

Conservation of Non-Apis Bees in Doon Valley, Uttarakhand, India

Pollinator Habitat Assessment Sheet for Urbanscapes

January 2019



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Photographs

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Site Summary

Urban Area:

Observer:

Address:

Date (1st assessment):

Date (2nd assessment):

Aerial Map of location being evaluated:

Habitat Assessment Score:

total scores will be calculated at the end of the each assessment)

Before

After

Element 1: Urbanscape Features

Element 2: Urban Space Features

Element 3: Foraging Habitat

Element 4: Bee Nesting Habitat

Element 5: Urban Space Management Practices

Overall score

Element 1: Urbanscape Features

Landscapes play a crucial role in supporting wild bees by providing alternative food sources, breeding and nesting sites. Thus availability of natural or semi natural vegetation enhances the pollination services in adjacent sites as bees prefer wilderness

1.1. Availability of natural/semi-natural vegetation within 1 km radius of the urban area being assessed. This land cover will include riverine vegetation, dense sal forests, weedy vegetation, bamboo forests, Chir pine forests, plantations, orchards, lawn grass and overgrazed pastures

Select only 1	Score	Before	After	Remarks
>30%	10			
20%-30%	7			
5%-20%	3			
<5%	0			
Subtotal (1.1)				

>30%

20%-30%

5%-20%

<5%



1.2. Dominant Vegetation in surrounding area (within 1 km).

Select only one	Score	Before	After	Remarks
Native plants	10			
Mix of native and naturalized ornamental/exotic plants (non-invasive plants)	7			
Naturalized flowering species: ornamental/exotic plants	5			
Mix of native, naturalize and weedy/invasive ornamental/exotic plants	3			
Invasive flowering plants (ornamentals/exotic such as Lantana sp.)	0			
Subtotal (1.2)				
Urbanscape Features Total (1.1 + 1.2)				

Element 2: Urban Space Features

Natural or semi-natural areas present on the urban green space being assessed are effective in attracting bees and other pollinator biodiversity.

2.1. Percentage of urban green space with forests or orchards or plantations in the area being assessed (see section 1.1 for examples).

Select only one	Score	Before	After	Remarks
>10%	10			
6-9%	7			
3-5%	5			
1-2%	3			
0%	0			
Subtotal (2.1)				

2.2 Additional Urban Space features				
Select only 1	Score	Before	After	Remarks
Riparian features/Artificial/ Natural water body are present other than the grey and black water	5			
Hedgerows, windbreaks or fencerows if present	0-5			
(Can be natural or artificial structures such as iron).	0-5			
Native, wild flowers, ornamentals, kitchen gardens, artificial maintained lawns are present	5			
Subtotal (2.2)				
2.3. Element sub section: The average size of the Urban Space being assessed				
Select only 1	Score	Before	After	Remarks
<10 hectares	10			
10-50 hectares	5			
50-100 hectares	3			
>100 hectares	1			
Subtotal (2.3)				
Urban Space Features Total (2.1+2.2+2.3)				

Element 3: Foraging Habitat

Diverse flowering plants both wild and ornamental/exotic plants particularly native and long-season blooms attract bees

3.1. The percentage of vegetative cover (area where gardening management of planting is absent) such as wild flowers, flowering shrubs and pollinator friendly trees on site including living quarters/gardens.

Select only one	Score	Before	After	Remarks
>50% cover	10			
30-50% cover	7			
20-30% cover	5			
10-20% cover	3			
<10% cover	1			
Subtotal (3.1)				

> 50%

50%

< 50%



3.2. What number of spring-blooming species of wildflowers, flowering shrubs, or pollinator-friendly trees, supporting bees are present on the urban area?

