male beetles, who create a nuptial chamber under the bark and release semiochemicals to attract males and females to colonize the same tree. The ~~polygynous~~ males ~~attract~~ are polygynous, and in some cases up to six females ~~to the~~ have been reported in a single nuptial ~~chamber (diameter: 7–15 mm)~~chamber. Females mate with the resident male and then create radiating egg galleries along the inner bark (Cognato, 2015; Figure 2 and Figure 3). Females each lay eggs along their tunnel, these hatching after about seven days (Chararas, 1962). Larval galleries radiate from the "H"- or "Y"-shaped egg galleries (Figure 2 and Figure 3), extending over a span of 10–30 cm. Development requires six weeks in warm temperatures, allowing up to five generations per year in warm areas. In cooler areas, development requires up to two years (Furniss and Carolin, 1977). Adult beetles overwinter within parental breeding galleries, in forest litter, or in living wood tissue (Chansler, 1964; Lanier, 1967).	P	*Category : TECHNICAL* **(87) New Zealand (25 Sep 2023 11:15 PM)** This is very absolute when considering the whole genus. Suggest to rewrite. For instance: "The males are polygynous, and in some cases up to six females have been reported in a single nuptial chamber." Reporting the recorded size range of the nuptial chamber (supposedly for one particular species) is unnecessary.
204	Most attacks are initiated by male beetles, who create a nuptial chamber under the bark and release ~~semiochemicals~~ aggregation pheromones to attract males and females to colonize the same tree. The polygynous males attract up to six females to the nuptial chamber (diameter: 7–15 mm). Females mate with the resident male and then create radiating egg galleries along the inner bark (Cognato, 2015; Figure 2 and Figure 3). Females each lay eggs along their tunnel, these hatching after about seven days (Chararas, 1962). Larval galleries radiate from the "H"- or "Y"-shaped egg galleries (Figure 2 and Figure 3), extending over a span of 10–30 cm. Development requires six weeks in warm temperatures, allowing up to five generations per year in warm areas. In cooler areas, development requires up to two years (Furniss and Carolin, 1977). Adult beetles overwinter within parental breeding galleries, in forest litter, or in living wood tissue (Chansler, 1964; Lanier, 1967).	P	*Category : TECHNICAL* **(86) New Zealand (25 Sep 2023 11:12 PM)** Aggregation pheromones in this case
204	Most attacks are initiated by male beetles, who create a nuptial chamber under the bark and release semiochemicals to attract males and females to colonize the same tree. The polygynous males attract up to six females to the nuptial chamber (diameter: 7–15 mm). Females mate with the resident male and then create radiating egg galleries along the inner bark (Cognato, 2015; Figure 2 and Figure 3). Females each lay eggs along their tunnel, these hatching after about seven days (Chararas, 1962). Larval galleries radiate from the "H"- or "Y"-shaped egg galleries (Figure 2 and Figure 3), extending over a span of 10–30 cm. Development requires six weeks in warm temperatures, allowing up to five	P	*Category : EDITORIAL* **(58) EPPO (20 Sep 2023 11:06 AM)**

	generations per year in warm areas. In cooler areas, development requires up to two years (Furniss and Carolin, 1977). Adult beetles overwinter within parental breeding galleries, in ~~forest litter,~~ litter or in living wood tissue (Chansler, 1964; Lanier, 1967).		
204	Most attacks are initiated by male beetles, who create a nuptial chamber under the bark and release semiochemicals to attract males and females to colonize the same tree. The polygynous males attract up to six females to the nuptial chamber (diameter: 7–15 mm). Females mate with the resident male and then create radiating egg galleries along the inner bark (Cognato, 2015; Figure 2 and Figure 3). Females each lay eggs along their tunnel, ~~these hatching~~ which hatch after about seven days (Chararas, 1962). Larval galleries radiate from the "H"- or "Y"-shaped egg galleries (Figure 2 and Figure 3), extending over a span of 10–30 cm. ~~Development~~ Larval development requires six weeks in warm temperatures, allowing up to five generations per year in warm areas. In cooler areas, development requires up to two years (Furniss and Carolin, 1977). Adult beetles overwinter within parental breeding galleries, in forest litter, or in living wood tissue (Chansler, 1964; Lanier, 1967).	P	*Category : EDITORIAL* **(31) United States of America (15 Sep 2023 4:14 PM)**
204	Most attacks are initiated by male beetles, who create a nuptial chamber under the bark and release semiochemicals to attract males and females to colonize the same tree. The polygynous males attract up to six females to the nuptial chamber (diameter: 7–15 mm). Females mate with the resident male and then create radiating egg galleries along the inner bark (Cognato, 2015; Figure 2 and Figure 3). Females each lay eggs along their tunnel, these hatching after about seven days (Chararas, 1962). Larval galleries radiate from the "H"- or "Y"-shaped egg galleries (Figure 2 and Figure 3), extending over a span of 10–30 cm. Development requires six weeks in warm temperatures, allowing up to five generations per year in warm areas. In cooler areas, development requires up to two years (Furniss and Carolin, 1977). Adult beetles overwinter within parental breeding galleries, in forest litter, or in living wood tissue (Chansler, 1964; Lanier, 1967).	C	*Category : TECHNICAL* **(21) Kenya (28 Aug 2023 3:09 PM)** Specify in figures eg 10 ℃, 11℃ etc
204	Most attacks are initiated by male beetles, who create a nuptial chamber under the bark and release semiochemicals to attract males and females to colonize the same tree. The polygynous males attract up to six females to the nuptial chamber (diameter: 7–15 mm). Females mate with the resident male and then create radiating egg galleries along the inner bark (Cognato, 2015; Figure 2 and Figure 3). Females each lay eggs along their tunnel, these hatching after about seven days (Chararas, 1962). Larval galleries radiate from the "H"- or "Y"-shaped egg galleries (Figure 2 and Figure 3), extending over a span of 10–30 cm.	C	*Category : TECHNICAL* **(20) Kenya (28 Aug 2023 3:08 PM)** Specify in figures eg 20 ℃25 ℃ 3

