Using Physical Evidence to Count Panthers

Cooperating Partners

Ranchers Supply Inc.

Background

Historically, in Florida, panther population numbers were based on unverified sightings, questionnaires, extrapolations & personal opinions, which ranged from 300 to extinction

Survey Objectives

- End the speculative nature of panther population numbers and base census results on verifiable physical evidence
- Detect and record this evidence during each calendar year
- Categorize this evidence utilizing exclusionary rules to avoid overcounting and identify the actual number of panthers represented

ACCEPTED EVIDENCE

- Photos of Panther sign
- Photos of Panthers treed by hounds
- Photos of Panther mortalities
- Photos of Panthers by trail cameras
- Photos of Panthers from telemetry flights
- Photos of Panthers from deer surveys
- Photos of Panthers by random chance
- Videos of Panthers by security cameras

Panther Tracks

Panther Making Urine Marker

Urine Marker

Panther Scat

Panther Kill

Panther Kill

Panther Kill

Panther Kill

Panther Kill

Panther Kill

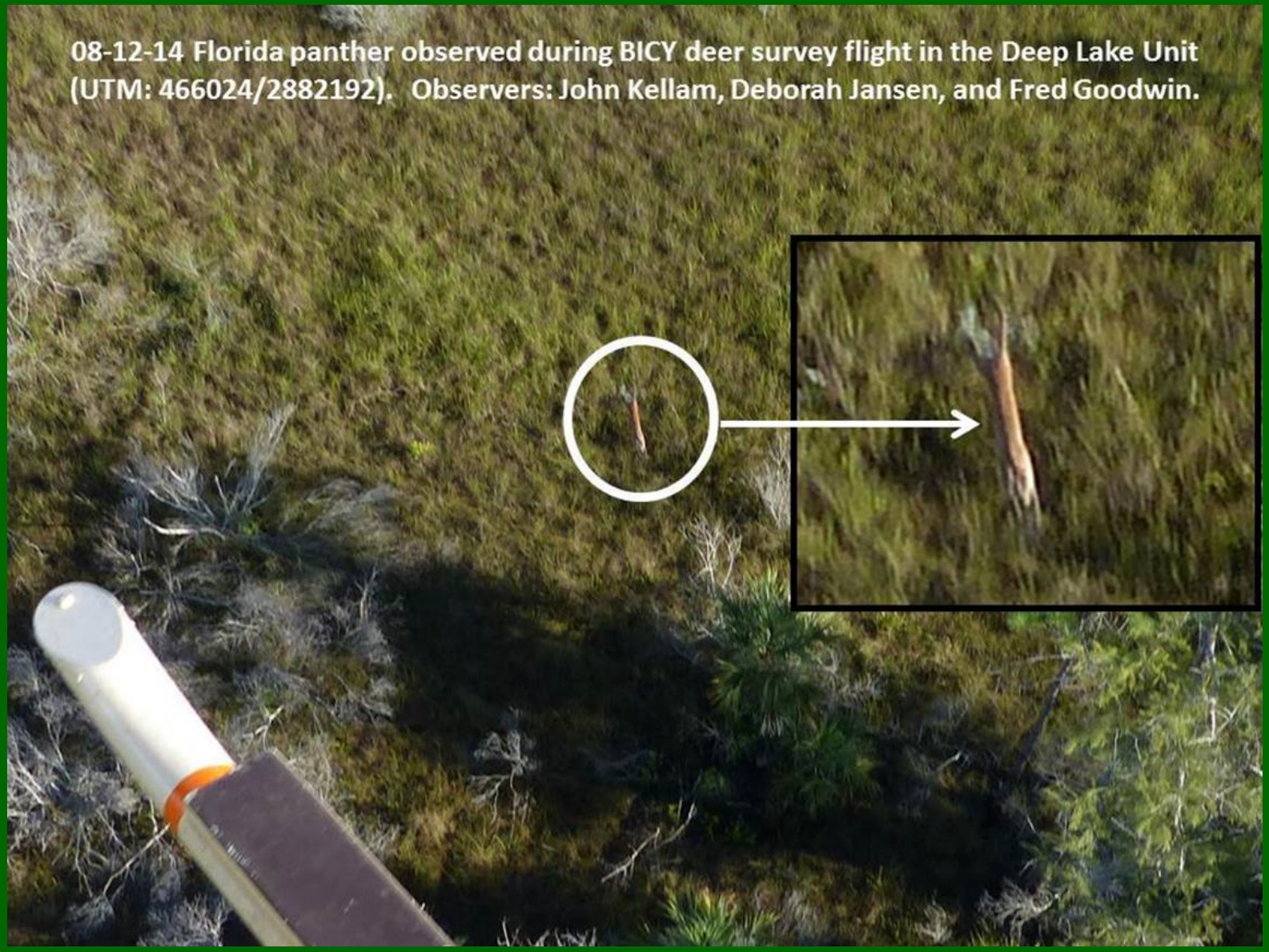
Treed By Hounds

Panther Mortality

Trail Camera

Telemetry Flight

Helicopter Deer Survey



Random Chance

Video Security Camera

Step #1 Gender

Determined by track size and confirmed by stride

Step # 2 Time

- **Determine track age by known events of the past 24 hours**

- **Tracks made following a rain**

- **Tracks in loose sand following a wind**

- **Tracks made over vehicle tracks**

- **Tracks that hounds can detect**

Effects of Rain

Effects of Wind

Tracks Made After Vehicle

The Use of Hounds

Panther Scent Trails
Aged by Hounds

Step # 3 Distance

Our distance rules were originally based on the greatest distance that our hounds trailed a puma from point of origin (abandoned kill site) to capture

- **Female Pumas = < 6 miles (10 Km)**
- **Male Pumas = < 11 miles (17 Km)**

A

6 mi.

6 mi.

B

C

> 6 miles

An analysis of 3,015 daily telemetry locations indicate that 99% of the time female panthers travel less than 6 miles in 24 hours

A

B

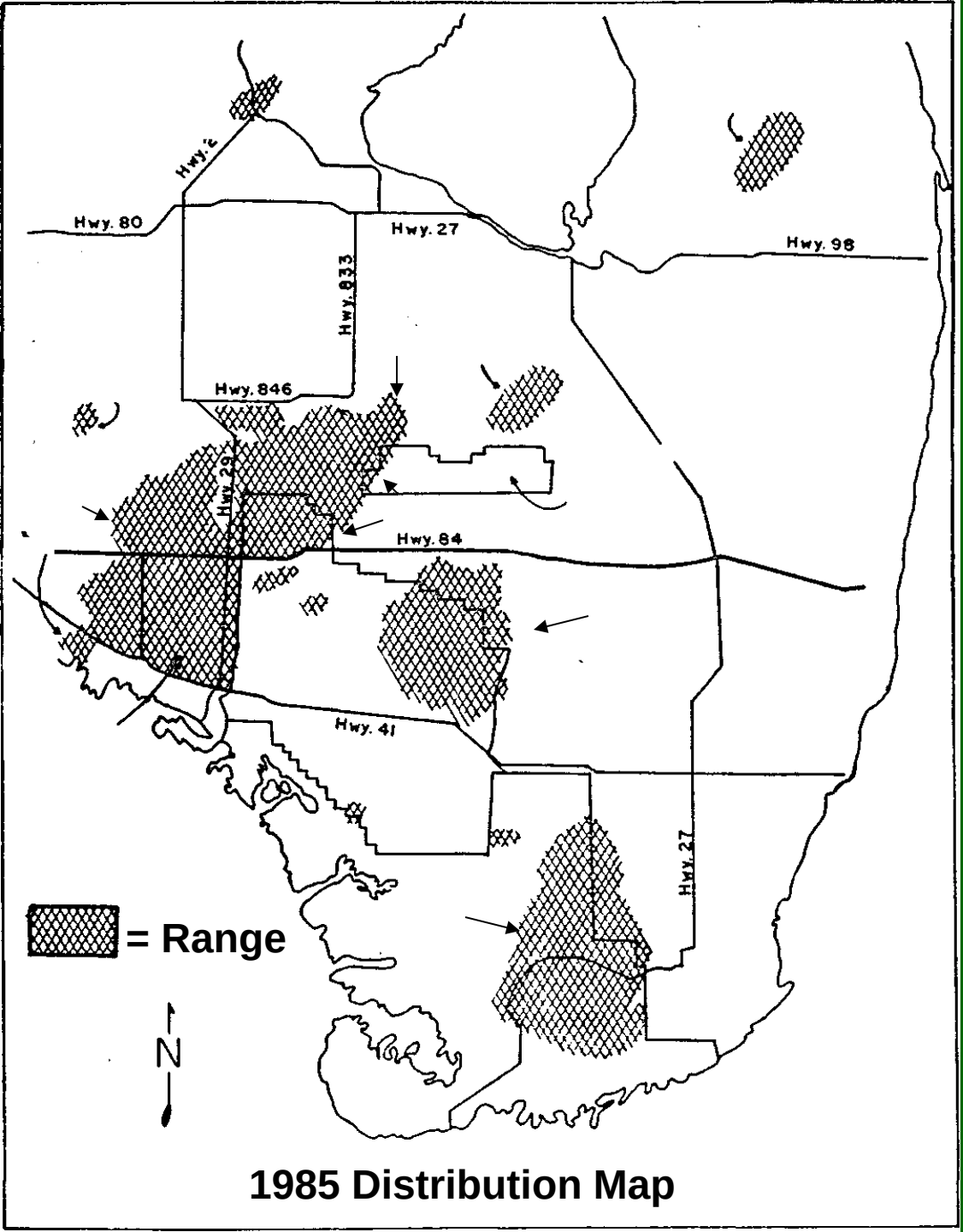
C

11 mi.

11 mi.

> 11 miles

An analysis of 824 daily telemetry locations indicate that 99% of the time male panthers travel less than 11 miles in 24 hours

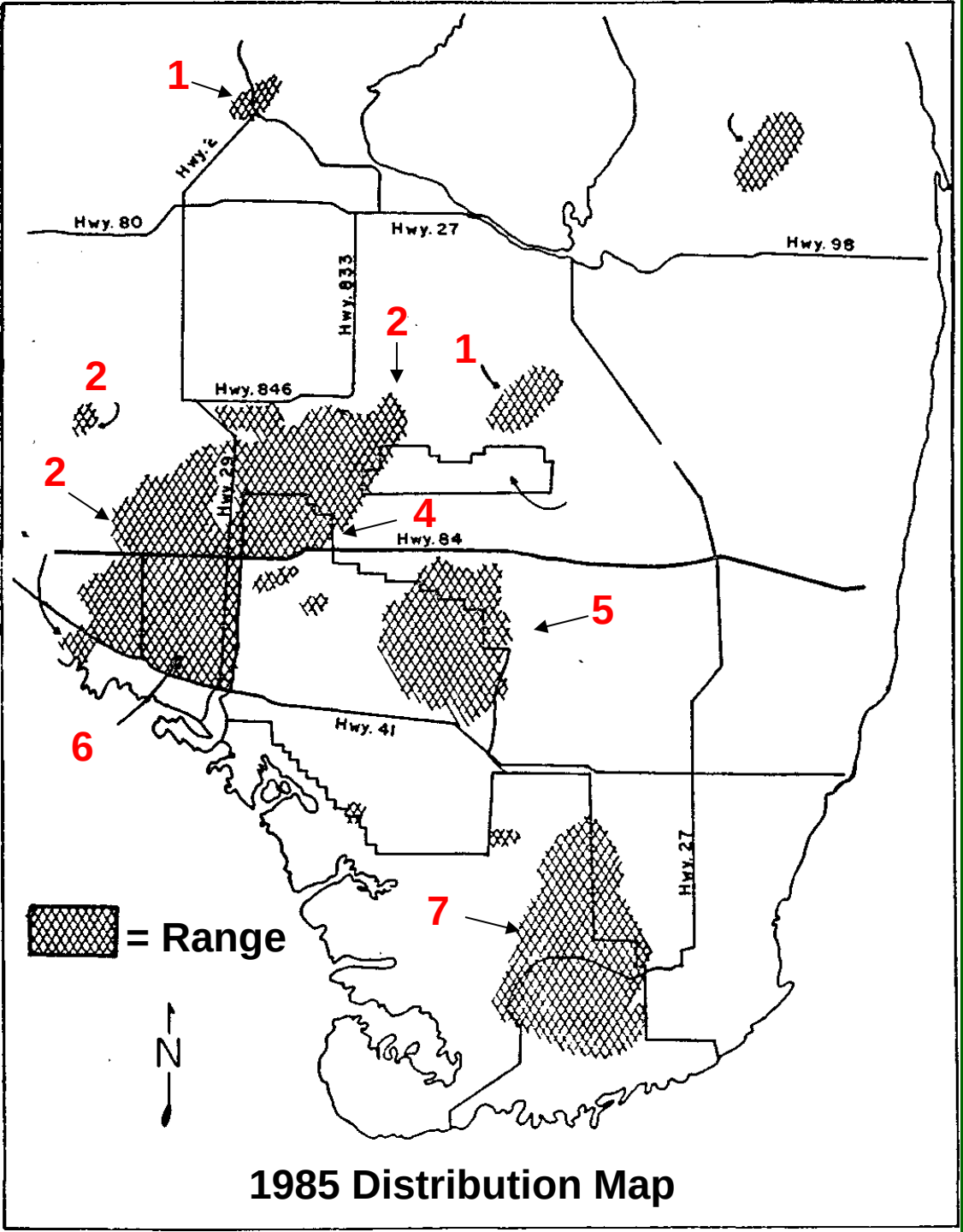


1985 Distribution Map

1985

How Distance is Used

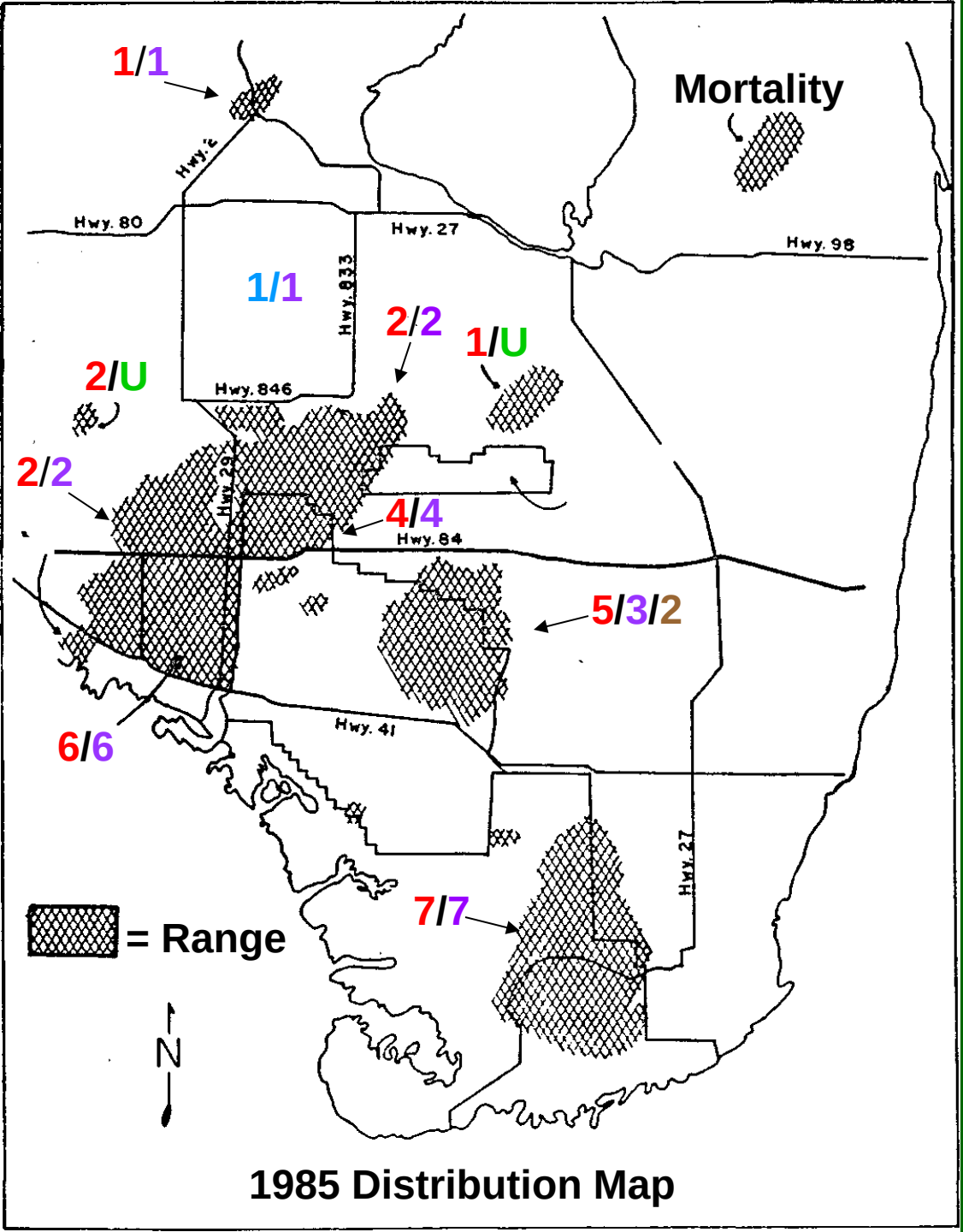
Extreme Distance
VS
Short Distance



Panthers Detected

(gender/time/distance)

