



AFRICAN FORUM
ON URBAN FORESTS

2nd African Forum On Urban Forests

Green Horizons: Shaping the Future Resilience of African Cities through Urban Forests

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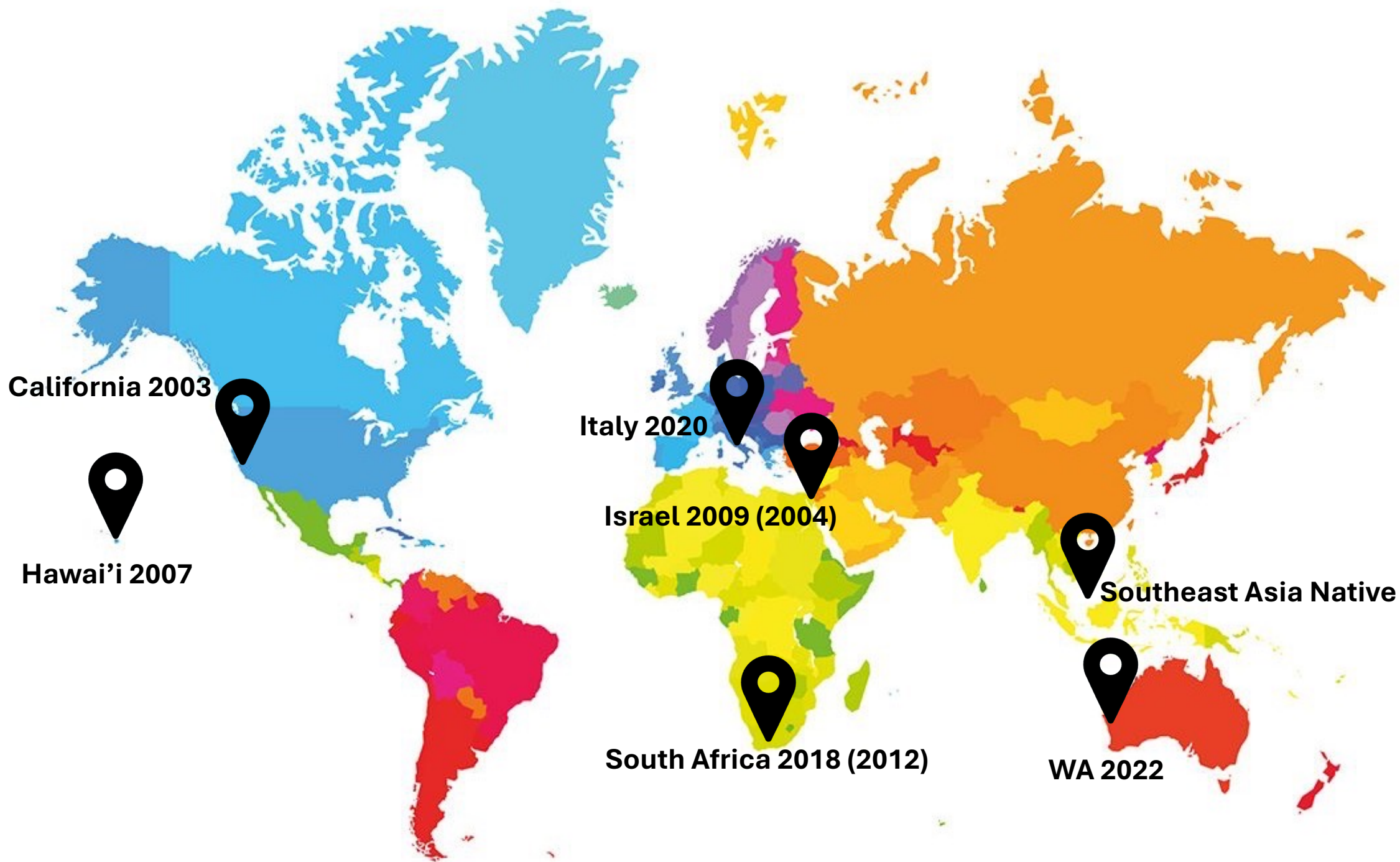
Protecting Africa's urban forests from insect pests and diseases: the case of the polyphagous shot hole borer in South Africa

