TALES FROM THE URBAN JUNGLE

UNIVERSITY OF HELSINKI

IAN MACGREGOR-FORS

TALES FROM THE URBAN JUNGLE

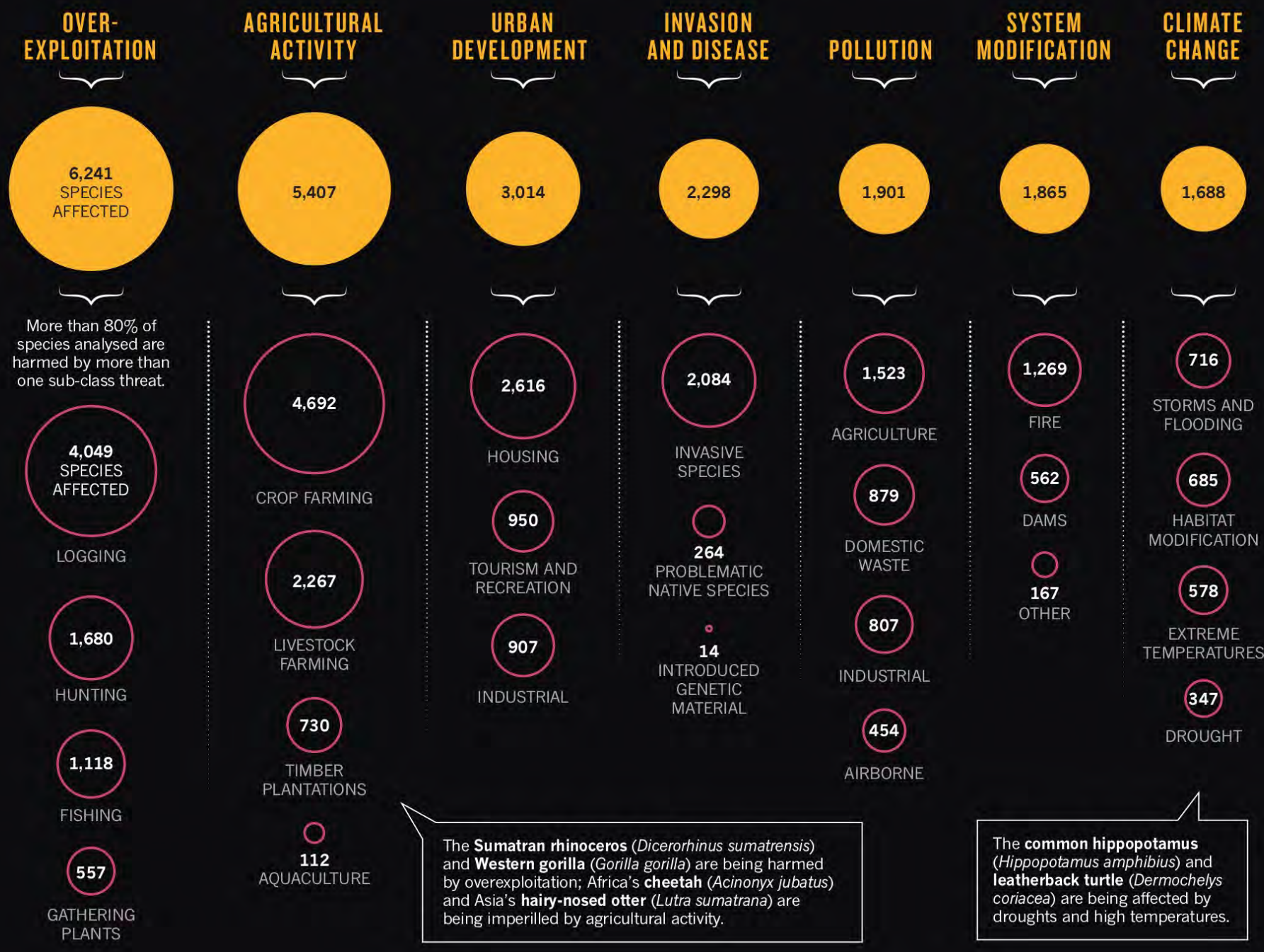
- URBANIZATION
  - BIODIVERSITY RESPONSES
    - UNDERSTANDING CITIES CONSIDERING BIODIVERSITY

THE ANTHROPOCENE

ARCHIVE.BOSTON.COM

BIG KILLERS

Overexploitation and agriculture are the most prevalent threats facing the 8,688 threatened or near-threatened species from comprehensively assessed species groups on the IUCN Red List.



MAXWELL ET AL (2016)

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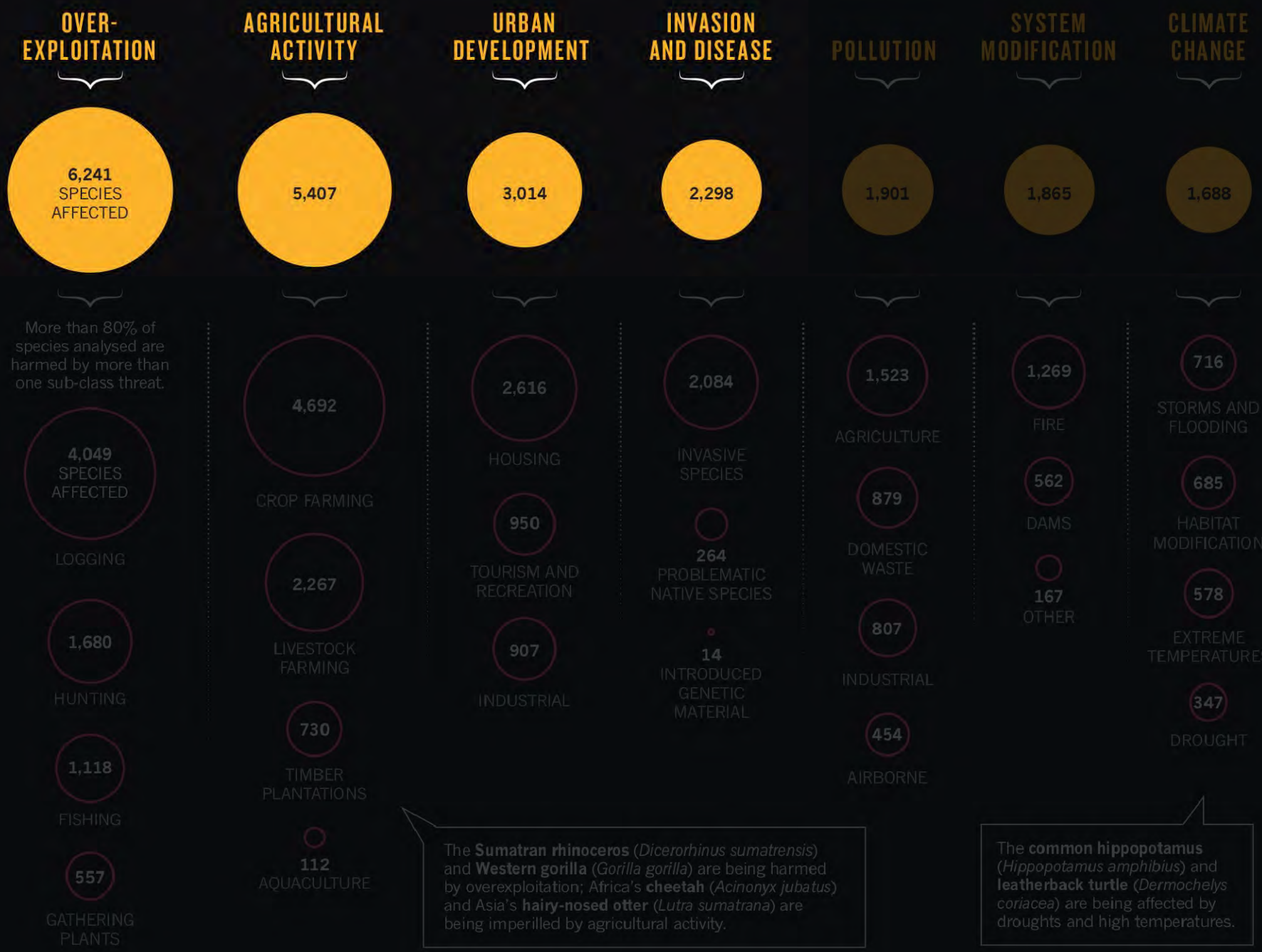


MAXWELL ET AL (2016)

OVER-EXPLOITATION

LOGGING

AGRICULTURAL ACTIVITY

CROP FARMING

INVASION AND DISEASE

INVASIVE SPECIES

THE HOUSE SPARROW

INVASION AND DISEASE

INVASIVE SPECIES

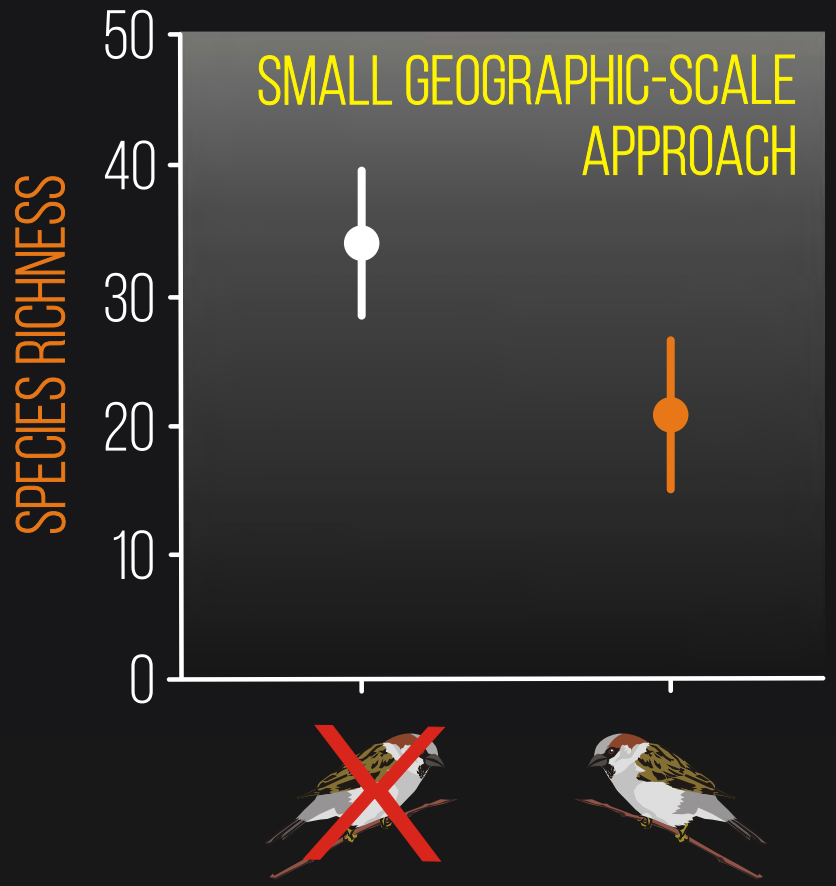
THE HOUSE SPARROW

MY LAB'S 'BATTLE HORSE'

INVASION AND DISEASE

INVASIVE SPECIES

THE HOUSE SPARROW

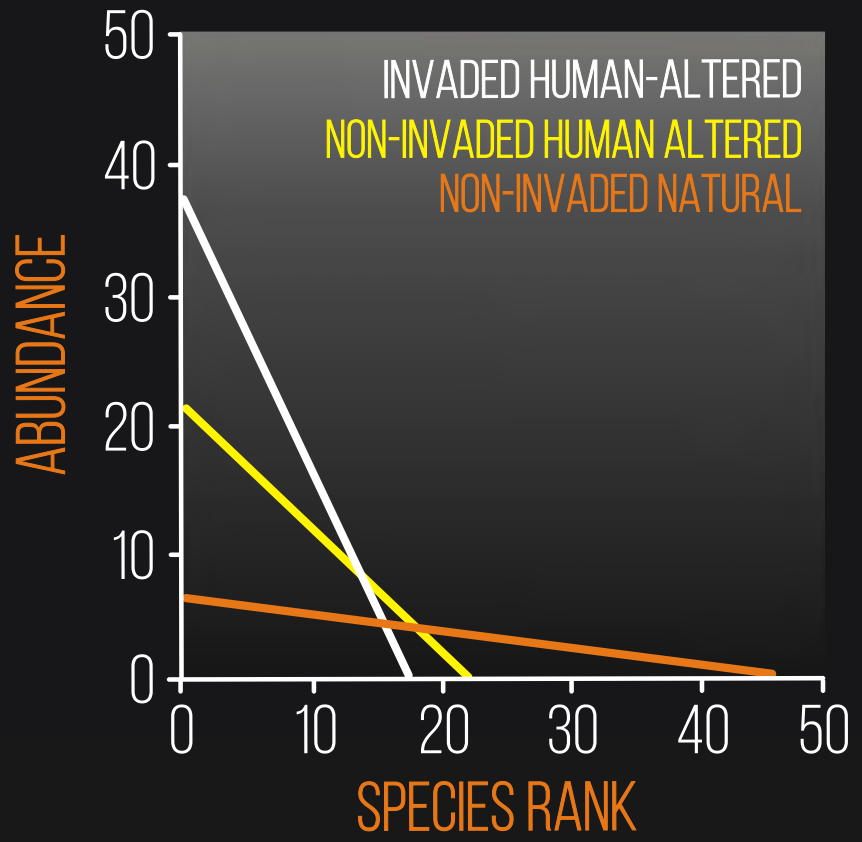


INVASION AND DISEASE

INVASIVE SPECIES

MACGREGOR-FORS ET AL (2010) BIOL INV, 12: 87-96

THE HOUSE SPARROW



MACGREGOR-FORS ET AL (2010) BIOL INV, 12: 87-96

INVASION AND DISEASE

INVASIVE SPECIES

THE HOUSE SPARROW

~30% NATIVE SPECIES LOSS

MACGREGOR-FORS ET AL (2010) BIOL INV, 12: 87-96

INVASION AND DISEASE

INVASIVE SPECIES

URBAN DEVELOPMENT
HOUSING

URBAN DEVELOPMENT
HOUSING

URBAN 'METABOLISM'

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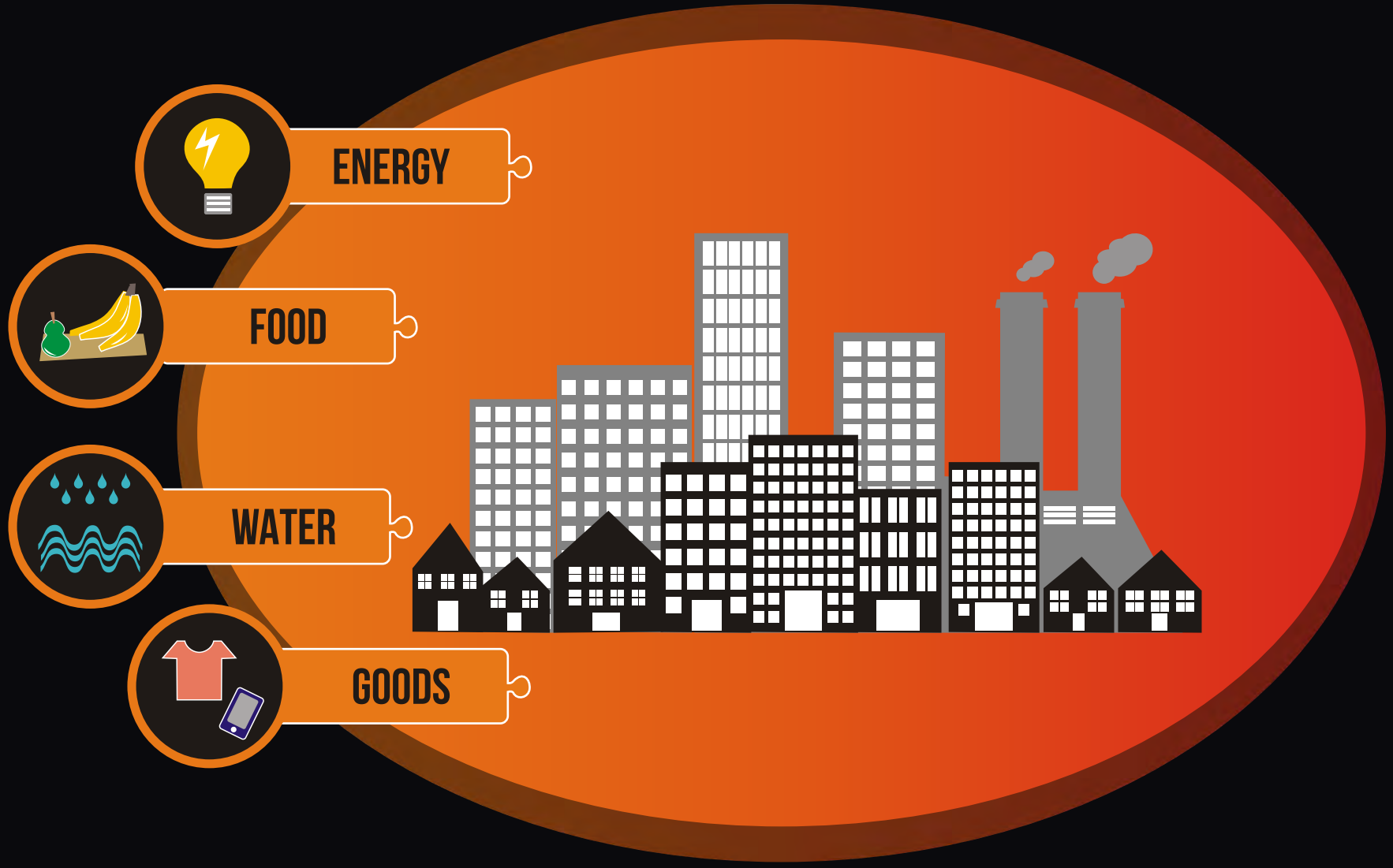
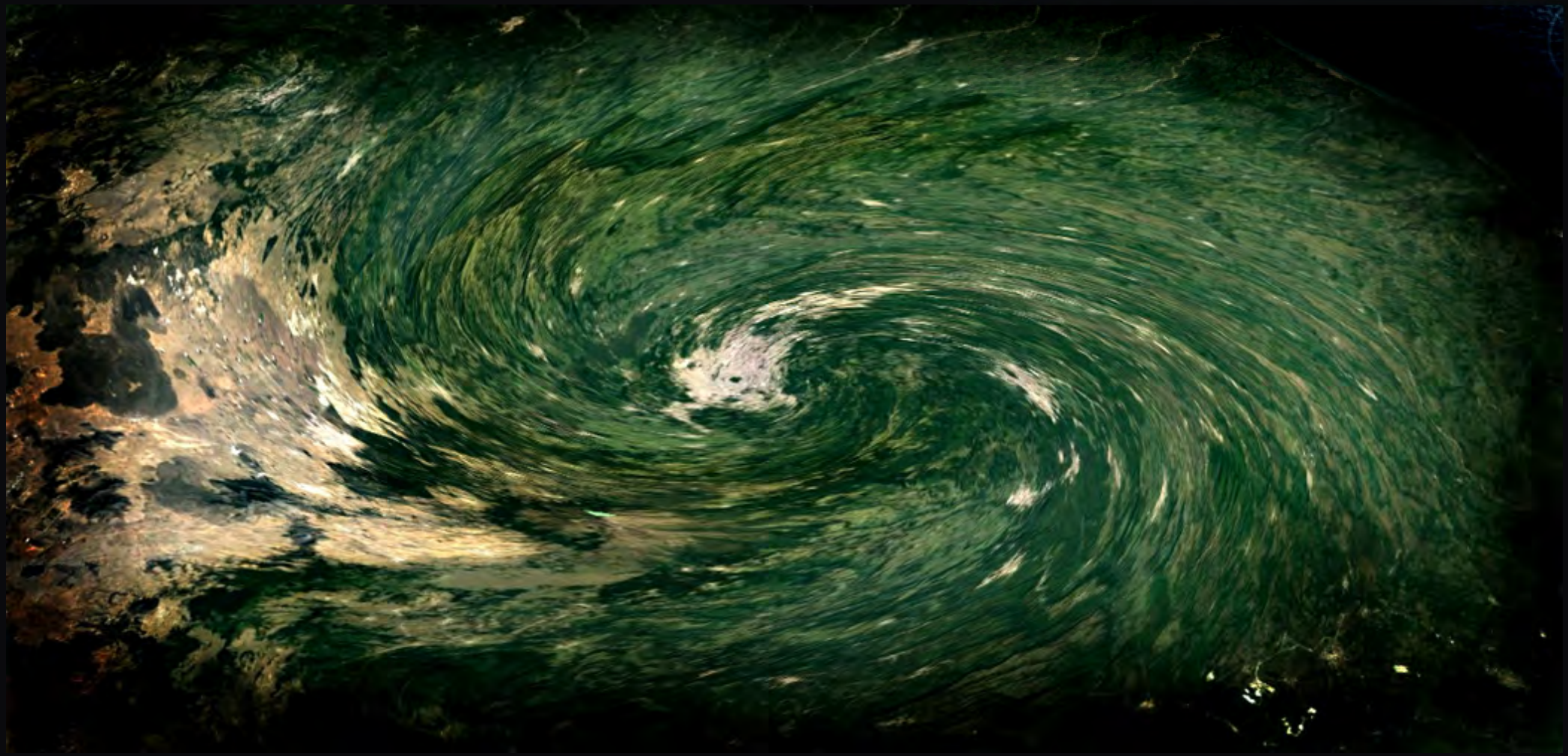


