



# Lesson Two

## The Horses We All Own - The Wild Horse & Burro Program

- Content explores government ownership of horses, the Wild Horse and Mustang Program (*Description of current state of affairs and challenges facing BLM program.*)

### Teacher Guide and Resources:

#### Goals

1. Learner will increase awareness of equine evolution and biology.
2. Learner will develop geography and mapping skills.
3. Learner will develop practical math skills.

#### Common Core Standards

RIT.1	Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
RIT.10	Read and comprehend complex literary and informational texts independently and proficiently.
W.2	Write informative/ explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
W.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
W.7	Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
W.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.
5.NOB10	Perform operations with multi-digit whole numbers and with decimals to hundredths.
6.NS	Compute fluently with multi-digit numbers and find common factors and multiples.
5.MD	Represent and interpret data.
6.RPR, 7RPR	Understand ratio concepts and use ratio reasoning to solve problems.
6.G	Solve real-world and mathematical problems involving area, surface area, and volume.

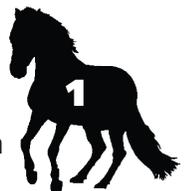
#### Activities for this lesson:

##### Lesson Two Herd Time:

- Exercise 1: Calculate BLM wild horse and burro population growth based on reproduction rates of 20% for one, five, and ten years by compounding numbers
- Exercise 2: Calculate feed cost increases based on reproduction rates for wild horses and burros moved from the range to long-term holding for one, five, and ten years by compounding numbers
- Exercise 3: Identify the location of Herd Management Areas and suggested rationale for these placements

##### Lesson Two Pasture Time:

- Exercise 1: Calculate area needed to house national herd on the range with increases based on reproduction rates projected for one, five, and ten year by compounding number
- Exercise 2: Research to identify sanctuary or holding area for national herd closest to student's home





## Lesson Two

### Background Information:

Many are surprised by the fact that the US Government is the owner of more horses than any other single entity in the world. The latest available data, compiled Feb 29, 2012, show 37,300 wild horses and burros roaming on Bureau of Land Management (BLM) lands in 10 western states, plus an additional 45,800 horses and burros in short term holding pens (12,400) and long term holding facilities (33,400). According to numbers compiled in June 2012, the American people collectively own 83,100 wild horses and burros. The Bureau of Land Management and US Forest Service are charged with caring for this national herd as directed by the **1971 Wild Free-Roaming Horses and Burros Act**.

Horses were re-introduced to the Americas by Spanish explorers in the early 1500s. The species had died out on this continent more than 10,000 years before, but these early equines had crossed the Bering land bridge into Asia, migrating from there to Africa and Europe, where they thrived and were eventually domesticated. Some of the horses the explorers brought to the New World escaped from the expeditions and additional animals were freed by later explorers and settlers to become the ancestors of today's wild horse or mustang (from *mestengo*, meaning stray). Burros accompanied missionaries and prospectors to the west as pack animals. Some escaped while others were turned loose to join the wild herds when the mines shut down. Horses far outnumber burros in the national herd, with approximately 15% of the herd being burros.

There are two primary reasons for the rapid population growth of wild horses and burros. The first is that the animals' only natural predators are mountain lions and man; the small population of mountain lions do little to reduce overall herd numbers, and the horses have been protected from predation by man under the 1971 Wild Free-Roaming Horses and Burros Act. The second reason is a prolific **reproduction rate of 20 percent annually**. The agencies managing the wild horse population must meet the extreme challenge of keeping the numbers of animals on the range at a level that ensures the health of both the range and the herd. The appropriate management level (AML) or **number of animals sustainable on the authorized 31.6 million acres of federal herd management areas (HMA) is 26,545** horses and burros (1190 acres per animal). This land is shared by other wildlife and grazing leases, and provides access to oil and gas rights. The BLM and Forest Service must manage **179 HMAs** for multiple uses in the 10 Western states that are home to wild horses and burros. These include: **California, Oregon, Nevada, Idaho, Utah, Arizona, Montana, Wyoming, Colorado, and New Mexico**. Land in many of the HMAs is arid with sparse vegetation and limited forage. The number of horses currently on the range exceeds the sustainable number by more than 10,800 animals.