Brett P. Hurley* and Bernard Slippers



The polyphagous shot hole borer (PSHB), *Euwallacea fornicatus*, and its fungal symbiont, *Fusarium euwallaceae*





PSHB in South Africa



- Spread to all provinces excluding Limpopo
- Reported to infest more than 161 tree species, 83 of which are reproductive hosts (*data from April 2023*)





Paap et al 2018



ZW de Beer

Current PSHB Control

- **Chemicals**

- Short term solution
- Requires continued re-application
- Costly
- Can negatively affect the tree

- **Tree (branch) removal**

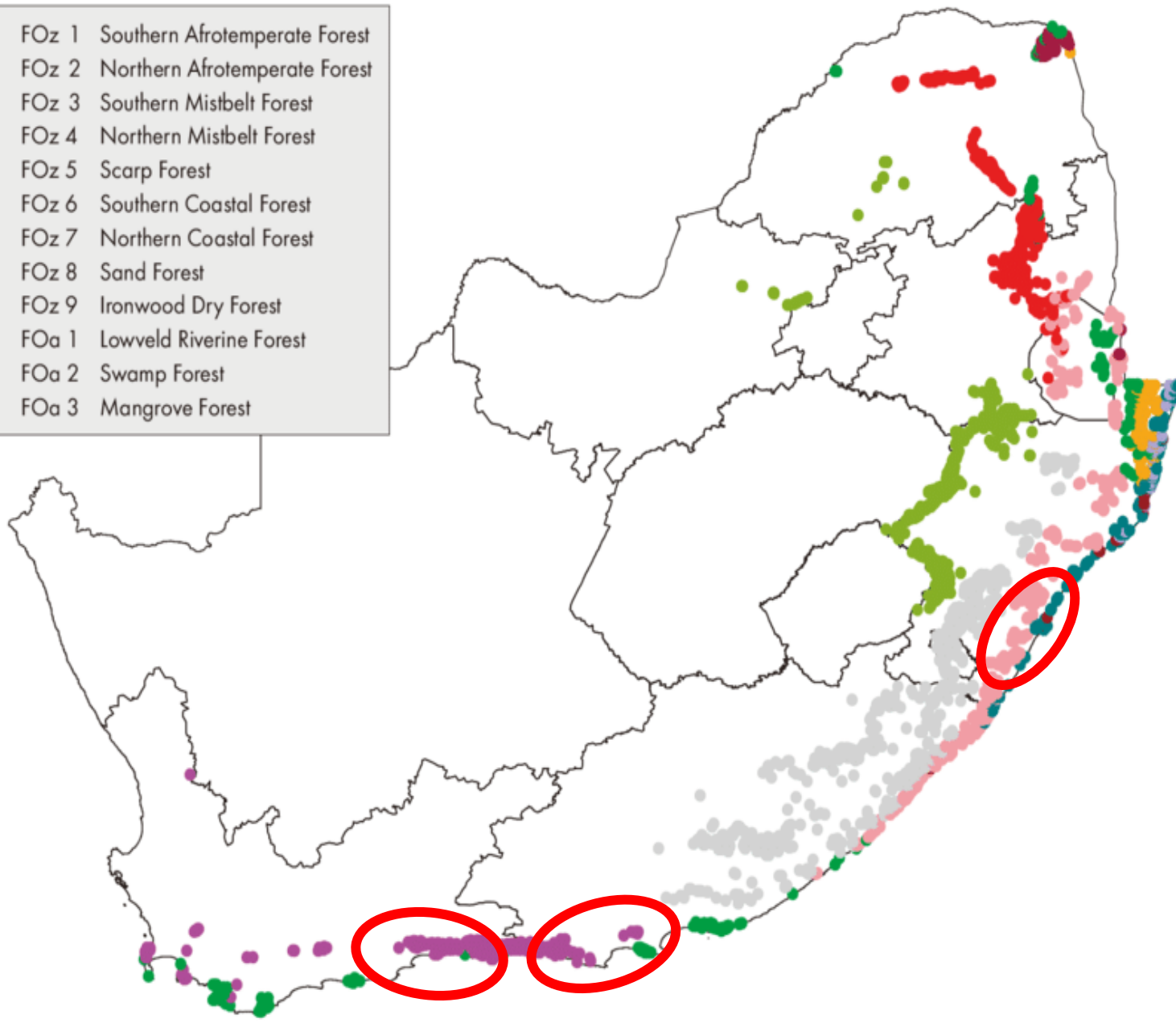
- Chipping (pieces smaller than 5 cm)
 - Composting
 - Burning
 - Solarization