N = 30



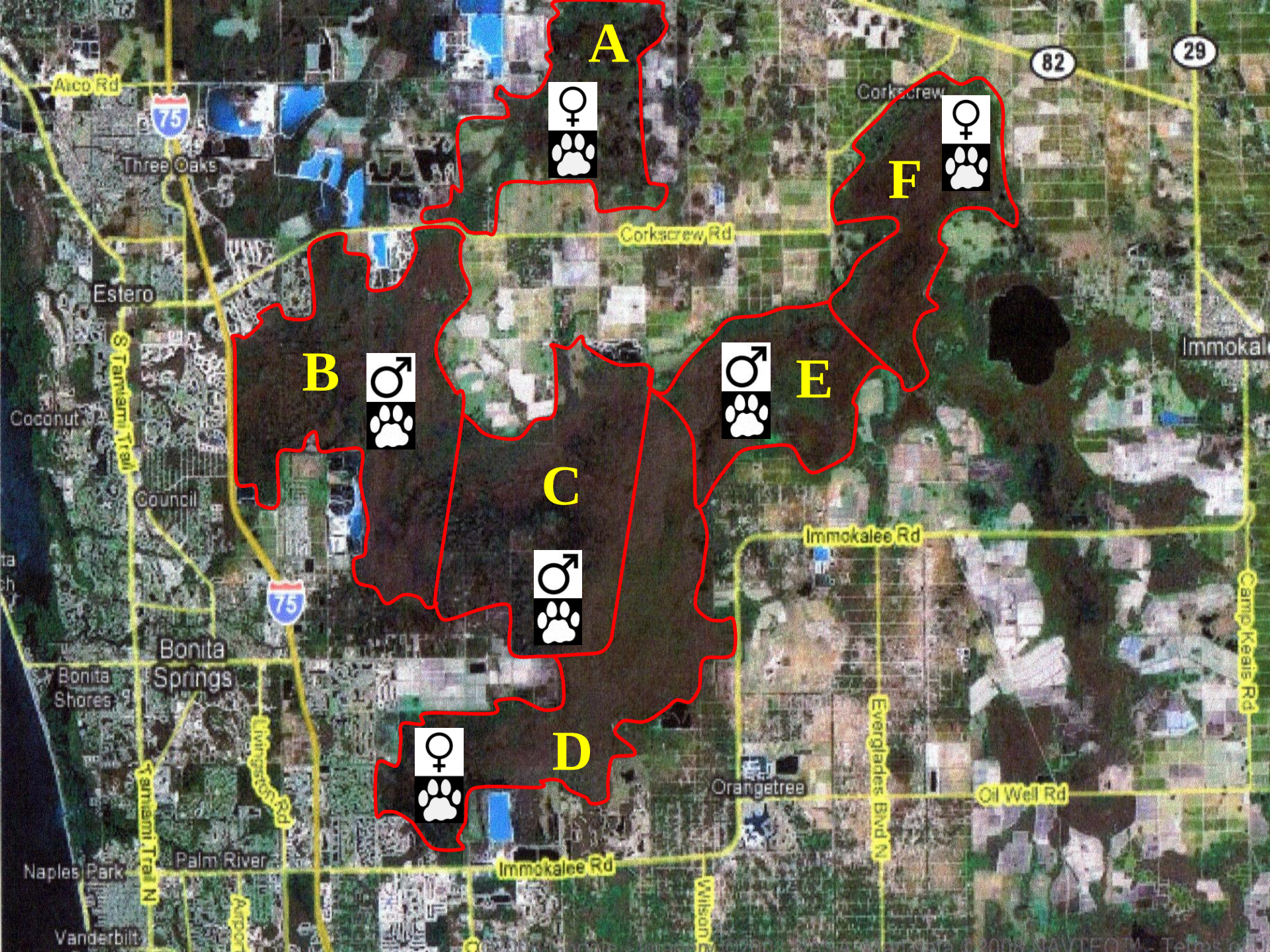
1985
Panther Census
(gender/time/distance)

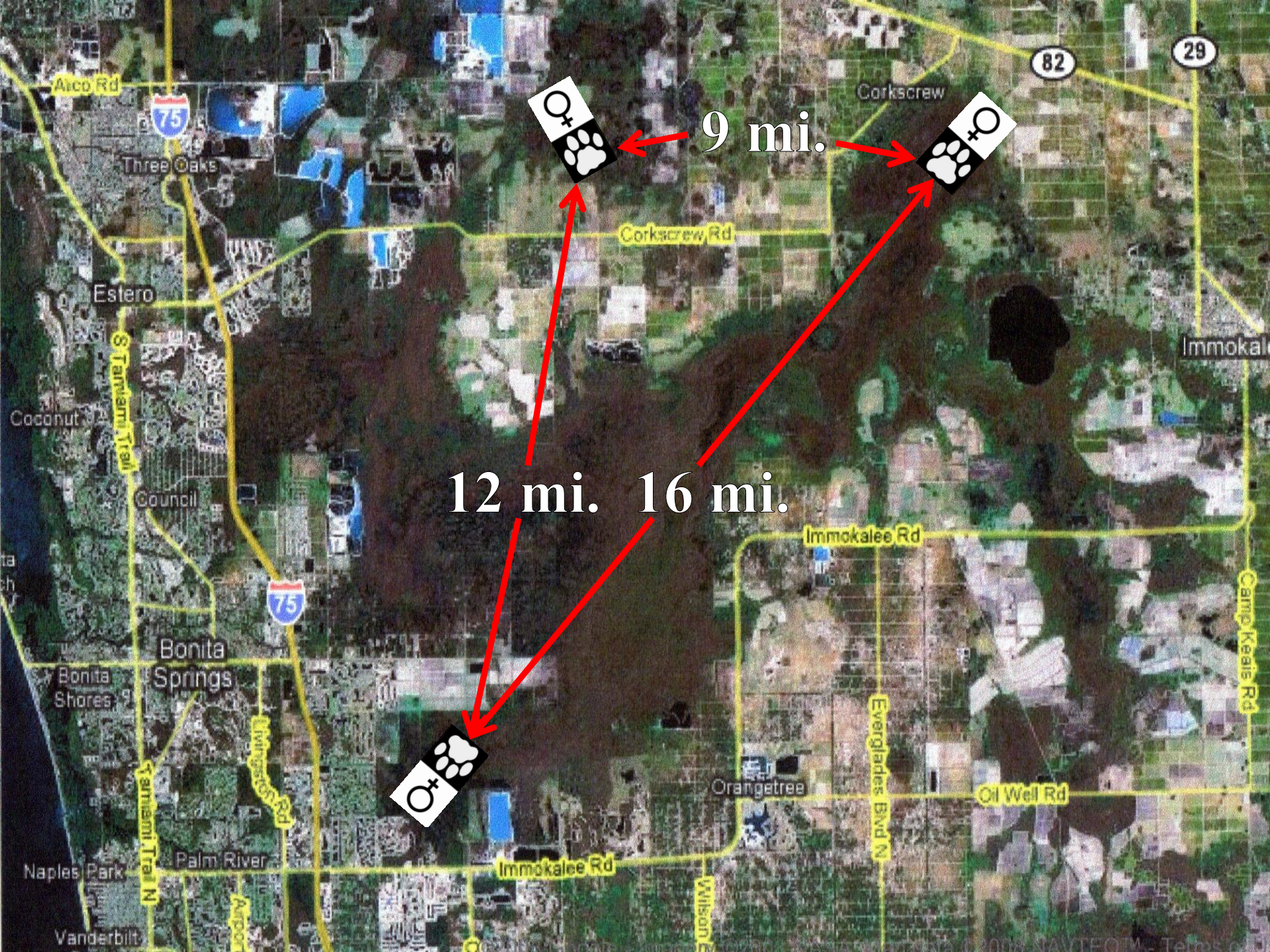
Panthers detected	N = 30
Un-detected panther	N = 1
	N = 31

1985 - 1988
Panthers captured by area

Panthers captured	N = 26
Panther un-hunted	N = 3
Panthers un-captured	N = 2

Corkscrew Swamp 2008

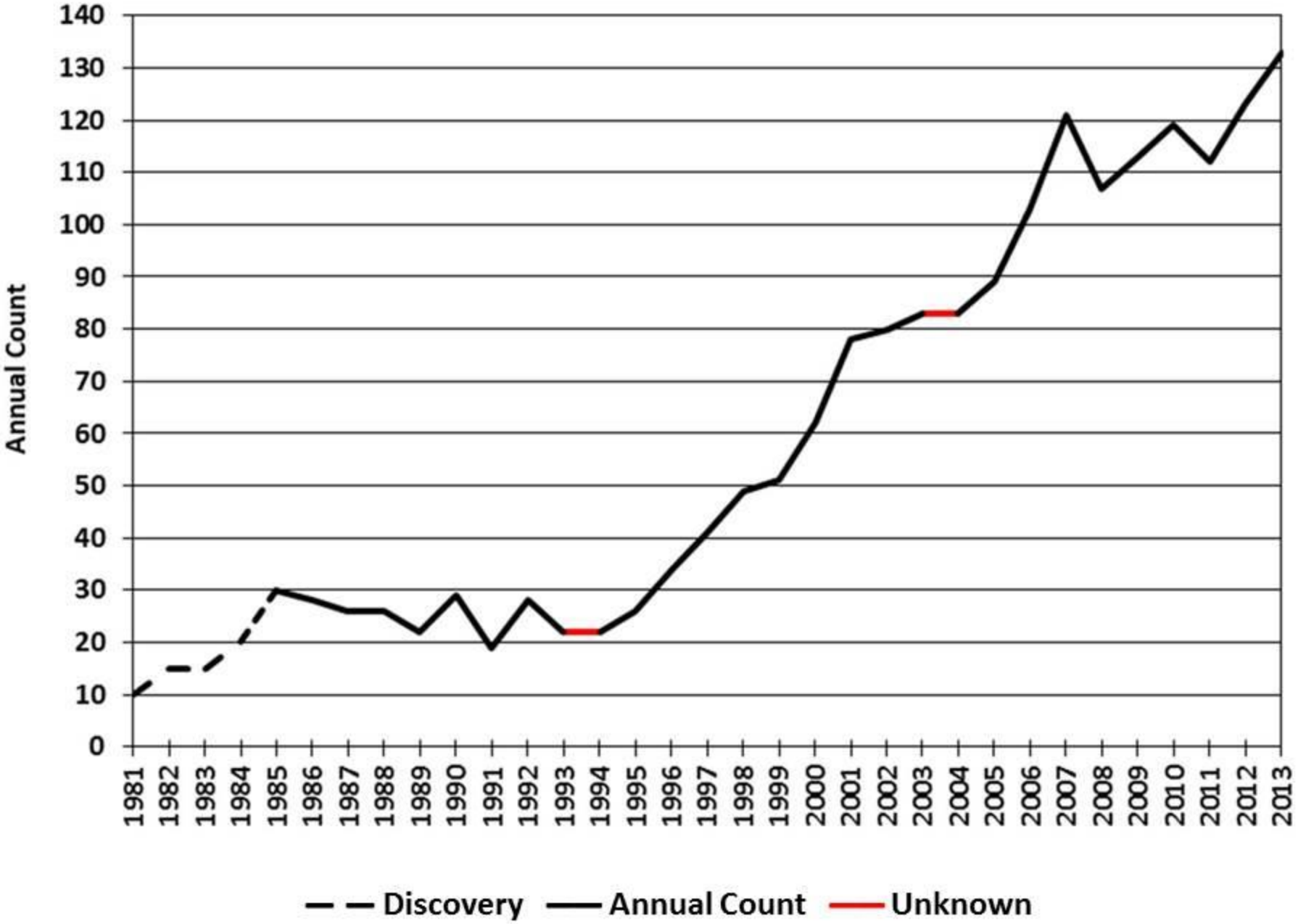

A
B
C
D
E
F
Alico Rd
75
Three Oaks
Corkscrew Rd
Estero
S Tamiami Trail
Coconut
Council
Bonita Springs
Bonita Shores
Tamiami Trail N
Palm River
Naples Park
Vanderbilt
Immokalee Rd
Orangetree
Everglades Blvd N
Oil Well Rd
Camp Keais Rd
Wilson
82
29
Immokal

