



“BINGO” using Dark Skies and Light Pollution Terms

Suggested Instructions are listed below (many variations can be used, i.e., blackout, four square, etc.). Words can be changed for different grade levels or cross out words that are too hard for the participants. The ones we have listed on the back are probably appropriate for grades 3 and up.

Ask each player fill all the 24 blank squares on their Bingo card. They choose which words they want to use and where to place them.

The Bingo caller chooses a word listed on the back of this page and calls out the word(s). For game one, circle the number “1” listed before the word so you know you have used this word in the first game. Each person that has the word on their BINGO page is asked to quickly raise their hand and then to comment on the term, i.e., how it applies to dark skies or light pollution. If the next person has no comment or can’t give a different answer, they have to give up placing a mark on this square. They can simply state single words or brief statements, this should move quickly. If no one has the word on their card, the Bingo caller gives a brief description of the word. Some information for the word are next to the word on the list. There are many other possible answers, but these should help the Bingo caller.

A penny or other object including a scrap of paper can be used for the square markers or they can be marked off with a pencil. If you do this, an “O” could be used for one game and an “X” for the next game. A new sheet would be needed when new words are to be selected.

As in regular Bingo game, filling a row, column, or diagonal line constitutes a “BINGO” which needs to be shouted out. Small prizes or some other reward like being the next Bingo caller could be used.

This game and other Education activities are available on our website. We encourage feedback and suggestions for new activities. Please contact us per addresses below....

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Light pollution and Dark Skies - BINGO Words and Brief Definitions

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Circle game number 1, 2, 3, 4, or 5 when you use this word for that game to avoid using the same words.