The BLM and US Forest Service have two primary means to manage herd levels, both of which begin with removing horses and burros from the range. When the population in an HMA exceeds its sustainable level, the excess animals are gathered from the range to ensure the herd size remains consistent with the land's ability to support it. BLM removed 8464 wild horses and 413 burros from the range in 2011.

The first and preferred outcome for the animals removed from the range is placement in good adoptive homes. The requirements for adopting a wild horse or burro are basic and management is very similar to standard horse-keeping practices. After caring for the animal for a year, the adopter gains full ownership. The Bureau placed 2844 removed animals into private care through adoption in 2011—down from a recent high of 5,701 in 2005. Since the 1970s the BLM has adopted out more than 230,000 animals.





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## Lessons about the Unwanted Horse

# Lesson Two

The second method of keeping them off the range is placement in holding facilities. The holding facilities are of two types, short term and long term. The animals in short term holding facilities (corrals) are candidates for adoption. Some short term facilities partner with prisons where inmates learn horse training skills as they "gentle" the mustangs and prepare them for life as domesticated animals. The most recent count for **wild horses and burros in short term holding is 12,400 animals**. Long term holding facilities (pastures) are used when a wild horse or burro is determined to be unadoptable. These animals remain under the protection of the BLM to live out their natural lives. The long-term holding facilities are contracted pastures located in the plains of Kansas and Oklahoma. The most recent figure for wild horses and burros **in long term holding is 33,400 animals**. The average life span of a horse or burro on the range is 15 years, which is about half that of the animals in long term holding. 2011 costs to care for the animals in holding were 47% of the total budget for the wild horse and burro program and totalled \$35.7 million. For 2011 the average cost of care was \$780 for each animal. Without pasture, the cost of short term holding is higher than the cost of long-term holding due to the need to buy feed. These counts and costs are updated routinely on the BLM website and can be found at<sup>1</sup> <http://www.blm.gov/wo/st/en/prog/whbprogram.html>.

Another population control method used to manage the herd on a more limited basis is contraception. *Porcine Zona Pellucida* (PZP) was developed and tested in the 1990s; since 2004 more than 4,562 mares have been treated with the contraceptive and returned to the range in 80 of the 179 HMAs. Significant reductions in the rate of population increase have not yet been apparent. Improvements in administration of the drug are needed, as well as more time to assess the effectiveness of the treatment as a herd management tool.

The newest method of herd management is direct sale of horses that are determined to be unadoptable after being passed over for adoption three times or when they are over 10 years of age. This option was not available until December 2004 when the Wild Free Roaming Horse and Burro Act was amended to provide sale authority. This program eliminates the one-year trial period that adopters must comply with. Upon sale, ownership of the animal passes immediately to the buyer. Approximately 8,400 animals became eligible for sale, and to date, about 3,300 have been sold using this program.

This protected class of horse is part of the unwanted horse population as legislation mandates their protection and care without guarantee for the resources needed to provide for them. The government is attempting to find cost-effective alternatives to their life-long care of horses removed from the range. Without a change in the current structure, the direct costs for holding the animals will overwhelm the program.

1. US Dept. of the Interior Bureau of Land Management, "Wild Horse and Burro Quick Facts," cited July 23, 2012 at [http://www.blm.gov/wo/st/en/prog/whbprogram/history\\_and\\_facts/quick\\_facts.html](http://www.blm.gov/wo/st/en/prog/whbprogram/history_and_facts/quick_facts.html)

### **Resources for further reading**

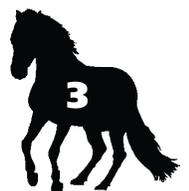
Bureau of Land Management. National Wild Horse and Burro Program

- <http://www.blm.gov/wo/st/en/prog/whbprogram.html>

Fuller, Alexandra. "Spirit of the Shrinking West: Mustangs," National Geographic, February 2009