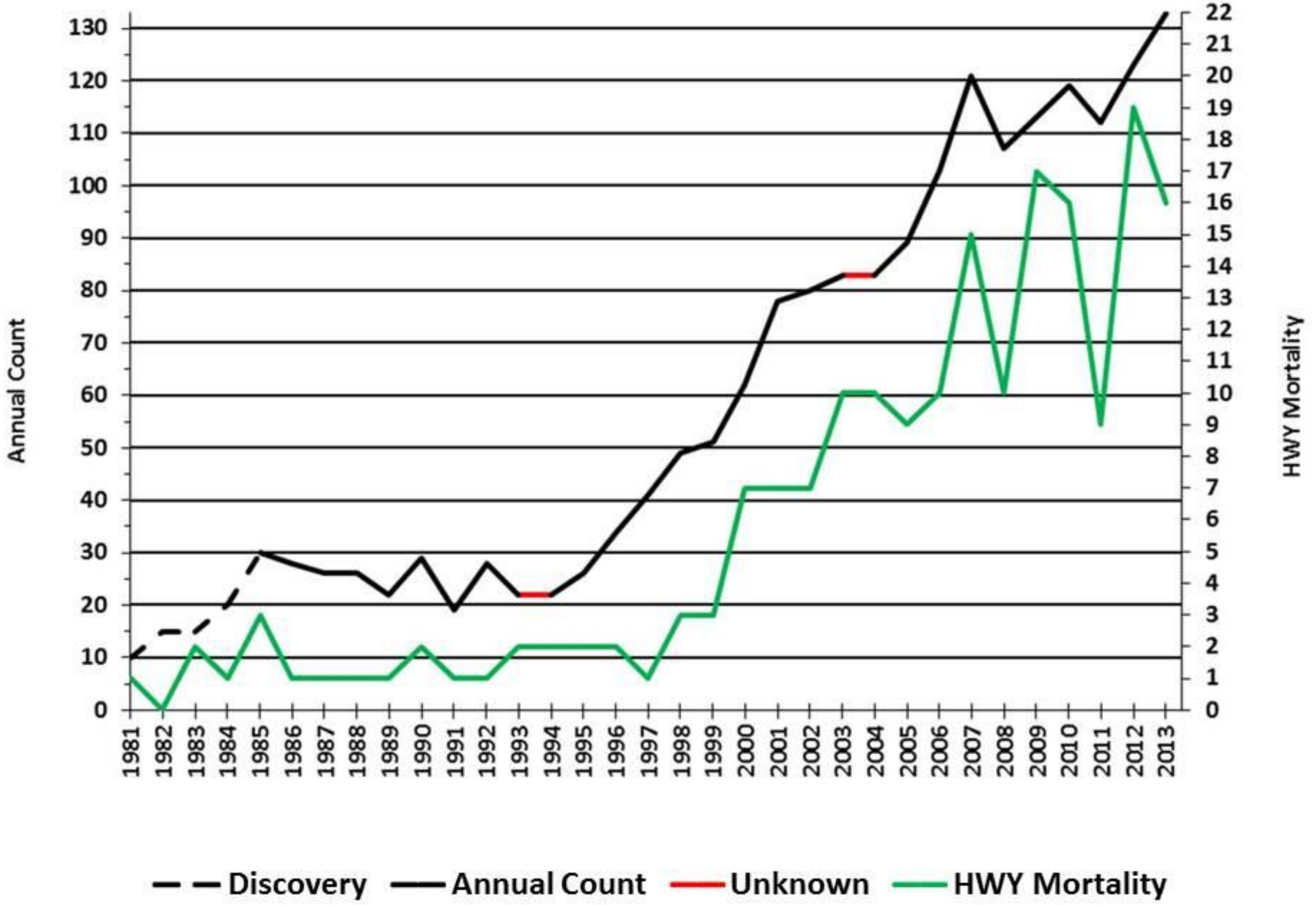

9 mi.
12 mi.
16 mi.
Alico Rd
75
Three Oaks
Corkscrew
82
29
Corkscrew Rd
Estero
S Tamiami Trail
Coconut
Council
Immokalee Rd
Bonita Springs
Bonita Shores
Tamiami Trail N
Palm River
Naples Park
Vanderbilt
Orangetree
Everglades Blvd N
Oil Well Rd
Camp Keais Rd
Wilson


< 11 miles
Alico Rd
75
Three Oaks
Corkscrew Rd
Estero
S Tamiami Trail
Coconut
Council
Bonita Springs
Bonita Shores
Tamiami Trail N
Palm River
Naples Park
Vanderbilt
Immokalee Rd
Orangetree
Everglades Blvd N
Oil Well Rd
Camp Keais Rd
Corkscrew
82
29
Immokal

The synoptic survey technique results in a snapshot of panther use within a defined geographic area during a specific period of time

Panther census data 1981-2013


Annual Count
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Discovery
Annual Count
Unknown


Annual Count
HWY Mortality
0
10
20
30
40
50
60
70
80
90
100
110
120
130
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
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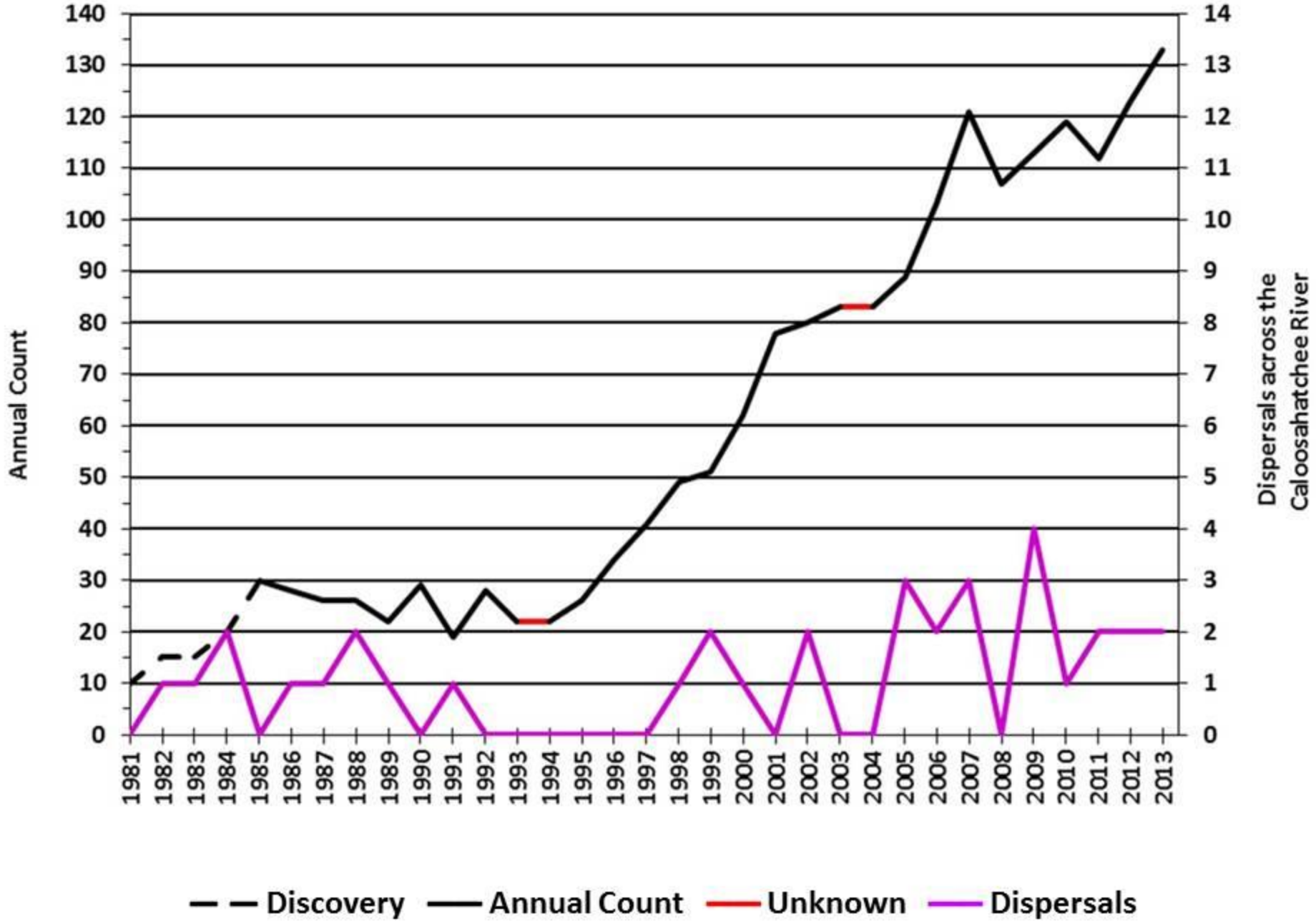
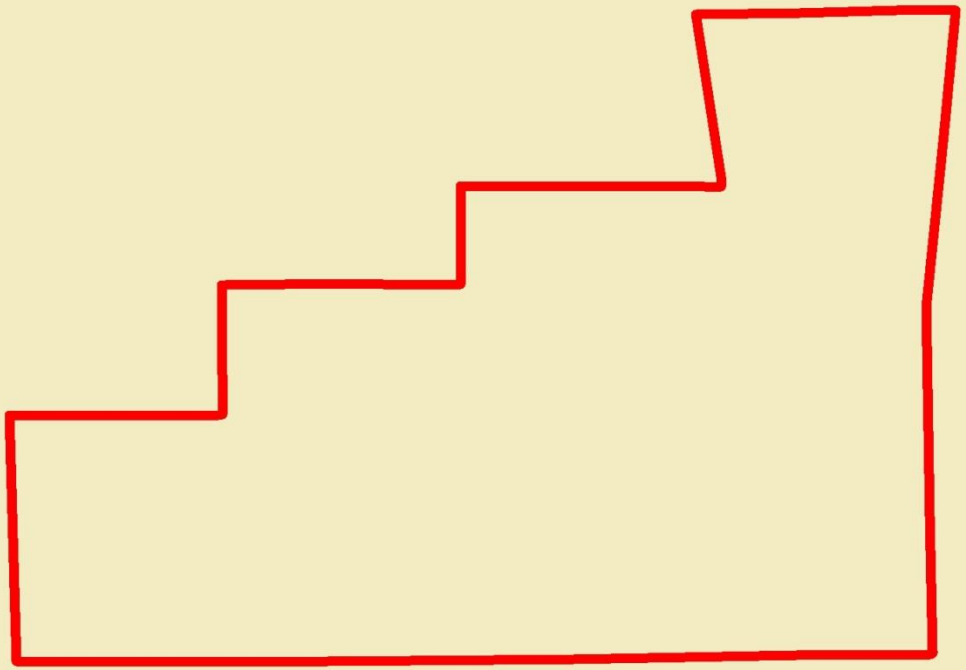
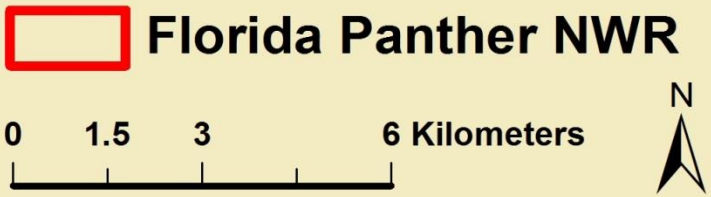
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Discovery
Annual Count
Unknown
HWY Mortality


Annual Count
Dispersals across the Caloosahatchee River
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Discovery
Annual Count
Unknown
Dispersals

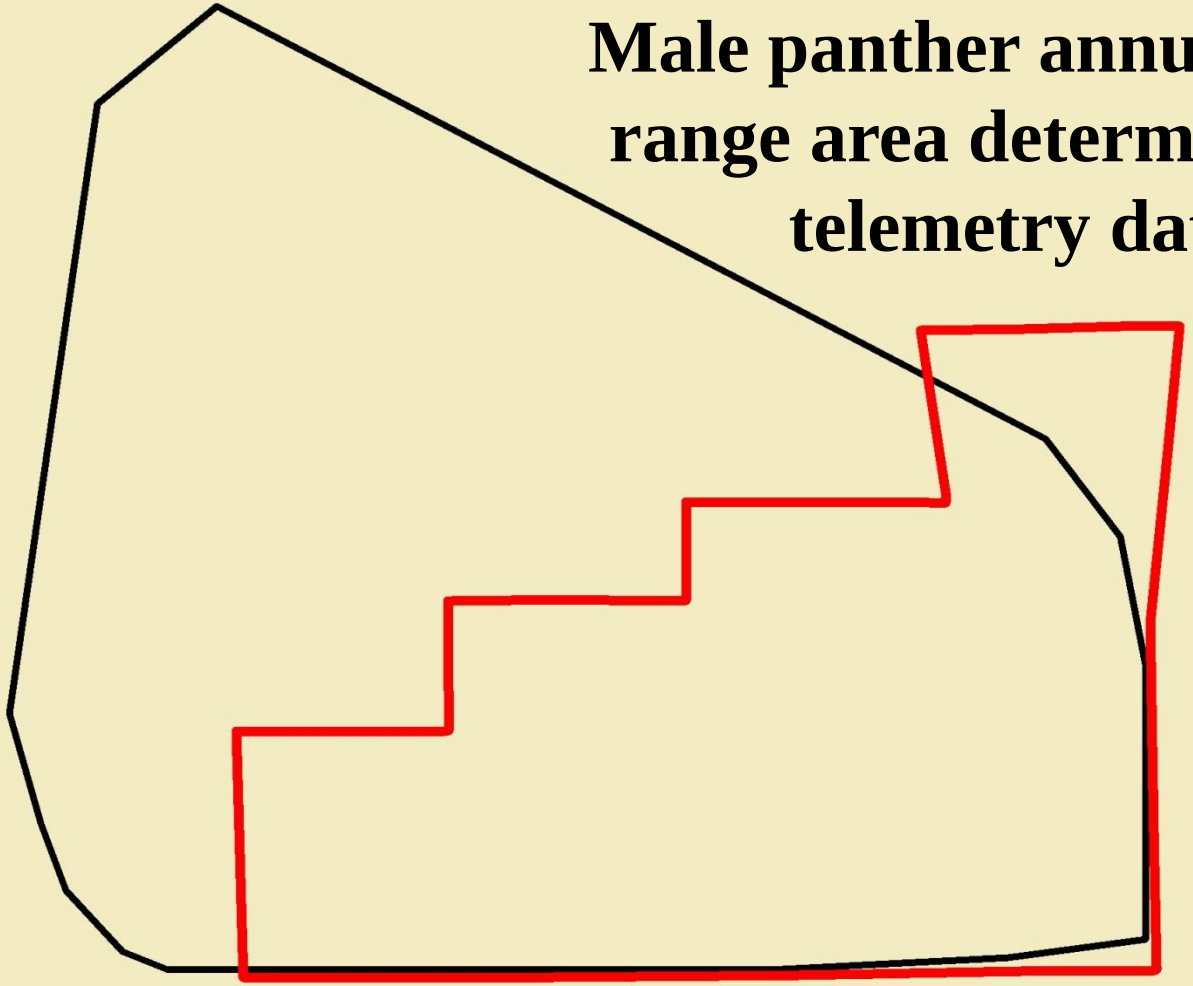
Why its difficult to determine panther density