	Development requires six weeks in warm temperatures, allowing up to five generations per year in warm areas. In cooler areas, development requires up to two years (Furniss and Carolin, 1977). Adult beetles overwinter within parental breeding galleries, in forest litter, or in living wood tissue (Chansler, 1964; Lanier, 1967).		
205	Flight distances of ~~50~~ 19-50 km for *I. calligraphus* (CABI, 2022) and 55 km for *I. typographus* ~~(Forsse and Solbreck~~(Platonoff 1940; Nilssen 1978, ~~1985)~~ 1984) have been reported for adults, but shorter flight distances are more common. These estimates do not include the impact of wind on movement during flight. International trade may also result in the introduction of *Ips* to new areas. Life stages of *Ips* are disseminated through host plants, unmanufactured solid wood packaging material or unmanufactured wood products, underneath the bark or in the phloem.	P	*Category : SUBSTANTIVE* **(104) China (28 Sep 2023 4:21 AM)** Flight distances of 50 km for I. calligraphus (CABI, 2022) and 19-55 km for I. typographus (Platonoff 1940; Nilssen 1978, 1984) have been reported for adults, but shorter flight distances are more common.
205	Flight distances of 50 km for *I. calligraphus* (CABI, 2022) and 55 km for *I. typographus* (Forsse and Solbreck, 1985) have been reported for adults, but shorter flight distances are more common. These estimates do not include the impact of wind on movement during flight. ~~International~~ There are some examples that international trade of wood may ~~also~~ result in the introduction of *Ips* to new ~~areas~~areas (ref). ~~Life~~ All life stages of *Ips* are disseminated through host plants, unmanufactured solid wood packaging material or unmanufactured wood products, underneath the bark or in the phloem.	P	*Category : TECHNICAL* **(92) New Zealand (25 Sep 2023 11:46 PM)** There are interceptions and also some entries (live individuals entering new locations not followed by establishment) reported in the literature. Re. 'Life stages'. Better to be specific. “All life stages” or “Eggs, larvae, pupae and adults”
205	Flight distances of 50 km for *I. calligraphus* (CABI, 2022) and 55 km for *I. typographus* (Forsse and Solbreck, 1985) have been reported for adults, but shorter flight distances are more common. These estimates do not include the impact of wind on movement during flight. International trade may also result in the introduction of *Ips* to new areas. Life stages of *Ips* are disseminated through host plants, unmanufactured solid wood packaging material or unmanufactured wood products, underneath the bark or in the phloem.	P	*Category : TECHNICAL* **(91) New Zealand (25 Sep 2023 11:40 PM)** Re. typical flight distance. This is an extreme case which could be misleading or relevant for the purpose of this DP. There are indications of more typical flight distances in the literature. Such as in Jactel, H. (1991). Dispersal and Flight Behavior of Ips sexdentatus (Coleoptera, Scolytidae) in Pine Forest. Annales Des Sciences Forestieres, 48(4), 417–428.
205	Flight distances of 50 km have been reported for adult *I. calligraphus* (CABI, 2022) and 55 km for *I. typographus* (Forsse and Solbreck, 1985) ~~have been reported for adults,~~ but shorter flight distances are more common. These estimates do not include the impact of wind on movement during flight. International trade may also result in the introduction of *Ips* to new areas. Life stages of *Ips* are disseminated through host plants, unmanufactured solid wood packaging material or unmanufactured wood products, underneath the bark or in	P	*Category : TECHNICAL* **(32) United States of America (15 Sep 2023 4:18 PM)** What does "unmanufactured" mean here? having bark, uncut, etc.?

	the phloem.		
205	Flight distances of 50 km for *I. calligraphus* (CABI, 2022) and 55 km for *I. typographus* (Forsse and Solbreck, 1985) have been reported for adults, but shorter flight distances are more common. These estimates do not include the impact of wind on movement during flight. International trade may also result in the introduction of *Ips* to new areas. Life stages of *Ips* are disseminated through host plants, unmanufactured solid wood packaging material or unmanufactured wood products, underneath the bark or in the phloem.	C	*Category : TECHNICAL* **(22) Kenya (28 Aug 2023 3:09 PM)** Specify with figure eg 40 km ,30 km etc
212	**Table 2.** Common names and synonyms of target *Ips* species, sorted by subgenera	C	*Category : SUBSTANTIVE* **(127) European Union (29 Sep 2023 6:47 PM)** Only 14 out of 37 species have been listed in the table below. On which basis are these 14 species selected?
212	**Table 2.** Common names and synonyms of target *Ips* species, sorted by subgenera	C	*Category : SUBSTANTIVE* **(59) EPPO (20 Sep 2023 11:06 AM)** Only 14 out of 37 species have been listed in the table below. On which basis are these 14 species selected?
217	*Bonips*	C	*Category : TECHNICAL* **(33) United States of America (15 Sep 2023 4:19 PM)** Do these subgeneric names have authors like the generic names and species names?
264	*Tomicus grandicollis* Eichhoff, 1868	C	*Category : EDITORIAL* **(128) European Union (29 Sep 2023 6:48 PM)** Shouldn't this synonym from 1868 be the first one listed, ahead of the current first synonym on the list, which is from 1869?
264	*Tomicus grandicollis* Eichhoff, 1868	C	*Category : EDITORIAL* **(60) EPPO (20 Sep 2023 11:06 AM)** Shouldn't this synonym from 1868 be the first one listed, ahead of the current first synonym on the list, which is from 1869?
312	*Source:* Knížek, M. 2011. Subfamily Scolytinae Latreille, 1804. In: I. Löbl & A. Smetana, eds. *Catalogue of palaearctic Coleoptera 7: Curculionoidea I*, pp. 204–250. Stenstrup, Denmark, Apollo Books. 373 pp.	C	*Category : TECHNICAL* **(34) United States of America (15 Sep 2023 4:20 PM)** The Harvard citation should be sufficient, and the full reference does not need to be included in the table legend.
315	~~Larvae~~ Adults, larvae and pupae (Figure 4) are found in the host plant or wood products immediately underneath the bark or in the phloem, and not deeper in the wood or xylem (although some overwintering adults tunnel into the xylem	P	*Category : TECHNICAL* **(129) European Union (29 Sep 2023 6:50 PM)** adults may also be found + an adult is shown in figure 4

	(Lanier, 1967)). Trees can be examined by removing the bark to see if galleries are present, or externally for symptoms of infestation (circular holes, 1–4 mm in diameter, and red-brown boring dust, Figure 5). Pitch tubes can sometimes be seen, particularly on pine and despite Ips typically attack weakened trees.		
315	~~Larvae~~ Adults, larvae and pupae (Figure 4) are found in the host plant or wood products immediately underneath the bark or in the phloem, and not deeper in the wood or xylem (although some overwintering adults tunnel into the xylem (Lanier, 1967)). Trees can be examined by removing the bark to see if galleries are present, or externally for symptoms of infestation (circular holes, 1–4 mm in diameter, and red-brown boring dust, Figure 5). Pitch tubes can sometimes be seen, particularly on pine and despite Ips typically attack weakened trees.	P	*Category : TECHNICAL* **(61) EPPO (20 Sep 2023 11:06 AM)** adults may also be found + an adult is shown in figure 4
317	Four general symptoms indicating possible attack in living Pinaceae trees ~~are as follows~~are:	P	*Category : EDITORIAL* **(35) United States of America (15 Sep 2023 4:21 PM)**
318	Yellowing, dying needles on the crown, a branch or ~~all of~~ the entire tree.	P	*Category : EDITORIAL* **(36) United States of America (15 Sep 2023 4:21 PM)**
321	Appearance of many small holes on the bark (e.g. ten or more 1–4 mm diameter holes in a 10 cm × 10 cm area). This is consistent with the postemergence stage of *Ips* infestation. At this time the progeny ~~has~~ have emerged from the tree to find unexploited bark tissue in which to establish new galleries.	P	*Category : EDITORIAL* **(37) United States of America (15 Sep 2023 4:22 PM)**
322	Several months or more after successful colonization, the attacked tree may change leaf (needle) colour to yellow-green or red as the tree dies. *Ips* beetles sometimes kill healthy trees when beetle populations are high, although some trees recover even after the beetles have successfully reproduced in their tissues.	C	*Category : TECHNICAL* **(57) Uruguay (18 Sep 2023 6:48 PM)** Time required after colonization should be specified
322	Several months or more after successful colonization, the attacked tree may change leaf (needle) colour to yellow-green or red as the tree dies. *Ips* beetles sometimes kill healthy trees when beetle populations are high, although some trees recover even after the beetles have successfully reproduced in their tissues.	C	*Category : TECHNICAL* **(28) COSAVE (13 Sep 2023 5:50 PM)** It should be specify the time required after colonization
322	Several months or more after successful colonization, the attacked tree may change leaf (needle) colour to yellow-green or red as the tree dies. *Ips* beetles sometimes kill healthy trees when beetle populations are high, although some trees recover even after the beetles have successfully reproduced in their tissues.	C	*Category : TECHNICAL* **(23) Kenya (28 Aug 2023 3:10 PM)** Several months specifications eg five ,ten ,eleven, twentyfour etc
322	Several months or more after successful colonization, the attacked tree may change leaf (needle) colour to yellow-green or red as the tree dies. *Ips* beetles sometimes kill healthy trees when beetle populations are high, although some	C	*Category : TECHNICAL* **(14) Chile (14 Aug 2023 3:25 PM)** No se entiende, debiera eliminarse el "or more" o indicar cuántos meses después