McNabb, Ken. "Why Manage the Mustangs?" Episode 224 of series, "Ken McNabb, Discovering the Horseman Within", <http://www.kenmcnabb.com/tv>

USA.gov. "Wild Horse and Burro Program Frequently Asked Questions" (FAQs), cited April 16, 2009, <http://www.fs.fed.us/rangelands/ecology/wildhorseburro/index.shtml>





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## Lessons about the Unwanted Horse

# Lesson Two

## The Horses We All Own – The Wild Horse and Burro Program

1. Explain to students the format of the lesson:
  - a. Introduction of topic - Challenges facing BLM's Wild Horse and Burro program.
  - b. Distribute Student Background handout (SB1-2) for students to use in completing exercises.
  - c. "Herd time" (Provide students with handouts and worksheets.)
  - d. "Pasture time" (Explain expectations for which activities will be used and how assignment will be checked.)
2. Americans are responsible for 83,100 wild horses and burros supported by public funding.
  - a. Briefly describe the 1971 Wild Free-Roaming Horses and Burro Act, the legislation that created protections for these horses.
  - b. Few predators and prolific reproduction resulted in an over-population of the animals. Ask students what predators horses face in the wild (humans and mountain lions) .
  - c. The herd reproduction rate is 20% annually on the range. Refer to question one in "Herd Time" and do the herd growth math with the group.
  - d. Two main methods are used to manage the herd growth on the range, both beginning with removing horses in round-ups: offering them for adoption or maintaining them in holding areas. Adoption is the preferred method. Horses and Burros in holding areas (45,800) cost 35.7 million to feed and care for in 2011. This averages \$780 per horse in holding. Refer to question two in "Herd Time" and do the maintenance costs math with the group. (Refer to Student Handouts.)
3. Rangeland and herd management is a balancing act for the Bureau of Land Management.
  - a. Capacity for the 31.6 million acres designated to herd management areas is 26,545 animals. This provides an average of 1190 acres per animal. With more than 37,000 horses on the range, more than 44 million acres would be needed to sustain this herd on the range with no population growth. Review map in student handout or use internet to show BLM Herd Management Areas at: [http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning\\_and\\_Renewable\\_Resources/wild\\_horses\\_and\\_burros/public\\_land\\_stats/2011\\_maps.Par.19854.File.dat/National\\_all\\_maps.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning_and_Renewable_Resources/wild_horses_and_burros/public_land_stats/2011_maps.Par.19854.File.dat/National_all_maps.pdf) Refer to question 3 in "Herd Time" and discuss location of HMAs.
  - b. Expanding the available rangeland has been suggested, but needs to be combined with herd growth control to be sustainable. Contraception drugs for mares on the range have been used on a limited basis. More study of this method is needed.
  - c. Prompt students to discuss solutions they believe could help the BLM with managing wild horses and burros. Invite them to work on the calculation questions as a class or in small groups. (Refer to Student Handouts.)
4. Review how "Pasture Time" field exercise will be completed.
  - a. Explain whether the "pasture problem" exercise is to be returned at the next meeting or is given as just a take-home. (Refer to Student Handouts.)
  - b. Explain whether the search to identify wild horse sanctuaries will be done as an individual assignment or in group. Coach the students on potential sources of information (BLM map, internet, phone book) and provide instructions for how they should work with the sanctuary managers to learn about their horses and programs. As the instructor, you may want to call ahead on behalf of your students to make sure the manager is willing to take their calls.





### Answer Key ~ “Herd Time” Student Handout

#### 1. Population growth of the herd.

Calculate the number of horses that the BLM will have on the range at the end of each year when the animals reproduce at a rate of 20% annually and if 15% of the increased number are removed. How many horses will be on the range next year, five years from now, 10 years from now?

This year began with 37,300 horses and burros on the range. A population growth of 20% will increase the range herd to 44,760 ( $37,300 \times 20\% = 7460 + 37,300 = 44,760$ ). If the BLM removes 15% of the total herd, at the end of the year there will be 38,046 horses on the range ( $44,760 \times 15\% = 6714$ ;  $44,760 - 6714 = 38,046$ ).