Florida Panther NWR
26,390 acres





Male panther annual home range area determined by telemetry data

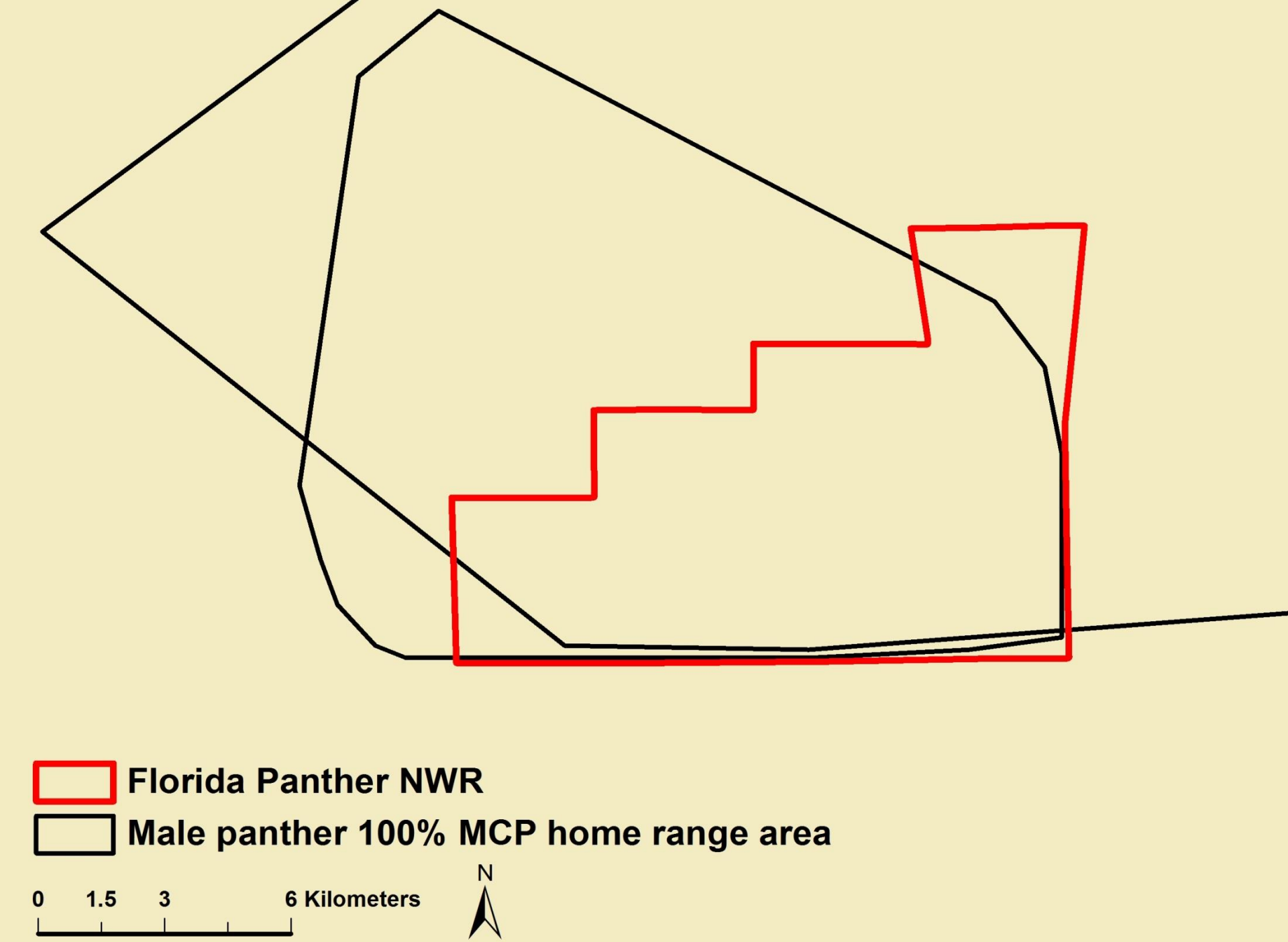


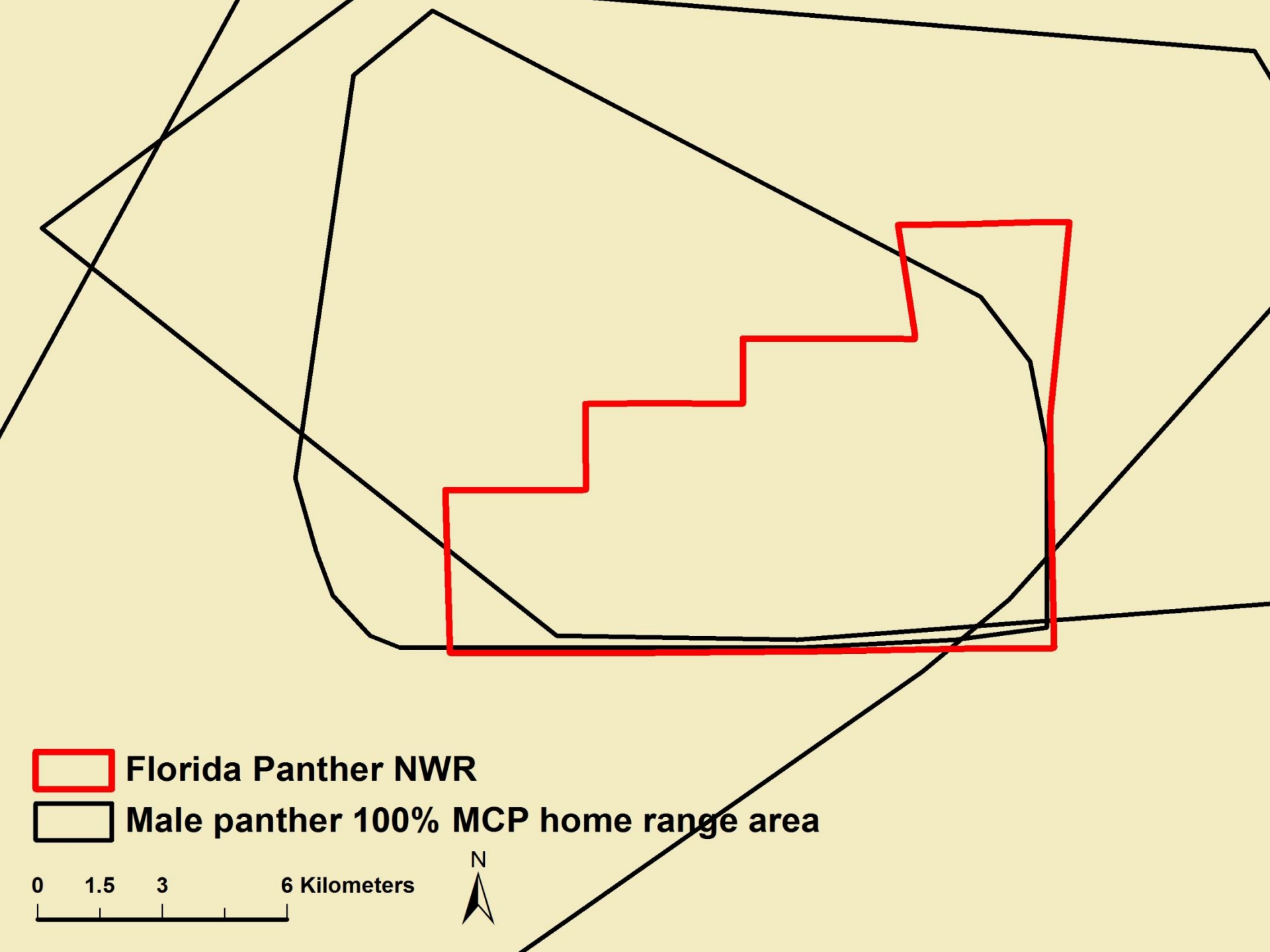
Florida Panther NWR

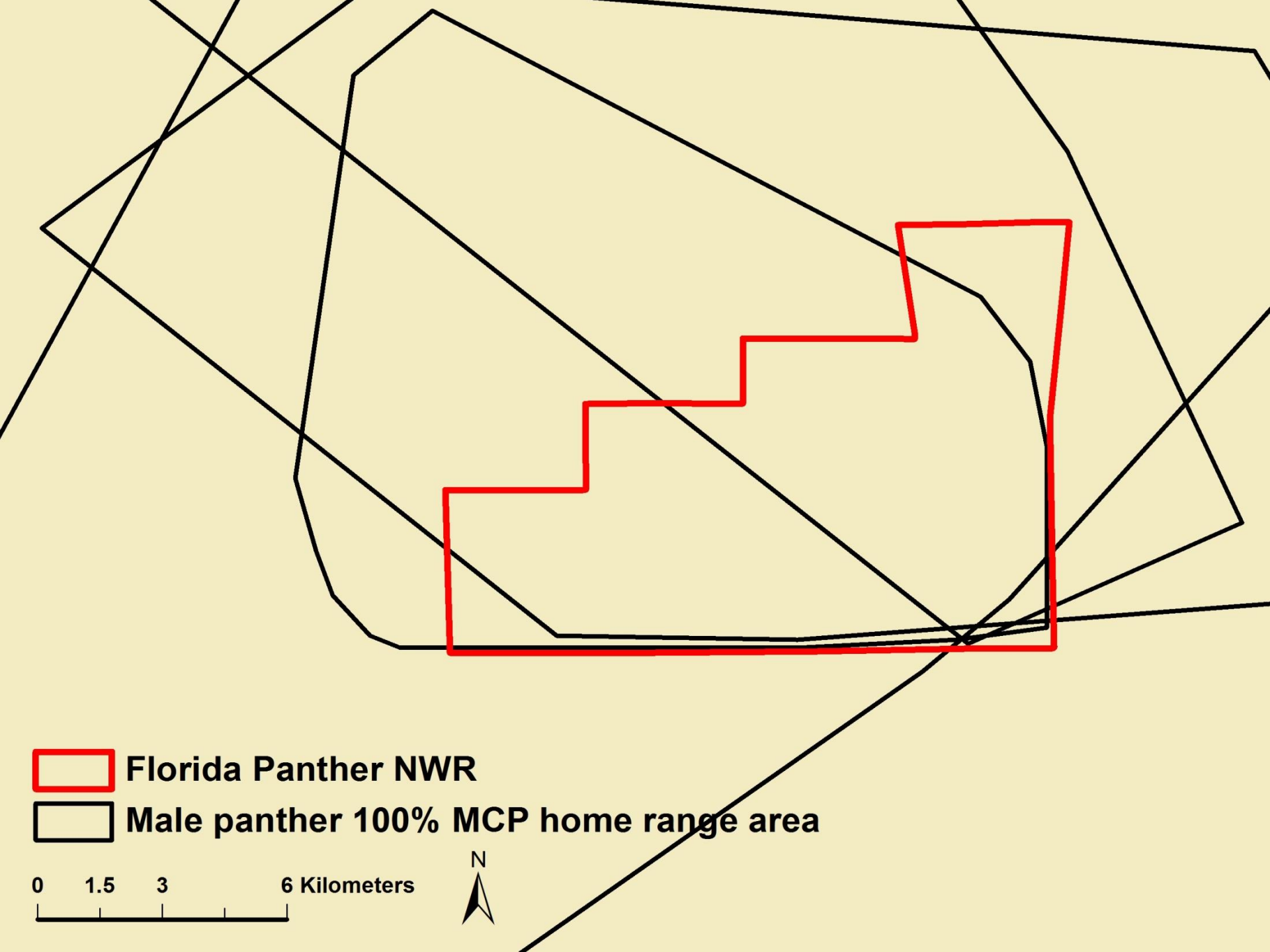
Male panther 100% MCP home range area

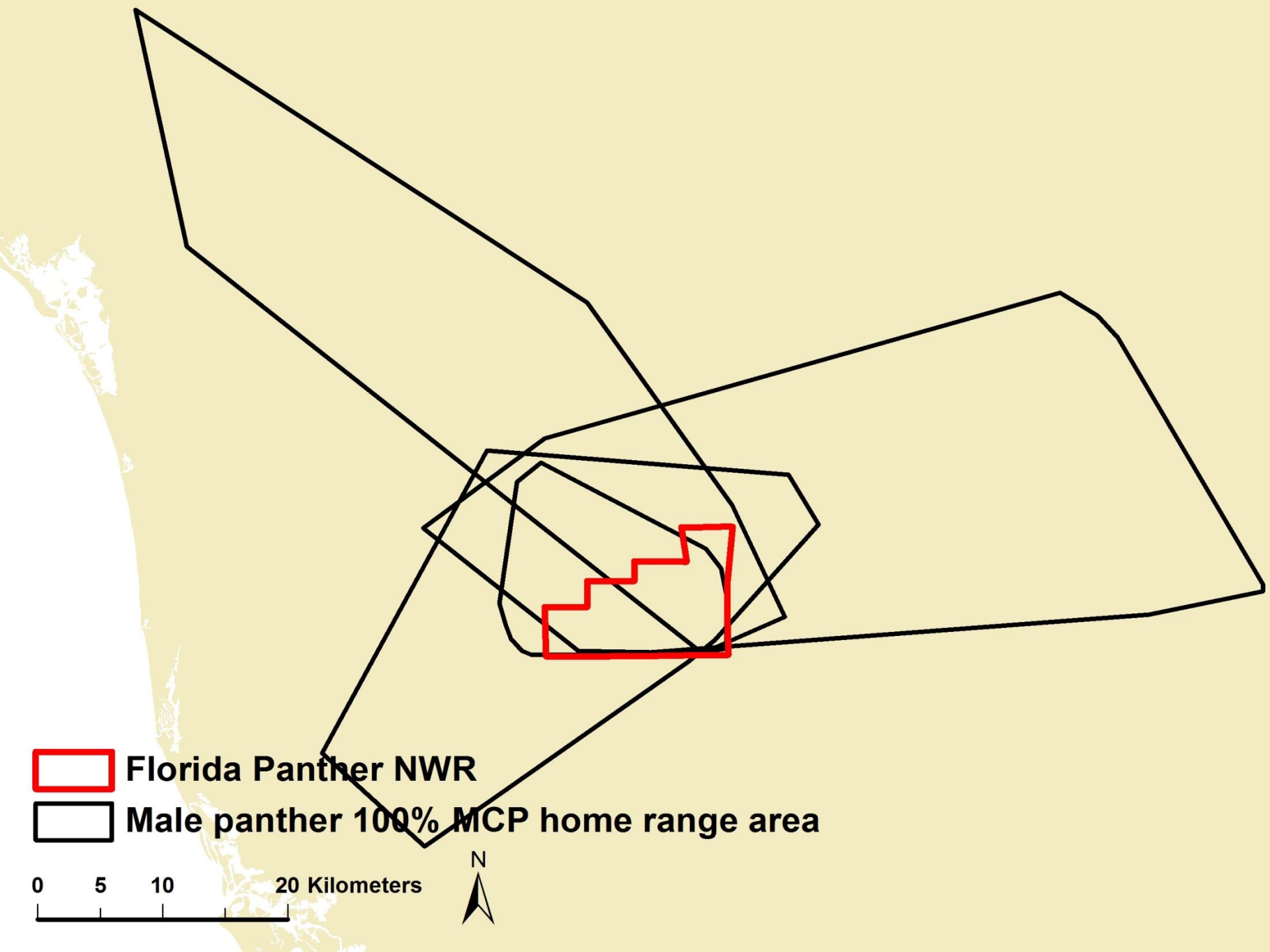
0 1.5 3 6 Kilometers

N

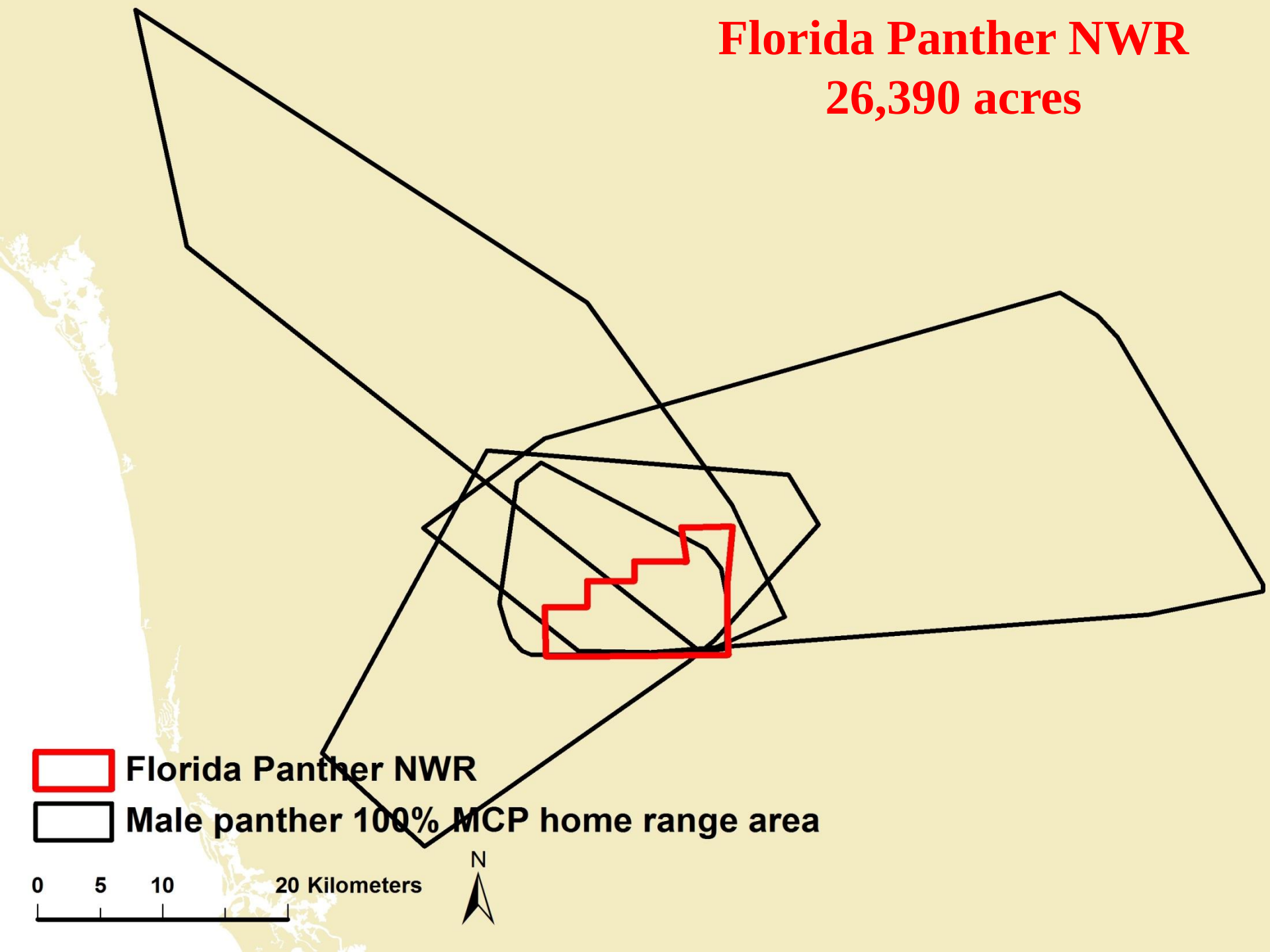

Florida Panther NWR
Male panther 100% MCP home range area
0
1.5
3
6 Kilometers
N


Florida Panther NWR
Male panther 100% MCP home range area
0
1.5
3