BLACK HOLES

URBAN 'METABOLISM'



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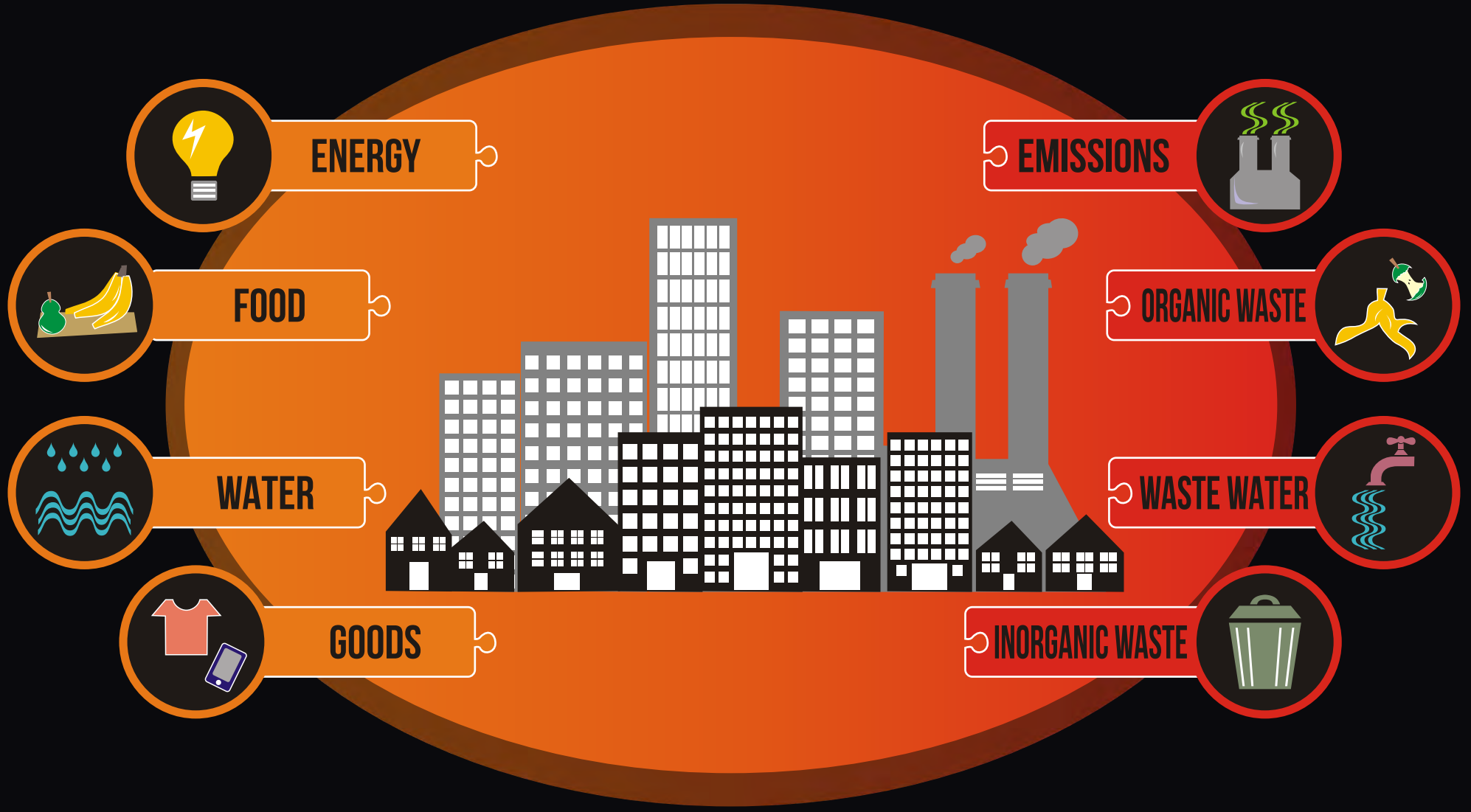


URBAN

'METABOLISM'

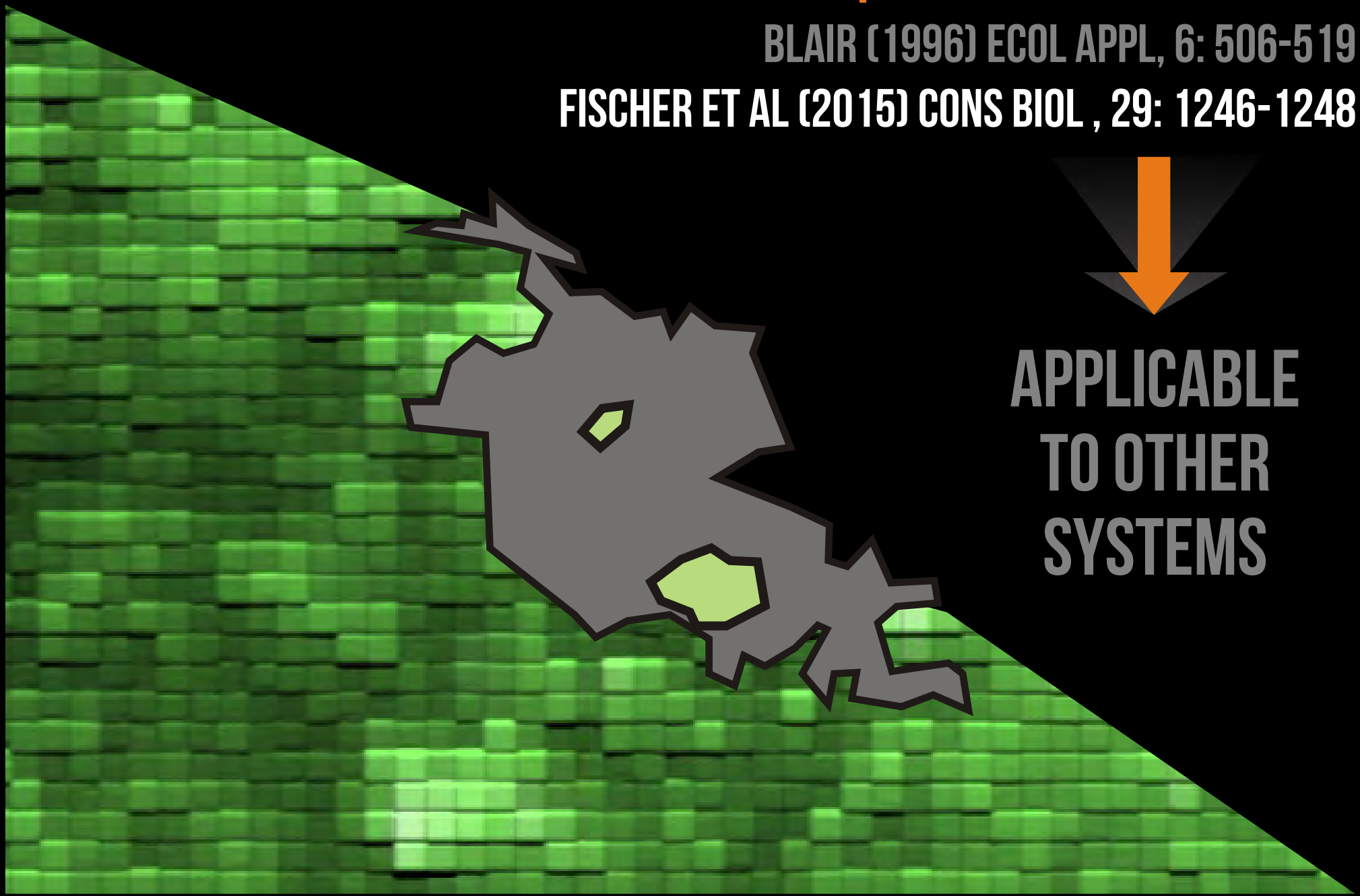
UNBALANCED METABOLISM

BIRD RESPONSES

BIRD RESPONSES TO URBANIZATION

BLAIR (1996) ECOL APPL, 6: 506-519

FISCHER ET AL (2015) CONS BIOL , 29: 1246-1248



APPLICABLE TO OTHER SYSTEMS

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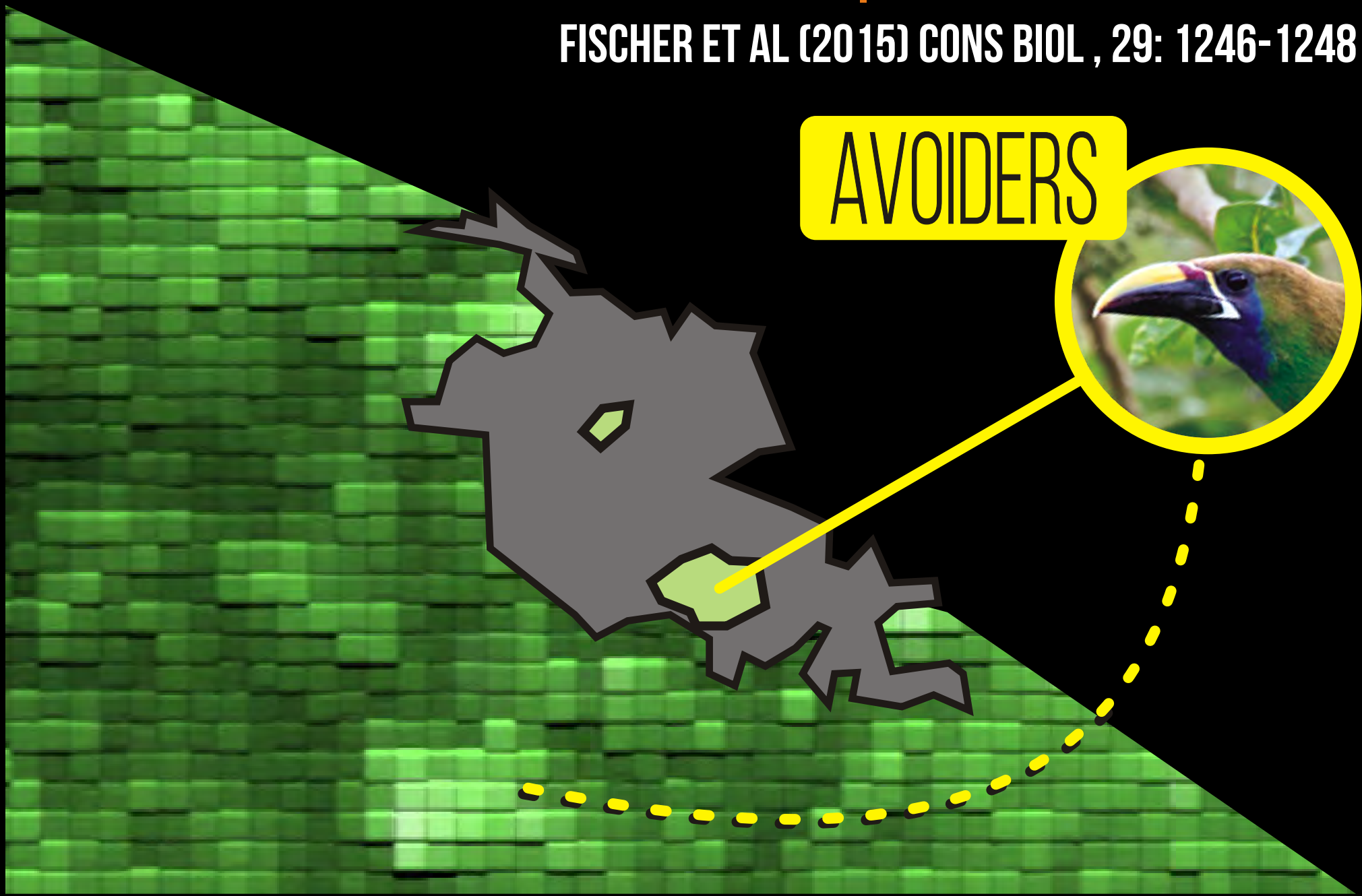

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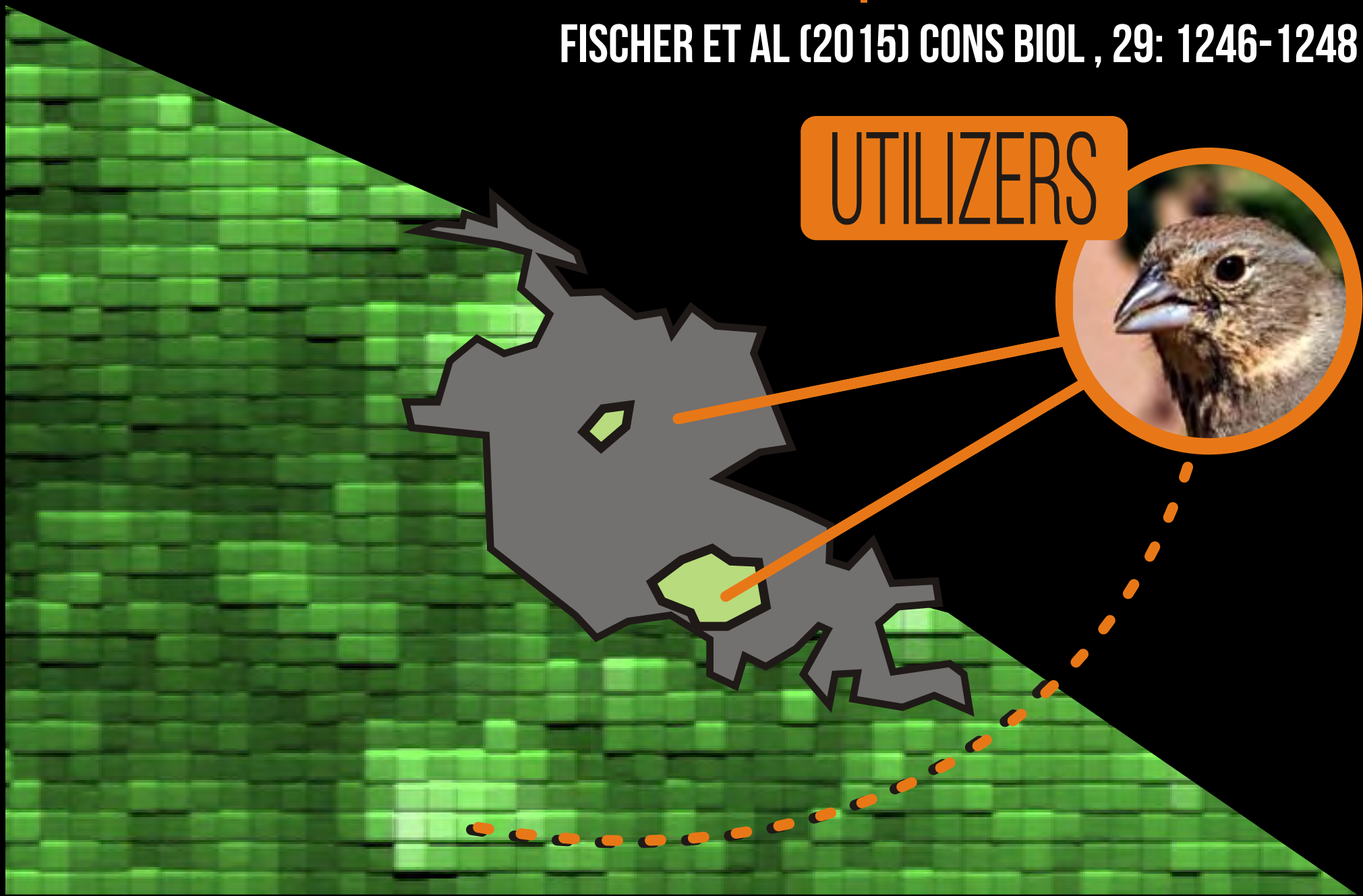