Year	Year Start Range Herd	20% Increase	Herd Subtotal	15% Gathered	Year End Range Herd
1	37,300	7,460	44,760	6,714	38,046
2	38,046	7,609	45,655	6,848	38,807
3	38,807	7,761	46,568	6,985	39,583
4	39,583	7,917	47,500	7,125	40,375
5	40,375	8,075	48,450	7,267	41,182
6	41,182	8,236	49,419	7,413	42,006
7	42,006	8,401	50,407	7,561	42,846
8	42,846	8,569	51,415	7,712	43,703
9	43,703	8,741	52,443	7,867	44,577
10	44,577	8,915	53,492	8,024	45,468

Chart 1

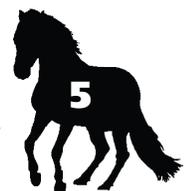
#### 2. Cost of population growth of the herd when removed from range.

Calculate the cost to feed wild horses and burros in holding when the 45,800 currently in holding increase by the number removed from the range. This year began with 45,800 animals in holding. How many animals will be held by the end of the year? And what will be the cost of their feeding? What will the cost be in five years? In ten years?

Use the gather numbers from question 1 to calculate the numbers of animals in holding each year. Use those numbers and the average feed cost of \$780 per horse to figure the cost to feed all the animals in holding.

Year	Year Start Horses in Holding	15% Gathered Added to Holding	Year End Horses in Holding	Feed Cost per Horse in Holding	Total Cost of Feed for Horses in Holding
1	45,800	6,714	52,514	\$780.00	\$40,960,920.00
2	52,514	6,848	59,362	\$780.00	\$46,302,578.40
3	59,362	6,985	66,348	\$780.00	\$51,751,069.97
4	66,348	7,125	73,472	\$780.00	\$57,308,531.37
5	73,472	7,267	80,740	\$780.00	\$62,977,141.99
6	80,740	7,413	88,153	\$780.00	\$68,759,124.83
7	88,153	7,561	95,714	\$780.00	\$74,656,747.33
8	95,714	7,712	103,426	\$780.00	\$80,672,322.28
9	103,426	7,867	111,293	\$780.00	\$86,808,208.72
10	111,293	8,024	119,316	\$780.00	\$93,066,812.90

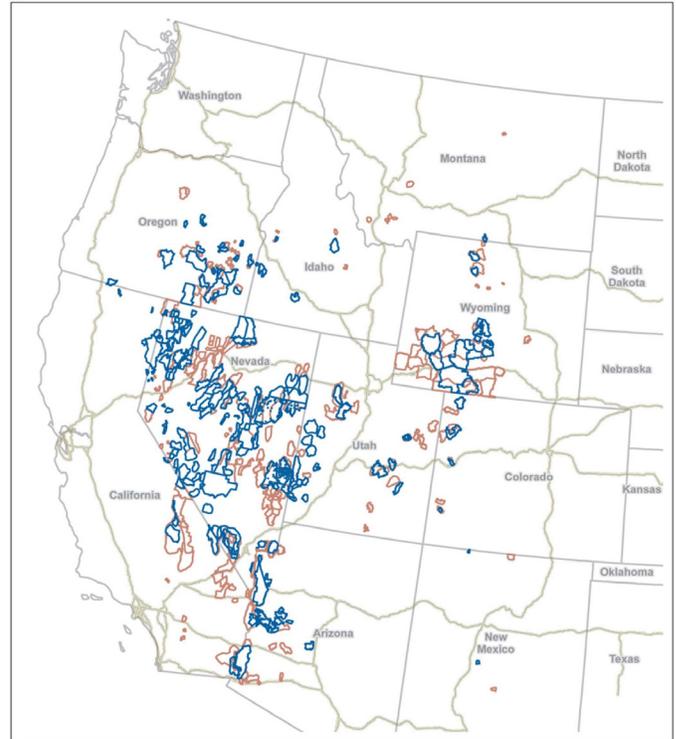
Chart 2





- 3.** States with HMAs include California, Oregon, Nevada, Idaho, Utah, Arizona, Montana, Wyoming, Colorado, and New Mexico. These areas were designated in the Wild Free Horse and Burro Act.