	trees recover even after the beetles have successfully reproduced in their tissues.		
324	The bark can be removed from affected trees or wood products using a sharp, strong knife or a small axe. The wood underneath the bark layer and the inner bark can be inspected for "H"- or "Y"-shaped galleries (or similar, Figure 2 and Figure 3). A 40× magnifying lens can be used to inspect galleries for adults, larvae and eggs. If gallery engravings are present, some of the bark or affected material should be collected and photographed. Infested materials can be transported using a sealed bag or container. Double bagging of samples is useful for preventing escape.	C	*Category : SUBSTANTIVE* **(118) South Africa (28 Sep 2023 12:31 PM)** Proposal for a separate Annex for the pathogen (Fungi) vectored by Ips spp.
324	The bark can be removed from affected trees or wood products using a sharp, strong knife or a small axe. The wood underneath the bark layer and the inner bark can be inspected for "H"- or "Y"-shaped galleries (or similar, Figure 2 and Figure 3). A ~~40×~~ magnifying lens (≥ 40×) can be used to inspect galleries for adults, larvae and eggs. If gallery engravings are present, some of the bark or affected material should be collected and photographed. Infested materials can be transported using a sealed bag or container. Double bagging of samples is useful for preventing escape.	P	*Category : SUBSTANTIVE* **(105) China (28 Sep 2023 4:23 AM)** ≥ 40× magnifying lens can be used in inspect galleries for adults, larvae and eggs, but not only 40×.
324	The bark can be removed from affected trees or wood products using a sharp, strong knife or a small axe. The wood underneath the bark layer and the inner bark can be inspected for ~~"H"- or "Y"-shaped~~ galleries ~~(or similar,~~ (examples are shown in Figure 2 and Figure 3). A 40× magnifying lens can be used to inspect galleries for adults, larvae and eggs. If gallery engravings are present, some of the bark or affected material should be collected and photographed. Infested materials can be transported using a sealed bag or container. Double bagging of samples is useful for preventing escape.	P	*Category : TECHNICAL* **(93) New Zealand (25 Sep 2023 11:50 PM)** Not necessarily these shapes. H and Y are only examples
324	Bark can be removed from affected trees or wood products using a sharp, strong knife or a small axe. The wood underneath the bark layer and the inner bark can be inspected for "H"- or "Y"-shaped galleries (or similar, Figure 2 and Figure 3). A 40× magnifying lens can be used to inspect galleries for adults, larvae and eggs. If gallery engravings are present, some of the bark or affected material should be collected and photographed. Infested materials can be transported using a sealed bag or container. Double bagging of samples is useful to prevent escape.~~The bark can be removed from affected trees or wood products using a sharp, strong knife or a small axe. The wood underneath the bark layer and the inner bark can be inspected for "H"- or "Y"-shaped galleries (or similar, Figure 2 and Figure 3). A 40× magnifying lens can be used to inspect galleries for adults, larvae and eggs. If gallery engravings are present, some of the bark or affected material should be collected and photographed. Infested materials can~~	P	*Category : EDITORIAL* **(38) United States of America (15 Sep 2023 4:24 PM)**

	~~be transported using a sealed bag or container. Double bagging of samples is useful for preventing escape.~~		
325	Detected adults, larvae, pupae or eggs can be removed using forceps. Live larvae, or larvae recently killed in ethanol, can be placed for 30 to 60 seconds in near boiling water (90 °C to 100 °C) to fix for long-term preservation. Specimens should then be stored in a glass vial containing 70% to 80% ethanol. Adults can be killed in ethanol or by placement into a dry tube and then a freezer at either −20 °C for at least 24 h or −80 °C for at least 6 h before card- or point-mounting on a pin. If specimens are to be saved for DNA analysis, it is recommended that they be stored in a preservative such as a high percentage (>95%) of ethanol or propylene ~~glycol~~glycol without treatment in boiling water.	P	*Category : SUBSTANTIVE* **(106) China (28 Sep 2023 4:27 AM)** If the sample is used for DNA extraction, it is better not to treated with boiling water but store into ethanol to reduce degradation of DNA. So add "without treatment in boiling water" at the end of the sentence: If specimens are to be saved for DNA analysis, it is recommended that they be stored in a preservative such as a high percentage (>95%) of ethanol or propylene glycol without treatment in boiling water.
325	Detected adults, larvae, pupae or eggs can be removed using ~~forceps~~flexible forceps with narrow tips (for eggs and small larvae) and broad tips (for large larvae and adults). Live larvae, or larvae recently killed in ethanol, can be placed for 30 to 60 seconds in near boiling water (90 °C to 100 °C) to fix for long-term preservation. Specimens should then be stored in a glass vial containing 70% to 80% ethanol. Adults can be killed in ethanol or by placement into a dry tube and then a freezer at either −20 °C for at least 24 h or −80 °C for at least 6 h before card- or point-mounting on a pin. If specimens are to be saved for DNA analysis, it is recommended that they be stored in a preservative such as a high percentage (>95%) of ethanol or propylene glycol.	P	*Category : TECHNICAL* **(94) New Zealand (25 Sep 2023 11:51 PM)** Additional detail more useful for handling specimens. Flexible forceps with narrow tips (for eggs and small larvae) and broad tips (for large larvae and adults) are the best ones.
325	Detected adults, larvae, pupae or eggs can be removed using forceps. Immature stages should be preserved in ethanol. Live larvae, or larvae recently killed in ethanol, can be placed for 30 to 60 seconds in near boiling water (90 °C to 100 °C) to fix for long-term preservation. Specimens should then be stored in a glass vial containing 70% to 80% ethanol. Adults can be killed in ethanol or by placement into a dry tube and then a freezer at either −20 °C for at least 24 h or −80 °C for at least 6 h before card- or point-mounting on a pin. If specimens are to be saved for DNA analysis, it is recommended that they be stored in a preservative such as a high percentage (>95%) of ethanol or propylene glycol.	P	*Category : TECHNICAL* **(39) United States of America (15 Sep 2023 4:25 PM)**
325	Detected adults, larvae, pupae or eggs can be removed using forceps. Live larvae, or larvae recently killed in ethanol, can be placed for 30 to 60 seconds in near boiling water (90 °C to 100 °C) to fix for long-term preservation. Specimens should then be stored in a glass vial containing 70% to 80% ethanol. Adults can be killed in ethanol or by placement into a dry tube and then a freezer at either −20 °C for at least 24 h or −80 °C for at least 6 h before card- or point-	C	*Category : TECHNICAL* **(13) Chile (14 Aug 2023 3:24 PM)** también podría ser (>70%).

