

Supplementary Table 2. Matrix of traditional pollination syndrome traits to score the 54 *Oenothera* species. In section *Gaura*, subsections are given after the slash.

Section	Species	Color at anthesis							Brightness							Scent							Corolla Shape							Floral Tubes				Orientation		Anthesis Time		Symmetry		Nectar	
		yellow	white	red	pink	green	purple	brown	blue	Vivid	Drab	sweet	fruity	fresh	musty	sour	decay	none	trap	dish	bell/funnel	brush	gullet	flag	tube	short tube	long tube	pendant	upright	horizontal	Day	Night	Actinomorphic	Zygomorphic	Nectar presence	Nectar location					
<i>Gaunopsis</i>	<i>O. canescens</i>	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	0	1	1	0	1	0	1	1				
<i>Hartmannia</i>	<i>O. deserticola</i>	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	1	0	1	0	1	1				
<i>Hartmannia</i>	<i>O. platanorum</i>	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	1	0	1	0	1	0	1	0	0	0				
<i>Hartmannia</i>	<i>O. rosea</i>	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	1	0	1	0	0	0				
<i>Hartmannia</i>	<i>O. speciosa</i>	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	1	1	1	0	1	1	1	1	0	1	1				
<i>Hartmannia</i>	<i>O. texensis</i>	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	1	1	0	1	0	1	0	1	0	0	0				
<i>Xanthocoryne</i>	<i>O. epilobifolia</i> s. <i>epilobifolia</i>	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	1	1	0	1	1	1				
<i>Xanthocoryne</i>	<i>O. epilobifolia</i> s. <i>cupifera</i>	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	1	0	1	0	1	0	1	0	1	1				
<i>Xanthocoryne</i>	<i>O. multicaulis</i>	1	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	1	0	1	0	0	0				
<i>Xanthocoryne</i>	<i>O. seiffritzii</i>	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	1	0	1	0	1	0	0	0				
<i>Leucocoryne</i>	<i>O. dissecta</i>	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	1	0	1	0	1	1	1				
<i>Leucocoryne</i>	<i>O. kauhiana</i>	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	0	1	1	0	0	0				
<i>Leucocoryne</i>	<i>O. laevis-julianae</i>	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	0	1	1	0	0	0				
<i>Leucocoryne</i>	<i>O. ortizabae</i>	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	0	1	1	0	0	0				
<i>Leucocoryne</i>	<i>O. tetraptera</i>	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	0	1	1	0	0	0				
<i>Paradoxos</i>	<i>O. havardii</i>	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	0	1	1	0	1	1				
<i>Megapterium</i>	<i>O. bruchycarpa</i>	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	0	1	1	0	1	1				
<i>Megapterium</i>	<i>O. coryi</i>	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	0	1	1	0	1	1				
<i>Megapterium</i>	<i>O. havardii</i>	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	0	1	1	0	1	1				
<i>Megapterium</i>	<i>O. macrocarpa</i> s. <i>macrocarpa</i>	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	0	1	1	0	1	1				
<i>Penstaphylum</i>	<i>O. linifolia</i>	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	1	0	1	0	0	0				
<i>Kneflia</i>	<i>O. fruticosa</i> s. <i>fruticosa</i>	1	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	1	0	1	0	1	1				
<i>Kneflia</i>	<i>O. fruticosa</i> s. <i>glauca</i>	1	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	1	0	1	0	1	1				
<i>Kneflia</i>	<i>O. riparia</i>	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	1	0	1	0	1	1				
<i>Kneflia</i>	<i>O. parviflora</i>	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	1	0	1	0	0	0				
<i>Kneflia</i>	<i>O. pilosella</i>	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	1	0	1	0	1	1				
<i>Kneflia</i>	<i>O. sessilis</i>	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	1	0	1	0	1	1				
<i>Kneflia</i>	<i>O. spachiana</i>	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	1	0	1	0	0	0				
<i>Gaura/Gauridium</i>	<i>O. anomala</i>	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	1	1	0	1	1	1				
<i>Gaura/Stenophyon</i>	<i>O. glaucifolia</i>	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	1	0	1	0	1	0	0			
<i>Gaura/Schizocarya</i>	<i>O. curviflora</i>	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0				
<i>Gaura/Xenogaura</i>	<i>O. arida</i>	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0				
<i>Gaura/Campogaura</i>	<i>O. suffrutescens</i>	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	1	0	1	0	0				
<i>Gaura/Campogaura</i>	<i>O. boquillensis</i>	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	1	0	1	0	0				
<i>Gaura/Sipogaura</i>	<i>O. cinerea</i> s. <i>cinerea</i>	0	1	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	1	0	1	0	0				
<i>Gaura/Sipogaura</i>	<i>O. cinerea</i> s. <i>parksi</i>	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	1	0	1	0	0				
<i>Gaura/Sipogaura</i>	<i>O. calcicola</i>	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	1	0	1	0	0				
<i>Gaura/Sipogaura</i>	<i>O. filipes</i>	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	1	0	1	0	0				
<i>Gaura/Sipogaura</i>	<i>O. mckelveyae</i>	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	1	0	1	0	0				
<i>Gaura/Sipogaura</i>	<i>O. simosa</i>	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	1	0	1	0	0				
<i>Gaura/Xenogaura</i>	<i>O. hispida</i>	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	1	0	1	0	0				
<i>Gaura/Gaura</i>	<i>O. coloradoensis</i>	0	1	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	1	0	1	0	0				
<i>Gaura/Gaura</i>	<i>O. dodgsoniana</i>	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	1	0	1	0	0				
<i>Gaura/Gaura</i>	<i>O. demissa</i>	0	1	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	1	0	1	0	0				
<i>Gaura/Gaura</i>	<i>O. filiformis</i>	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	1	0	1	0	0				
<i>Gaura/Gaura</i>	<i>O. gaura</i>	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	1	0	1	0	0				
<i>Gaura/Gaura</i>	<i>O. lindheimeri</i>	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	1	0	1	0	0				
<i>Gaura/Gaura</i>	<i>O. hexandra</i>	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1																