Zentrum Stadtnatur und Klimaanpassung
Technische Universität München

Anwendung der Methode Animal-Aided Design

Applying Animal-Aided Design for urban planning

Dr. Thomas E. Hauck, Prof. Dr. Wolfgang W. Weisser, Robert Bischer, Maximilian Mühlbauer

1. BACKGROUND

Animal-Aided Design (AAD) was developed as a new method to make animals an integral part of the design of urban free spaces. A key element of AAD is the provision of planning tools for city planners and landscape architects. AAD transforms critical needs of animals into designing opportunities for architects and planners and promotes positive contact of citizens with the planned species.

CASE STUDY
Here we report on an AAD case study in Munich to illustrate how the AAD concept can be put into practice in a real-world building project. The case study is located within a building project in the Brantstraße in Munich where 3 new apartment blocks are added to existing buildings on a former meadow (Fig. 1).

We illustrate the planning and design process using the European green woodpecker (*Picus viridis*) as an example.

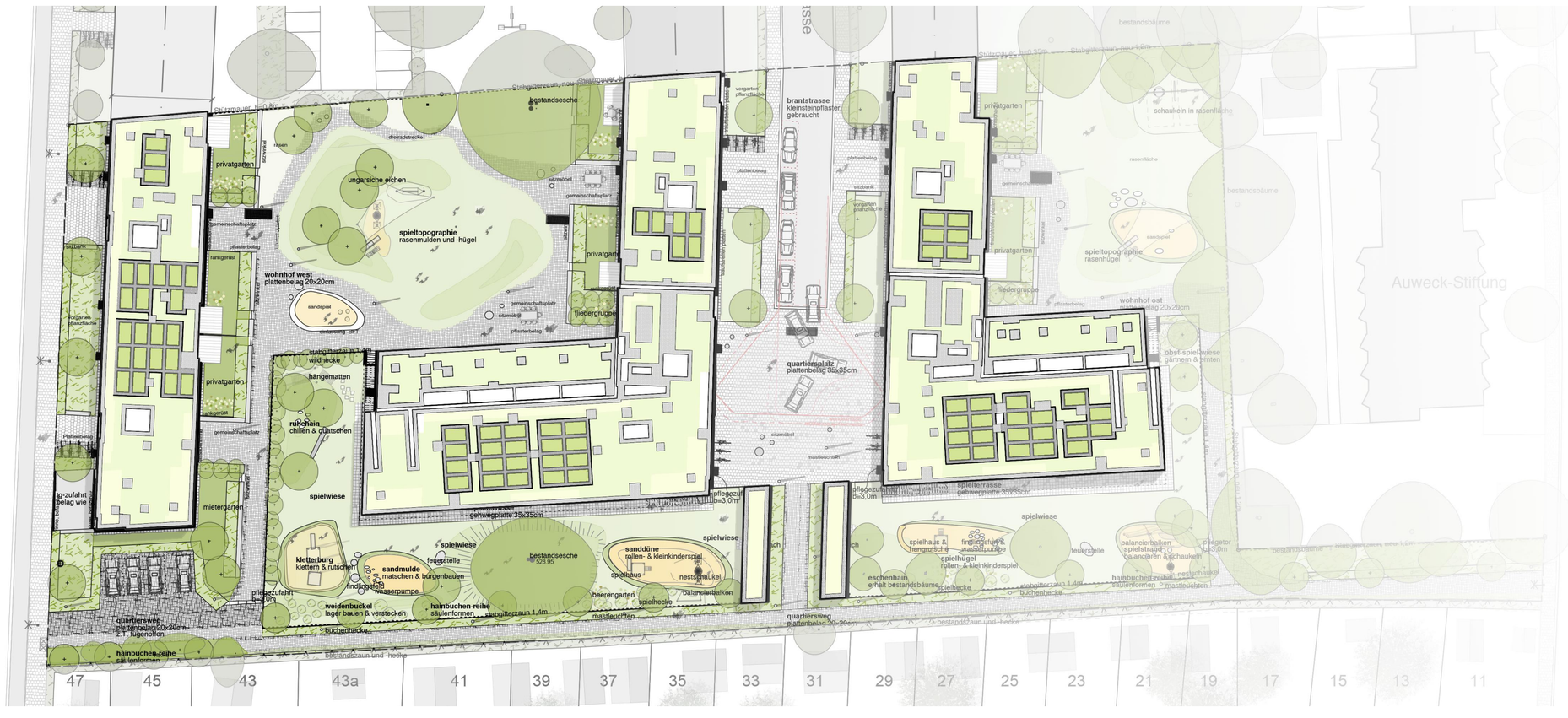
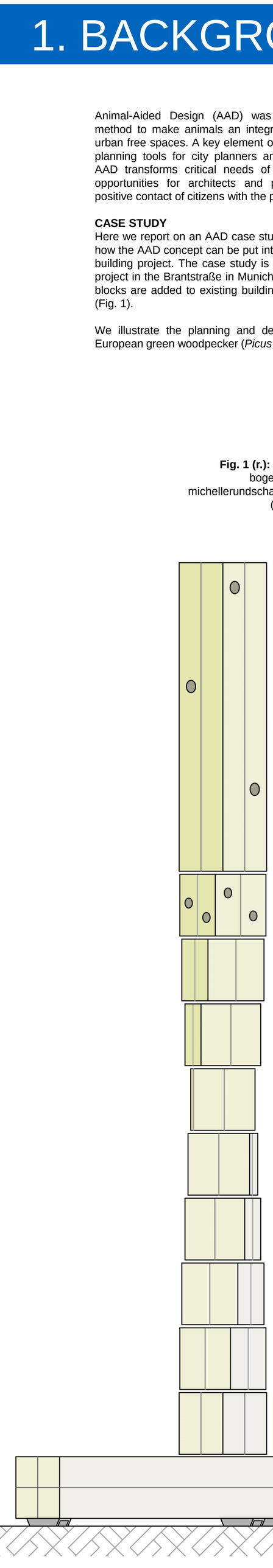