	mounting on a pin. If specimens are to be saved for DNA analysis, it is recommended that they be stored in a preservative such as a high percentage (>95%) of ethanol or propylene glycol.		
326	It is necessary to collect any adults present because adults have important diagnostic morphological characters. It is not possible to identify ~~juveniles~~ larvae to genus or species level based on morphology. In the laboratory, adult specimens should be mounted for examination while larvae, pupae or eggs should be examined in ethanol. See section 4.1 and section 4.2 for details on preparation of specimens for identification.	P	*Category : TECHNICAL* **(130) European Union (29 Sep 2023 6:51 PM)**
326	It is necessary to collect any adults present because adults have important diagnostic morphological characters. It is not possible to identify ~~juveniles~~ larvae to genus or species level based on morphology. In the laboratory, adult specimens should be mounted for examination while larvae, pupae or eggs should be examined in ethanol. See section 4.1 and section 4.2 for details on preparation of specimens for identification.	P	*Category : TECHNICAL* **(62) EPPO (20 Sep 2023 11:06 AM)**
326	Always collect adults if they are present because adults have important diagnostic morphological characters. It is not possible to identify immature stages to genus or species level based on morphology. In the laboratory, adult specimens should be dry mounted for examination while larvae, pupae or eggs should be examined in ethanol. See section 4.1 and section 4.2 for details on preparation of specimens for identification. ~~It is necessary to collect any adults present because adults have important diagnostic morphological characters. It is not possible to identify juveniles to genus or species level based on morphology. In the laboratory, adult specimens should be mounted for examination while larvae, pupae or eggs should be examined in ethanol. See section 4.1 and section 4.2 for details on preparation of specimens for identification.~~	P	*Category : TECHNICAL* **(40) United States of America (15 Sep 2023 4:27 PM)**
328	The genus *Ips* can be identified to species level by adult external morphology (Douglas *et al.*, 2019). Adult structures are illustrated in Figure 6. Descriptions and regional keys to the species of *Ips* based on morphology are available (Balachowsky, 1949; Kurenzov and Kononov, 1966; Grüne, 1979; Schedl, 1981; Wood, 1982; Holzschuh, 1988; Lanier, Teale and Pajares, 1991; Pfeffer, 1995; Cognato and Sun, 2007). A generic key to the Scolytinae larvae of eastern Canada is available (Thomas, 1957) but ~~juvenile~~ preimaginal stages cannot be used for reliable identification on a global scale. Although *Ips* species have been discovered and identified using DNA sequence data (Cognato and Sun, 2007), validated protocols for universal DNA identification of *Ips* species have not yet been developed (Chang *et al.*, 2012). Additional work is needed to demonstrate that DNA sequence records provide accurate identification of the target species	P	*Category : TECHNICAL* **(131) European Union (29 Sep 2023 6:52 PM)**

	and to determine how to interpret DNA similarity between the target and non-target species.		
328	The genus *Ips* can be identified to species level by adult external morphology (Douglas *et al.*, 2019). Adult structures are illustrated in Figure 6. Descriptions and regional keys to the species of *Ips* based on morphology are available (Balachowsky, 1949; Kurenzov and Kononov, 1966; Grüne, 1979; Schedl, 1981; Wood, 1982; Holzschuh, 1988; Lanier, Teale and Pajares, 1991; Pfeffer, 1995; Cognato and Sun, 2007). A generic key to the Scolytinae larvae of eastern Canada is available (Thomas, 1957) but juvenile stages cannot be used for reliable identification on a global scale. ~~Although~~ Ips species have been discovered and identified using DNA sequence data (Cognato and Sun, 2007), and the results from 14 species of Ips suggest that DNA barcoding based on mitochondrial CO I is applicable in the classification and identification of Ips species(Chang et al., 2012). Furthermore, a simple PCR_x001E_based approach for rapid detection of Ips typographus and Ips duplicatus in the presence of (associated) symbionts and parasites was also developed (Becker M., König s. and Hoppe B., 2021). ~~*Ips* species have been discovered and identified using~~ Additional work is needed to demonstrate that DNA sequence ~~data (Cognato and Sun, 2007), validated protocols for universal DNA~~ records provide accurate identification of the target species and to determine how to interpret DNA similarity between the target and non-target species. ~~*Ips* species have not yet been developed (Chang *et al.*, 2012). Additional work is needed to demonstrate that DNA sequence records provide accurate identification of the target species and to determine how to interpret DNA similarity between the target and non-target species.~~	P	*Category : SUBSTANTIVE* **(107) China (28 Sep 2023 4:30 AM)** Chang et al., 2012和Becker M., König s. and Hoppe B., (2021) all stuied on identification using CO I to determine Ips species, so we revise it here.
328	The genus *Ips* can be identified to species level by adult external morphology (Douglas *et al.*, 2019). Adult structures are illustrated in Figure 6. Descriptions and regional keys to the species of *Ips* based on morphology are available (Balachowsky, 1949; Kurenzov and Kononov, 1966; Grüne, 1979; Schedl, 1981; Wood, 1982; Holzschuh, 1988; Lanier, Teale and Pajares, 1991; Pfeffer, 1995; Cognato and Sun, 2007). A generic key to the Scolytinae larvae of eastern Canada is available (Thomas, 1957) but ~~juvenile~~ preimaginal stages cannot be used for reliable identification on a global scale. Although *Ips* species have been discovered and identified using DNA sequence data (Cognato and Sun, 2007), validated protocols for universal DNA identification of *Ips* species have not yet been developed (Chang *et al.*, 2012). Additional work is needed to demonstrate that DNA sequence records provide accurate identification of the target species and to determine how to interpret DNA similarity between the target and non-	P	*Category : TECHNICAL* **(63) EPPO (20 Sep 2023 11:06 AM)**