The large tracts of public land and low population density in these high plains deserts and mountains helped make the areas feasible to designate for this specific government use.



[http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning and Renewable Resources/wild horses and burros/public land stats/2011 maps.Par.19854.File.dat/National all maps.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning_and_Renewable_Resources/wild_horses_and_burros/public_land_stats/2011_maps.Par.19854.File.dat/National_all_maps.pdf)

## Answer Key ~ “Pasture Time” Student Handout

**1.**

Year	Horses on Range	Acres Needed per Horse on Range	Total Acres Needed for Horses on Range
1	38,046	1,190	45,274,740
2	38,807	1,190	46,180,235
3	39,583	1,190	47,103,839
4	40,375	1,190	48,045,916
5	41,182	1,190	49,006,835
6	42,006	1,190	49,986,971
7	42,846	1,190	50,986,711
8	43,703	1,190	52,006,445
9	44,577	1,190	53,046,574
10	45,468	1,190	54,107,505

How much more land is needed to house the range herd growth for the next ten years?

Use the average of 1190 acres needed per horse on the range and the answers from question 1 in the Herd Time questions.



# Lessons about the Unwanted Horse: Lesson Two

## The Horses We All Own – The Wild Horse & Burro Program

### Student Background Information

The US Government owns more horses than any other single entity in the world. As of June 2012, the American people collectively own **83,100 wild horses and burros**. There are **37,300 wild horses and burros** roaming on federal land in **10 western states** plus **45,800 horses and burros** in **short-term holding pens (12,400)** and **long term holding facilities (33,400)**. The Bureau of Land Management and US Forest Service have the task of caring for this national herd as directed by the **1971 Wild Free-Roaming Horses and Burros Act**.

Horses died out on this continent more than 10,000 years ago, but were re-introduced to the Americas by Spanish explorers in the early 1500s. Some of the horses the explorers brought to the New World escaped or were freed; these became the ancestors of today's wild horse or **mustang** (from *mestengo*, meaning stray). Of the burros carrying goods for missionaries and prospectors to the west, some escaped while others were turned loose when the mines shut down. Horses far outnumber burros in the national herd, with approximately 15% of the herd being burros.

#### Population Growth

The wild horse and burro population increases by **20% every year**. The animals' only natural predators are mountain lions and man. The small numbers of mountain lions do little to reduce overall herd numbers. These horses are **protected from predation by man** under the 1971 Wild Free-Roaming Horses and Burros Act. The Bureau of Land Management (BLM) and US Forest Service must meet the extreme challenge of keeping the numbers of animals on the range at a level that ensures the health of both the range and the herd.

The appropriate management level (AML) or number of animals sustainable on the designated 31.6 million federal acres is 26,545 horses and burros (**1190 acres per animal**). Other wildlife, livestock with grazing leases, and oil and gas industry interests also share this land. The BLM and Forest Service must manage 179 federally-owned herd management areas (HMAs) for these multiple uses. The HMAs are found in: California, Oregon, Nevada, Idaho, Utah, Arizona, Montana, Wyoming, Colorado, and New Mexico. The land is remote and unattractive for other uses which means these HMAs are likely to remain available for the national herd. However, much of it is arid with sparse vegetation which limits how many animals can survive on it.