- 1 2 3 4 5 **ASTRONOMERS** - People who study the universe and are hurt the most by Light Pollution
- 1 2 3 4 5 **BATS** - One of Arizona's night time pollinators, outdoor light does not help them, distracts them, confuses them.
- 1 2 3 4 5 **BIRDS** - Often collide with lit buildings and can lose their way migrating due to light pollution.
- 1 2 3 4 5 **BUSINESS SIGNS** - Create some light pollution, must be turned off one hour after the close of business.
- 1 2 3 4 5 **CFL** - Compact Fluorescent Lamp, uses 25% of incandescent bulb energy, lasts longer, twisty shape.
- 1 2 3 4 5 **CIRCADIAN RHYTHM** - Your body clock, you must have light and dark cycles to keep in sync.
- 1 2 3 4 5 **DARK SLEEP** - Necessary for circadian rhythms to sync., melatonin generation, human health in general.
- 1 2 3 4 5 **DARK SKY** - Is needed for good astronomy, bird migrations, bat foraging, moth pollinators, fish spawning, etc.
- 1 2 3 4 5 **EDUCATION** - The most needed item in helping to reduce Light Pollution. Learn more, pass it on.
- 1 2 3 4 5 **FISH** - Spawning and eating habits as well as general health are affected by outdoor lights.
- 1 2 3 4 5 **FLAGSTAFF** - First IDA dark sky friendly city in USA. Lowell, observatory where Pluto was discovered.
- 1 2 3 4 5 **FLOOD LIGHT** - One of the worst residential light polluters. Must be aimed down at 45 degrees or less.
- 1 2 3 4 5 **FOOT CANDLE** - A unit of measuring light, light from a candle one foot away, abbrev. is fc, light meter reading
- 1 2 3 4 5 **GLARE** - A type of light pollution-horizontal light in your face, annoying, safety hazards, blinding
- 1 2 3 4 5 **HOLIDAY LIGHTS** - Pima County code, can be on to 11 pm from Thanksgiving to early January each year.
- 1 2 3 4 5 **HORIZONTAL** - Light traveling horizontal is worse for observatories, causes more light pollution than going up.
- 1 2 3 4 5 **HPS** - High Pressure Sodium, yellowish high intensity lamps, are the most common for street lights/parking lots.
- 1 2 3 4 5 **IDA** - International Dark-Sky Association, committed to Preserving and Protecting the night sky, located in Tucson.
- 1 2 3 4 5 **INCANDESCENT** - Old style light bulb, being replaced by CFL's, 85% energy goes to heat, Thomas Edison inventor
- 1 2 3 4 5 **KITT PEAK** - Observatory west of Tucson, has over 20 telescopes, has public tours, has solar telescope.
- 1 2 3 4 5 **LED** - Light Emitting Diode, latest technology for street lighting, uses only 10% of incandescent lamp energy.
- 1 2 3 4 5 **LIGHT POLLUTION (LP)** - Light going up and horizontal, bad for astronomy, wildlife, humans, plants
- 1 2 3 4 5 **LIGHT TRESPASS** - A type of LP - light leaving your property, annoying, wasted energy
- 1 2 3 4 5 **LIGHTS DOWN** - Good light fixtures always shine their light down, allows stars to be visible.
- 1 2 3 4 5 **LUMENS** - Units used for designating light bulb output, a unit of measure for light.
- 1 2 3 4 5 **MELATONIN** - Generation of this chemical is greatly reduced by not having dark sleep. Helps fight disease.
- 1 2 3 4 5 **MERCURY VAPOR** - A greenish color of light, sale of these lamps are banned in AZ, can't use starting in 2011.
- 1 2 3 4 5 **MILKY WAY** - A candy bar, galaxy, our solar system in it, should be able to see it at night if low Light Pollution.
- 1 2 3 4 5 **MIRROR LAB** - Facility at the U of A making precision telescope mirrors up to 8.4 meters in diam (27.5 feet)
- 1 2 3 4 5 **MOTHS** - Are attracted to white light as if it were a magnet, fly to their death, need to be pollinating at night.
- 1 2 3 4 5 **MOTION DETECTOR** - An excellent way to turn lights on and off to minimize energy use.
- 1 2 3 4 5 **MT. GRAHAM** - Vatican 1.8m telescope is here. New 8.4m Large Binocular Telescope (LBT) is here too.
- 1 2 3 4 5 **MT. HOPKINS** - Location of large single mirror (6.5 meters diameter) MMT telescope east of Green Valley, AZ.
- 1 2 3 4 5 **NOCTURNAL** - Refers to animals that are active at night. Lights on may confuse them thinking it is day time.
- 1 2 3 4 5 **OBSERVATORIES** - Need dark skies to function, have restricted outdoor lighting for miles around them.
- 1 2 3 4 5 **OLC** - Outdoor Lighting Code, these are rules to restrict and control outdoor lighting, Pima County has since 1973
- 1 2 3 4 5 **OWL** - Nocturnal, has excellent vision at night if low light pollution.
- 1 2 3 4 5 **SAFETY** - Glare in your face while driving, bike riding or walking can cause safety problems (temp. blind you).
- 1 2 3 4 5 **SEA TURTLES** - Hatchlings easily get confused by lights on buildings, they must find the water quickly.
- 1 2 3 4 5 **SHIELDS** - A way to control the light downward, can often be added to existing fixtures to improve them.
- 1 2 3 4 5 **SKY GLOW** - A type of LP-light up sky, upwards light, hides stars, wasted energy, hurts astronomy
- 1 2 3 4 5 **SOUTHERN ARIZONA** - Most number of telescopes and astronomers, good outdoor lighting codes since 1973.
- 1 2 3 4 5 **SPORTS LIGHTING** - Often a big source of light pollution, these lights usually have an 11 pm curfew.
- 1 2 3 4 5 **STREET LIGHTS** - Biggest cause of light pollution, most are on all night, many are not needed, many too bright.
- 1 2 3 4 5 **SUN** - Closest, biggest, brightest star, 93 M miles from earth, 109 diameters, can cause communications problems
- 1 2 3 4 5 **TELESCOPE** - Used to view planets and stars, sky glow can make them useless, lots around Tucson,
- 1 2 3 4 5 **THOMAS EDISON** - Invented the incandescent light bulb, the light bulb used today with a tungsten filament.
- 1 2 3 4 5 **TWO BILLION** - Amount of wasted light headed skyward is estimated to cost over two billion dollars per year.
- 1 2 3 4 5 **UNSHIELDED FIXTURES** - Not good, poor light control, often causes lots of glare and light trespass.
- 1 2 3 4 5 **WASTED ENERGY** - Lights with no purpose, lights are left on for no reason, wastes water for elect. generation.

Light Pollution and Dark Skies “BINGO” Card

Choose one of the terms below for each of the 24 blank squares above. Write the word(s) in the square to make your own BINGO card, a different word for each square.

ASTRONOMERS
 BATS
 BIRDS
 BUSINESS SIGNS
 CFL
 CIRCADIUM RHYTHM
 DARK SLEEP
 DARK SKY
 EDUCATION
 FISH
 FLAGSTAFF
 FLOOD LIGHT
 FOOT CANDLE
 GLARE
 HOLIDAY LIGHTS
 HORIZONTAL
 HPS

IDA
 INCANDESCENT
 KITT PEAK
 LED
 LIGHT POLLUTION (LP)
 LIGHT TRESPASS
 LIGHTS DOWN
 LUMENS
 MELATONIN
 MERCURY VAPOR
 MILKY WAY
 MIRROR LAB
 MOTHS
 MOTION DETECTOR
 MT. GRAHAM
 MT. HOPKINS
 NOCTURNAL

OBSERVATORIES
 OLC
 OWL
 SAFETY
 SEA TURTLES
 SHIELDS
 SKY GLOW
 SOUTHERN ARIZONA
 SPORTS LIGHTING
 STREET LIGHTS
 SUN
 TELESCOPE
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