	target species.		
328	~~The~~ Members of the genus *Ips* can be identified to species level by adult external morphology (Douglas *et al.*, 2019). Adult structures are illustrated in Figure 6. Descriptions and regional keys to the species of *Ips* based on morphology are available (Balachowsky, 1949; Kurenzov and Kononov, 1966; Grüne, 1979; Schedl, 1981; Wood, 1982; Holzschuh, 1988; Lanier, Teale and Pajares, 1991; Pfeffer, 1995; Cognato and Sun, 2007). A generic key to the Scolytinae larvae of eastern Canada is available (Thomas, ~~1957)~~ 1957), but juvenile stages cannot be used for reliable identification of genera on a global scale. Although *Ips* species have been discovered and identified using DNA sequence data (Cognato and Sun, 2007), validated protocols for universal DNA identification of *Ips* species have not yet been developed (Chang *et al.*, 2012). Additional work is needed to demonstrate that DNA sequence ~~records~~ data provide accurate identification of the target species and to determine how to interpret DNA similarity between ~~the~~ target and non-target species.	P	*Category : TECHNICAL* **(41) United States of America (15 Sep 2023 4:30 PM)**
331	Ethanol-preserved specimens (section 3.2) are transferred to a dish filled with 70% to 80% ethanol, to ~~be cleaned of~~ remove dirt, debris and frass. Specimens can be cleaned by gently brushing with a fine-hair artist's paint brush. The integument must be clean to show the surface texture and setal punctures. Before mounting, adult specimens preserved in ethanol should first be dried by removing the specimen from the ethanol, blotting it with paper towel and allowing it to air-dry for 2–5 min. Specimens removed from −20 or −80 °C freezers should be placed on blotting paper and thawed for 10–20 min or until any visible condensation has evaporated from the specimen. A triangular point mount can be used for mounting, attaching the beetle to the point along the right side of its thorax. Specimens may, alternatively, be glued ventrally to the middle of an 11 × 4.5 mm mounting card. Ideally the left lateral, dorsal and ventral views should be free and visible for examination. Once adults are ~~pinned~~mounted, they may be examined under a dissecting microscope capable of 40× magnification or higher (a higher magnification may be preferable). Strong, diffuse lighting is important for examination of adult bark beetles to see the surface sculpturing. Because adult bark beetles are shiny, light reflected from specimens may make it difficult to see surface structures. The sheen can be reduced by placing tracing paper or translucent drafting film between the light source and the specimen.	P	*Category : TECHNICAL* **(42) United States of America (15 Sep 2023 4:31 PM)**
333	Wood (1986) provides a key to the world genera of Scolytinae. Rabaglia (2002) provides an updated key to the North American genera of Scolytinae. ~~The~~ Adult Scolytinae can be identified by the following ~~set of adult~~ morphological	P	*Category : TECHNICAL* **(43) United States of America (15 Sep 2023 4:33 PM)**

	characters (Hulcr *et al*., 2015):		
336	Legs and antennae (Figure 6, Figure 7, and Figure 8(a) to Figure 8(e)) 8(a)- (e)) short (shorter than maximum body width in most, hind legs up to two-thirds of body length in a few Xyleborini), and flattened in cross-section in most.	P	*Category : EDITORIAL* **(44) United States of America (15 Sep 2023 4:34 PM)**
338	Antennae (Figure 7, and Figure 8(a) to Figure 8(c)) Figures 8(a)- (c)) geniculate (bent or elbowed) with: a long basal segment (the scape); an angled junction with a series of one to seven bead-like antennomeres (the funicle); and a compressed three-segmented apical club (intersegmental sutures visible or not).	P	*Category : EDITORIAL* **(45) United States of America (15 Sep 2023 4:35 PM)**
341	Eyes flush (level) with surface of head (Figure 9(a) to Figure 9(h))(Figures 9(a)-(h)). Eyes of many similar-shaped Bostrichidae protrude.	P	*Category : EDITORIAL* **(46) United States of America (15 Sep 2023 4:36 PM)**
346	Compound eye (Figure (Figures 9(a) to Figure 9(d)) -(d)) sinuate (narrowed at mid-height), ventral half narrower than dorsal part.	P	*Category : EDITORIAL* **(47) United States of America (15 Sep 2023 4:38 PM)**
347	Antennal scape (basal segment) slender elongate, funicle five-segmented, club either obliquely truncate or with sutures on posterior face strongly displaced toward apex (Figure (Figures 8(a) to Figure 8(c)) -(c)).	P	*Category : EDITORIAL* **(48) United States of America (15 Sep 2023 4:39 PM)**
358	Antennal club flattened (thickness less than one-third maximum width) and marked by sutures (Figure (Figures 8(a) to Figure 8(c))(c)). Sutures nearly straight to strongly bisinuate (not procurved).	P	*Category : EDITORIAL* **(49) United States of America (15 Sep 2023 4:40 PM)**
359	Elytral declivity broadly and deeply excavated, with sides acutely elevated and armed by three or more pairs of spines (Figure (Figures 7, Figure 11, Figure 12 and Figure 13). Apices of spines aligned with edge of declivity. Second spine (beginning from dorsal-most part of sloping declivity) acute in lateral profile (acute shape visible in spine next to 'elytral declivity label in Figure 6). Lower edge of concavity with an acutely elevated, explanate transverse ridge separating declivital excavation from apical edge (Figure 12(c)). Apex of declivity is not visible in the dorsal view.	P	*Category : EDITORIAL* **(50) United States of America (15 Sep 2023 4:41 PM)**
367	– Apex of protibiae with multiple spines and denticles (Figure 8(d)), and mesotibiae widest near apex (as in Figure 8(d) and Figure 8(e)) 8(d)-8(e)) _______**3**	P	*Category : EDITORIAL* **(51) United States of America (15 Sep 2023 4:41 PM)**
369	– Eye shallowly sinuate (Figure 9(a)), its lower half distinctly narrower than above; elytral declivity elaborately excavated, with lateral edges armed by three to six pairs of spines (Figure 7, Figures 11to 11 to Figure 13) **4**	P	*Category : EDITORIAL* **(132) European Union (29 Sep 2023 6:53 PM)** Typo: one space missing.
369	– Eye shallowly sinuate (Figure 9(a)), its lower half distinctly narrower than above; elytral declivity elaborately excavated, with lateral edges armed by three to six pairs of spines (Figure 7, Figures 11to 11 to Figure 13) **4**	P	*Category : EDITORIAL* **(64) EPPO (20 Sep 2023 11:06 AM)** Typo: one space missing.