Select only one	Score	Before	After	Remarks
7+ species	10			
4-6 species	6			
1-3 species	3			
0 species	0			
Subtotal (3.2)				

3.3. What number of summer-blooming species of wildflowers, flowering shrubs, or pollinator-friendly trees, supporting bees are present on the urban area?				
Select only one	Score	Before	After	Remarks
5+ species	10			
3-4 species	6			
1-2 species	3			
0 species	0			
Subtotal (3.3)				
3.4. What number of monsoon/post monsoon-blooming species of wildflowers, flowering shrubs, or pollinator-friendly trees, supporting bees are present on the urban area?				
Select only one	Score	Before	After	Remarks
7+ species	10			
4-6 species	6			
1-3 species	3			
0 species	0			
Subtotal (3.4)				
3.5. What number of fall/winter-blooming species of wildflowers, flowering shrubs, or pollinator-friendly trees, supporting bees are present on the urban area?				
Select only one	Score	Before	After	Remarks
5+ species	10			
3-4 species	6			
1-2 species	3			
0 species	0			
Subtotal (3.5)				
Foraging Habitat Total (3.1 + 3.2 + 3.3 + 3.4 + 3.5)				

Element 4: Bee Nesting Habitat				
Non-Apis bees nests in diverse nesting habitats. Bees are commonly found nesting on ground (cracks, crevices, abandoned rodent burrows) and cavities of wood or stem. These nesting habitats need conservation.				
4.1. Ground nesting bees live in nests that are constructed into a mound of excavated soil. These nests are tiny and found on well-drained slopes of the soil. They may be hidden among plants or exposed on bare soil. Nests are in places where there is sufficient sunlight. Bumble bees are found occupying abandoned rodent burrows or clumped grasses. (*Score: Abundant=5, Moderate=3, Scarce=1, Lacking=0)				
Score all options that apply	Score	Before	After	Remarks
Areas of undisturbed native bunch grasses/herbs/ shrubs/ trees.	0-5*			
Areas of uncompacted, well-drained ground, either bare or with sparse vegetation	0-5*			
Rock piles, borders, or walls in the vicinity of urbanscape areas	0-5*			
Subtotal (4.1)				
4.2. Wood and cavity nesting bees. Predominantly cavity nesting bees nest in pre-existing cavities and tunnels in snags, bush or the centres of pithy stemmed shrubs and large grass stems (*Score: Abundant=10, Moderate=5, Scarce=1, Lacking=0)				
Score all options that apply	Score	Before	After	Remarks
Dead wood, snags, and bush piles in the vicinity of garden/built-up areas	0-10*			
Shrubs of woody plants with hollow or pithy stalks (ex. Mulberry), reed, large sturdy herbaceous plants. Plants with pithy or hollow centres (Asteraceae plants)	0-10*			
Subtotal (4.2)				
Bee Nesting Habitat Total (4.1 + 4.2)				

Element 5: Urban Space Management Practices				
Bee populations are significantly influenced by pest management, pesticide use and land management activities in and around habitat sites.				
5.1. Pest management techniques used on the Urban space being assessed. Use n/a if option is not applicable				
Score all options that apply	Score (0-5)	Before	After	Remarks
Does Urban space have high plant diversity (which includes aromatic plants like marigold/basil/lemongrass) which limits the pest outbreaks	5			
Sanitation is practiced (e.g., removing and destroying infested plant parts or weedy plants)	5			
Presence of diverse habitat which support beneficial species (Mantis/ wasps/hornets/insectivorous birds) around the urban space	5			
Subtotal (5.1)				
5.2 Garden Management techniques used in habitats on the Urban space. This sub-section looks at the overall management and not the site preparation. Use n/a if option is not applicable on the site				
Score all options that apply	Score	Before	After	Remarks
Is mowing/flooding (lawn management) done in natural areas or pollinator habitat if present in the Urban space	10			
Does the Urban space include lawn, gardens that encourage wildflower diversity/abundance	10			
Do the urban space have orchards/plantations where disturbance along the borders are performed infrequently and for enhancing the habitat quality	10			
Subtotal (5.2)				
Urban Space Management Practices Total (5.1 + 5.2)				