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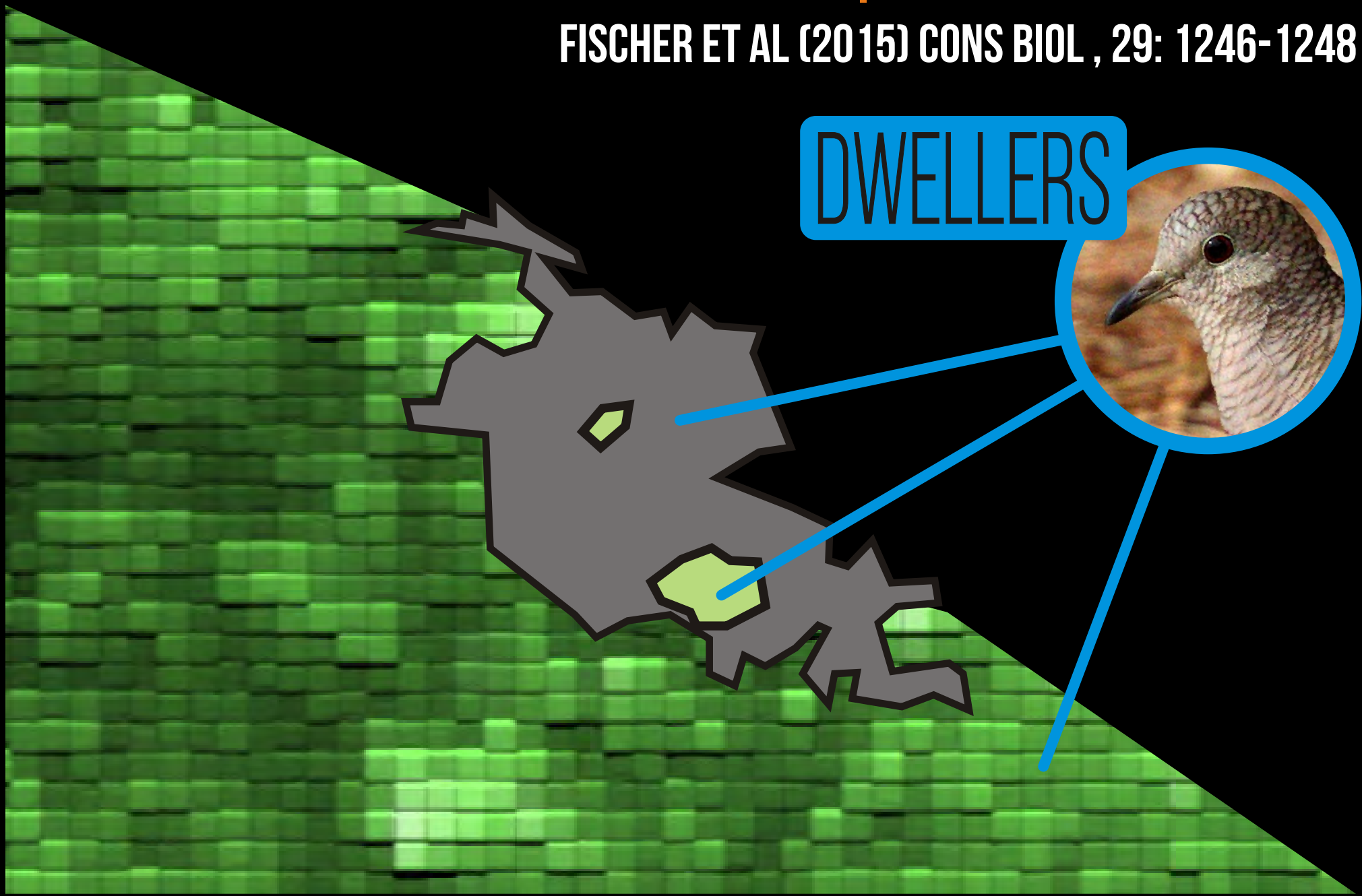
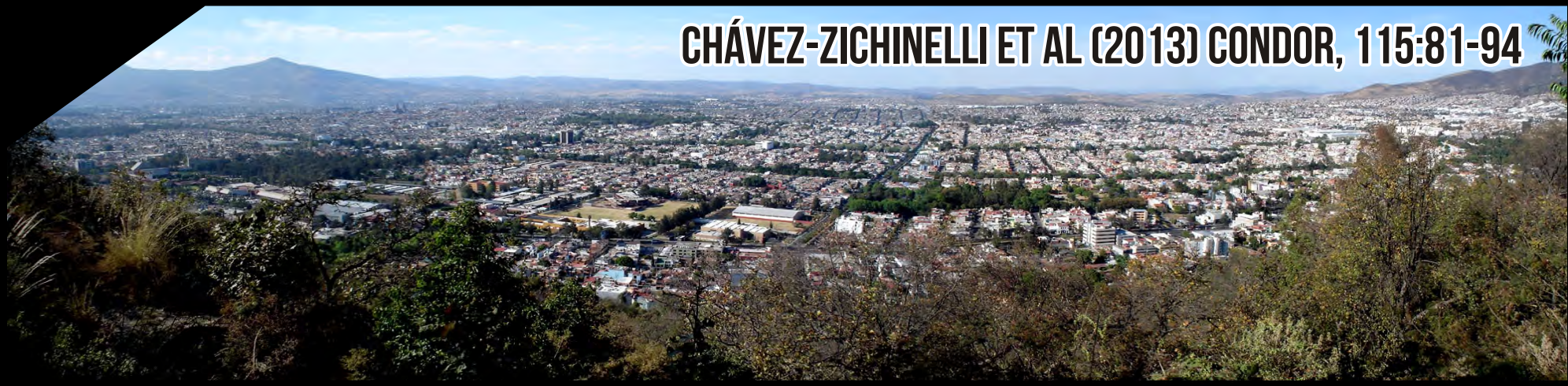


CASE STUDIES

LANDSCAPE-SCALE

WEST-CENTRAL MEXICO ○ ENTIRE WATERSHED



CHÁVEZ-ZICHINELLI ET AL (2013) CONDOR, 115:81-94

CORTICOSTERONE
IMMUNOGLOBULIN
RELATIONS

CASE STUDIES

LANDSCAPE-SCALE

WEST-CENTRAL MEXICO ○ ENTIRE WATERSHED

CHÁVEZ-ZICHINELLI ET AL (2013) CONDOR, 115:81-94

DWELLER OR UTILIZER?

CORTICOSTERONE

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CHÁVEZ-ZICHINELLI ET AL (2013) CONDOR, 115:81-94

DWELLER

NO EVIDENCE OF PHYSIOLOGICAL LIMITATIONS

UTILIZER

~30% URBAN INVIDIVUALS PHYSIOLOGICAL LIMITATIONS

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REDRAWN FROM GONZÁLEZ-LAGOS & QUESADA (2017)
AVIAN ECOLOGY IN LATIN AMERICAN CITYSCAPES (SPRINGER BOOK)

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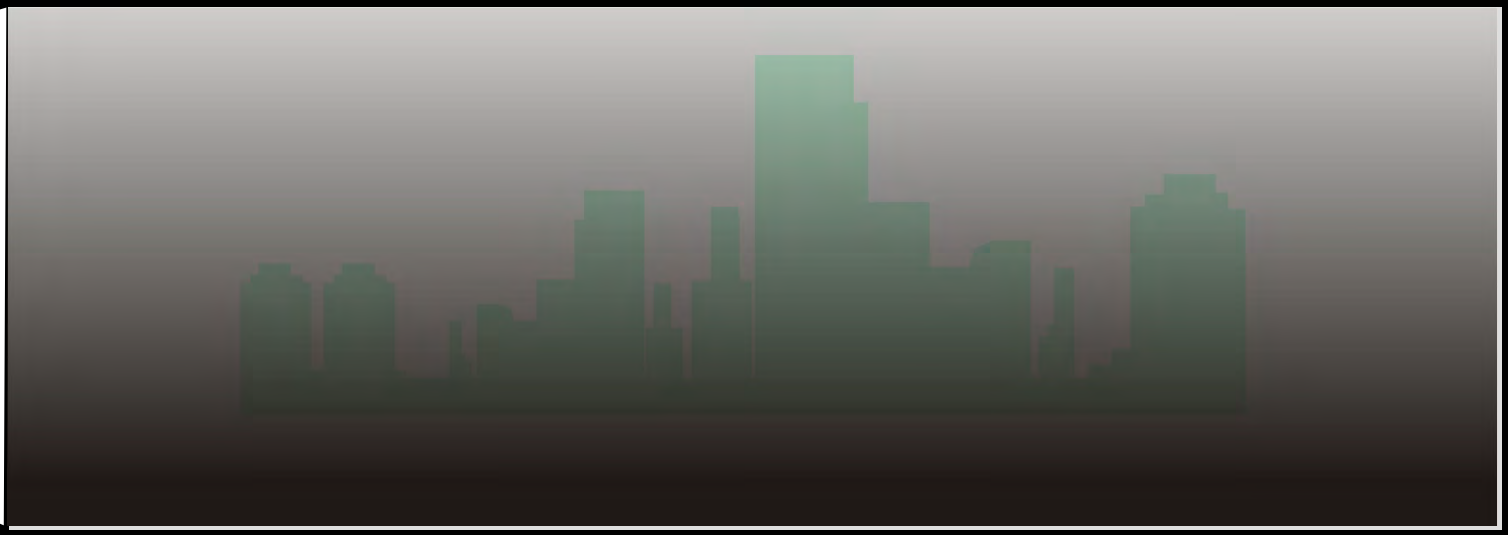
URBANIZATION



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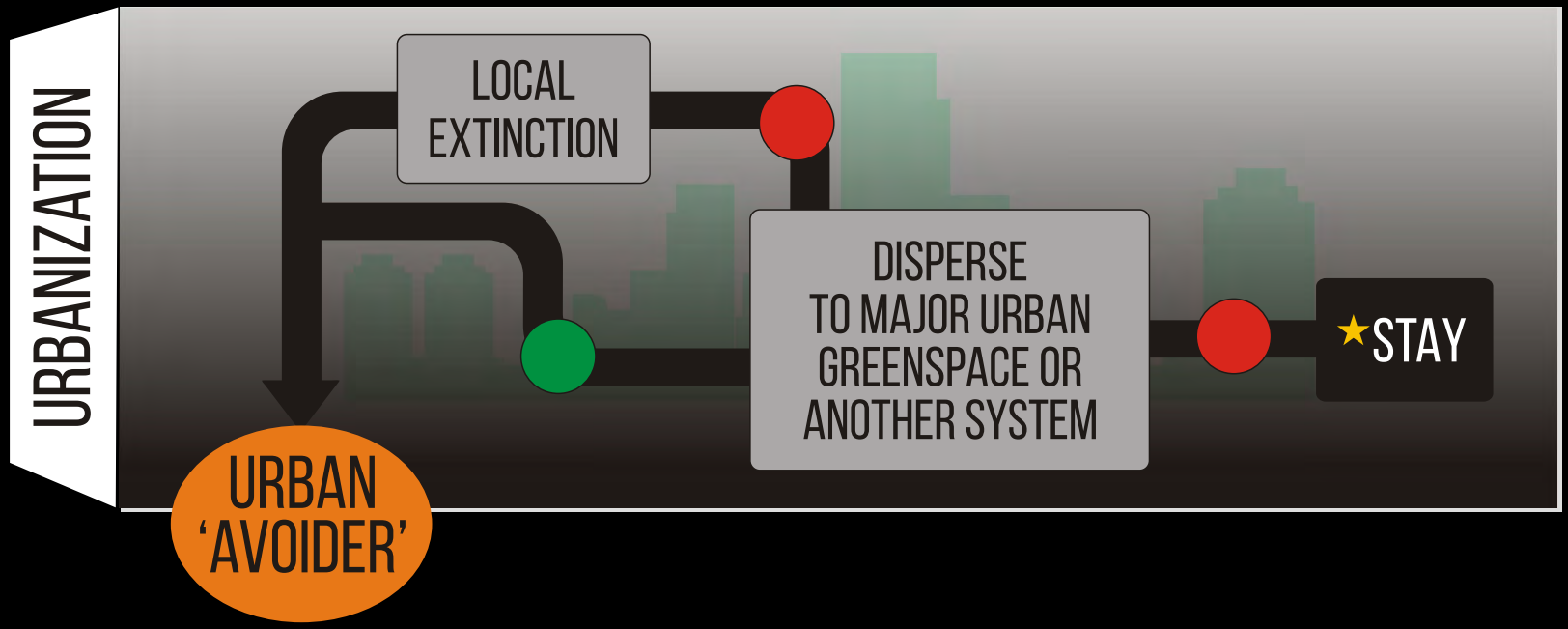

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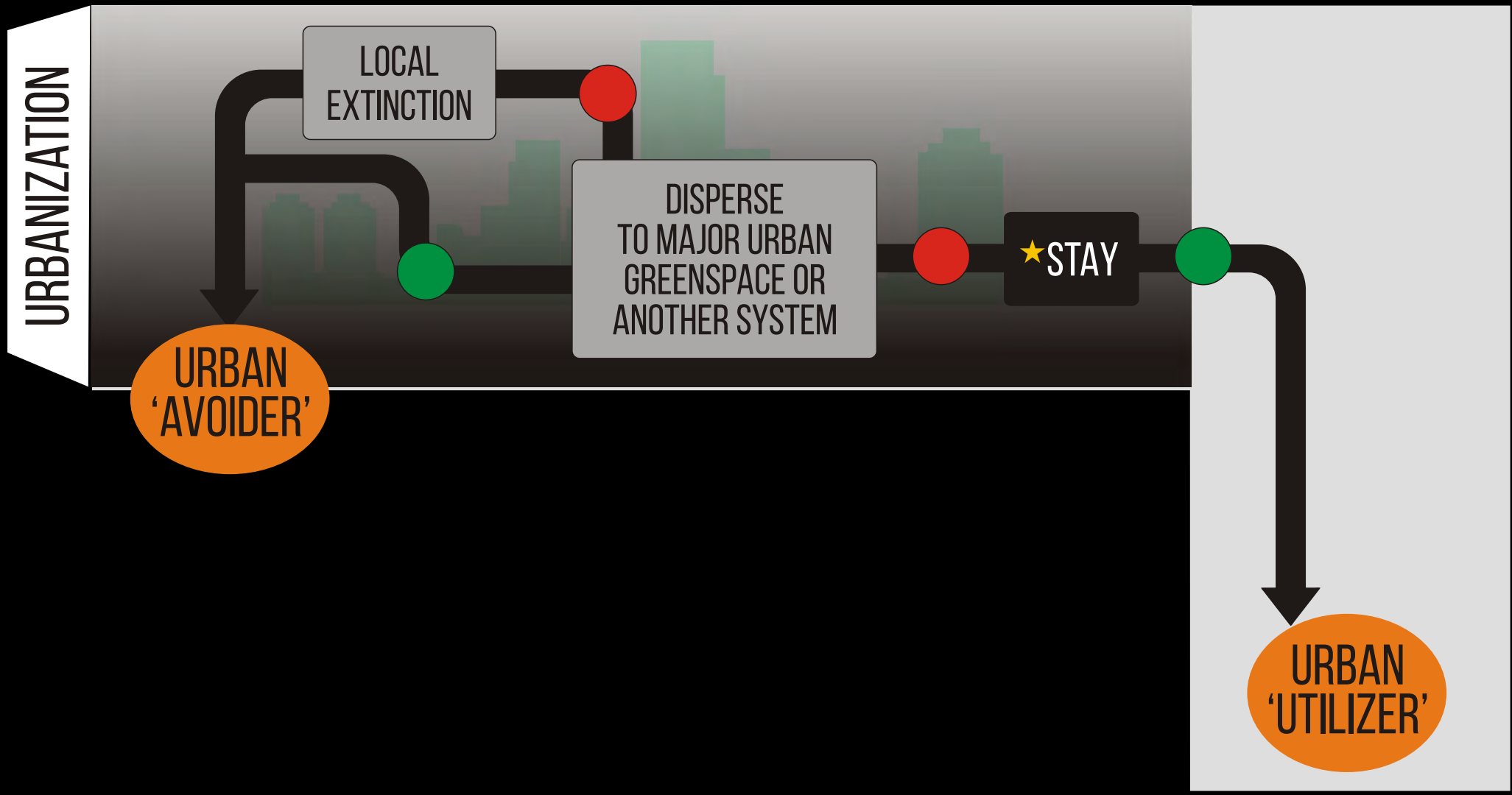