6 Kilometers
N

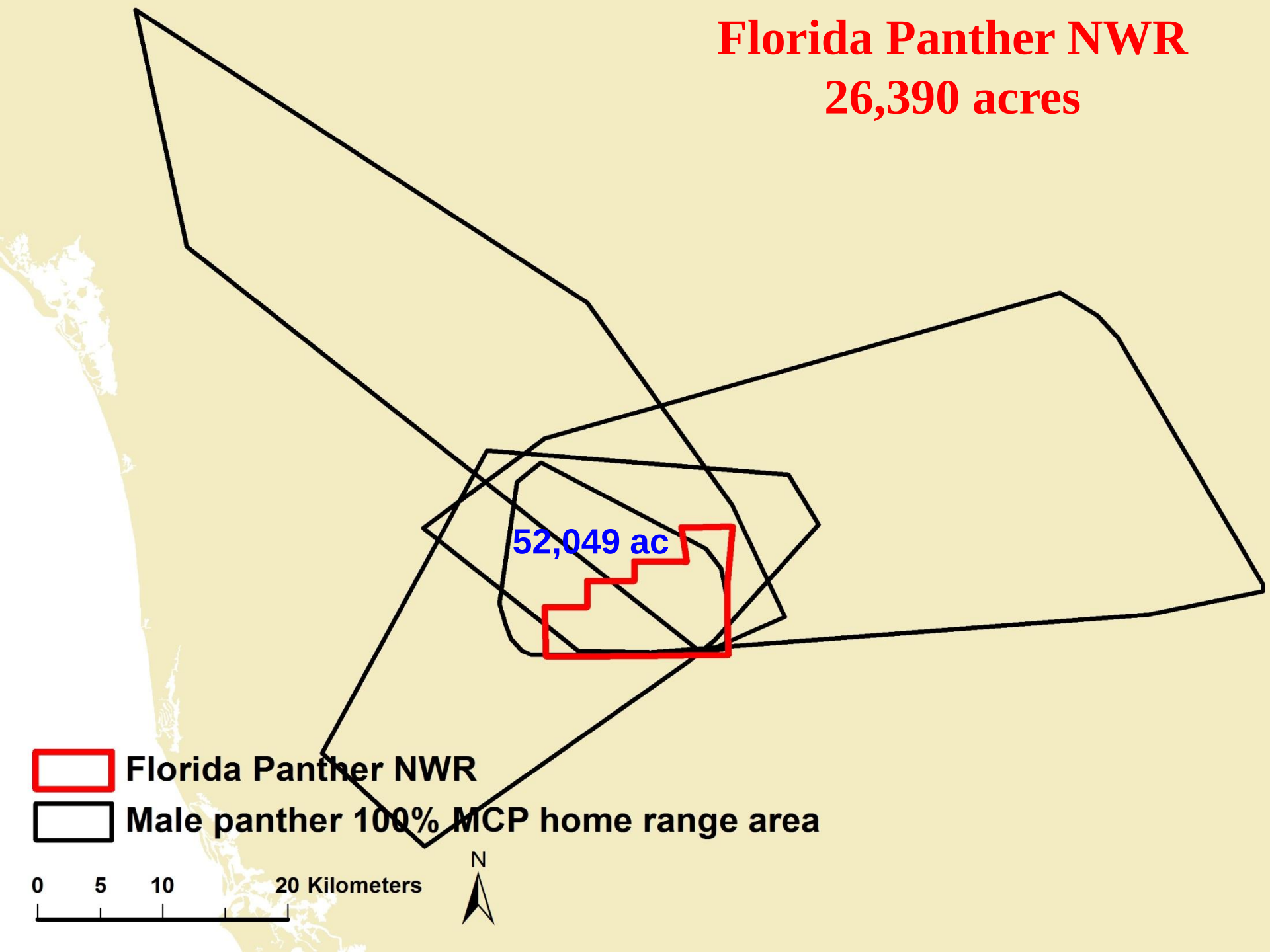

Florida Panther NWR
Male panther 100% MCP home range area
0
1.5
3
6 Kilometers
N

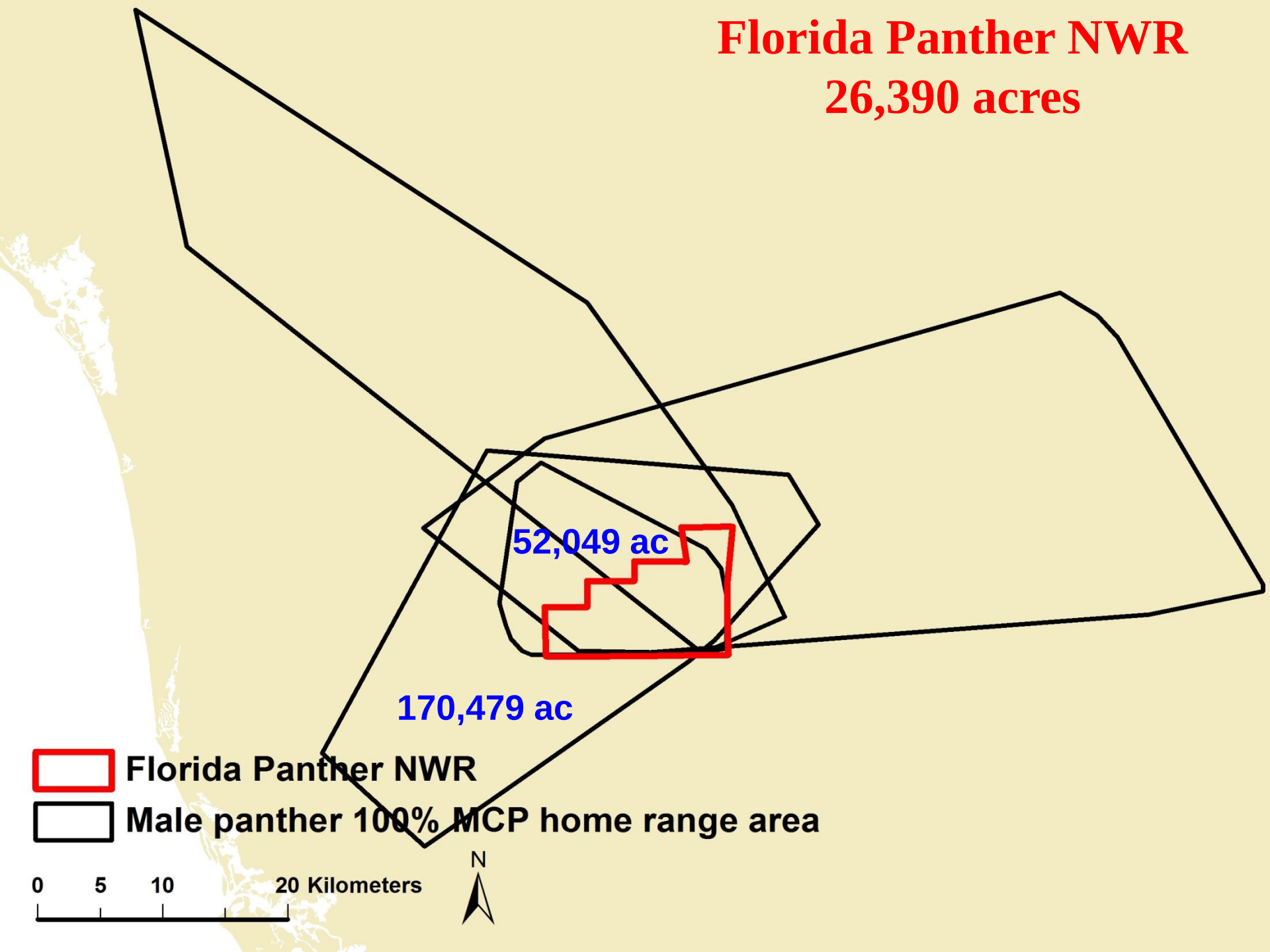

Florida Panther NWR
Male panther 100% MCP home range area
0
5
10
20 Kilometers
N

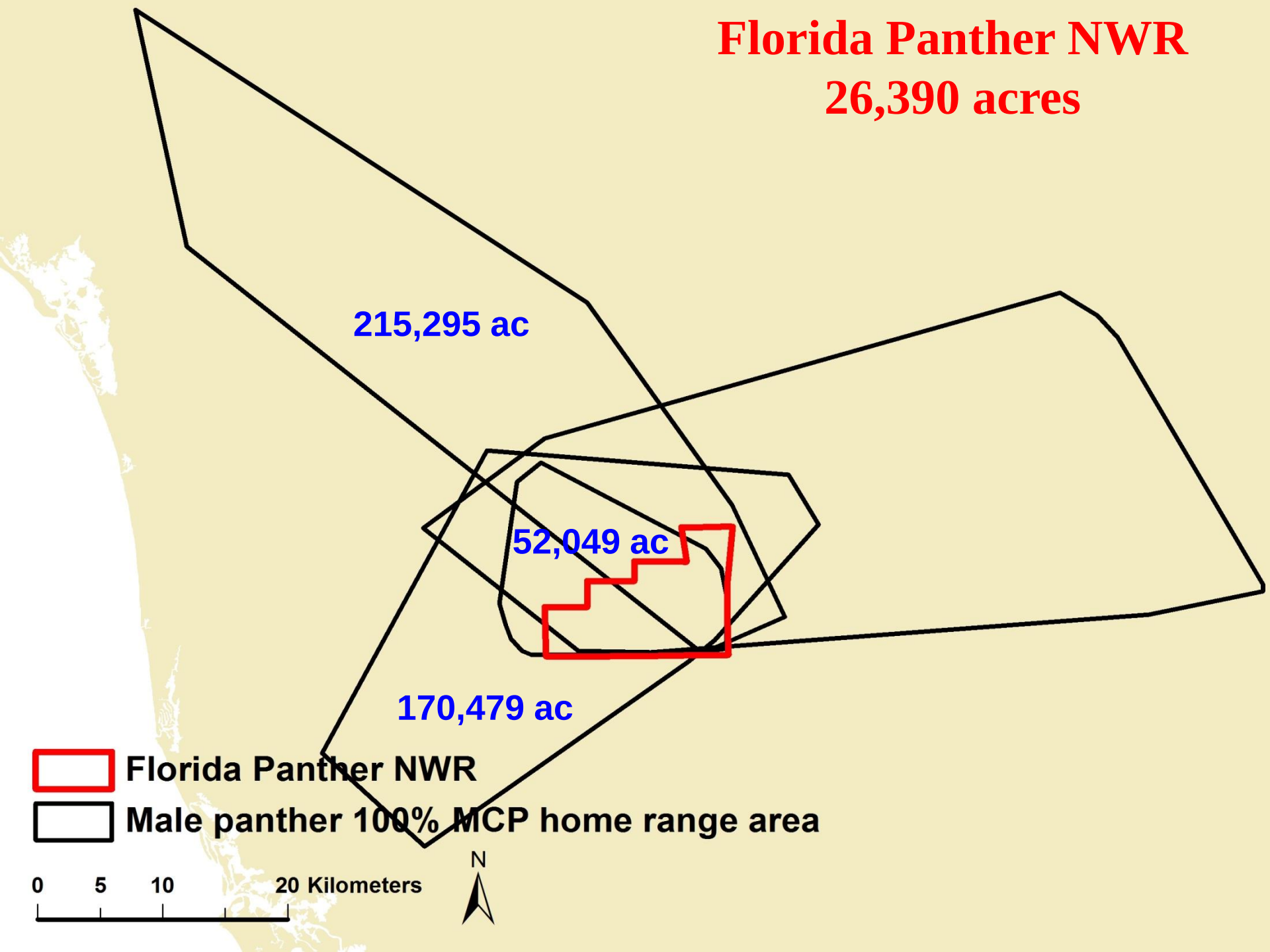
Florida Panther NWR
26,390 acres

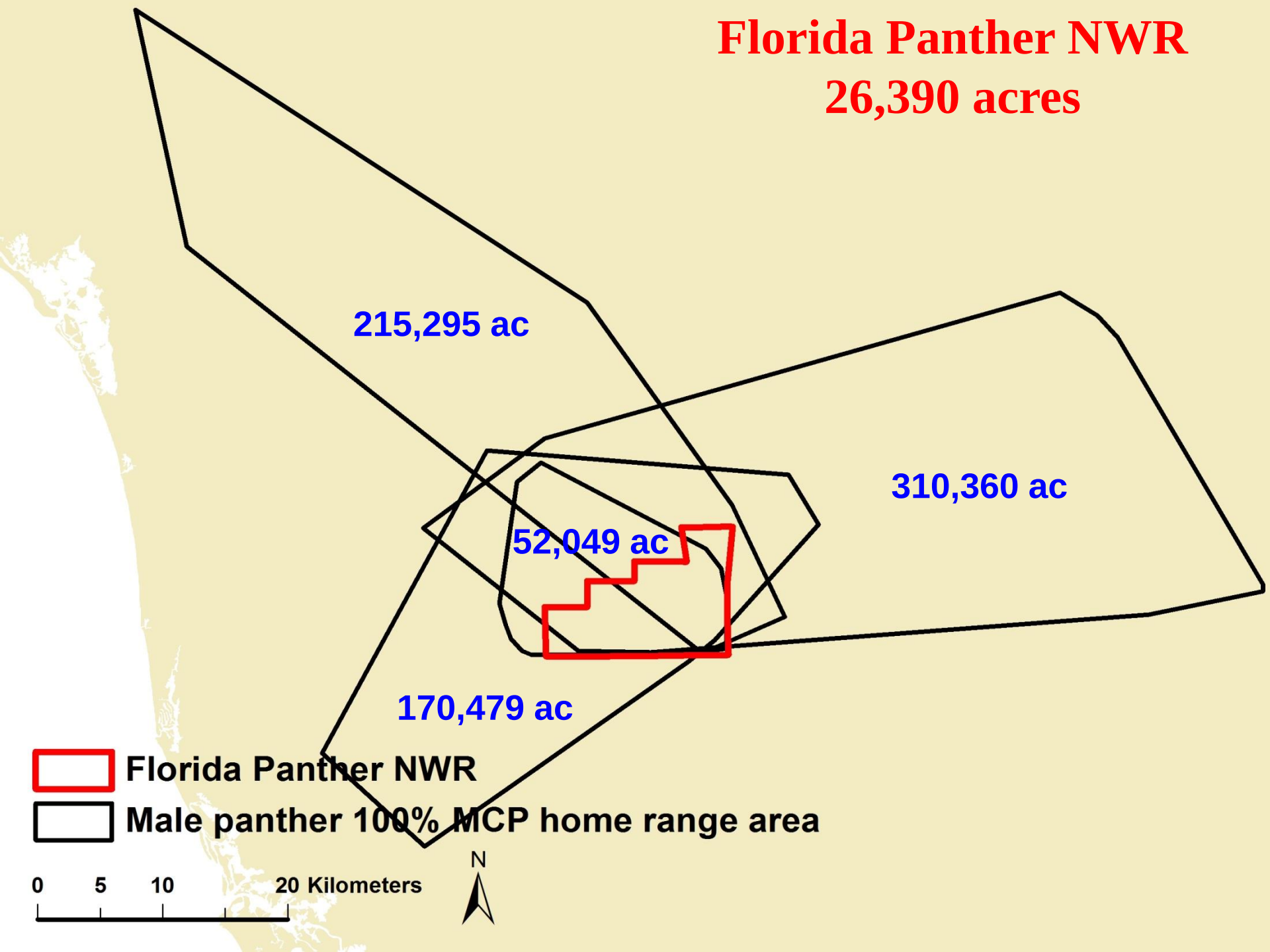


Florida Panther NWR
26,390 acres




Florida Panther NWR
26,390 acres
52,049 ac
170,479 ac
Florida Panther NWR
Male panther 100% MCP home range area
0
5
10
20 Kilometers
N


