The Window Unit:
Low-tech animal husbandry in the high-rise

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Like humans, animals have also witnessed a steady shrinking of their territory, space, or landscape of inhabitation. The Window Unit creates individualized animal habitats that take advantage of the human environment in a way that allows for a mutualistic relationship. Chickens, bees, and fish gain a useful and previously uninhabitable space in the air, their living quarters curiously fastened to a window ledge via a simple and solid steel armature.

Borrowing design intuition from the much maligned window air conditioner units found in cities around the world, this appendage uses the existing structural frame and the accessible aperture of the window to create a new liminal space, between inside and out, between the human and animal realms. In providing useful food for the household inside, the Window Unit is a form of architectural mutualism. This synergistic relationship couples habitat for animals with edible products for humans, creating a scalable model for increasing urban self-sufficiency.

Each type of Window Unit has been designed to reflect the unique needs of the animals it houses. Like conventional bee hives, aquariums, and chicken coops, these individualized habitats create autonomous zones for each species to thrive. And like those predecessors, each of these idiosyncratic protuberances has an articulated human edge at the building envelope dedicated for feeding, cleaning, and harvesting.

Animal-populated Window Units enable the resurrection of household-based urban food production. This bottom-up agricultural strategy enlists urban dwellers who elect to stock their window space with chickens, bees, or fish in creating a new urban food system. Working at a very small scale, with eminently replicable technologies, these wall projections have the potential to link on-site agricultural production to vast numbers of independent households.

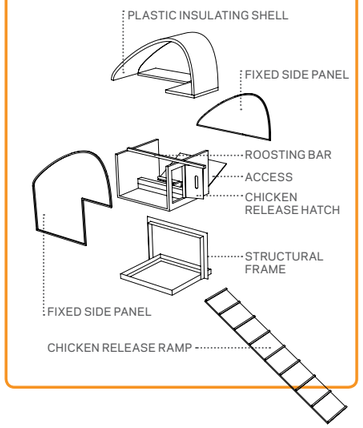
Because the Window Unit is a small and scalable feature, it can be produced for affordability and incremental growth. Although the shape of each type of Window Unit differs, the design of each of these habitats adheres to the standard condition of a typical window HVAC unit at the building envelope. This interface with the room inside the building occurs by way of an access aperture, which can be opened by humans to clean, feed, or harvest. Outside of the building, each Window Unit sheds water, self-ventilates, and defies temperature extremes through a thick plastic-cast insular shell.

Each Window Unit provides approximately four square feet of productive habitat for resident animals. This tiny farm space will produce up to 50 pounds of honey per season, 600 eggs per year, or several hundred pounds of fish and vegetables annually. And while Window Units may be dispatched across the globe like their window heating and air conditioner predecessors, their contents necessarily develop cultural, climatic and economic specificity. The same method and structure used in these examples can be readily modified to fit local conditions and to house a wide array of productive species.

GALLUS GALLUS DOMESTICUS
The Laying Hen

Number of inhabitants: 2
Cost for supplies: $1.50 per chick, $200 per year in ongoing food
Supplies needed: Food scraps and pellets, watering can, food bin
Yield per year: 600 eggs
Calories per egg: 65 calories
Cost per calorie: $0.w0052
Cost per pound of egg: 0.33
Annual calorie yield per window: 39,000
Annual calories required for one human: 912,500
Percentage of annual caloric needs: 4.2%

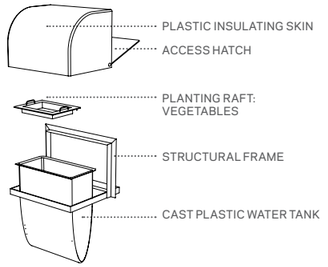
The Window Unit chicken coop holds two laying hens and all of the gear they need for survival. A high roosting bar, low laying nest, and feeding area comprise the interior space. The door connecting to the household is easy to access, permitting cleaning, feeding and egg retrieval. If this Window Unit is placed near the ground, the hens can be let out via an integrated ramp hatch for daytime excursions.



OREOCHROMIS NILOTICUS NILOTICUS
Farmed Tilapia Fish

Number of inhabitants: 10 mature fish per tank
Cost for supplies in the first year: $3 for starts, $30 for pump and filter
Supplies needed: Recirculation pump, fish food
Yield per year: 500 lbs of fish and produce
Calories per pound: 437 calories in 1 pound of Tilapia
Cost per calorie: 0.00015
Cost per pound of fish: $0.06
Annual calorie yield per window: 216,000
Annual calories required for one human: 91,2500
Percentage of annual caloric needs: 24%

Both vegetables and fresh fish may be harvested from this aquaponic Window Unit. With a simple low-tech biofilter and pump, the water in this tank remains aerated and clean. Tilapia grow quickly and are resilient in tight quarters, their ammonia undergoes nitrification to feed the plants above. These plants thrive with a simple root mat, water, and the nitrogen-rich nutrients coming from fish waste.



APIS MELLIFERA
The Honey Bee

Number of inhabitants: Mail order sets of 3,000 bees and a queen
Cost for supplies in the first year: $150 for start-up supply kit
Supplies needed: Protective suit, smoker, extracting tools
Yield per year: 50 lbs of honey
Calories per pound: 22 calories
Cost per calorie: 0.00142
Cost per pound of honey: $3
Annual calorie yield per window: 105,600
Annual calories required for one human: 912,500
Percentage of annual caloric needs: 11%

Based on the classic Langstroth bee hive, this Window Unit features two separate zones: a brood box (for the colony) and a honey super (honeycomb harvesting space) with a Queen Excluder between. Sloped to shed water and allow for humans to harvest honeycomb through the window, a sawtooth shelf system supports rungs at variable heights. A protected opening allows bees to freely come and go without compromising the thermal envelope. When extracting honey, a smoker is used to keep bees out of the house.