

1 **Appendix S2.** Categorization of pathways for the introduction of alien species developed  
2 through the Global Invasive Alien Species Information Partnership (GIASIPartnership) in  
3 recognition of the need for free and open access to standardized invasive alien species and  
4 pathway information globally. This pathway classification has recently been adopted by the  
5 CBD (<http://www.cbd.int/doc/meetings/sbstta/sbstta-18/official/sbstta-18-09-add1-en.pdf>;  
6 Decision XII/17 CBD COP12).

Category	Subcategory
RELEASE IN NATURE (1)	Biological control
	Erosion control/ dune stabilization (windbreaks, hedges...)
	Fishery in the wild
	Hunting in the wild
	Landscape/flora/fauna improvement
	Conservation introduction
	Release in nature for use (other than above, e.g. medical use, fur..)
	Other Intentional release
ESCAPE FROM CONFINEMENT (2)	Agriculture (including biofuel feedstosks)
	Aquaculture/mariculture
	Botanical garden/zoo/aquaria (excluding domestic aquaria)
	Farmed animals
	Forestry
	Fur farms
	Horticulture
	Ornamental purpose other than horticulture
	Pet/aquarium/terrarium species
	Research (in facilities)
	Live food and live bait
	Other escape from confinement
	TRANSPORT – CONTAMINANT (3)
Contaminated bait	
Food contaminant	
Contaminant on animals (except species transported by host/vector)	
Contaminant on plants (except species transported by host/vector)	
Parasites on animals	
Parasites on plants	
Seed contaminant	

	Timber trade
	Transportation of habitat material (soil, vegetation...)
TRANSPORT – STOWAWAY (4)	Angling/fishing aquaculture equipment
	Container/bulk
	Hitchhikers in or on plane
	Hitchhikers on ship/boat
	Machinery/equipment
	People and their luggages/equipment
	Ship/boat ballast water
	Ship/boat hull fouling
	Vehicles (car, trains...)
	Other means of transport
CORRIDOR (5)	Interconnected waterways/basins/seas
	Tunnels and land bridges
UNASSISTED (6)	Natural dispersal across borders of alien species that have been introduced through pathways 1 to 5

1

2 Notes:

3 (1) **Release** in nature refers to the intentional introduction of live alien organisms for the  
4 purpose of human use in the natural environment. Examples include for biological  
5 control, erosion control (and dune stabilization), for fishing or hunting in the wild;  
6 hunting in the wild; landscape “improvement” and introduction of threatened  
7 organisms for conservation purposes.

8 (2) **Escape** refers to the movement of (potentially) invasive alien species from  
9 confinement (e.g.: in zoos, aquaria, botanic gardens; agriculture, horticulture,  
10 aquaculture and mariculture facilities; scientific research or breeding programmes; or  
11 from keeping as pets) into the natural environment. Through this pathway the  
12 organisms were initially purposefully imported or otherwise introduced into the  
13 confined conditions, but then escaped from such confinement, unintentionally. This  
14 may include accidental or irresponsible release of live organisms from confinement.

15 (3) Transport – **Contaminant** refers to the unintentional movement of live organisms as  
16 contaminants of commodity that are intentionally transferred through international  
17 trade, development assistance, emergency relief. This includes, in contaminants,  
18 including pests and diseases, of food, seeds, timber and other products of agriculture,  
19 forestry, and fisheries.

20 *Related to a transport Vector:*

21 (4) Transport – **Stowaway** refers to the moving of live organisms attached to transporting  
22 vessels and associated equipment and media. The physical means of Transport-  
23 stowaway include various conveyances, ballast water and sediments, bio-fouling of  
24 ships, boats, offshore oil and gas platforms and other water vessels, dredging, angling

1 or fishing equipment, civil aviation, sea and air containers. Stowaways of any other  
2 vehicles and equipment for human activities, in military activities, emergency relief,  
3 aid and response, international development assistance, waste dispersal, recreational  
4 boating, tourism (e.g. tourists and their luggage) are also included under this pathway.

#### 5 ***Dispersal mechanism***

6 (5) **Corridor** refers to movement of alien organisms into a new region following the  
7 construction of transport infrastructures in whose absence spread would not have been  
8 possible. Such trans-biogeographical corridors include international canals  
9 (connecting river catchments and seas) and trans-boundary tunnels linking mountain  
10 valleys or oceanic islands.

11 **Unaided** refers to the secondary *natural* dispersal of invasive alien species that have been  
12 introduced by means of any of the foregoing pathways.

13  
14 The standard categorization has been produced based on relevant literature (e.g. Molnar et al.  
15 2008, Hulme et al., 2008, Panov et al., 2009, Wilson et al., 2008) and on main online  
16 databases (IUCN SSC Global Invasive Species Database, CABI Invasive Species  
17 Compendium, DAISIE). It has been tested for consistency with international instruments and  
18 programs (decisions of the Convention on Biological Diversity, recommendations and  
19 International Standard Phytosanitary Measures). The categorization has been presented to the  
20 Convention on Biological Diversity with a note by the Executive Secretary of the Convention  
21 (<https://www.cbd.int/doc/meetings/sbstta/sbstta-18/official/sbstta-18-09-add1-en.pdf>). With  
22 decision XII/17 the Conference of the Parties of the Convention on Biological Diversity calls  
23 Member States to make use of the categorization for their prioritization and management of  
24 pathways.

#### 26 **References**

27 Molnar JL, Gamboa RL, Revenga C, Spalding MD 2008. Assessing the global threat of  
28 invasive species to marine biodiversity. *Frontiers in Ecology and the Environment* 6: 485–  
29 492.

30 Hulme PE, et al. 2008. Grasping at the routes of biological invasions: a framework for  
31 integrating pathways into policy. *Journal of Applied Ecology* 45: 323–341.

32 Panov VE, et al. 2009. Assessing the risks of aquatic species invasions via European inland  
33 waterways: from concepts to environmental indicators. *Integrative Environmental*  
34 *Assessment and Management* 5: 110–126.

35 Wilson JRU, Dormontt EE, Prentis PJ, Lowe AJ, Richardson DM 2009. Something in the

1 way you move: dispersal pathways affect invasion success. Trends in Ecology and  
2 Evolution 24: 136–144.

3