Florida Panther NWR
26,390 acres
215,295 ac
52,049 ac
170,479 ac
Florida Panther NWR
Male panther 100% MCP home range area
0 5 10 20 Kilometers
N


Florida Panther NWR
26,390 acres
215,295 ac
310,360 ac
52,049 ac
170,479 ac
Florida Panther NWR
Male panther 100% MCP home range area
0 5 10 20 Kilometers
N

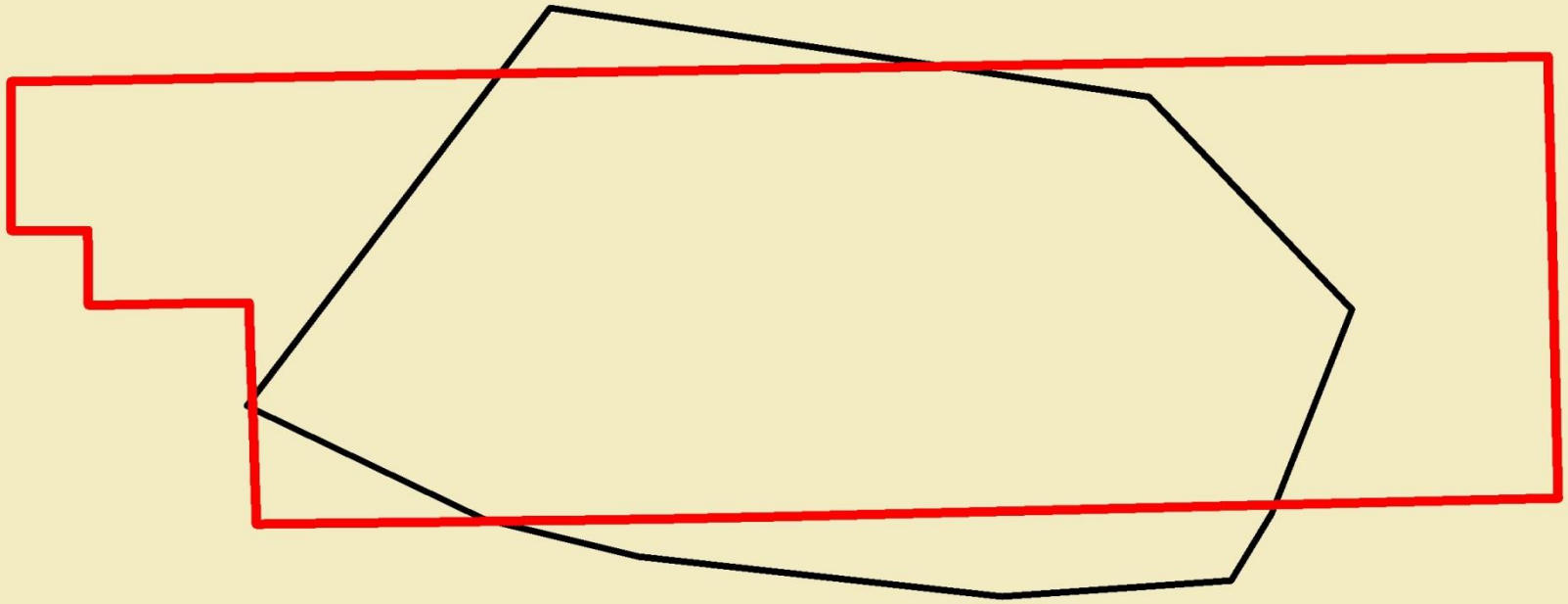
Northern Addition Lands
Big Cypress National Preserve
70,000 acres