Fig. 1 (r.): excerpt of the site plan
bogevischs buero (architects)
michellerundschalk (landscape architects)
(modified by Studio AAD)



2. FROM LIFE CYCLE TO DESIGN

STEP 1

selecting target species based on
a) the occurrence of species in the area
b) their conservation status
c) positive interactions with humans

STEP 2

compiling complete life cycles (Fig. 2) of the selected species and summarizing their critical needs which are then translated into the design language of landscape architecture

STEP 3

designing green spaces and supportive features by planners and landscape architects based upon the critical needs

STEP 4

evaluating population of target species

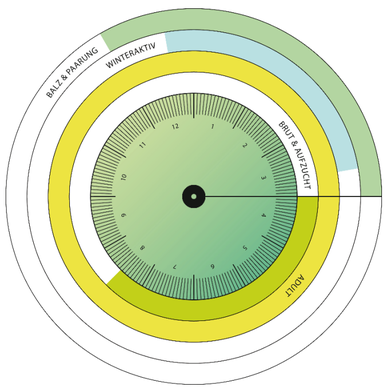


Fig. 2: Life cycle of the European green woodpecker (*Picus viridis*)
The illustration demonstrates all sections of the life cycle (brood and rearing, adult, display and mating etc.).

DISPLAY AND MATING

CRITICAL NEEDS: answering calls from nesting tree
SITUATION: loss of deciduous trees due to construction site
MEASURES: an artificial woodpecker tree serves as possibility to observe the calling birds (s. step 3, Fig. 4)

BROOD AND REARING

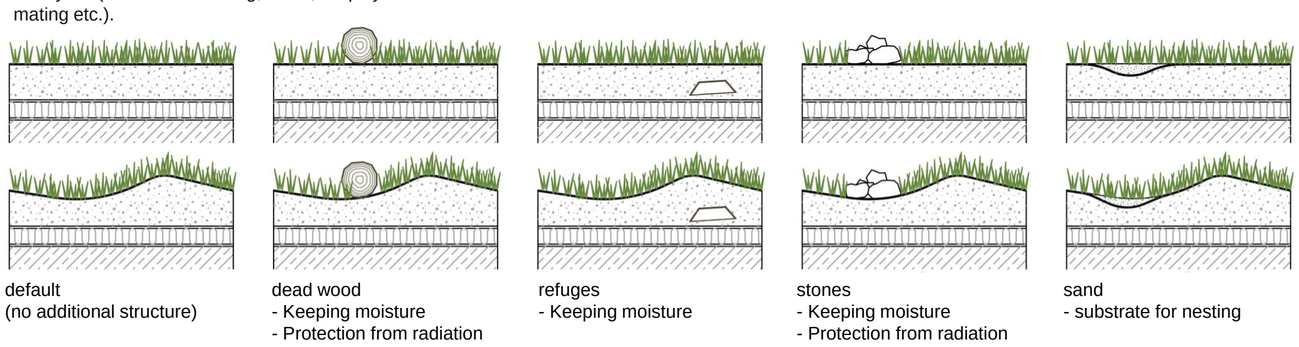
CRITICAL NEEDS: cavities in heights of 2-10 m needed
SITUATION: loss of old deciduous trees due to the construction site
MEASURES: artificial woodpecker tree offers opportunities for breeding (s. step 3, Fig. 4)

OVERWINTERING

CRITICAL NEEDS: cavities for shelter
SITUATION: loss of old deciduous trees due to the construction site
MEASURES: artificial tree can also be used for this critical need (s. step 3, Fig. 4)

ADULTS

CRITICAL NEEDS: ants as food, drinking water
SITUATION: lost ground area due to new buildings
MEASURES: standard green roofs are modified to provide ants and other arthropods (s. step 3, Fig. 3); providing water troughs (not shown)



default
(no additional structure)

dead wood
- Keeping moisture
- Protection from radiation

refuges
- Keeping moisture

stones
- Keeping moisture
- Protection from radiation

sand
- substrate for nesting

Fig. 3: Soil Life Roof Experiment (SoLiRoof)
About 2000 m² of standardized extensive green roofs will be realized in the Brantstraße. Into this matrix we implement 75 plots (1,5 x 2,5 m), separated by gravel bands. The plots will vary the structure of the substrate and introduce additional measures.

Altogether, this has been reported in the literature[3,4,5,6] as supportive for biodiversity and survival of invertebrates but has not been experimentally tested yet. Increased abundance and survival of invertebrates on green roofs helps to ensure the food requirements of the target species.

3. CONCLUSIONS

AAD can be a method to optimize free space planning for urban animals and humans. By that, AAD can reduce the environmental impact of densification in growing cities.

Fig. 4 (l.): European green woodpecker tree
The woodpecker tree aesthetically fits into the urban context. It provides opportunities to create cavities for the woodpecker in the top and additional prefabricated cavities for other bird species in the sections beneath. Cavities serve as sleeping and breeding sites.

LITERATURE

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Technische Universität München
Zentrum Stadtnatur und Klimaanpassung (ZSK)
Arcisstraße 21
80333 München
info@zsk.tum.de
www.zsk.tum.de

Wissenschaftliche Bearbeitung Teilprojekt 2:
Lehrstuhl für Terrestrische Ökologie
Wissenschaftszentrum Weihenstephan
Department für Ökologie und Ökosystemmanagement
Hans-Carl-v.-Carlowitz-Platz 2
85354 Freising

Prof. Dr. Wolfgang W. Weisser
Dr. Thomas E. Hauck
M. Sc. Robert Bischer
Dipl.-Biol. Maximilian Mühlbauer
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