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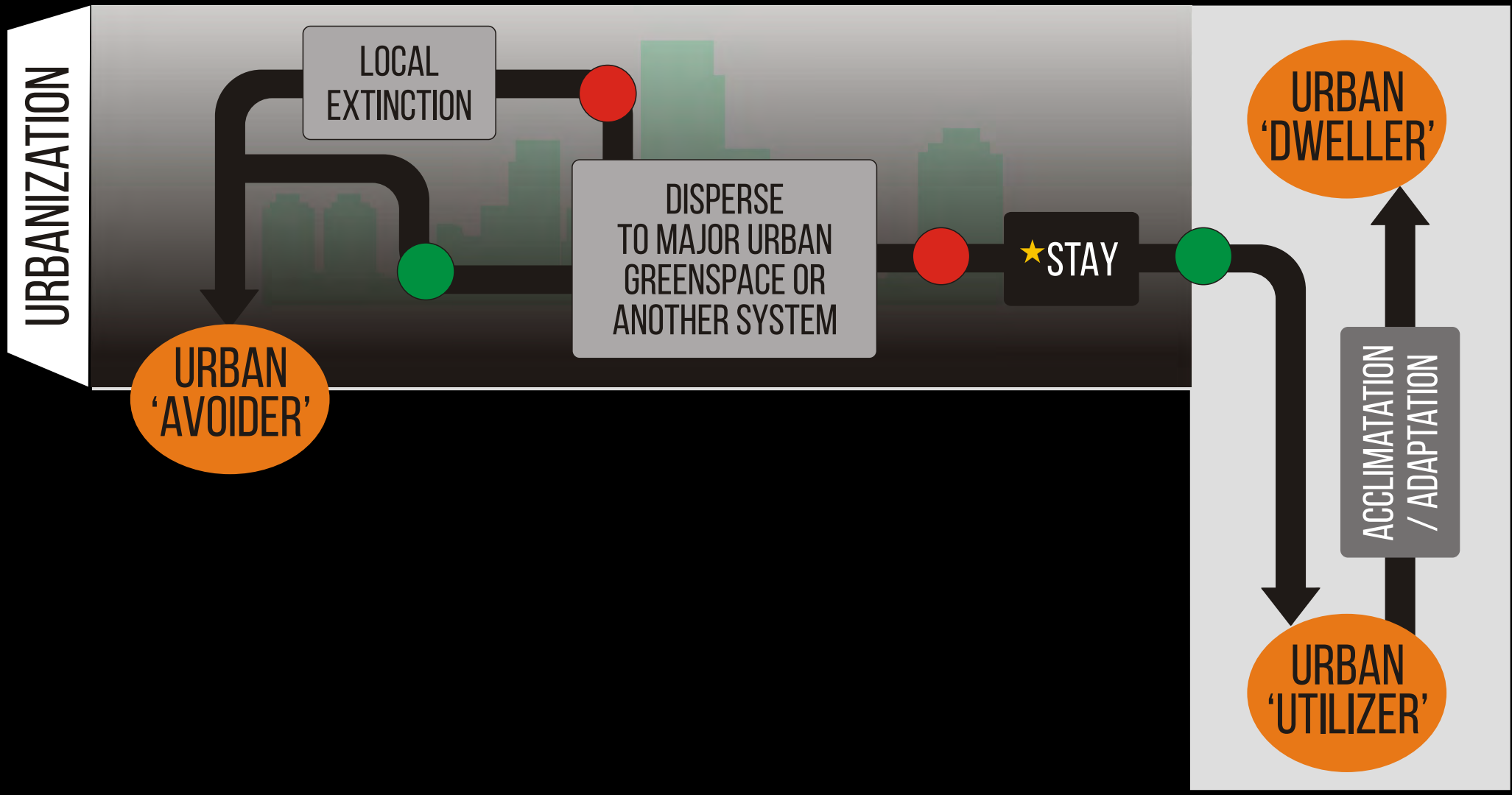

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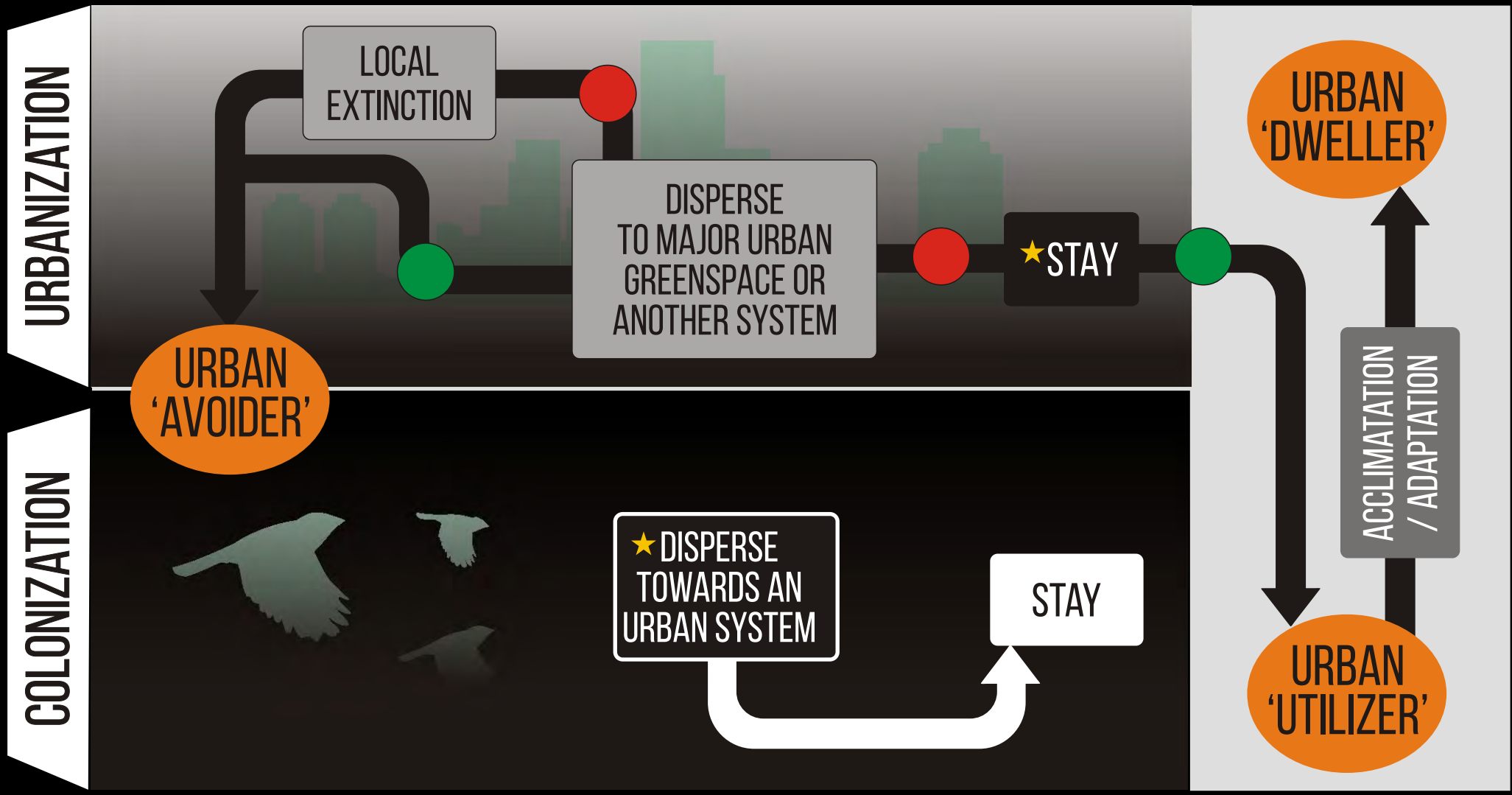

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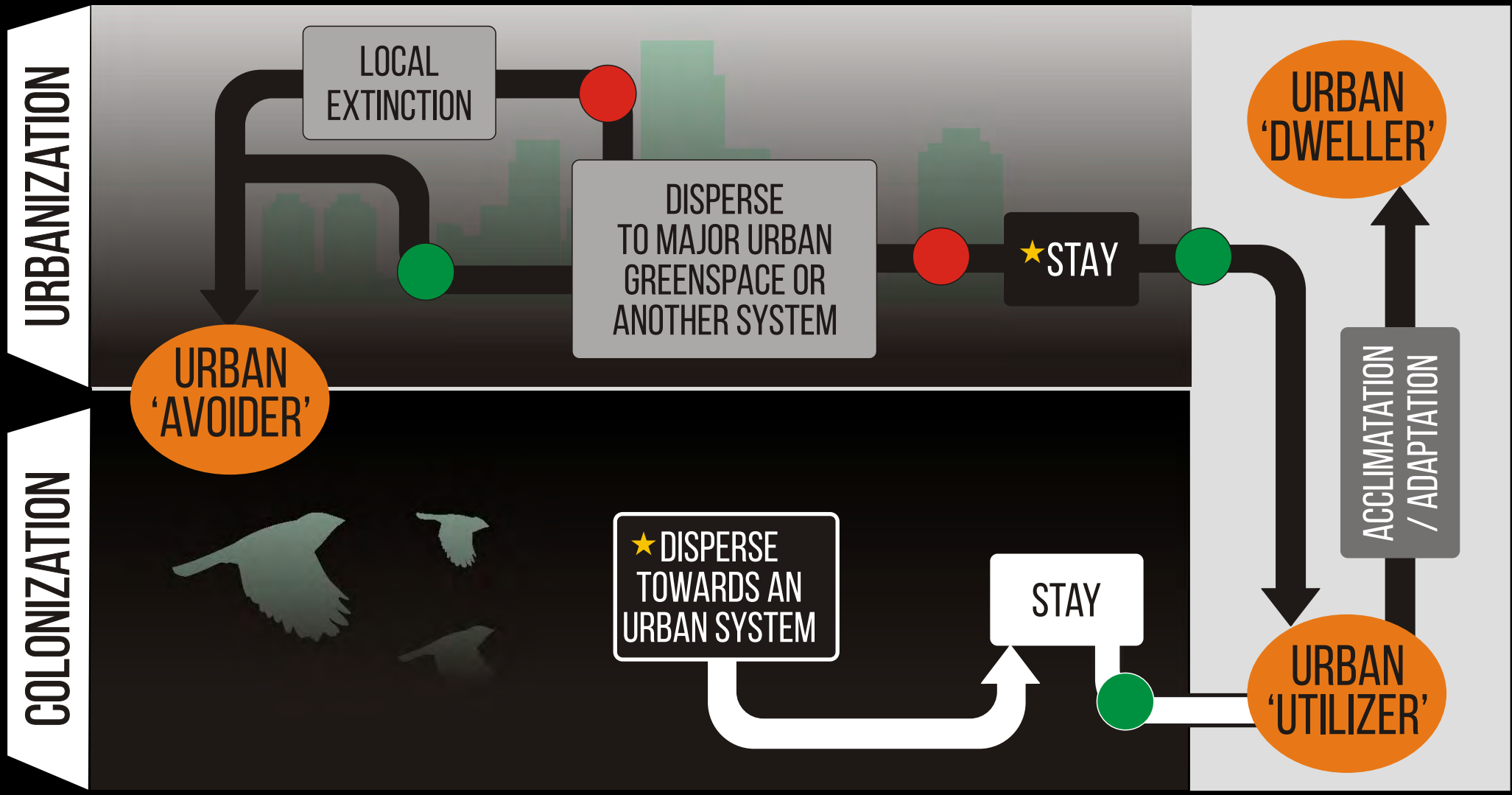

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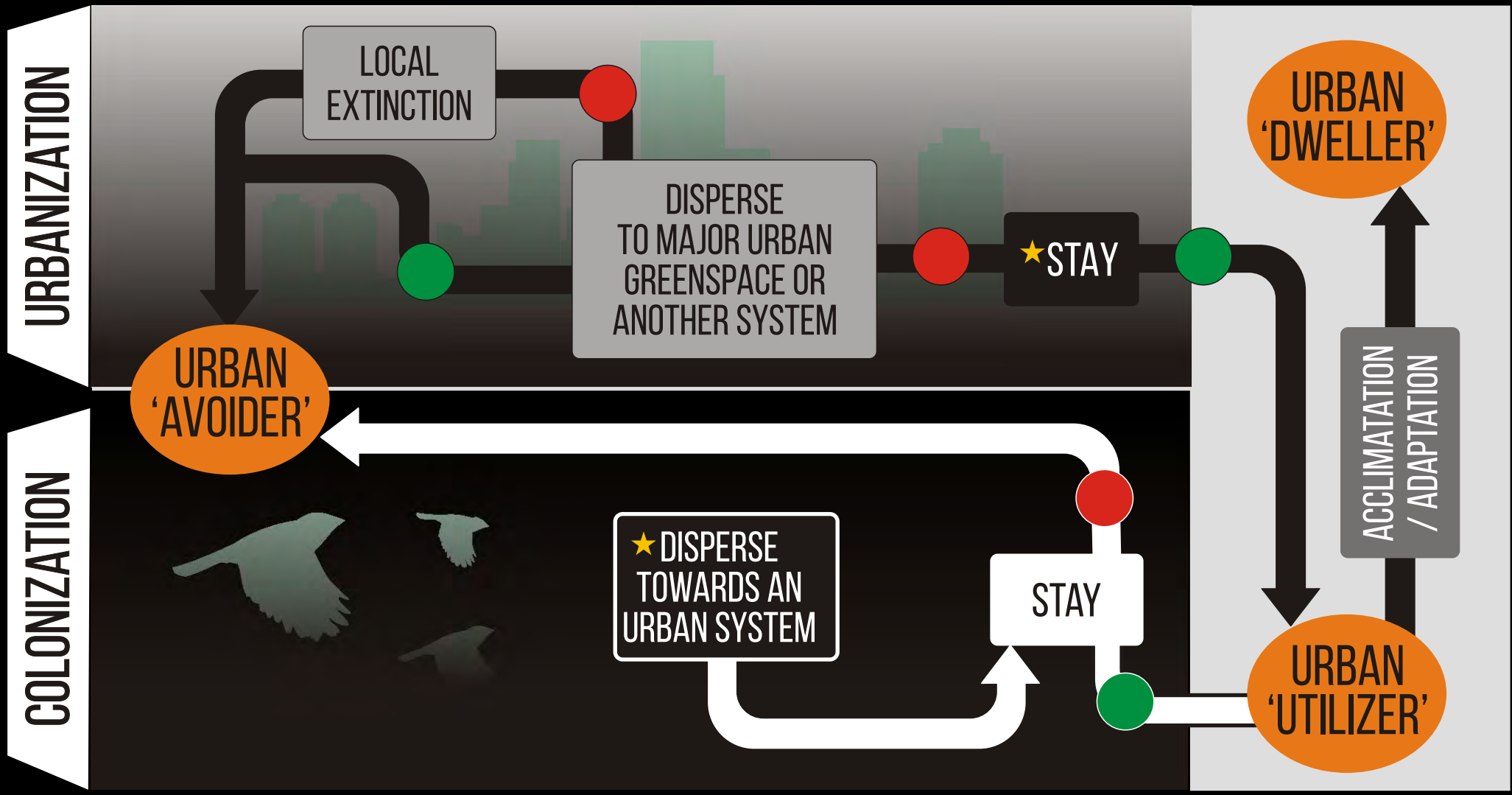

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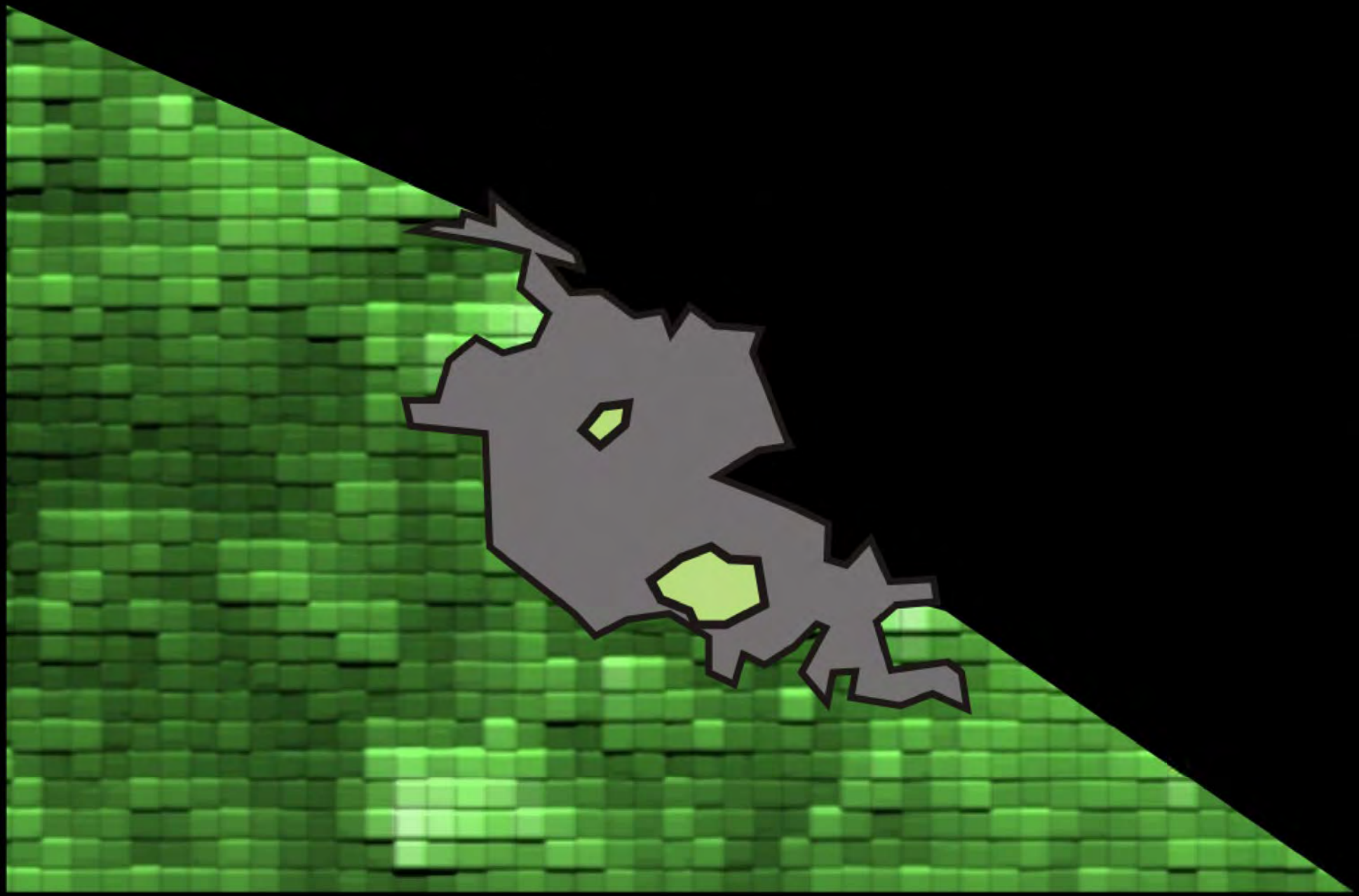