Addition Lands Study Area

0 2.5 5 10 Kilometers

N

Male panther annual home range area determined by telemetry data

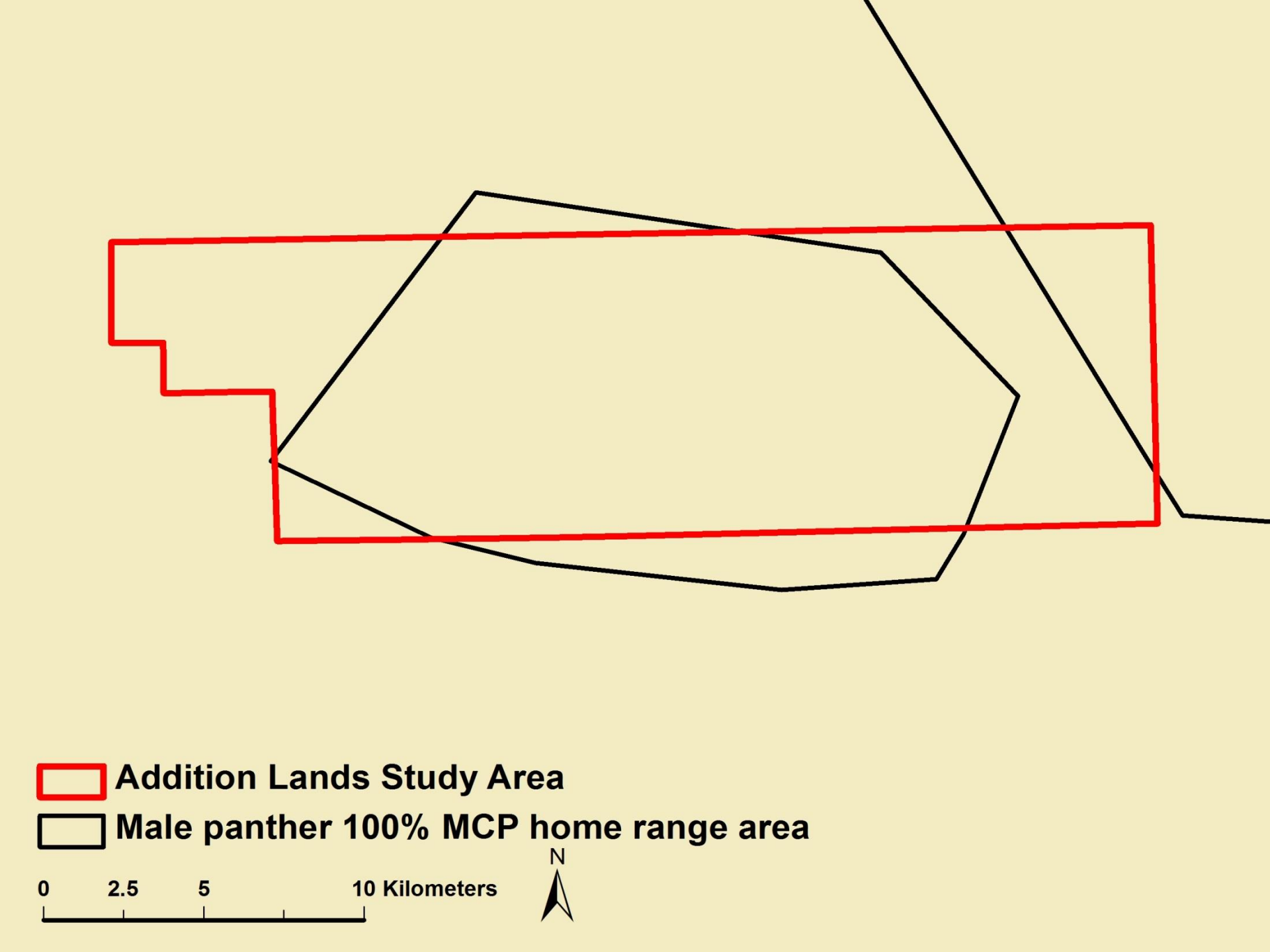


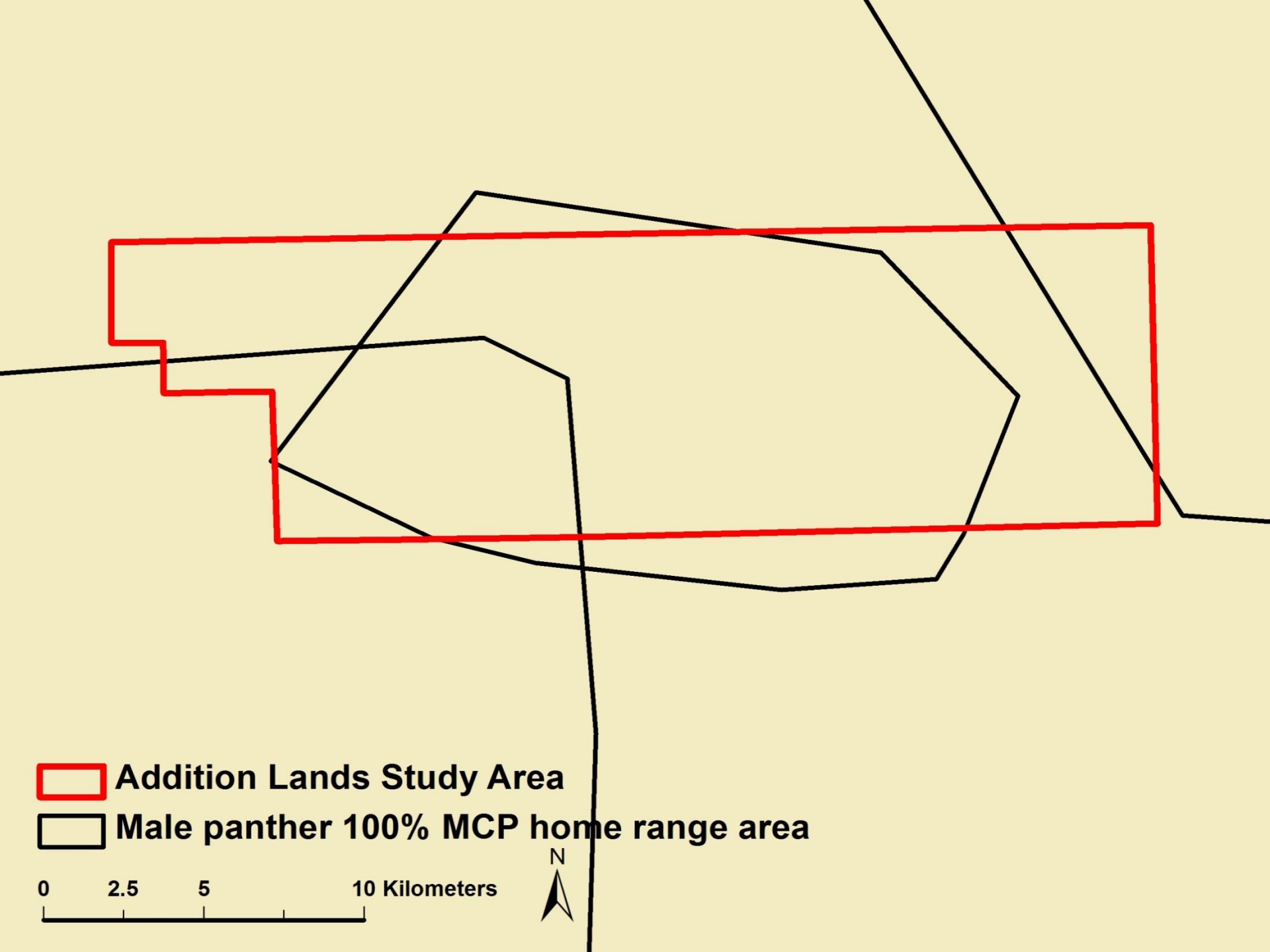
Addition Lands Study Area

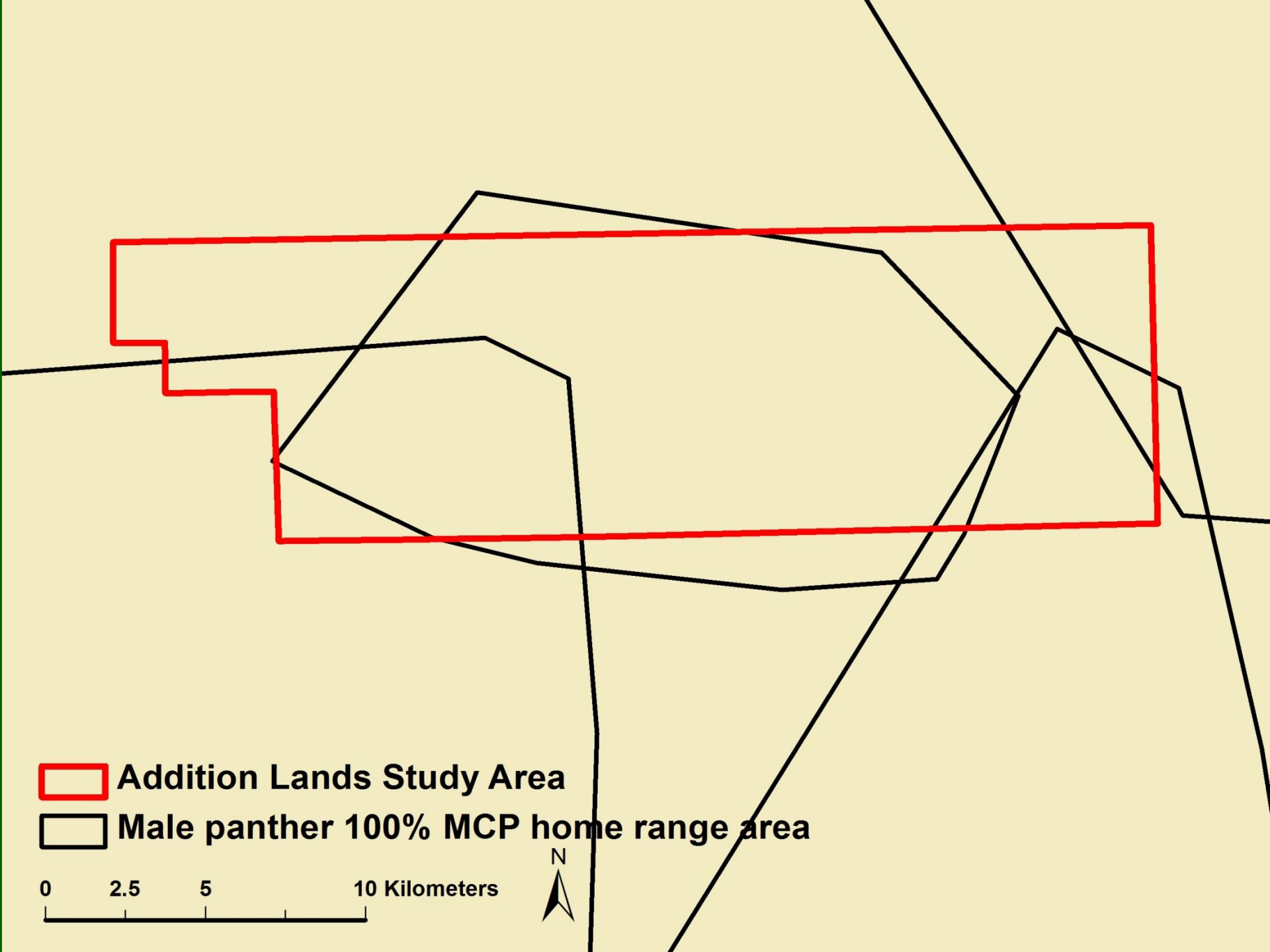
Male panther 100% MCP home range area

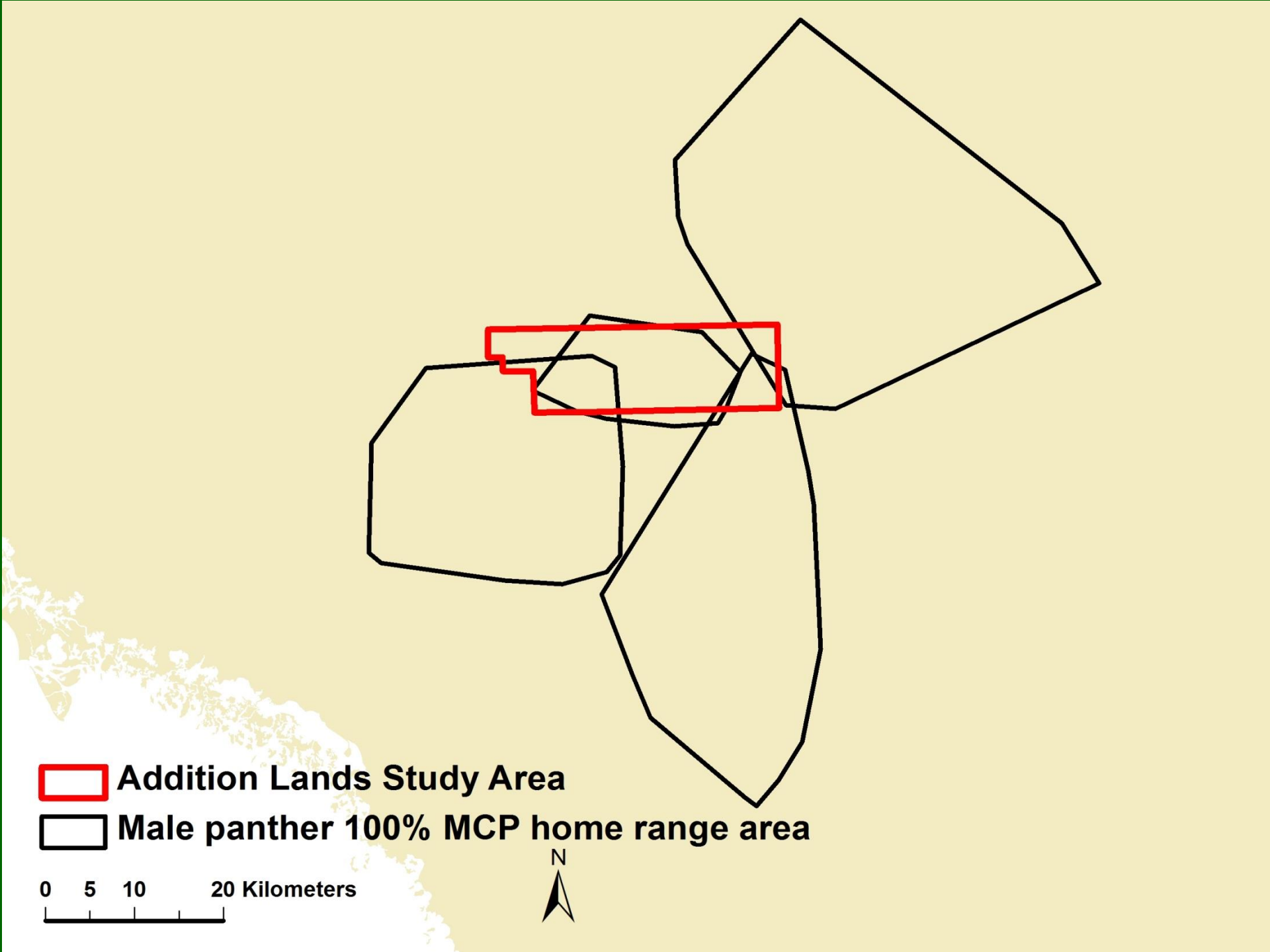
0 2.5 5 10 Kilometers

N

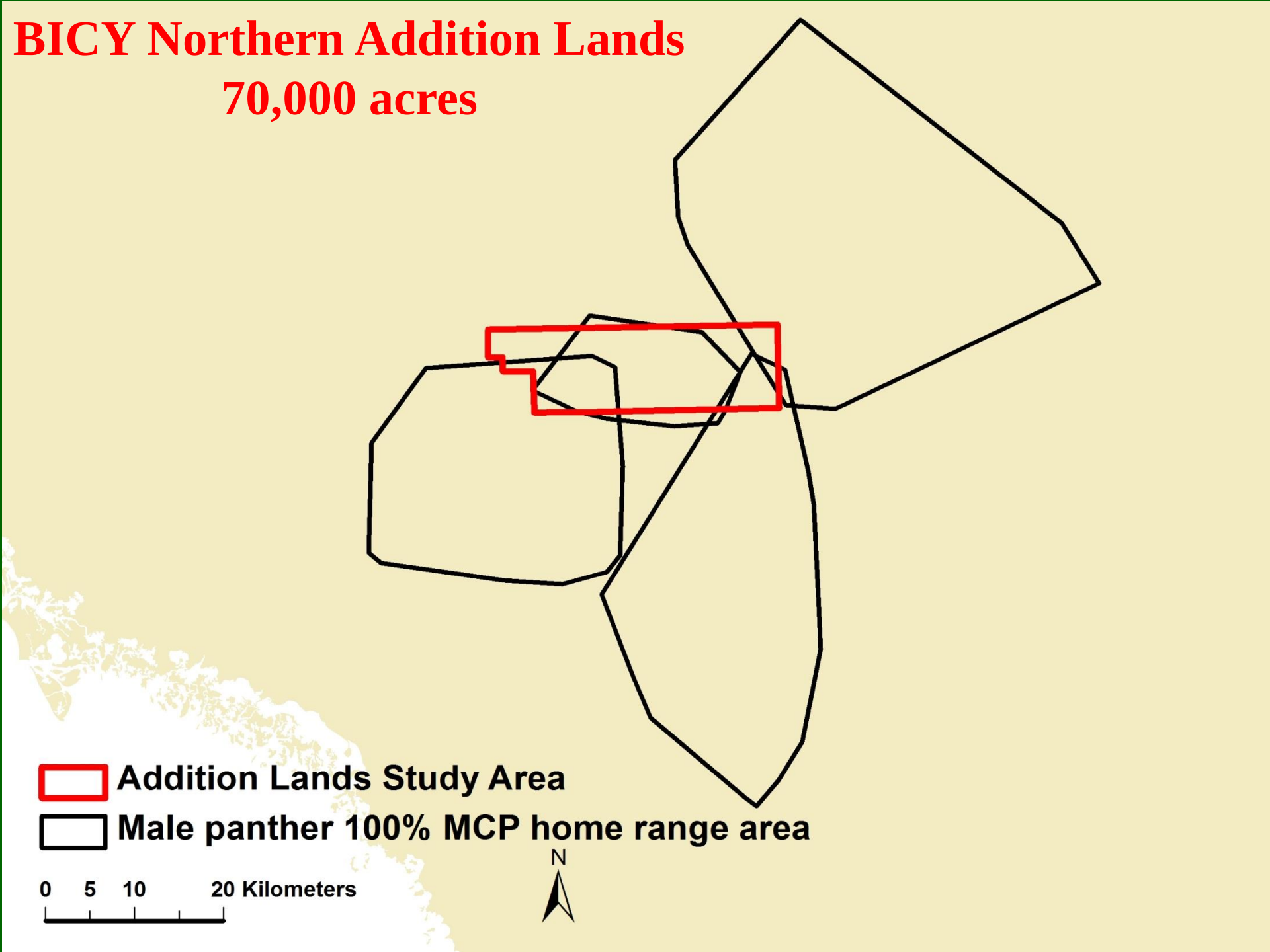

Addition Lands Study Area
Male panther 100% MCP home range area
0
2.5
5
10 Kilometers
N


Addition Lands Study Area
Male panther 100% MCP home range area
N
0
2.5
5
10 Kilometers

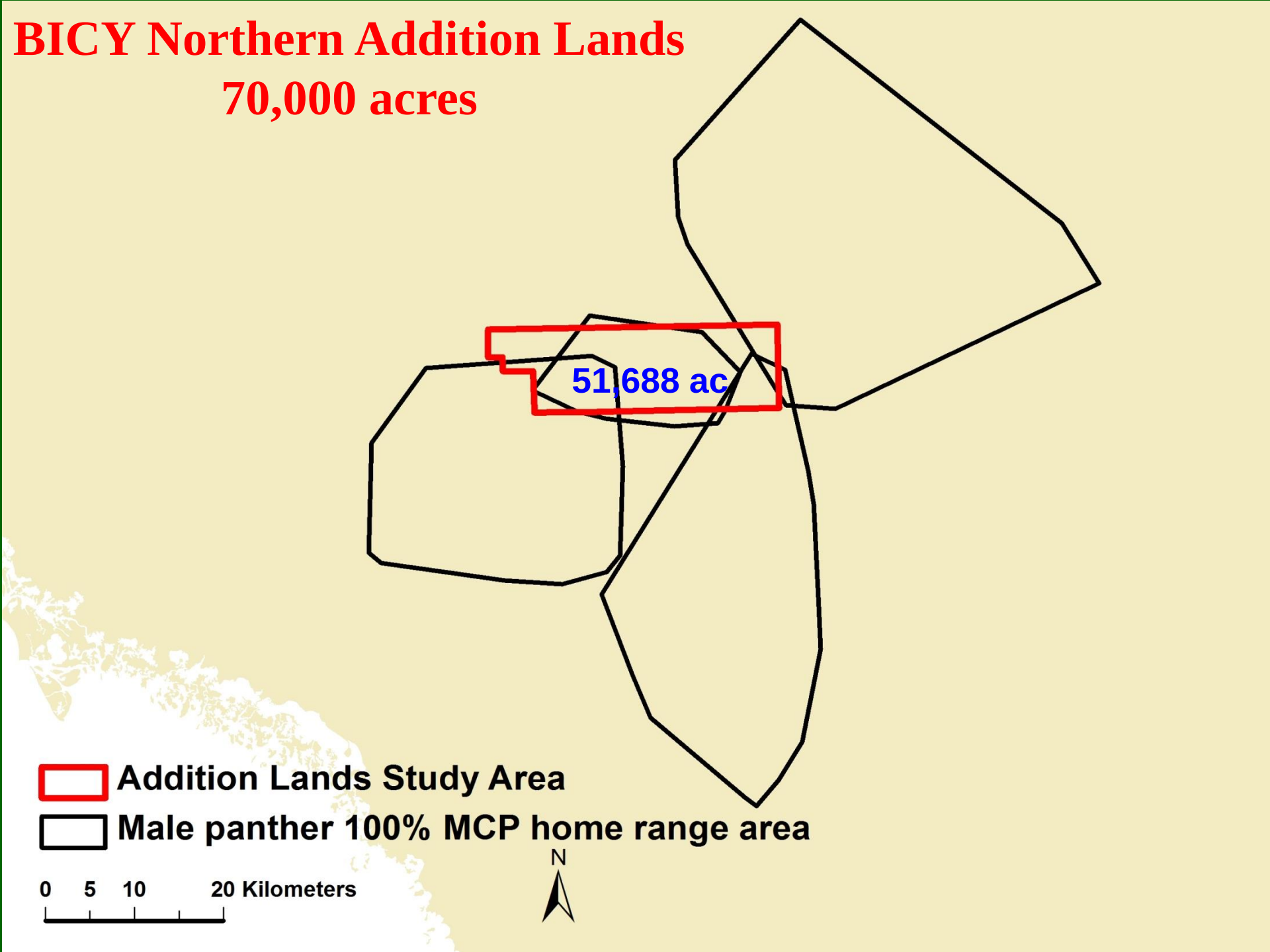

Addition Lands Study Area
Male panther 100% MCP home range area
N
0
2.5
5
10 Kilometers


Addition Lands Study Area
Male panther 100% MCP home range area
0 5 10 20 Kilometers
N

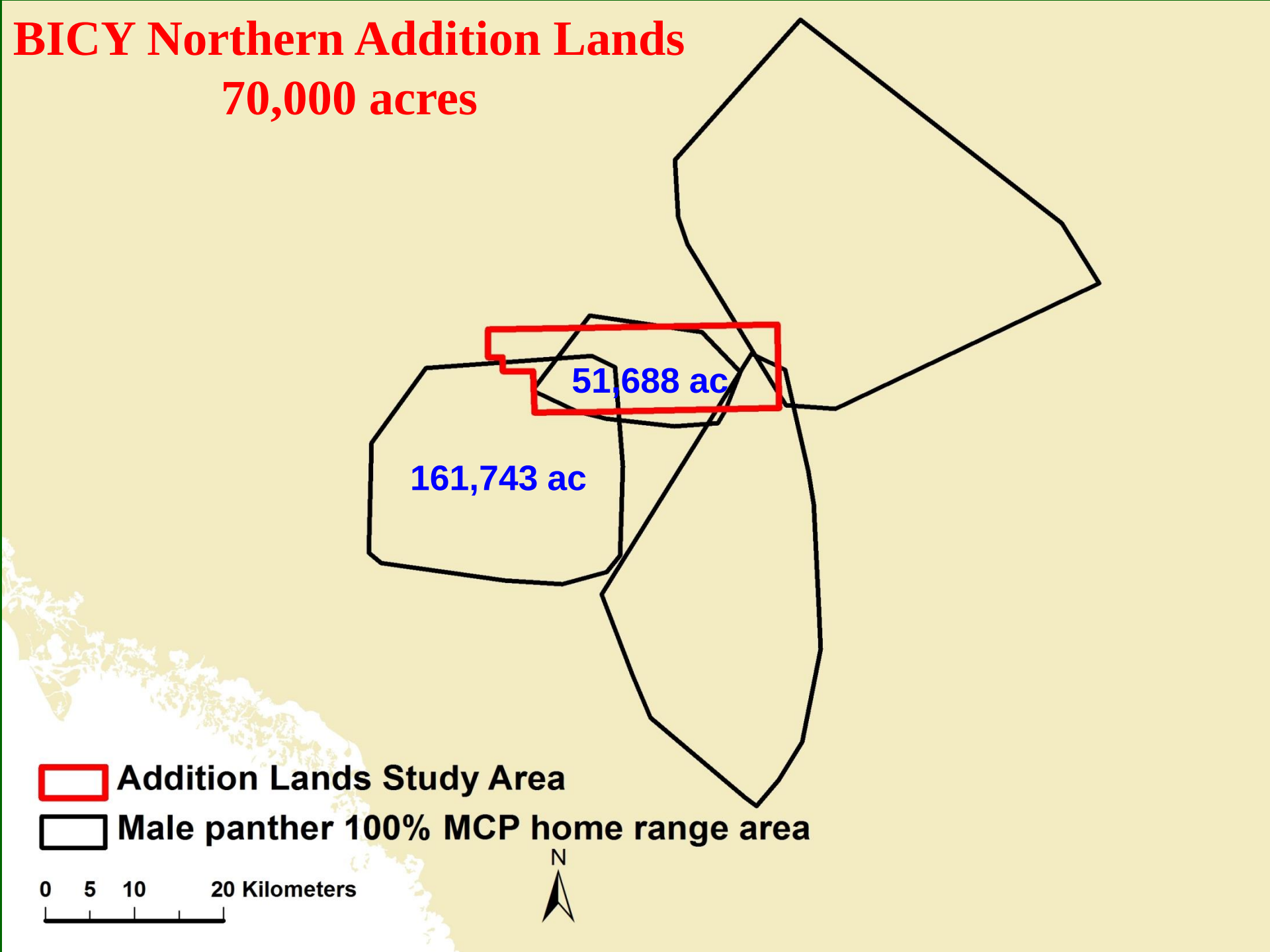
BICY Northern Addition Lands
70,000 acres