369	– Eye shallowly sinuate (Figure 9(a)), its lower half distinctly narrower than above; elytral declivity elaborately excavated, with lateral edges armed by three to six pairs of spines (Figure 7, Figures 11to Figure 13) 11-13) **4**	P	*Category : EDITORIAL* **(52) United States of America (15 Sep 2023 4:43 PM)**
370	4. Elytral declivity narrowly bisulcate, sides broadly elevated, rounded, and armed by three or fewer pairs of spines; posterior margin of declivity rounded; most shorter than 3 mm **not *Ips***	P	*Category : EDITORIAL* **(133) European Union (29 Sep 2023 6:53 PM)**
370	4. Elytral declivity narrowly bisulcate, sides broadly elevated, rounded, and armed by three or fewer pairs of spines; posterior margin of declivity rounded; most shorter than 3 mm **not *Ips***	P	*Category : EDITORIAL* **(65) EPPO (20 Sep 2023 11:06 AM)**
371	– Elytral declivity broadly, deeply excavated, sides acutely elevated and armed by three or more pairs of spines (Figure 7, Figure 11 and Figure 13), posterior edge of declivity with an acutely elevated (Figure 12(c) and Figure 12(e), circled), transverse ridge separating declivital excavation from elytral apex; most longer than 3 mm **5**	P	*Category : EDITORIAL* **(134) European Union (29 Sep 2023 6:55 PM)**
371	– Elytral declivity broadly, deeply excavated, sides acutely elevated and armed by three or more pairs of spines (Figure 7, Figure 11 and Figure 13), posterior edge of declivity with an acutely elevated (Figure 12(c) and Figure 12(e), circled), transverse ridge separating declivital excavation from elytral apex; most longer than 3 mm **5**	P	*Category : EDITORIAL* **(66) EPPO (20 Sep 2023 11:06 AM)**
371	– Elytral declivity broadly, deeply excavated, sides acutely elevated and armed by three or more pairs of spines (Figure 7, Figure 11 and Figure 13), posterior edge of declivity with an acutely elevated (Figure 12(c) and Figure 12(e), circled), transverse ridge separating declivital excavation from elytral apex; most longer than 3 mm **5**	P	*Category : EDITORIAL* **(53) United States of America (15 Sep 2023 4:43 PM)**
373	– Sutures of antennal club weakly to strongly bisinuate (Figure 8(a) to Figure 8(c)); elytral declivity with all spines in line with edge of declivity (Figure 7, Figure 11 to Figure 13) 13), declivital spine 2 acute in lateral profile; explanate apex of declivity wider than length of declivital spine 2 (Figure 12(c) and Figure 13(f)). Body length 2.1–8.0 mm ***Ips***	P	*Category : EDITORIAL* **(54) United States of America (15 Sep 2023 4:44 PM)**
375	Diagnostic characters of *Ips* spp. adults described in this protocol are based on key characters and diagnostic notes in Cognato (2015). If possible, both males and females from the same gallery should be examined because some diagnostic characters may occur in only one sex. Males and females from the same gallery are most likely to be conspecific. The closely related (Cognato and Sun, 2007) species *I. confusus* and *I. paraconfusus*, and also *I. cembrae* and *I. subelongatus*, are not fully distinguished from each other in the key to species provided in section 4.1.7. This may be important, as these species may differ in their biology	P	*Category : SUBSTANTIVE* **(108) China (28 Sep 2023 5:31 AM)** "Becker M., König s. and Hoppe B., 2021" is the newest reference about the DNA studies on Ips, so add it here.

	and distribution and in whether they are a regulated pest or not (Stauffer *et al*., 2001). Additional examination by *Ips* specialists with appropriate reference collections is required to identify these beetles to species level using morphology (Cognato, 2015). DNA studies have been published to support identification of *I. confusus* and *I. paraconfusus* (Cognato, Rogers and Teale, 1995; Cognato and Sun, 2007) and *I. cembrae* and *I. subelongatus* (Stauffer *et al*., 2001; Cognato and Sun, 2007) and Ips typographus and Ips duplicatus (Becker M., König s. and Hoppe B., 2021) but these studies have not yet been developed into identification methods. In this protocol, 14 species are treated as target species (section 4.1.8) based on their known pest status according to CABI and EPPO (1997). However, other *Ips* can also cause tree mortality, especially if introduced outside their native ranges.		
379	Measurements: elytral disc punctures are measured across the steepest part of the puncture walls on the flatter, anteromesal part of the elytra; interstriae (also on disc) are bounded by the steepest parts of adjacent strial punctures. NT = non-target species.	C	*Category : SUBSTANTIVE* **(109) China (28 Sep 2023 5:33 AM)** It is suggested to define "non-target species" in the text, and explain why those species are "non-target species".
379	Measurements: elytral disc punctures are measured across the steepest part of the puncture walls on the flatter, anteromesal part of the elytra; interstriae (also on disc) are bounded by the steepest parts of adjacent strial punctures. NT = non-target species.	C	*Category : TECHNICAL* **(99) Colombia (27 Sep 2023 4:45 PM)** It is suggested to include an illustration representing the explanation
386	~~4. Pronotal width 1.7 mm or less~~~~***I. apache*** **Lanier**, NT~~Elytral interstrial punctures wider than 0.5 the width of strial punctures; body comparatively smaller, pronotal width 1.3-2.1mm, occurred at the lower altitude (about <2000m) – Elytral interstrial punctures less than 0.5 the width of strial punctures; body relatively longer, pronotal width 1.3-2.5mm; occurred at the higher altitude (about 2000m)	P	*Category : SUBSTANTIVE* **(110) China (28 Sep 2023 5:35 AM)** 1. Gerald N. Lanier, Stephen A. Teale andJuan A. Pajares. 1991. Biosystematics of the genus Ips (Coleoptera: Scolytidae) in North America: review of the Ips calligraphus group. The Canadian Entomologist 123(5):1103-1124. 2. Sarah Smith, Anthony I Cognato. Occurrence of Ips apache Lanier (Coleoptera: Curculionidae: Scolytinae) in Panama. 2009. The Coleopterists Bulletin 63(4): 452-453. 3. Hume B. Douglas, Anthony I. Cognato, Vasily Grebennikov, Karine Savard. 2019. Dichotomous and matrix-based keys to the Ips bark beetles of the World (Coleoptera: Curculionidae: Scolytinae) https://cjai.biologicalsurvey.ca/ Doi:10.3752/cjai.2019.38
387	~~– Pronotal width 2.0 mm or more~~ ~~***I. calligraphus*** **(Germar)**~~	P	*Category : SUBSTANTIVE* **(111) China (28 Sep 2023 5:35 AM)**

409	– Elytral interstriae 2–5 times wider than adjacent strial punctures (Figure 13(d)) non-target species: ***I. hoppingi* Lanier**, some; ***I. montanus* (Eichhoff)**, some	C	*Category : TECHNICAL* **(135) European Union (29 Sep 2023 6:56 PM)** Isn't it rather Figure 14(d) (or Figure 14(c))?
409	– Elytral interstriae 2–5 times wider than adjacent strial punctures (Figure 13(d)) non-target species: ***I. hoppingi* Lanier**, some; ***I. montanus* (Eichhoff)**, some	C	*Category : TECHNICAL* **(67) EPPO (20 Sep 2023 11:06 AM)** Isn't it rather Figure 14(d) (or Figure 14(c))?
414	18. Frons median fovea (concavity above median tubercle) present (Figure 9(c), arrow); elytral interstriae on disc with punctures 0.4–0.5 times diameter of adjacent strial punctures... ***I. grandicollis* (Eichhoff)**, some	C	*Category : SUBSTANTIVE* **(100) Colombia (27 Sep 2023 4:49 PM)** It is suggested to correct the information of this paragraph in order to match what is shown in the figure 9
435	– Elytral declivital spines 1–4 nearly aligned in posterior view (Figure 12(d)) … non-target species: ***I. bonanseai* (Hopkins)**, some females; ***I. perturbatus* (Eichhoff)**, some	C	*Category : TECHNICAL* **(136) European Union (29 Sep 2023 6:57 PM)** Isn't it rather Figure 13(d)?
435	– Elytral declivital spines 1–4 nearly aligned in posterior view (Figure 12(d))........ …............ non-target species: ***I. bonanseai* (Hopkins)**, some females; ***I. perturbat***	C	*Category : SUBSTANTIVE* **(101) Colombia (27 Sep 2023 4:58 PM)** This paragraph seems to refer to figure 13(d) because figure 12(d) is not in posterior view
435	– Elytral declivital spines 1–4 nearly aligned in posterior view (Figure 12(d)) … non-target species: ***I. bonanseai* (Hopkins)**, some females; ***I. perturbatus* (Eichhoff)**, some	C	*Category : TECHNICAL* **(68) EPPO (20 Sep 2023 11:06 AM)** Isn't it rather Figure 13(d)?
482	52. **Elytral declivity greasy, and armed with four spines at two sides**~~Elytral declivity with matt surface~~_____ ~~(Figure 12(d))~~ ***I. typographus* (Linnaeus)**, most	P	*Category : SUBSTANTIVE* **(112) China (28 Sep 2023 5:36 AM)** 1. EPPO 2020. Ips typographus (IPSXTY)[Datasheet]| EPPO Global Database 2. CABI 2021. Ips typographus (eight-toothed bark beetle) | CABI Compendium (cabidigitallibrary.org)
517	*I. bonanseai* (Hopkins, 1906). Principal hosts: *Pinus* spp. Differs from *I. pini* in that the median frontal tubercle is connected to the epistomal tubercle, and ~~it is a~~ in its smaller size, 2.9–3.4 mm.	P	*Category : EDITORIAL* **(137) European Union (29 Sep 2023 7:02 PM)** Better English? (see paragraph [531] about I. aminitus)
517	*I. bonanseai* (Hopkins, 1906). Principal hosts: *Pinus* spp. Differs from *I. pini* in that the median frontal tubercle is connected to the epistomal tubercle, and ~~it is a~~ in its smaller size, 2.9–3.4 mm.	P	*Category : EDITORIAL* **(69) EPPO (20 Sep 2023 11:06 AM)** Better English? (see paragraph [531] about I. aminitus)