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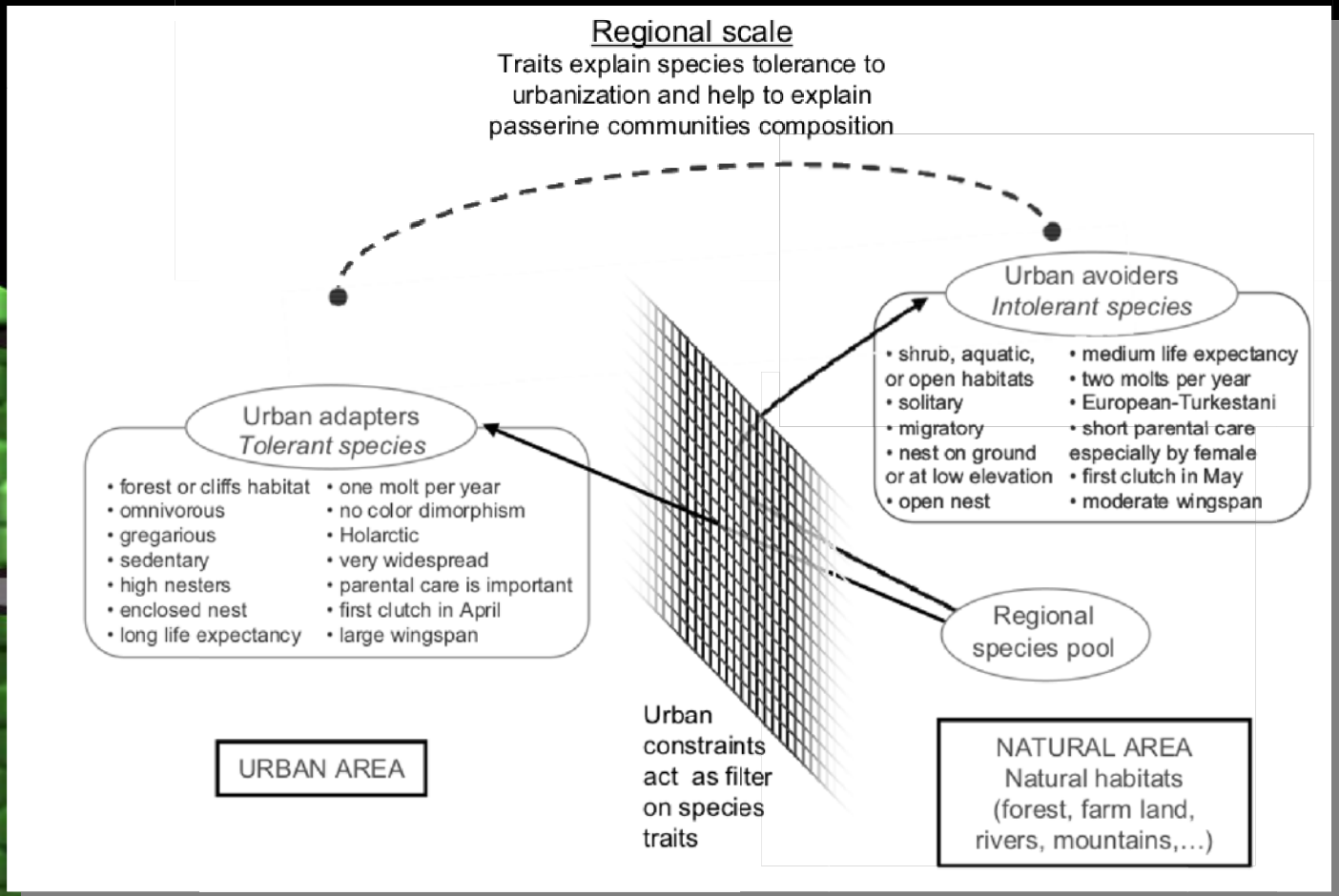

CROCI ET AL. 2008

COMMENTARY

Keys to the city: an integrative conceptual framework on avian urban filtering

Ian MacGregor-Fors [1,*] Michelle García-Arroyo [1] and Javier Quesada [2]

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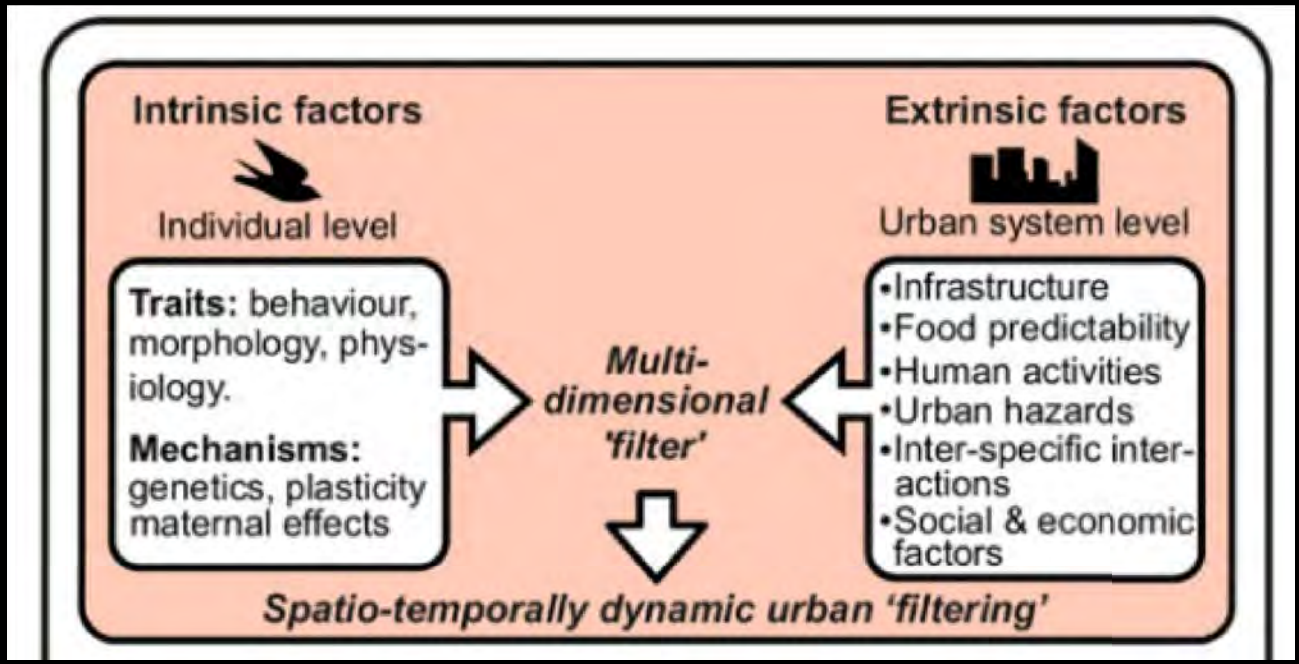

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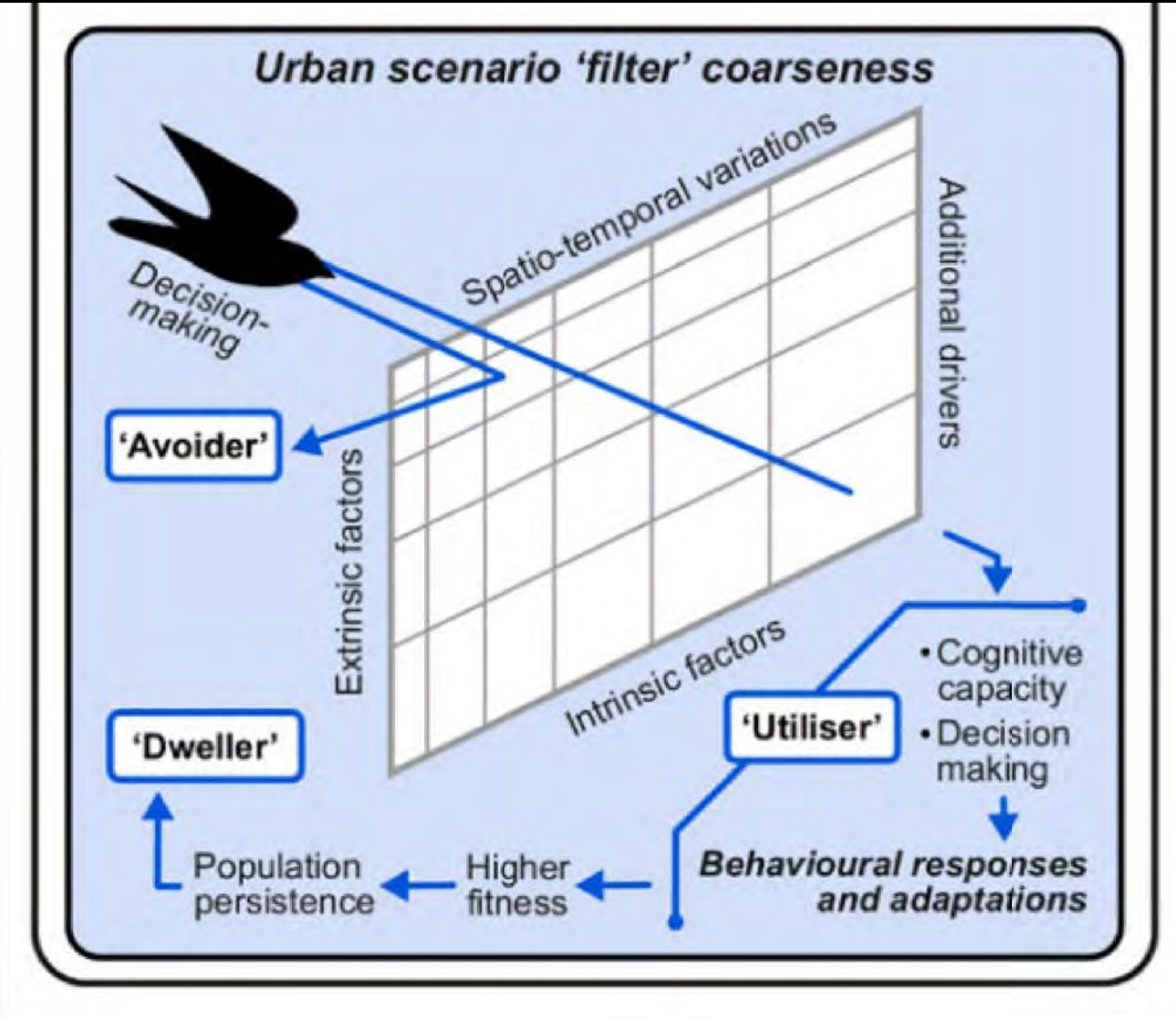

SOME FIRST (VERY SIMPLE) APPROACHES

CASE STUDIES

URBAN FOCUS

SINGLE-CITY ○ WEST-CENTRAL MEXICO

MACGREGOR-FORS ET AL (2013) STUD AVIAN BIOL, 45: 33-48

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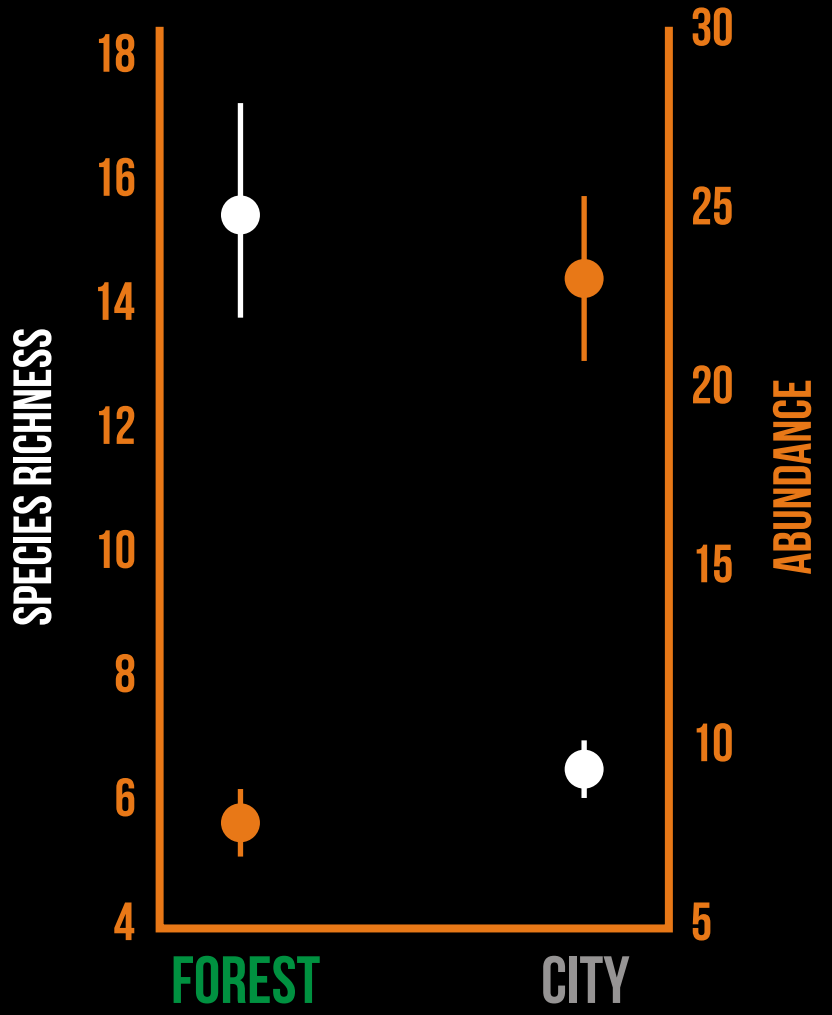

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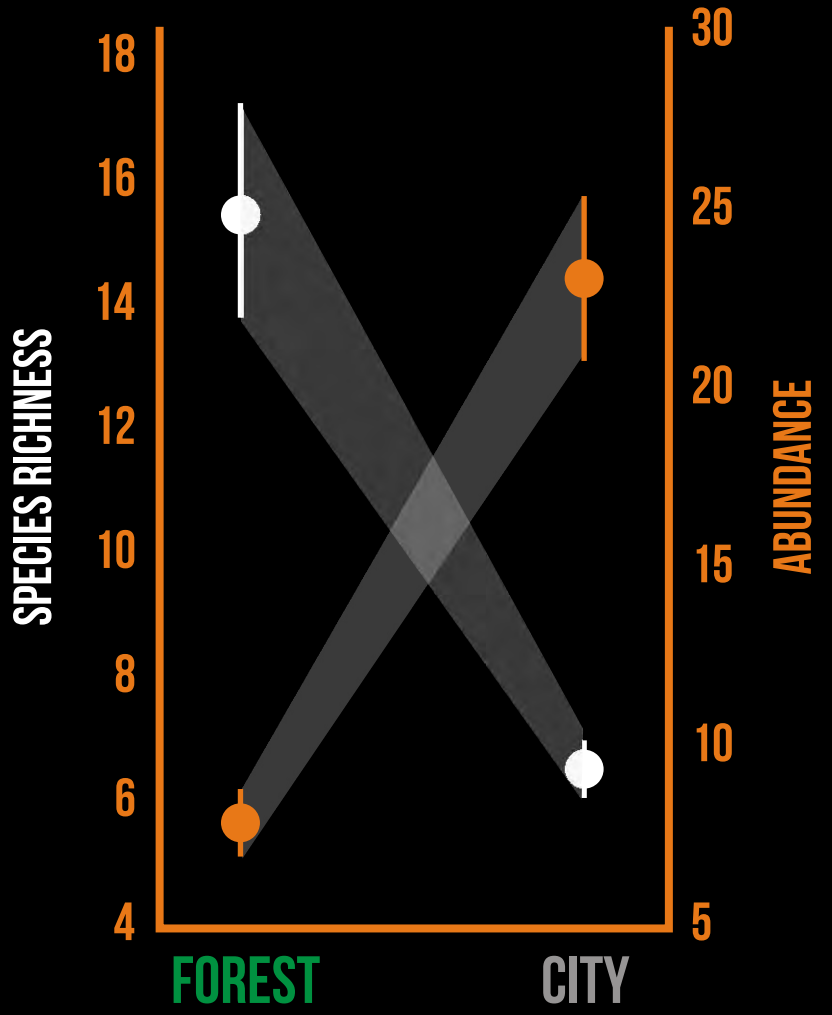

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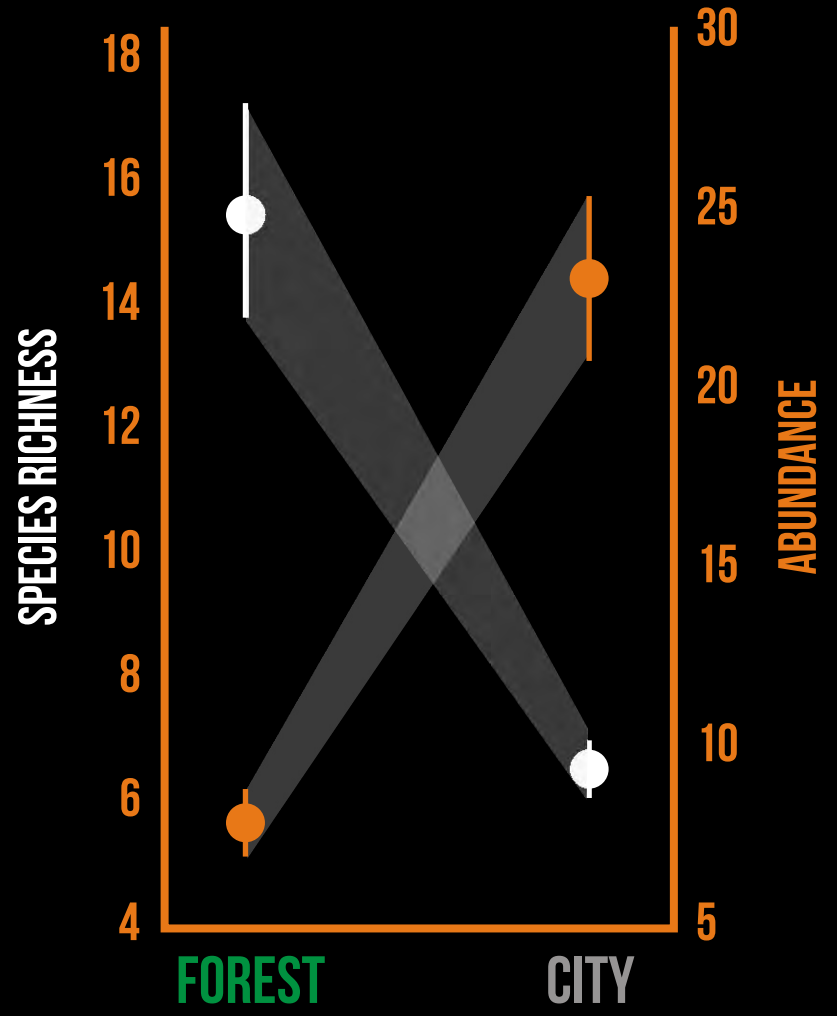
MACGREGOR-FORS ET AL (2013) STUD AVIAN BIOL, 45: 33-48

RICHNESS

- TREE, HERB. COV. (+); CAR TRAFFIC (-)

ABUNDANCE

- HERB HT., BUILD. HT. (+)