The number of horses currently on the range exceeds the sustainable number by 10,800. Sustaining this size herd on the range with no population growth would require more than 44 million acres. Review map in student handout or use the internet to see BLM Herd Management Area locations: [http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning\\_and\\_Renewable\\_Resources/wild\\_horses\\_and\\_burros/public\\_land\\_stats/2011\\_maps.Par.19854.File.dat/National\\_all\\_maps.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning_and_Renewable_Resources/wild_horses_and_burros/public_land_stats/2011_maps.Par.19854.File.dat/National_all_maps.pdf)

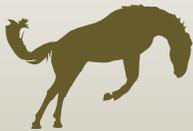




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## Lessons about the Unwanted Horse: Lesson Two The Horses We All Own – The Wild Horse & Burro Program



The BLM and US Forest Service have two primary means to manage herd levels; both begin by removing horses and burros from the range. On average, the **BLM removes about 15% of the horses and burros per year.**

### New Homes... or Holding Facilities?

The preferred outcome for the removed animals is placement in good homes. The requirements for adopting a wild horse or burro are basic and management is very similar to standard horse-keeping practices. Since the 1970s the BLM has adopted out more than 230,000 animals.<sup>1</sup>

Horses that are not immediately adopted are placed in **holding facilities**, of which there are two types, short term and long term. The animals in **short term** holding facilities (corrals) are candidates for adoption. Some short term facilities partner with prisons where inmates learn horse training skills as they “gentle” the mustangs and prepare them for life as domesticated animals. The most recent count for wild horses and burros in short term holding is 12,400 animals.

Unadoptable wild horses and burros are placed in **long term** holding facilities (pastures) where they remain under the protection of the BLM to live out their natural lives. The most recent figure for wild horses and burros in **long term holding is 33,400 animals.** The average life span for horses and burros in long term holding is almost twice their 15 year life span on the range. Each animal in holding costs an average of **\$780** annually to feed and keep. Holding costs to care for the animals for 2011 were 47% of the total budget for the wild horse and burro program and totaled \$35.7million. The cost of short term holding is higher than long-term; without pastures, the facility must pay for food.<sup>1</sup> See the BLM website where counts and costs are updated routinely at <http://www.blm.gov/wo/st/en/prog/whbprogram.html>

Contraception is another population control method that has been used since 2004 on a limited basis, although significant reductions in the rate of population increase have not yet been seen. The newest method of herd management is direct sale of horses that are determined to be unadoptable after being passed over for adoption three times or when they are over 10 years of age.

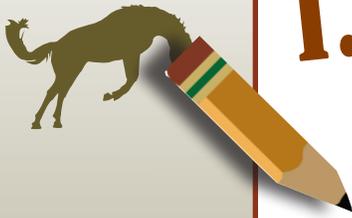
Wild horses and burros are a protected class of horse and part of the unwanted horse population. Legislation mandates their protection and care yet doesn't guarantee money to provide for them. The government is attempting to find cost-effective alternatives to the expense of life-long care for horses removed from the range. Without a change in the current structure, the direct costs for holding the animals will overwhelm the program.

<sup>1</sup> US Dept. of the Interior Bureau of Land Management, Wild Horse and Burro Quick Facts, cited July 24, 2012 at [http://www.blm.gov/wo/st/en/prog/whbprogram/history\\_and\\_facts/quick\\_facts.html](http://www.blm.gov/wo/st/en/prog/whbprogram/history_and_facts/quick_facts.html)



# Lessons about the Unwanted Horse: Lesson Two

## The Horses We All Own – The Wild Horse & Burro Program

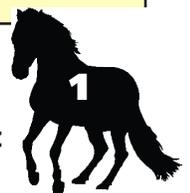


**1.** The animals on the range reproduce at a rate of 20% annually and the BLM removes 15% of the herd annually. How many horses will be on the range next year, in five years, in ten years?

Year	Year Start Range Herd	20% Increase	Herd Subtotal	15% Gathered	Year End Range Herd
1	37,300	7,460	44,760	6,714	38,046
2	38,046				
3					
4					
5					
6					
7					
8					
9					
10					

**2.** Using the gather calculations from question 1 and feed cost of an average of \$780 per animal in holding, how many horses will be in holding and how much will it cost to feed them next year, in five years, in ten years?