- **Biological control**

- In development
- Requires funding for research



- FOz 1 Southern Afrotemperate Forest
- FOz 2 Northern Afrotemperate Forest
- FOz 3 Southern Mistbelt Forest
- FOz 4 Northern Mistbelt Forest
- FOz 5 Scarp Forest
- FOz 6 Southern Coastal Forest
- FOz 7 Northern Coastal Forest
- FOz 8 Sand Forest
- FOz 9 Ironwood Dry Forest
- FOa 1 Lowveld Riverine Forest
- FOa 2 Swamp Forest
- FOa 3 Mangrove Forest



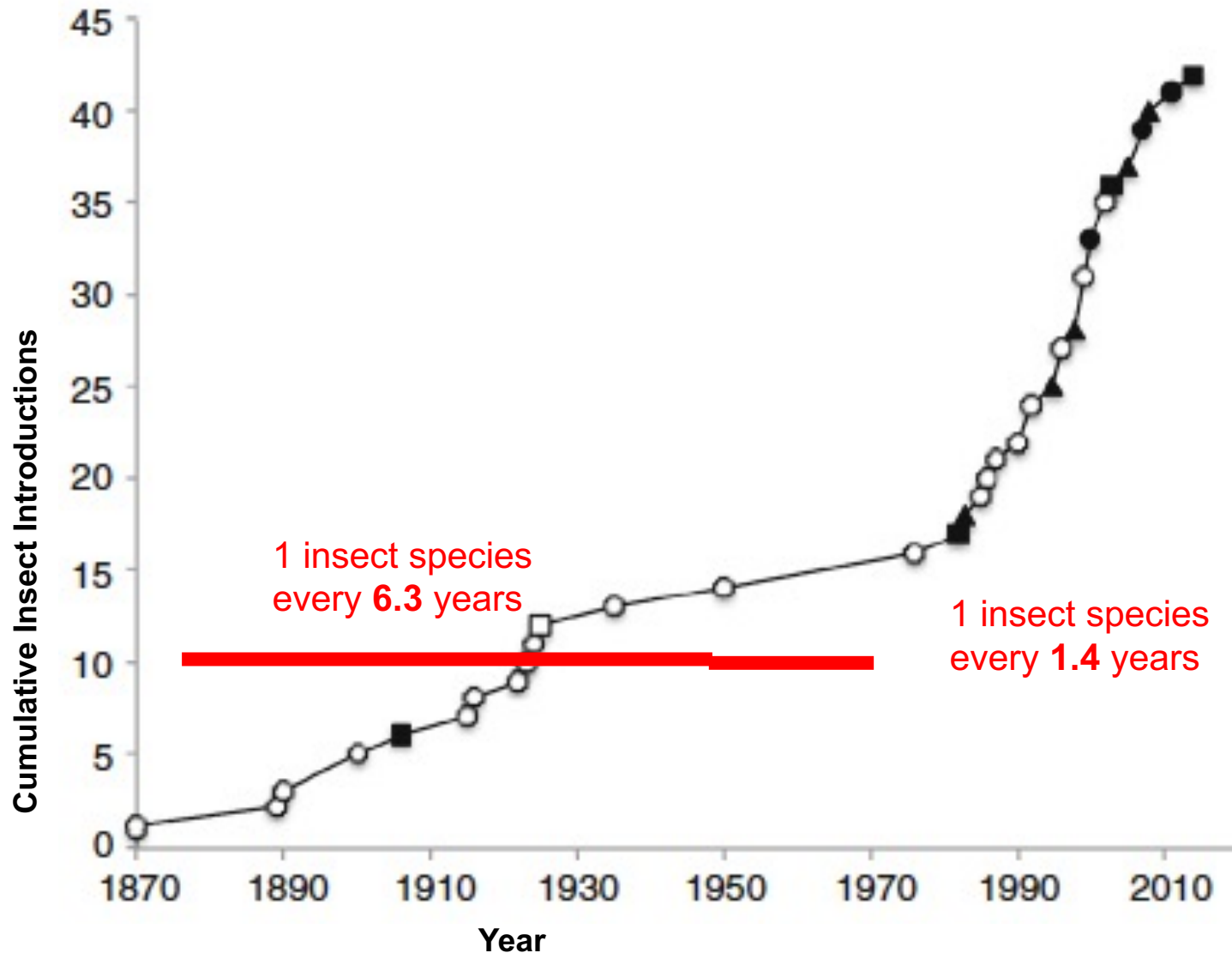


Northern Vietnam



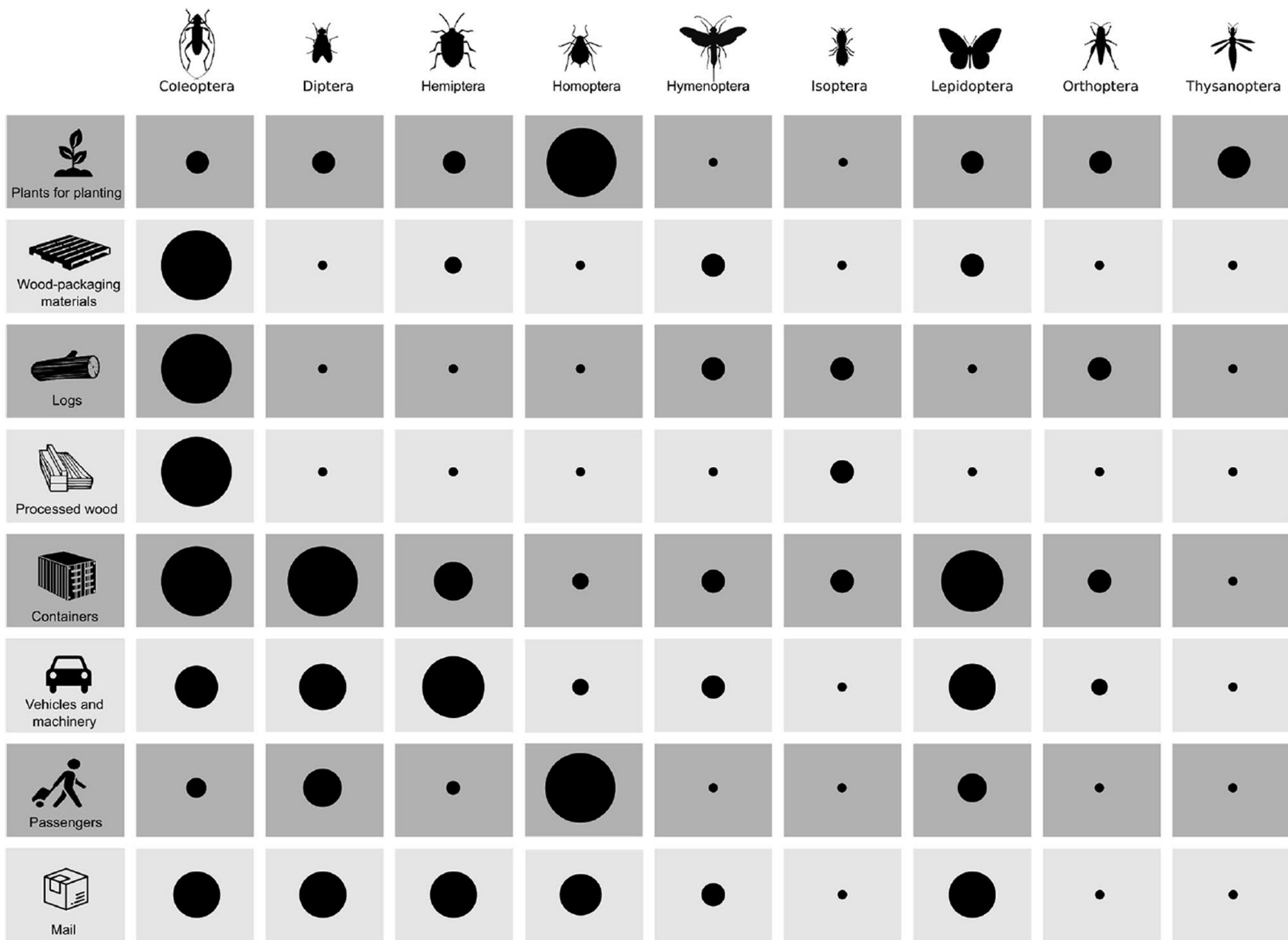


Increasing rate of introduction of invasive pests



Hurley et al. 2016
Biological Invasions





Pathways of introduction of invasive pests