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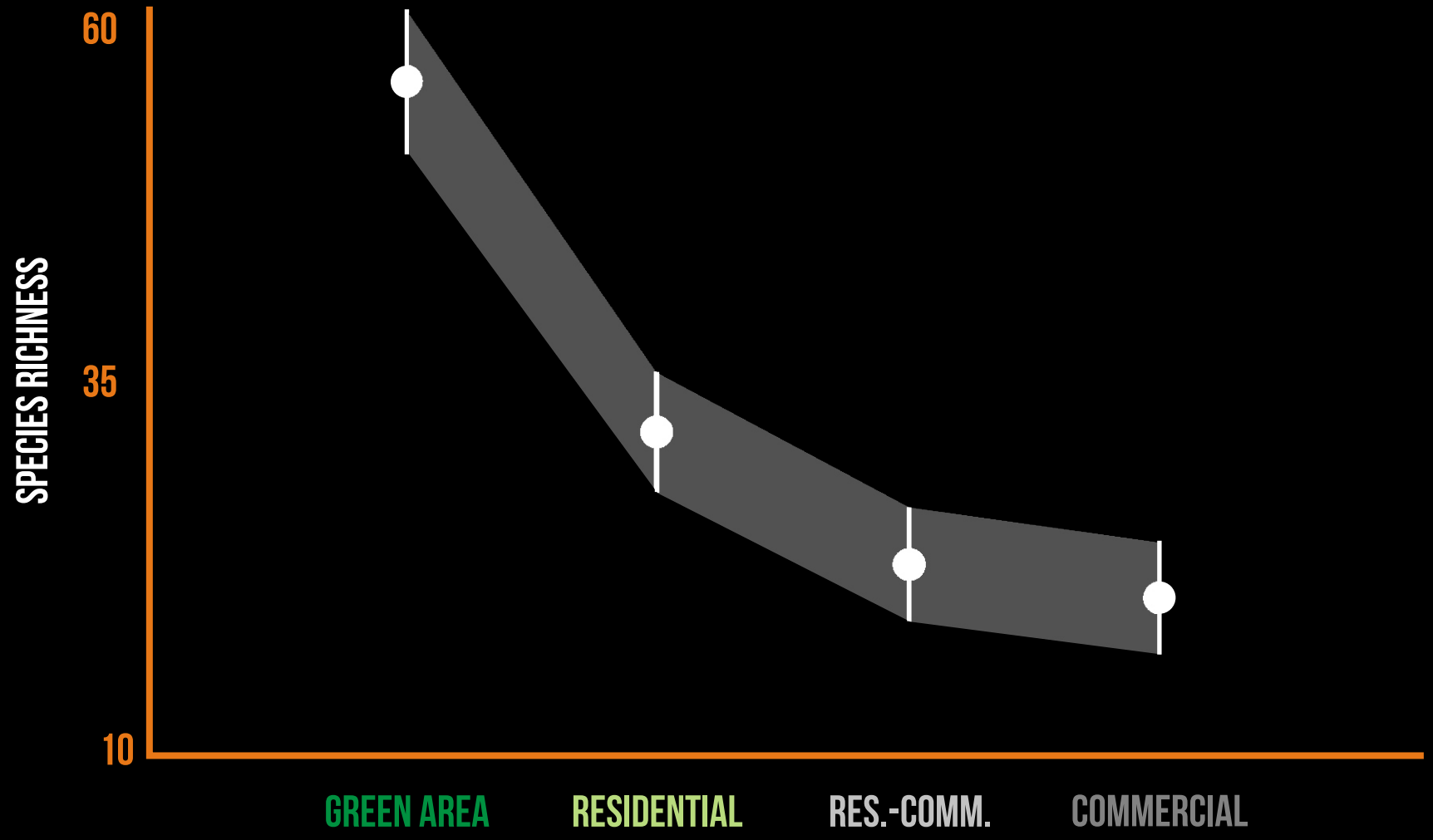
SINGLE-CITY ○ CENTRAL MEXICO

ORTEGA-ÁLVAREZ & MACGREGOR-FORS (2009) LANDSC URBAN PLAN, 90: 189-195



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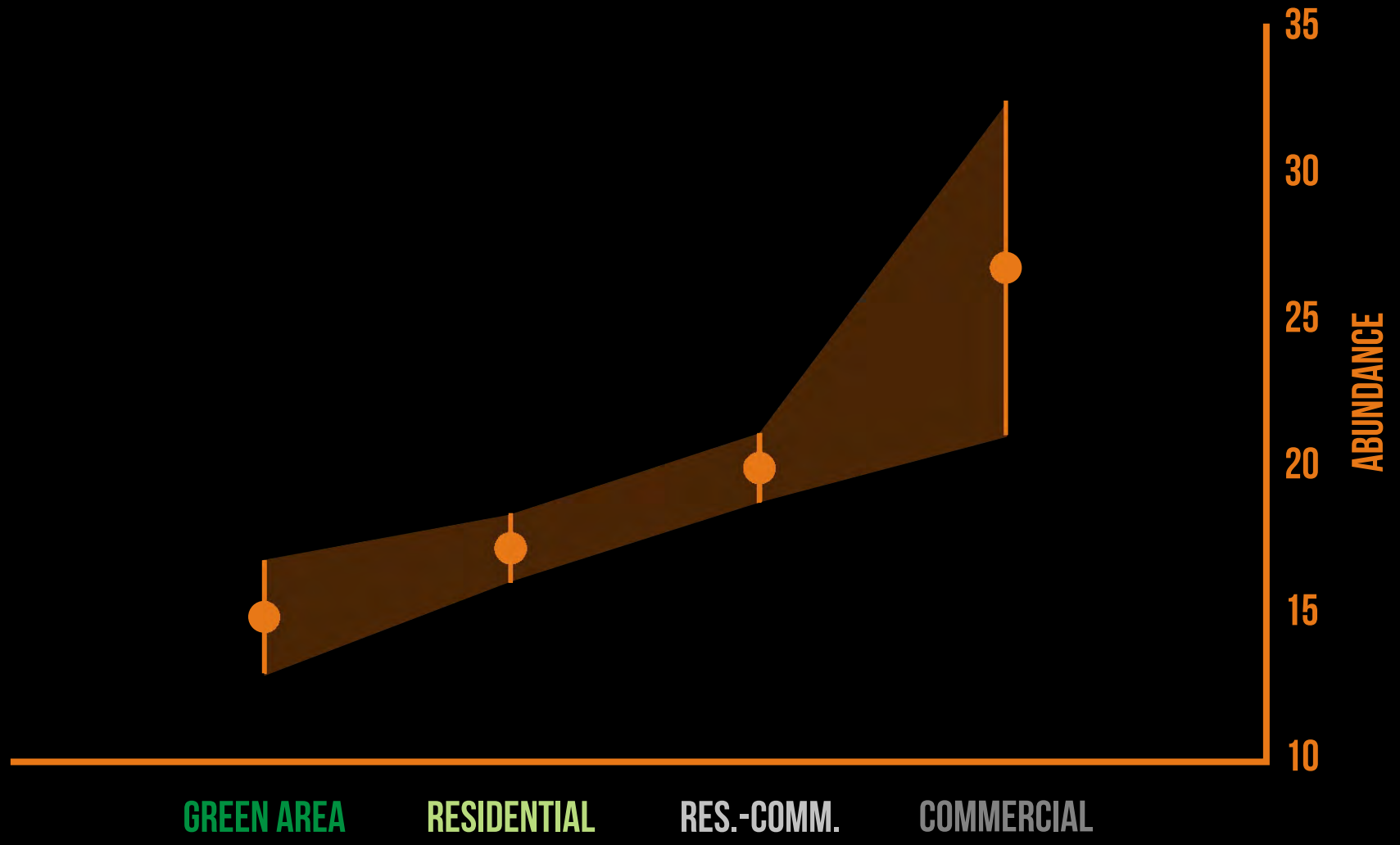

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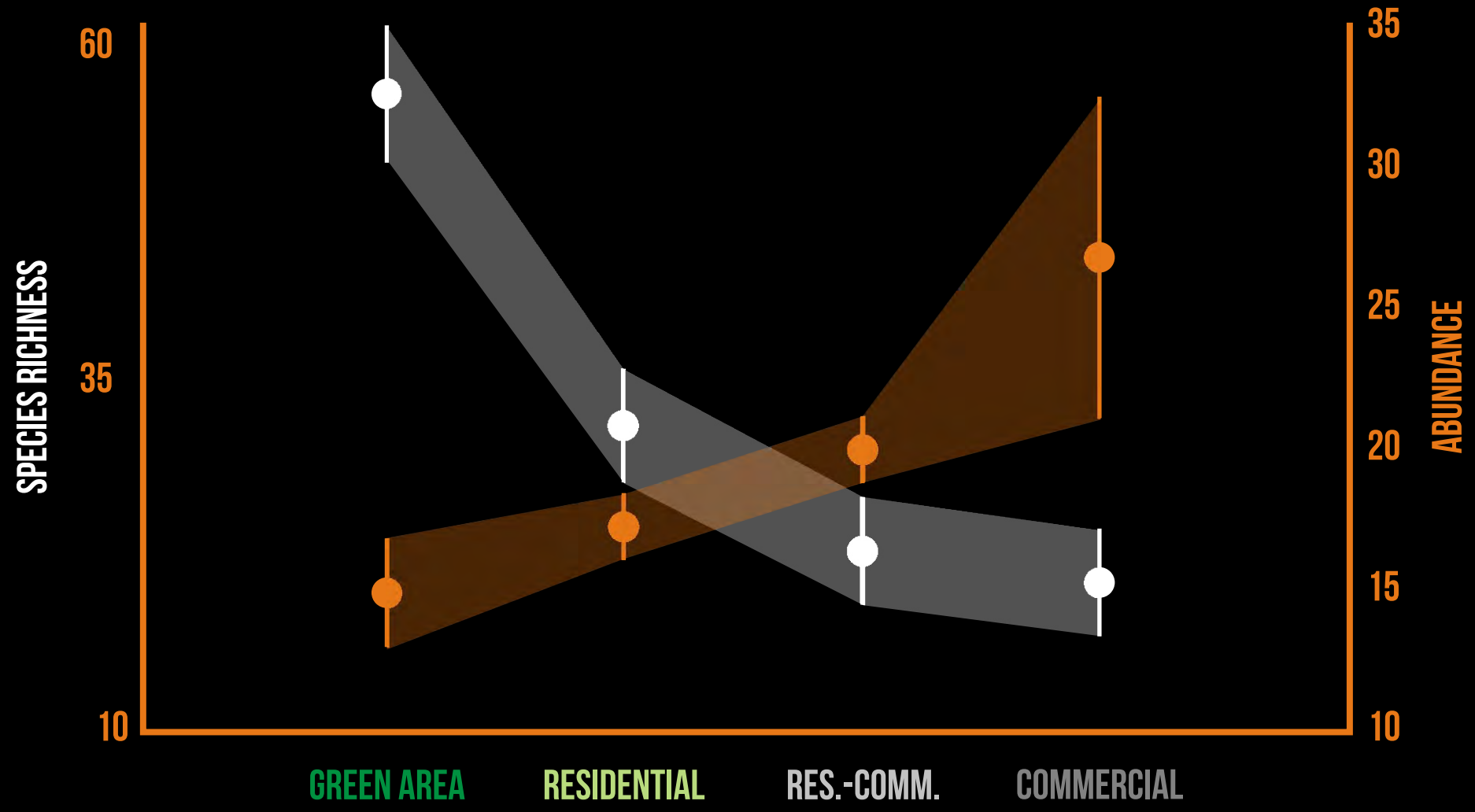


WHICH ARE THE FACTORS
BEHIND THESE PATTERNS?

CASE STUDIES

URBAN FOCUS

33 VARIABLES

VEGETATION • BUILT INFRAST. • HUMAN ACTIVITIES • THREATS

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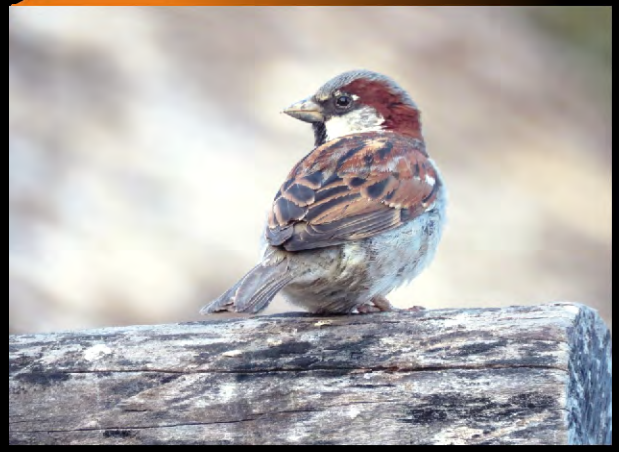


MODERATELY ABUNDANT

RARE

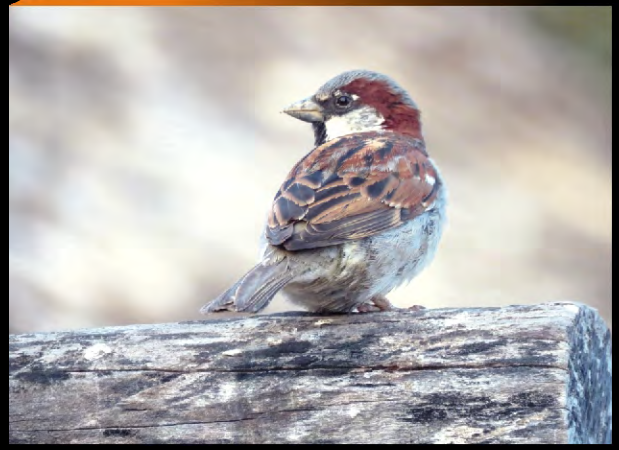
CASE STUDIES

URBAN FOCUS

MULTIPLE-CITY ○ WEST-CENTRAL MEXICO

MACGREGOR-FORS & SCHONDUBE (2011) BASIC APPL ECOL, 12: 372-381

ABUNDANT



CABLES (+)
LIGHTNING RODS (+)
BUILDING HEIGHT (+)

MODERATELY ABUNDANT

TREE/SHRUB COVER (+)
PASSING PEDESTRIANS (-)
BUILDING COVER (-)
POLES/DOGS (-)

RARE

TREE COVER (+)
HERBACEOUS HEIGHT (+)
DOGS/PEDESTRIANS (-)
LAMP POLES (-)

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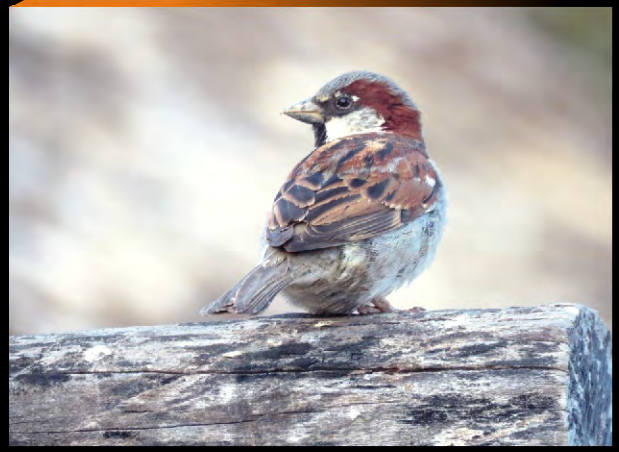

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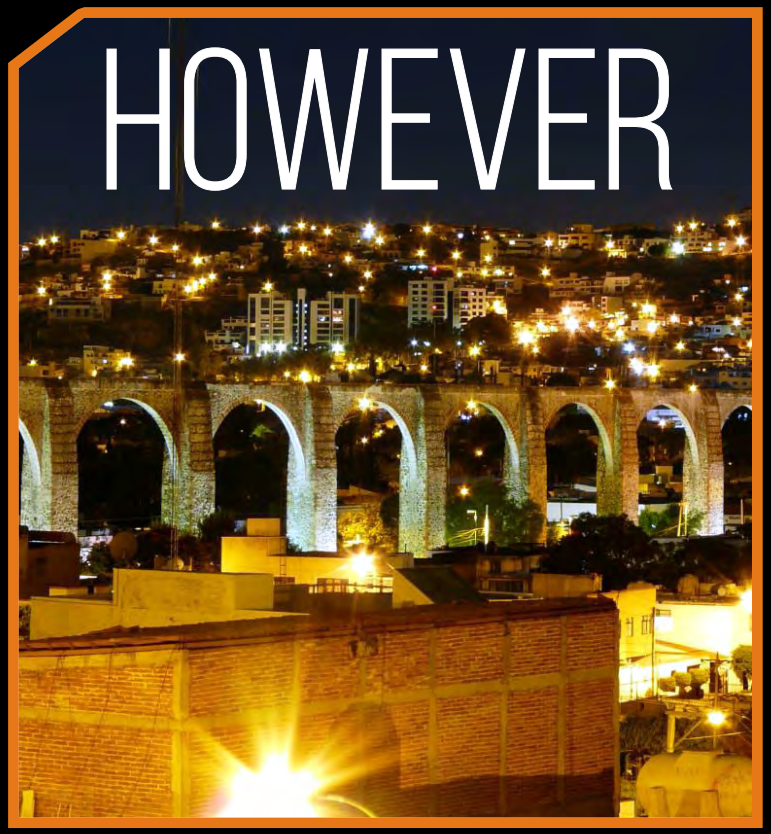
CASE STUDIES

URBAN FOCUS

SINGLE-CITY ○ SEMI-ARID CENTRAL MEXICO

MALAGAMBA-RUBIO ET AL (2013) ORNITOL NEOTROP, 24: 371-386



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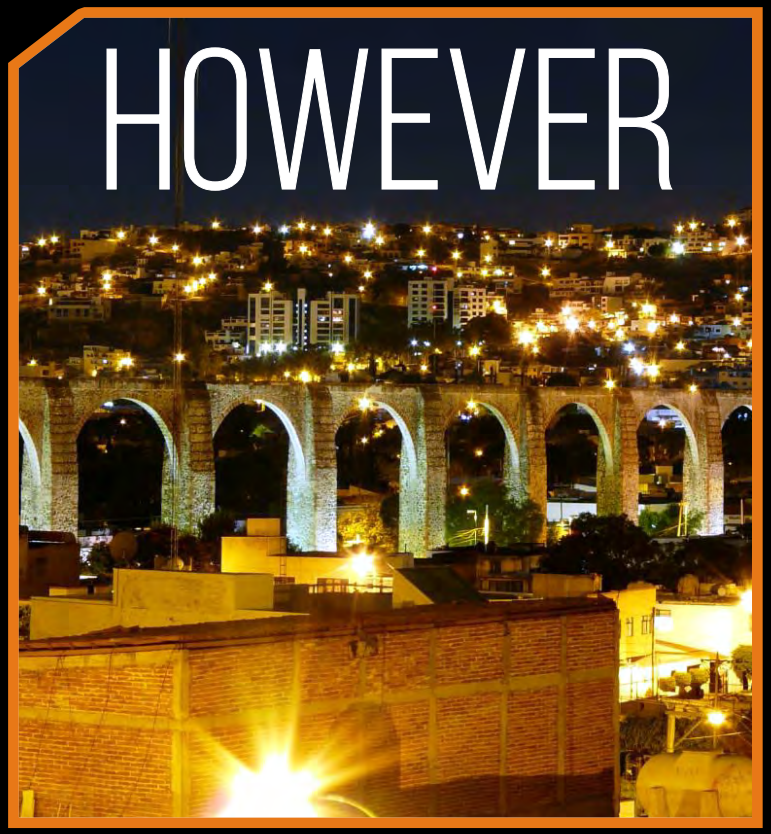