Year	Year Start Horses in Holding	15% Gathered Added to Holding	Year End Horses in Holding	Feed Cost per Horse in Holding	Total Cost of Feed for Horses in Holding
1	45,800	6,714	52,514	\$780.00	\$40,960,920.00
2	52,514				
3					
4					
5					
6					
7					
8					
9					
10					

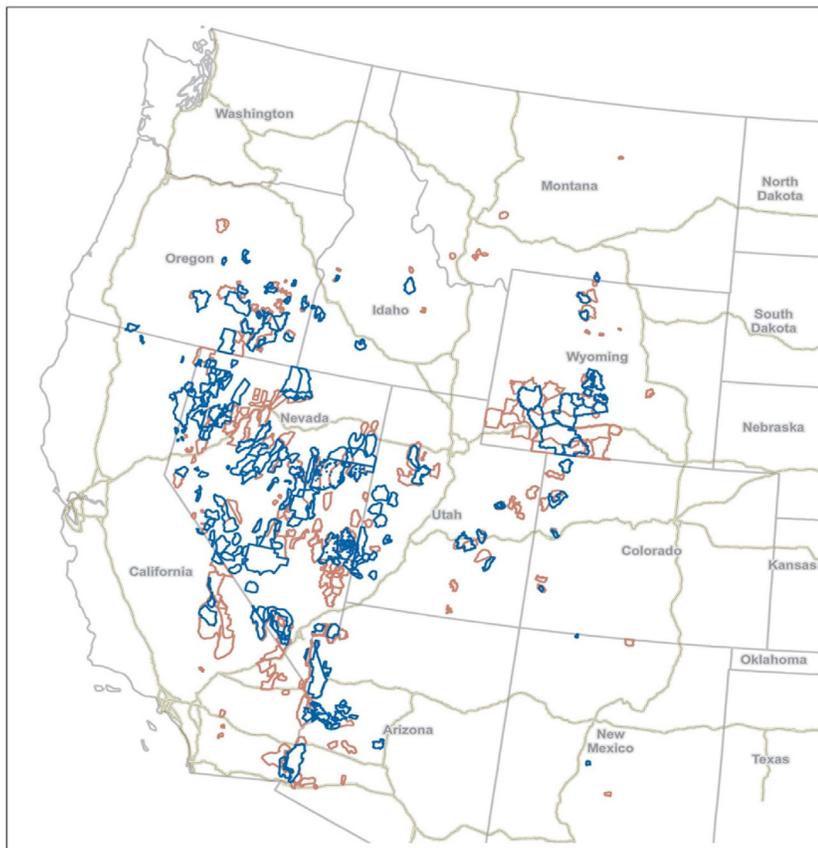


# Lessons about the Unwanted Horse: Lesson Two

## The Horses We All Own – The Wild Horse & Burro Program



**3.** Using the map of BLM HMAs where wild horses and burros roam, identify the states that contain herd management areas. What reasons may there be for these locations?



Interactive online map:

[http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning\\_and\\_Renewable\\_Resources/wild\\_horses\\_and\\_burros/public\\_land\\_stats/2011\\_maps.Par.19854.File.dat/National\\_all\\_maps.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning_and_Renewable_Resources/wild_horses_and_burros/public_land_stats/2011_maps.Par.19854.File.dat/National_all_maps.pdf)

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# “Pasture Time”



**Field Exercises:**  
group activity or  
independent take-  
home exercise



**1.**

A bill introduced in the 2009 Congress would amend the Wild and Free Roaming Horse and Burro Act to allow the BLM to expand HMAs. How much more land would be needed each year to house the horses if none are gathered from the range?

Using the average of 1190 acres needed per horse on the range and the answers from question 1 in the Herd Time questions, calculate pasture needs for wild horses and burros next year, in 5 years, and in 10 years.

Year	Horses on Range	Acres Needed per Horse on Range	Total Acres Needed for Horses on Range
1	38,046	1,190	45,274,740
2	38,807		
3			
4			
5			
6			
7			
8			
9			
10			

**2.**

State and private sanctuaries have also been developed to keep mustangs and burros. Locate and list 4 or 5 horse sanctuaries closest to your home.

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