535	*I. typographus* (Linnaeus, 1758) (Figure 12(d)). Principal hosts: *Picea* spp., but frequently found in *Pinus sylvestris* in Europe. Diagnosis: *I. typographus* has four spines on the elytral declivity. Body length: 3.5–5.5 mm. This species differs from most other species in its dull elytral declivity (in most specimens) and impunctate interstriae on the basal half of the elytral disc. *I. nitidus* can be distinguished from most *I. typographus* specimens by its shiny declivity, and all specimens can be distinguished morphologically by examining the alignment of ~~he~~ the spines of the elytral declivity and the relative size of elytral interstrial punctures (section 4.1.7 couplet 54). It differs from the morphologically similar Himalayan species, North American *Picea*-feeding species and *I. woodi* in having a major median frontal tubercle.	P	*Category : TECHNICAL* **(138) European Union (29 Sep 2023 7:04 PM)** Addition, and typo.
535	*I. typographus* (Linnaeus, 1758) (Figure 12(d)). Principal hosts: *Picea* spp., but frequently found in *Pinus sylvestris* in Europe. Diagnosis: *I. typographus* has four spines on the elytral declivity. Body length: 3.5–5.5 mm. This species differs from most other species in its dull elytral declivity (in most specimens) and impunctate interstriae on the basal half of the elytral disc. *I. nitidus* can be distinguished from most *I. typographus* specimens by its shiny declivity, and all specimens can be distinguished morphologically by examining the alignment of ~~he~~ the spines of the elytral declivity and the relative size of elytral interstrial punctures (section 4.1.7 couplet 54). It differs from the morphologically similar Himalayan species, North American *Picea*-feeding species and *I. woodi* in having a major median frontal tubercle.	P	*Category : EDITORIAL* **(70) EPPO (20 Sep 2023 11:06 AM)** Typo
563	**6. Contact points for further information**	C	*Category : SUBSTANTIVE* **(95) New Zealand (26 Sep 2023 12:08 AM)** Having email addresses of individuals doesn't future proof the protocol, what if people moved on or changed their email addresses? is there a better way of providing contact details?
566	Netherlands Food and Consumer Product Safety Authority (NVWA), Netherlands Institute for Vectors Invasive Plants and Plants Health (NIVIP), Geertjesweg 15, 6706 EA, Wageningen, Netherlands (Bas van de Meulengraaf; email: ~~NPPO- NL, Ministry of Economic Affairs, Netherlands Food and Consumer Product Safety Authority (NVWA), National Reference Centre, Geertjesweg 15, 6706 EA, Wageningen, Netherlands (Brigitta Wessels-Berk~~; ~~email~~tel.: (+31) 8 82232402)~~.; tel.: (+31) 3 17496835 or (+31) 8 82232941).~~	P	*Category : EDITORIAL* **(139) European Union (29 Sep 2023 7:08 PM)** Due to retirement and organisational name changes the contact details are ought to be changed
566	Netherlands Food and Consumer Product Safety Authority (NVWA), Netherlands Institute for Vectors Invasive Plants and Plants Health (NIVIP), Geertjesweg 15, 6706 EA, Wageningen, Netherlands (Bas van de Meulengraaf;	P	*Category : EDITORIAL* **(71) EPPO (20 Sep 2023 11:06 AM)** Due to retirement and organisational name changes the contact details are

	email: NPPO NL, Ministry of Economic Affairs, Netherlands Food and Consumer Product Safety Authority (NVWA), National Reference Centre, Geertjesweg 15, 6706 EA, Wageningen, Netherlands (Brigitta Wessels-Berk; email: ; tel.: (+31) 3 17496835 or (+31) 8 82232941)82232402).		ought to be changed
568	Norwegian Institute of Bioeconomy Research, Division of Biotechnology and Plant Health, Box 115, N-1431 Ås, Norway (Torstein Kvamme; email: ; tel.: (+47) 915 73942)900 85153 and Karl Thunes; email: karl.thunes@nibio.no; tel.: (+47) 456 00856)).	P	*Category : EDITORIAL* **(140) European Union (29 Sep 2023 7:09 PM)**
568	Norwegian Institute of Bioeconomy Research, Division of Biotechnology and Plant Health, Box 115, N-1431 Ås, Norway (Torstein Kvamme; email: ; tel.: (+47) 915 73942)900 85153 and Karl Thunes; email: karl.thunes@nibio.no; tel.: (+47) 456 00856).	P	*Category : EDITORIAL* **(72) EPPO (20 Sep 2023 11:06 AM)**
569	Ministry of Agriculture and Rural Development (MARD), Plant Protection Department (PPD), Plant Quarantine Diagnostic Centre (PQDC), Viet Nam (Hoang (Thoa Kim ThoaHoang; email: or).	P	*Category : EDITORIAL* **(141) European Union (29 Sep 2023 7:10 PM)**
569	Ministry of Agriculture and Rural Development (MARD), Plant Protection Department (PPD), Plant Quarantine Diagnostic Centre (PQDC), Viet Nam (Hoang (Thoa Kim ThoaHoang; email: or).	P	*Category : EDITORIAL* **(73) EPPO (20 Sep 2023 11:06 AM)**
573	This protocol was revised by Hume Douglas (Agriculture and Agri-Food Canada, Canada (see preceding section), Alfayo Ombuya (Kenya Plant Health Inspectorate Service, Kenya) and Thoa Kim Hoang (Ministry of Agriculture and Rural Development, Viet Nam (see preceding section)). The first draft of this protocol was written by Hume Douglas (Agriculture and Agri-Food Canada, Canada), with content from Anthony I. Cognato (Michigan State University, United States of America (see preceding section)) and editing by Brigitta Wessels-Berk (NVWA, The Netherlands) and Norman Barr (United States Department of Agriculture, Animal and Plant Health Inspection Service, United States of America). K. Savard (Agriculture and Agri-Food Canada, Canada) provided additional imagesThis protocol was revised by Hume Douglas (Agriculture and Agri-Food Canada, Canada (see preceding section), Alfayo Ombuya (Kenya Plant Health Inspectorate Service, Kenya), and Thoa Kim Hoang (Ministry of Agriculture and Rural Development, Viet Nam (see preceding section)). The first draft of this protocol was written by Hume Douglas (Agriculture and Agri-Food Canada, Canada), with content from Anthony I. Cognato (Michigan State University, United States of America (see preceding section)) and editing by Brigitta Wessels-Berk (NVWA, Kingdom of the Netherlands (see preceding section)) and Norman Barr (United States Department of Agriculture, Animal and Plant Health Inspection Service, United	P	*Category : EDITORIAL* **(142) European Union (29 Sep 2023 7:11 PM)** Created by merging other changes together.