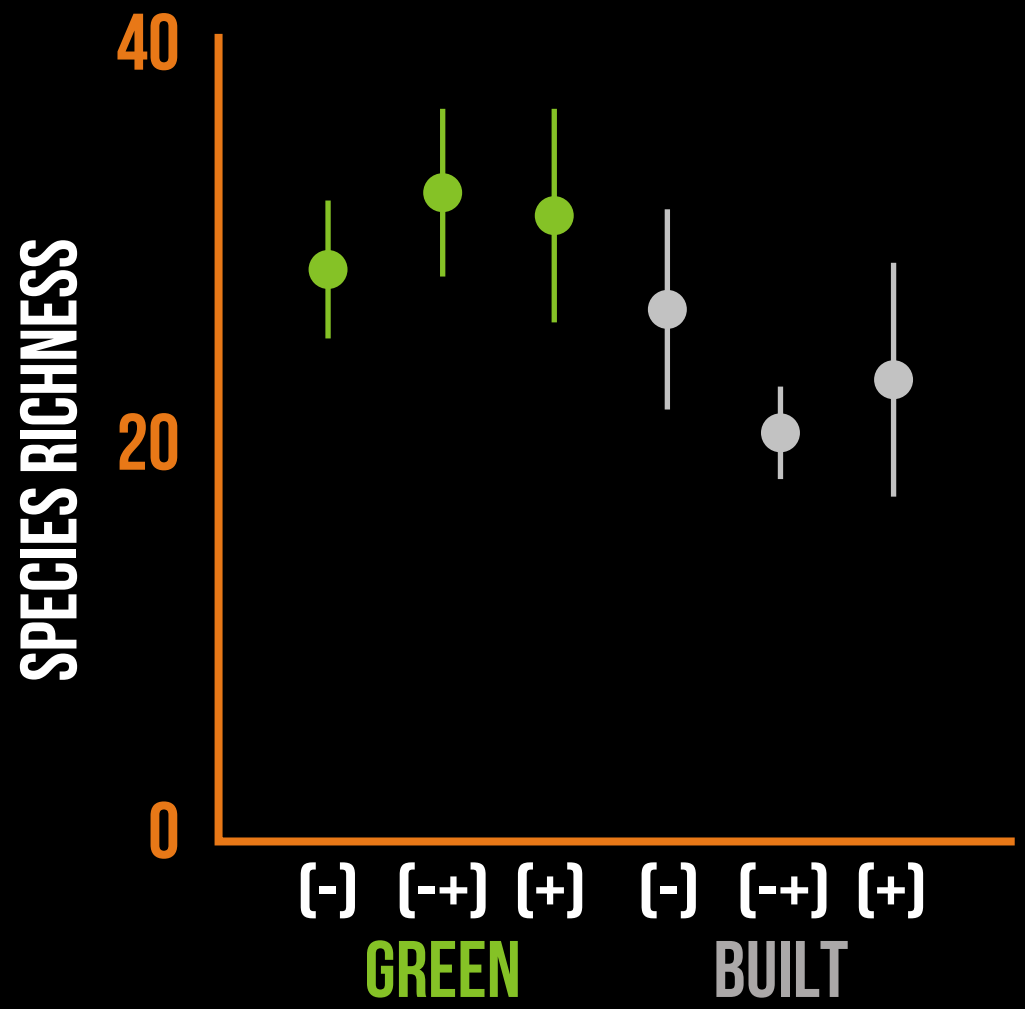

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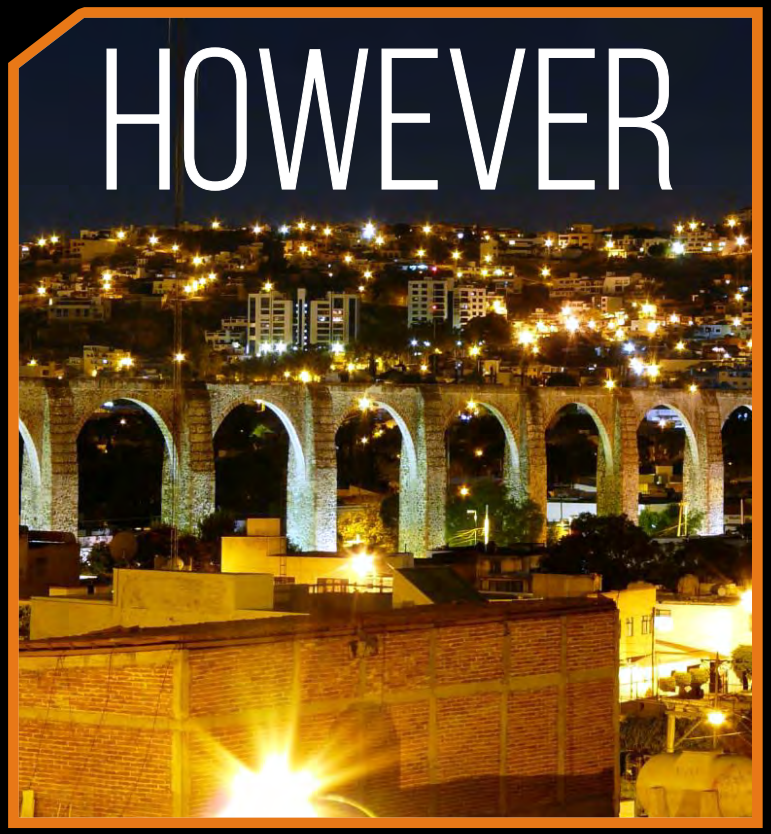

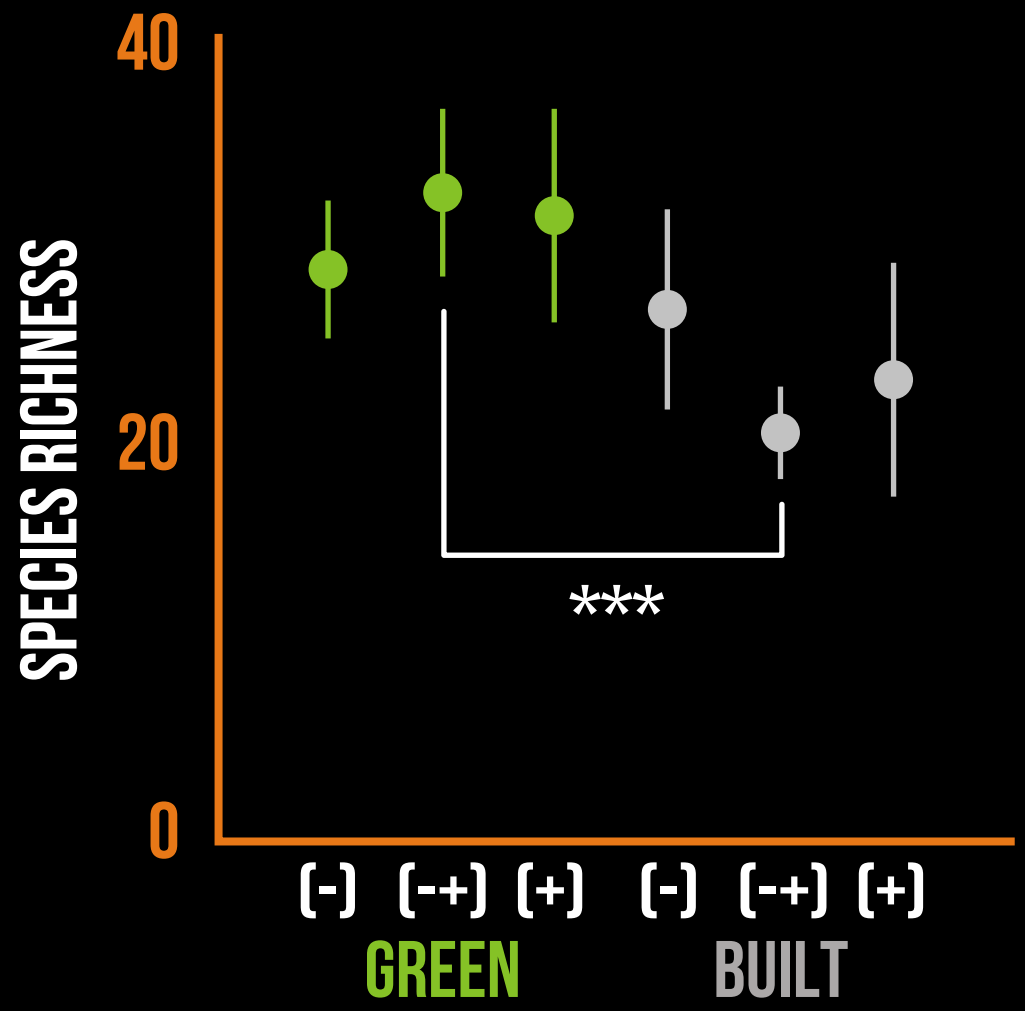

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URBAN FOCUS

SINGLE-CITY ○ WEST-CENTRAL MEXICO

MACGREGOR-FORS ET AL (2010) CONDOR, 112: 711-717

WHAT HAPPENS TO MIGRATORY BIRDS?

CASE STUDIES

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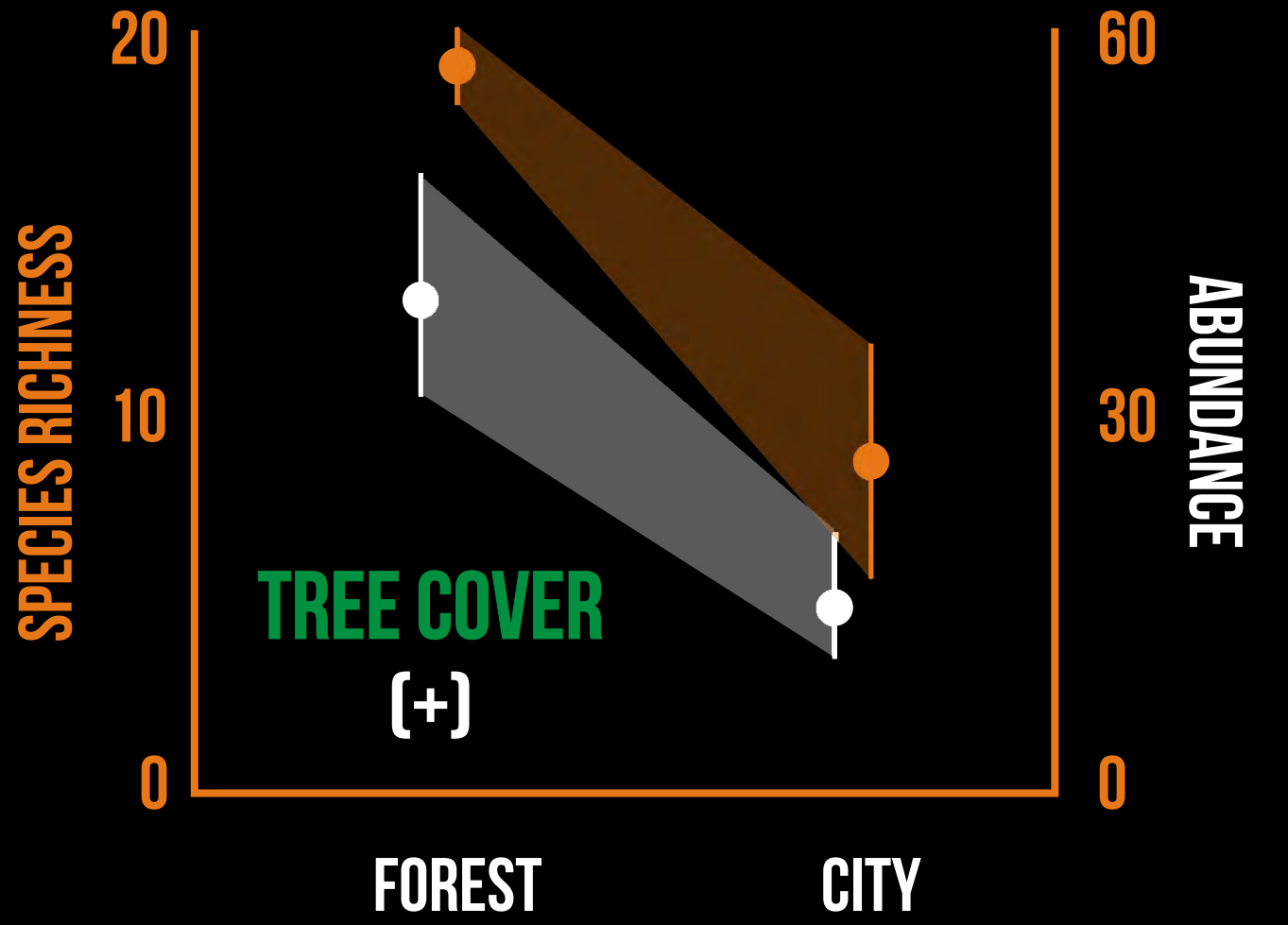

GETTING THINGS COMPLICATED

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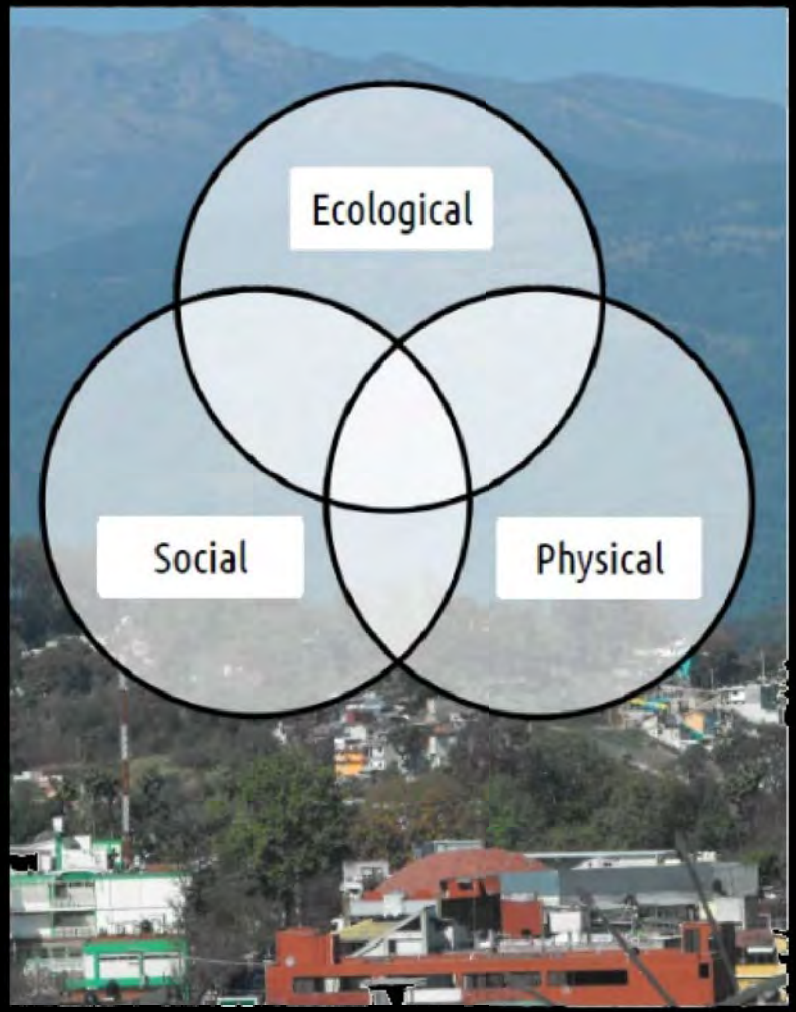
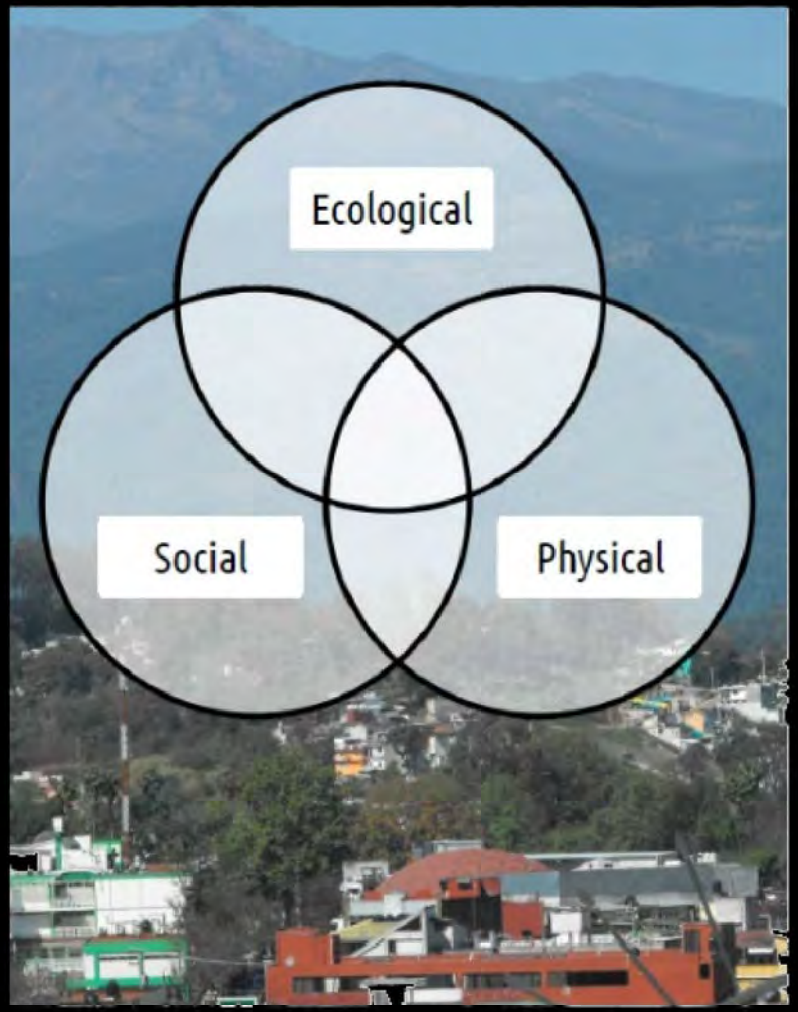
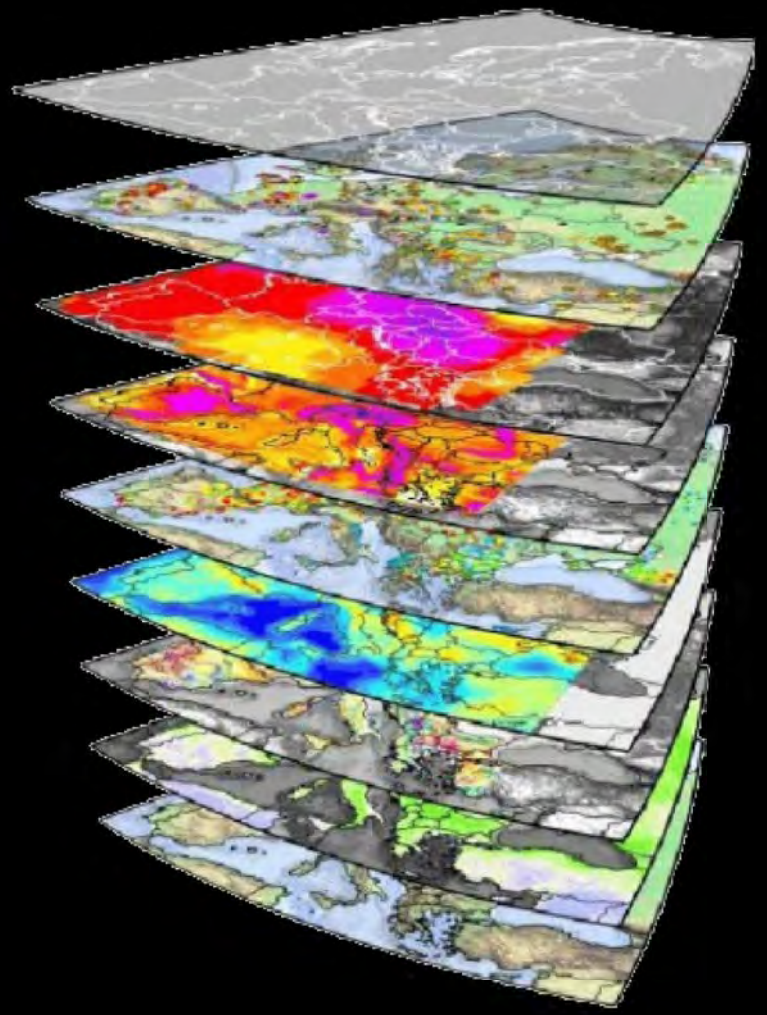