Meurisse et al. 2019
Journal of Pest Science



Initial introduction facilitates spread within the continent

	Host*	West and Central Africa					Eastern Africa					Southern Africa									
		G	C	CA	D	S	Bu	E	K	R	T	U	Es	L	Ma	Md	Mo	Mr	SA	Za	Zi**
<i>Blastopsylla occidentalis</i>	E		●				●		●	●						●		●	●		
<i>Cinara cronartii</i>	E								●										●		●
<i>Ctenarytaina eucalypti</i>	E								●										●		
<i>Eulachnus rileyi</i>	P				●				●		●	●	●		●				●	●	●
<i>Glycaspis brimblecombei</i>	E							●	●	●	●	●	●		●	●	●	●	●	●	●
<i>Gonipterus</i> sp. n. 2	E								●	●		●	●	●	●	●	●	●	●		●
<i>Hyblaea puera</i>	T											●			●				●		
<i>Hylastes angustatus</i>	P												●						●		●
<i>Hylurgus ligniperda</i>	P												●						●		●
<i>Leptocybe invasa</i>	E	●				●		●	●	●	●	●	●		●	●	●	●	●	●	●
<i>Ophelimus maskelli</i>	E							●	●	●					●	●		●	●		
<i>Orthotomicus erosus</i>	P												●						●		
<i>Phoracantha</i> spp.	E												●	●	●		●	●	●	●	●
<i>Pineus boernerii</i>	P								●		●	●			●				●		●
<i>Pissodes</i> sp.	P												●						●		
<i>Sirex noctilio</i>	P												●						●		
<i>Spondyliaspis</i> c.f. <i>plicatuloides</i>	E								●				●				●		●		
<i>Thaumastocoris peregrinus</i>	E			●	●				●	●	●	●			●	●	●	●	●	●	●
<i>Trachymela tinticollis</i>	E																		●		
<i>Cinara cupressi</i>	Cu							●	●		●	●			●				●		●