	~~States of America). K. Savard (Agriculture and Agri-Food Canada, Canada) provided additional images.~~		
573	This protocol was revised by Hume Douglas (Agriculture and Agri-Food Canada, Canada (see preceding section), Alfayo Ombuya (Kenya Plant Health Inspectorate Service, Kenya) and Thoa Kim Hoang (Ministry of Agriculture and Rural Development, Viet Nam (see preceding section)). The first draft of this protocol was written by Hume Douglas (Agriculture and Agri-Food Canada, Canada), with content from Anthony I. Cognato (Michigan State University, United States of America (see preceding section)) and editing by Brigitta Wessels-Berk (NVWA, The Netherlands) and Norman Barr (United States Department of Agriculture, Animal and Plant Health Inspection Service, United States of America). K. Savard (Agriculture and Agri-Food Canada, Canada) provided additional images.~~This protocol was revised by Hume Douglas (Agriculture and Agri-Food Canada, Canada (see preceding section), Alfayo Ombuya (Kenya Plant Health Inspectorate Service, Kenya), and Thoa Kim Hoang (Ministry of Agriculture and Rural Development, Viet Nam (see preceding section)). The first draft of this protocol was written by Hume Douglas (Agriculture and Agri-Food Canada, Canada), with content from Anthony I. Cognato (Michigan State University, United States of America (see preceding section)) and editing by Brigitta Wessels-Berk (NVWA, Kingdom of the Netherlands (see preceding section)) and Norman Barr (United States Department of Agriculture, Animal and Plant Health Inspection Service, United States of America). K. Savard (Agriculture and Agri-Food Canada, Canada) provided additional images.~~	P	*Category : EDITORIAL* **(75) EPPO (20 Sep 2023 11:06 AM)** Created by merging other changes together
573	This protocol was revised by Hume Douglas (Agriculture and Agri-Food Canada, Canada (see preceding section), Alfayo Ombuya (Kenya Plant Health Inspectorate Service, Kenya), and Thoa Kim Hoang (Ministry of Agriculture and Rural Development, Viet Nam (see preceding section)). The first draft of this protocol was written by Hume Douglas (Agriculture and Agri-Food Canada, Canada), with content from Anthony I. Cognato (Michigan State University, United States of America (see preceding section)) and editing by Brigitta Wessels-Berk (NVWA, Kingdom of the Netherlands (see preceding section)) and Norman Barr (United States Department of Agriculture, Animal and Plant Health Inspection Service, United States of America). K. Savard (Agriculture and Agri-Food Canada, Canada) provided additional images.	C	*Category : EDITORIAL* **(74) EPPO (20 Sep 2023 11:06 AM)** Consistency to ensure with section 6 (Contact points for further information).
578	**Breshears, D.D., Cobb, N.S., Rich, P.M., Price, K.P., Allen, C.D., Balice, R.G., Romme, W.H.** ***et al.*** 2005. Regional vegetation die-off in response to global-change-type drought. *Proceedings of the National Academy of Sciences of*	P	*Category : SUBSTANTIVE* **(113) China (28 Sep 2023 5:37 AM)** ADD.

	the United States of America, 102: 15144–15148. Becker M., König S. & Hoppe B. 2021. A simple PCR-based approach for rapid detection of Ips typographus and Ips duplicatus in the presence of (associated) symbionts and parasites. Journal of Plant Diseases and Protection. 128: 527-534		
580	~~**CABI**. 2022. *Ips calligraphus*. In: *Crop protection compendium*. Wallingford, UK. [Cited 6 January 2022].~~ CABI. 2022. Ips calligraphus (six-spined ips), CABI Compendium. CABI International.. Wallingford, UK. [Cited 6 January 2022]. www.cabi.org/cpc/datasheet/28819	P	*Category : SUBSTANTIVE* **(114) China (28 Sep 2023 5:40 AM)**
592	~~**Forsse, E. & Solbreck, C.** 1985. Migration in the bark beetle *Ips typographus* L.: duration, timing and height of flight. *Zeitschrift für Angewandte Entomologie*, 100: 47–57.~~Because delete the reference above, I also delete it here.	P	*Category : SUBSTANTIVE* **(115) China (28 Sep 2023 5:41 AM)**
605	**Meng, X.J., Lu, Q., Liu, X.W., Jiao, X.J., Liang, J. & Zhang, X.Y.** 2015. The species specific associations between *Ips subelongatus* and ophiostomatoid fungi. *Acta Ecologica Sinica*, 35: 313–323 (in Chinese with English abstract).	P	*Category : SUBSTANTIVE* **(116) China (28 Sep 2023 5:41 AM)** add
606	**Pfeffer, A.** 1995. *Zentral- und westpaläarktische Borken- und Kernkäfer (Coleoptera: Scolytidae, Platypodidae)*. Basel, Switzerland, Pro Entomologia, Naturhistorisches Museum. 310 pp. Platonoff, S., 1940: Beobachtungen über windgetriebene Insekten im Petsamofjord an der finnischen Eismeerkuste. Notül. Ent. 20, 10-13.	P	*Category : SUBSTANTIVE* **(117) China (28 Sep 2023 5:42 AM)** add
611	**Wermelinger, B.** 2004. Ecology and management of the spruce bark beetle *Ips typographus:* a review of recent research. *Forest Ecology and Management*, 202: 67–82. https://doi.org/10.1016/j.foreco.2004.07.01 ~~https://doi.org/10.1016/j.foreco.2004.07.01~~	P	*Category : EDITORIAL* **(143) European Union (29 Sep 2023 7:13 PM)** Not underlined.
611	**Wermelinger, B.** 2004. Ecology and management of the spruce bark beetle *Ips typographus:* a review of recent research. *Forest Ecology and Management*, 202: 67–82. ~~https://doi.org/10.1016/j.foreco.2004.07.01~~https://doi.org/10.1016/j.foreco.2004.07.01	P	*Category : EDITORIAL* **(76) EPPO (20 Sep 2023 11:06 AM)** Not underlined.