GETTING THINGS COMPLICATED





ECOSYSTEM INTEGRITY

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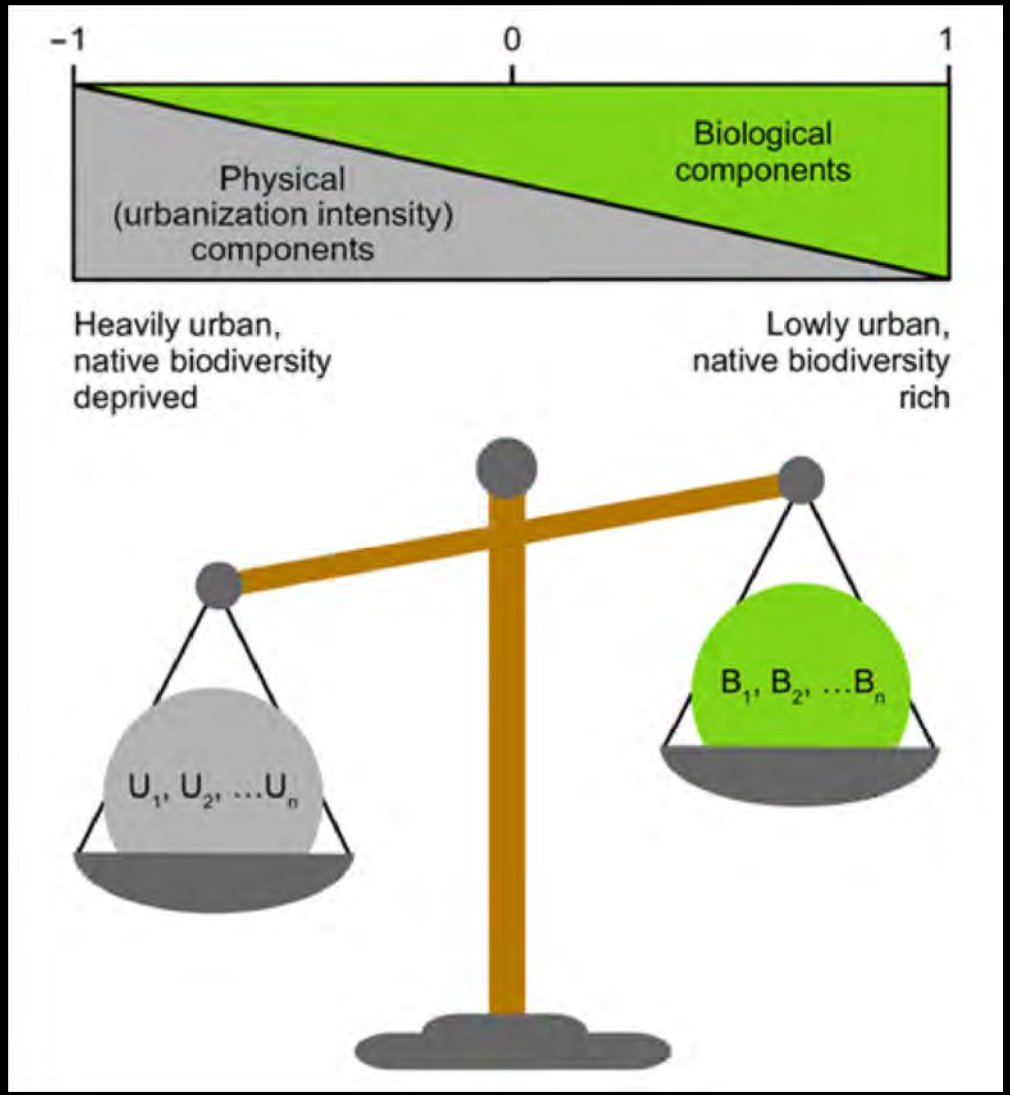
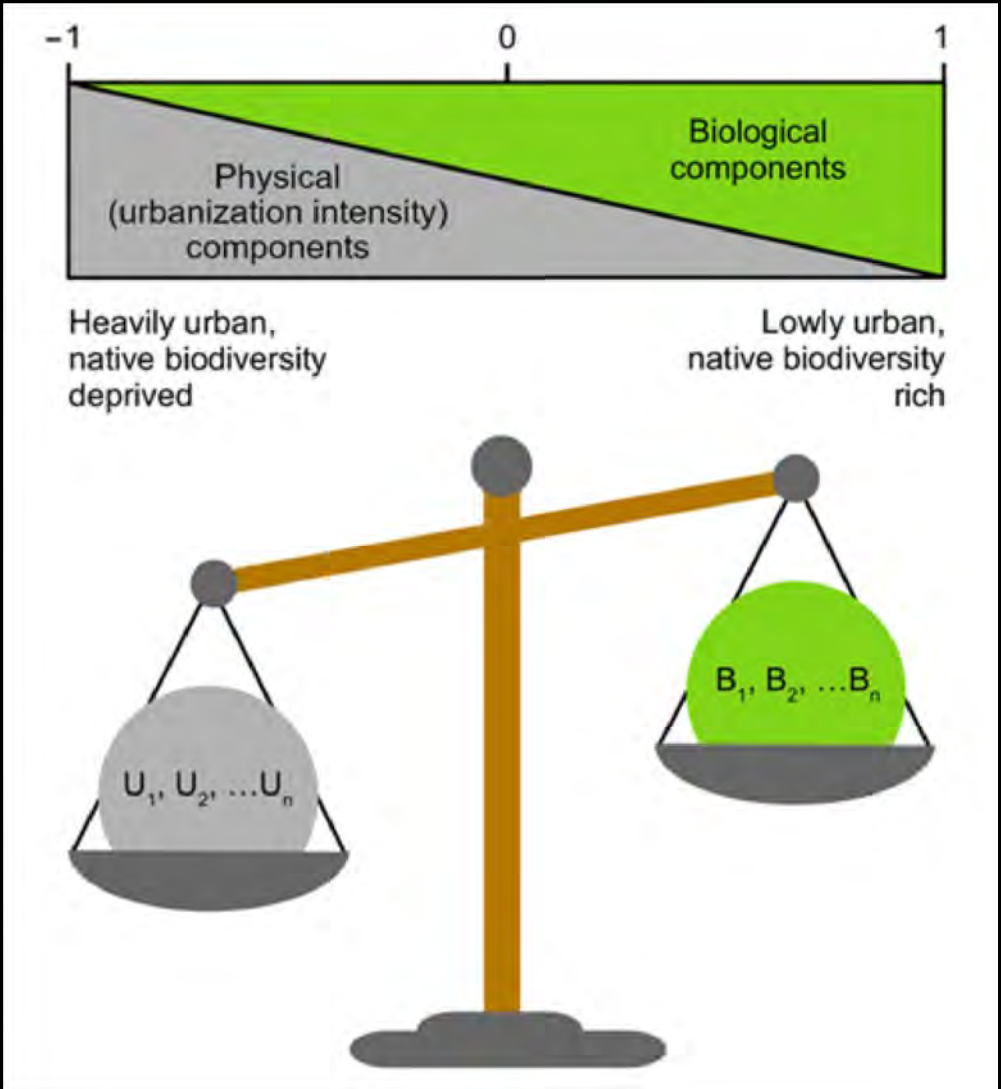
"THE CAPABILITY OF SUPPORTING AND MAINTAINING A BALANCED, INTEGRATED, ADAPTIVE COMMUNITY OF ORGANISMS HAVING A SPECIES COMPOSITION, DIVERSITY, AND FUNCTIONAL ORGANIZATION COMPARABLE TO THAT OF NATURAL HABITAT OF THE REGION"

KARR ET AL. 1981

ECOSYSTEM INTEGRITY



ECOSYSTEM INTEGRITY



$$UEII = \{[(U_1 + U_2 + \ldots\ U_n)/n_U]\ (-1)\} + [(B_1 + B_2 + \ldots\ B_n)/n_B],$$

ECOSYSTEM INTEGRITY

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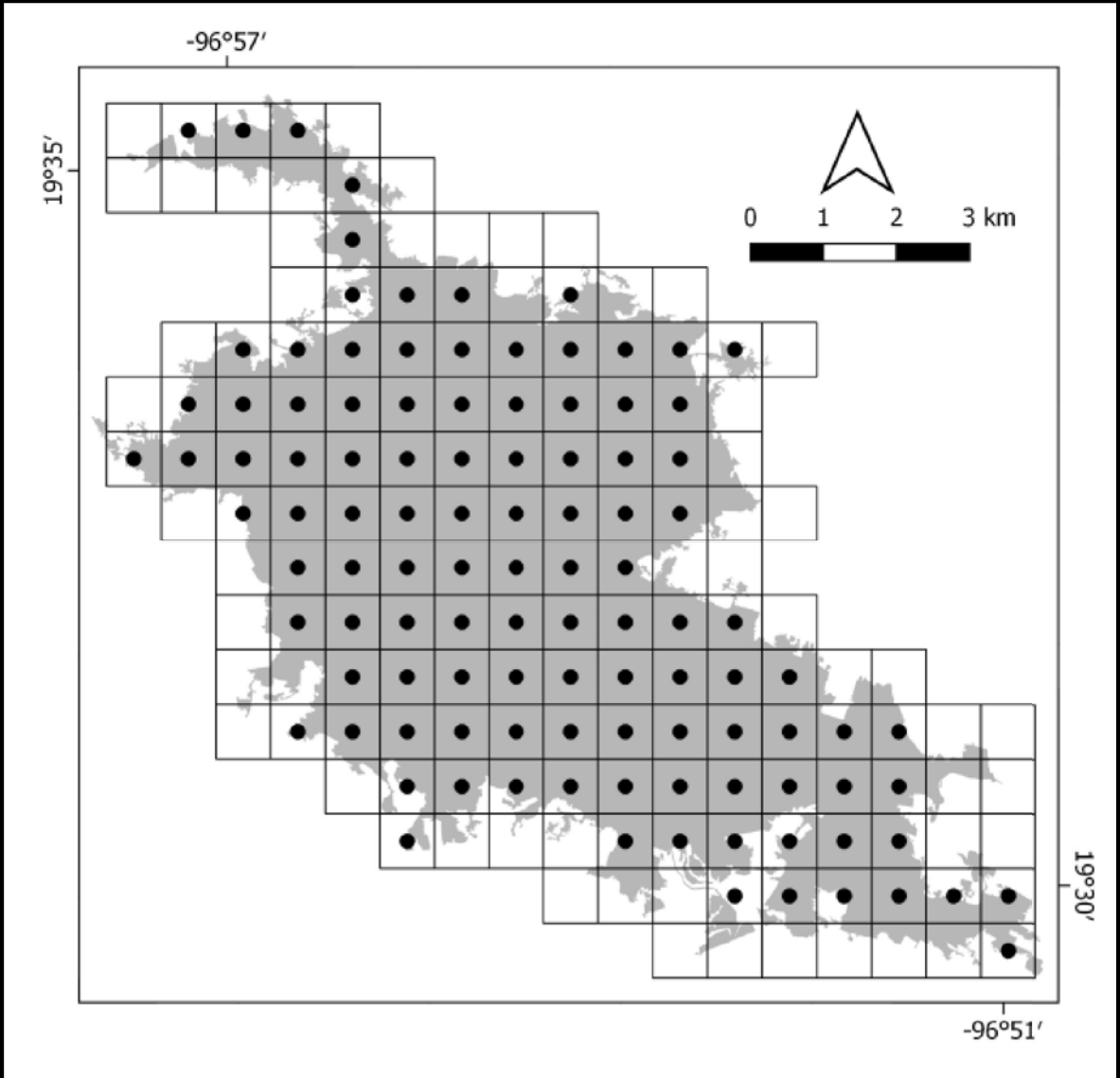
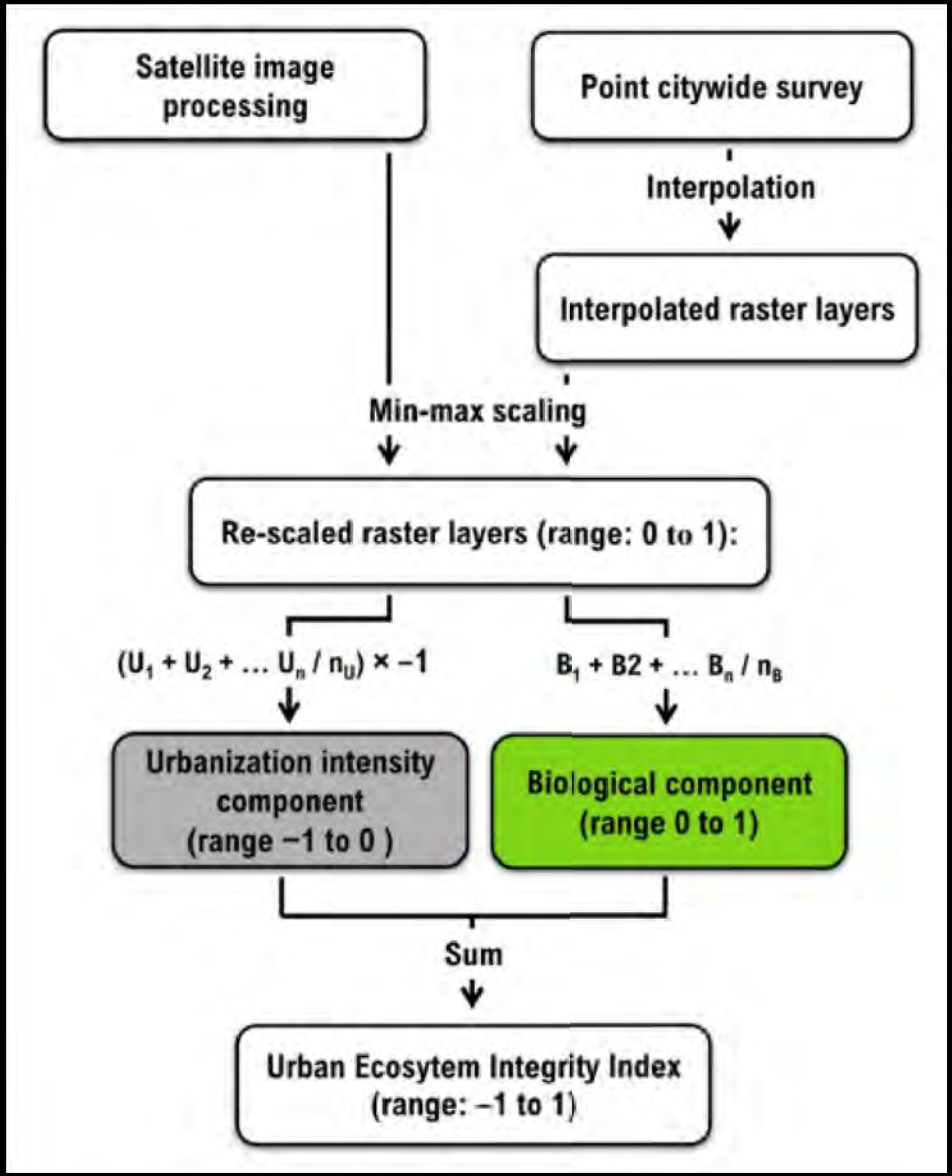


ECOSYSTEM INTEGRITY



ECOSYSTEM INTEGRITY