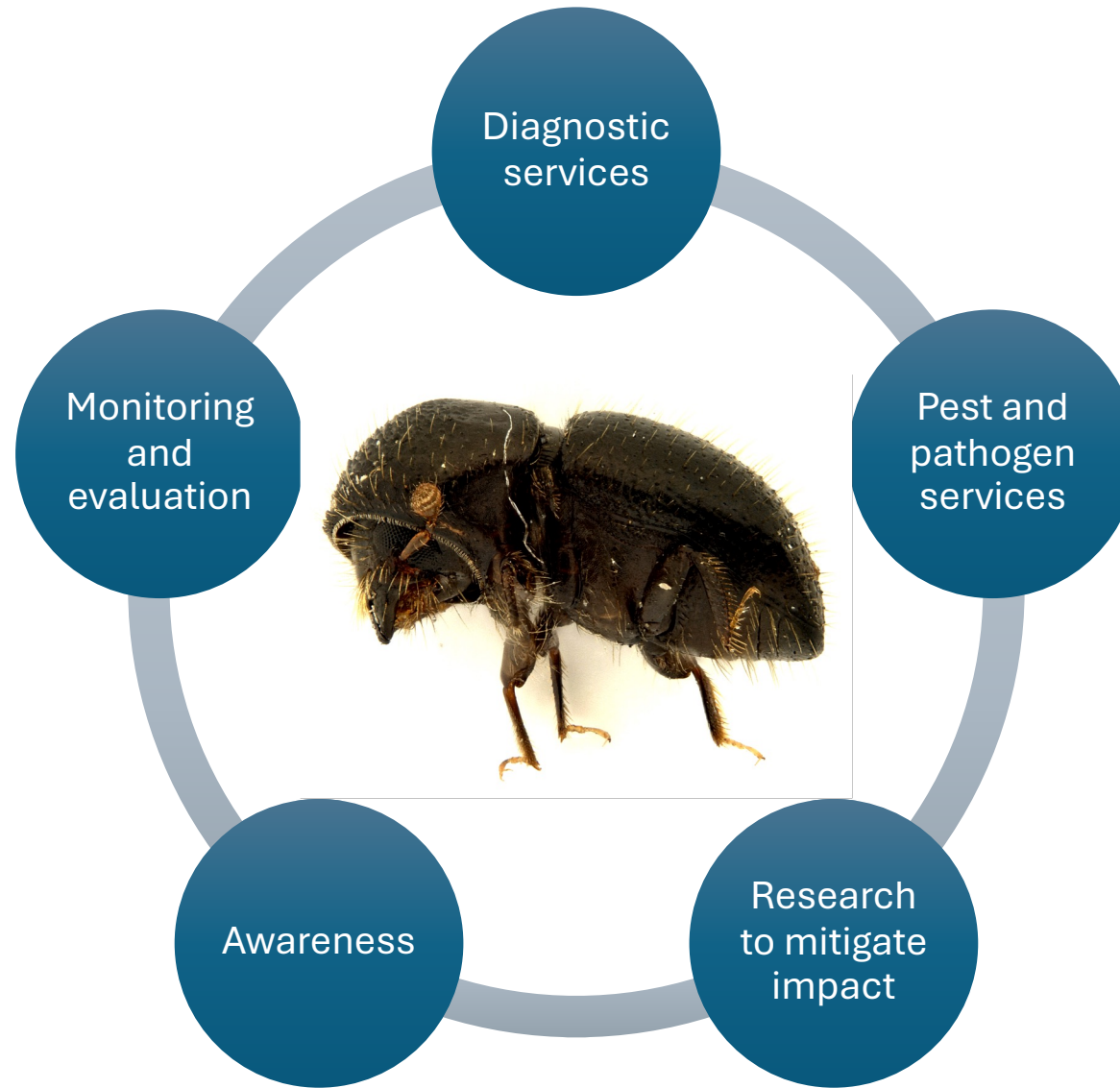
*Cu=Cupressus , E= Eucalyptus , P=Pinus , T=Tectona

**B=Benin, Bu=Burundi, C=Cameroon, CA=Central African Republic, D=Democratic Republic of Congo, E=Ethiopia, Es=Eswathini, G=Ghana, K=Kenya, L=Lesotho, Ma=Malawi, Md=Madagascar, Mo=Mozambique, Mr=Mauritius, R=Rwanda, Re=Reunion, S=Sierra Leone, SA=South Africa, T=Tanzania, U=Uganda, Za=Zambia, Zi=Zimbabwe

Adapted from Hurley et al.
2017 *Biological Invasions*



An Integrated Urban Forest Protection Strategy



To ensure forest protection, productivity, profitability and sustainability

Forest Invasive Species Network for Africa (FISNA)



Food and Agriculture Organization
of the United Nations



Coordinate the collation and dissemination of information relating to forest invasive species in sub-Saharan Africa for sustainable forest management and conservation of biodiversity

In conclusion ...

- Insect pests and diseases pose a substantial threat to the sustainability and health of natural and managed forests, including urban forests
- Urban forests in Africa are particularly vulnerable to insect pests and diseases because most countries have little capacity or resources assigned to manage this threat
- In addition, urban forests are ideal bridgeheads for invasive pests and pathogens within and between countries
- An integrated urban forest protection strategy is needed, which should include investment in research and implementation of prevention and control methods, ...
- But also the development of relevant policies (and including urban forests in broader biosecurity initiatives), and networks to facilitate knowledge sharing within and between countries





Acknowledgements





UNIVERSITEIT VAN PRETORIA
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Thank You.

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