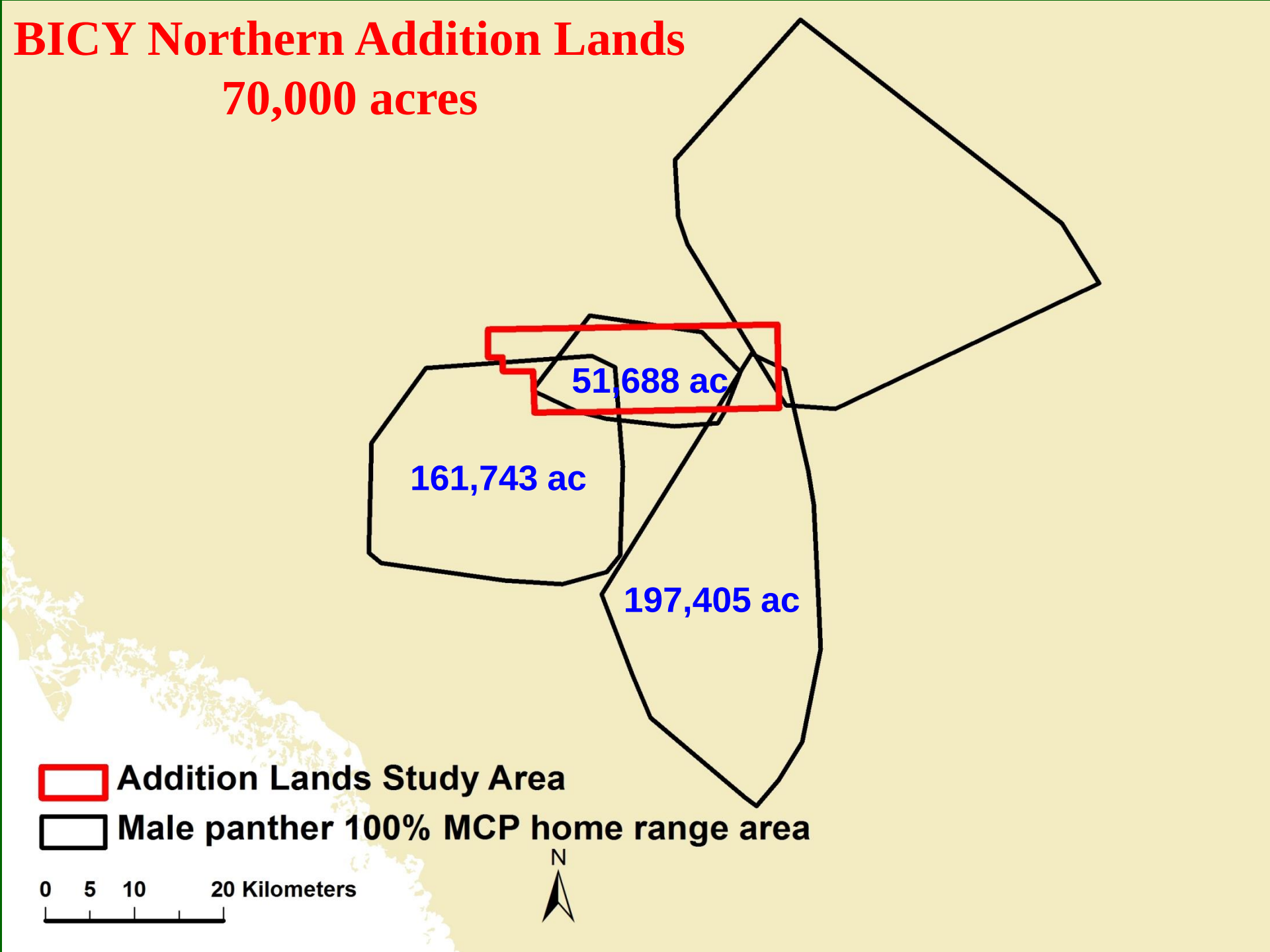
BICY Northern Addition Lands
70,000 acres



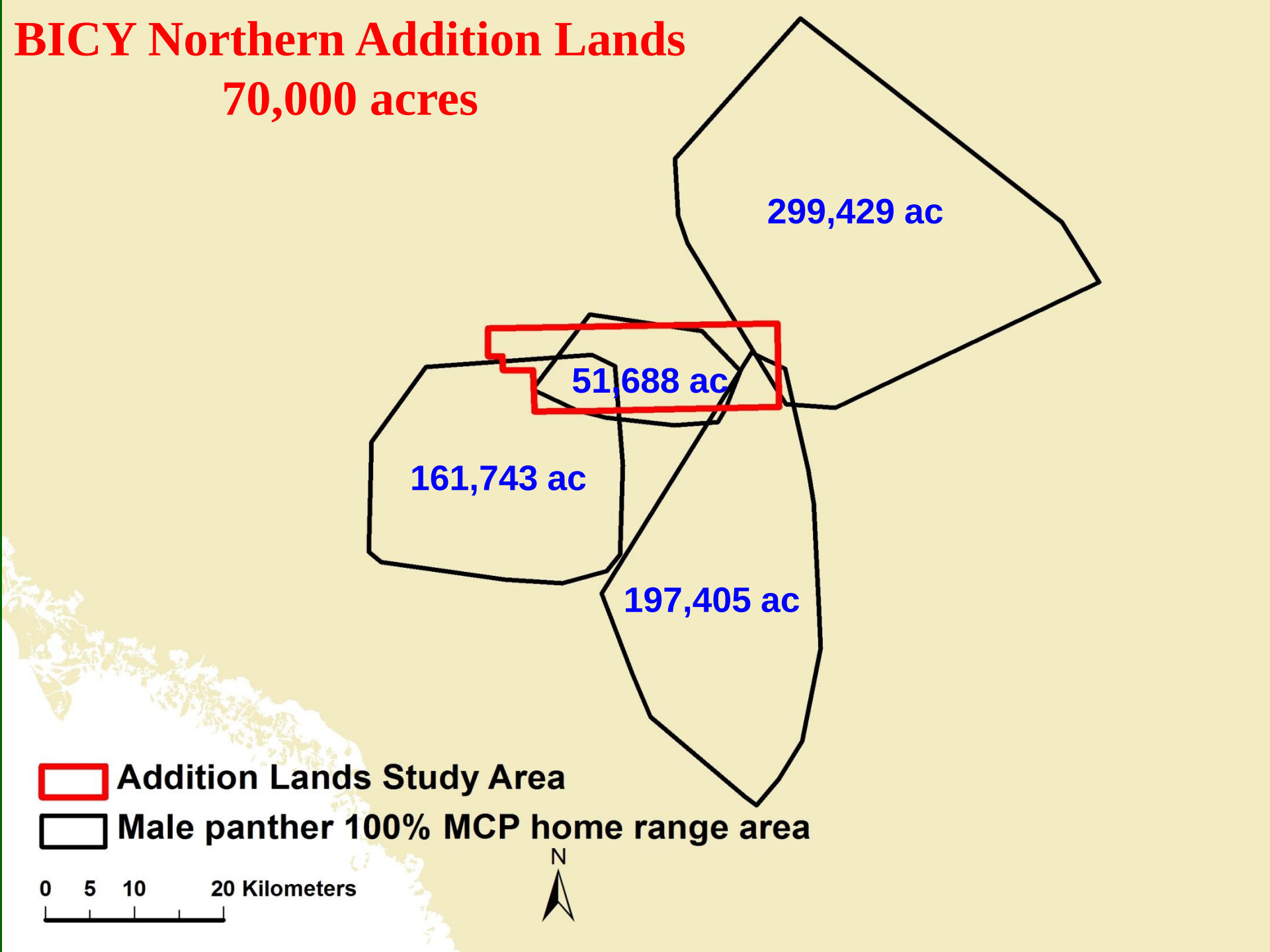
BICY Northern Addition Lands
70,000 acres

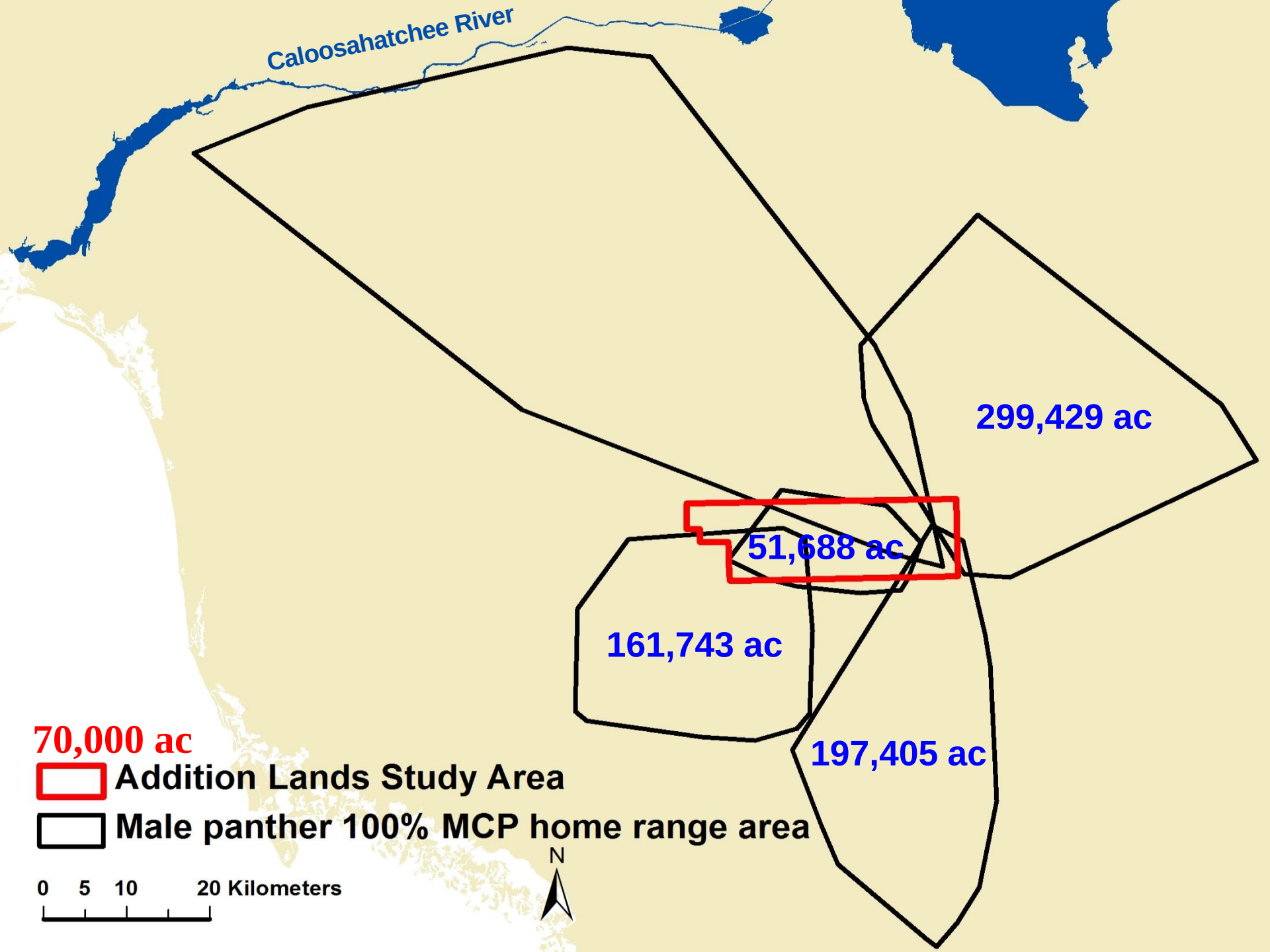


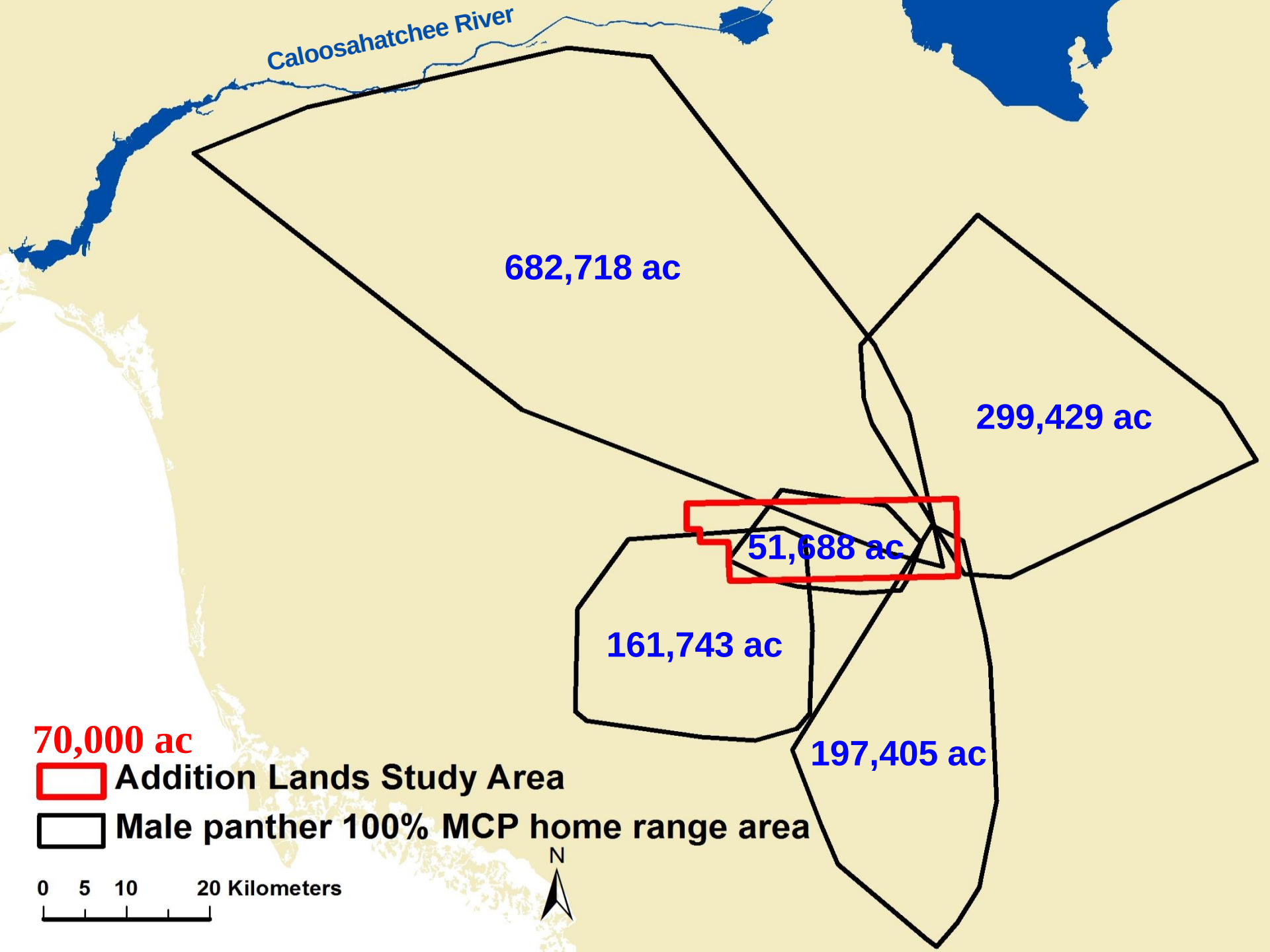
BICY Northern Addition Lands
70,000 acres

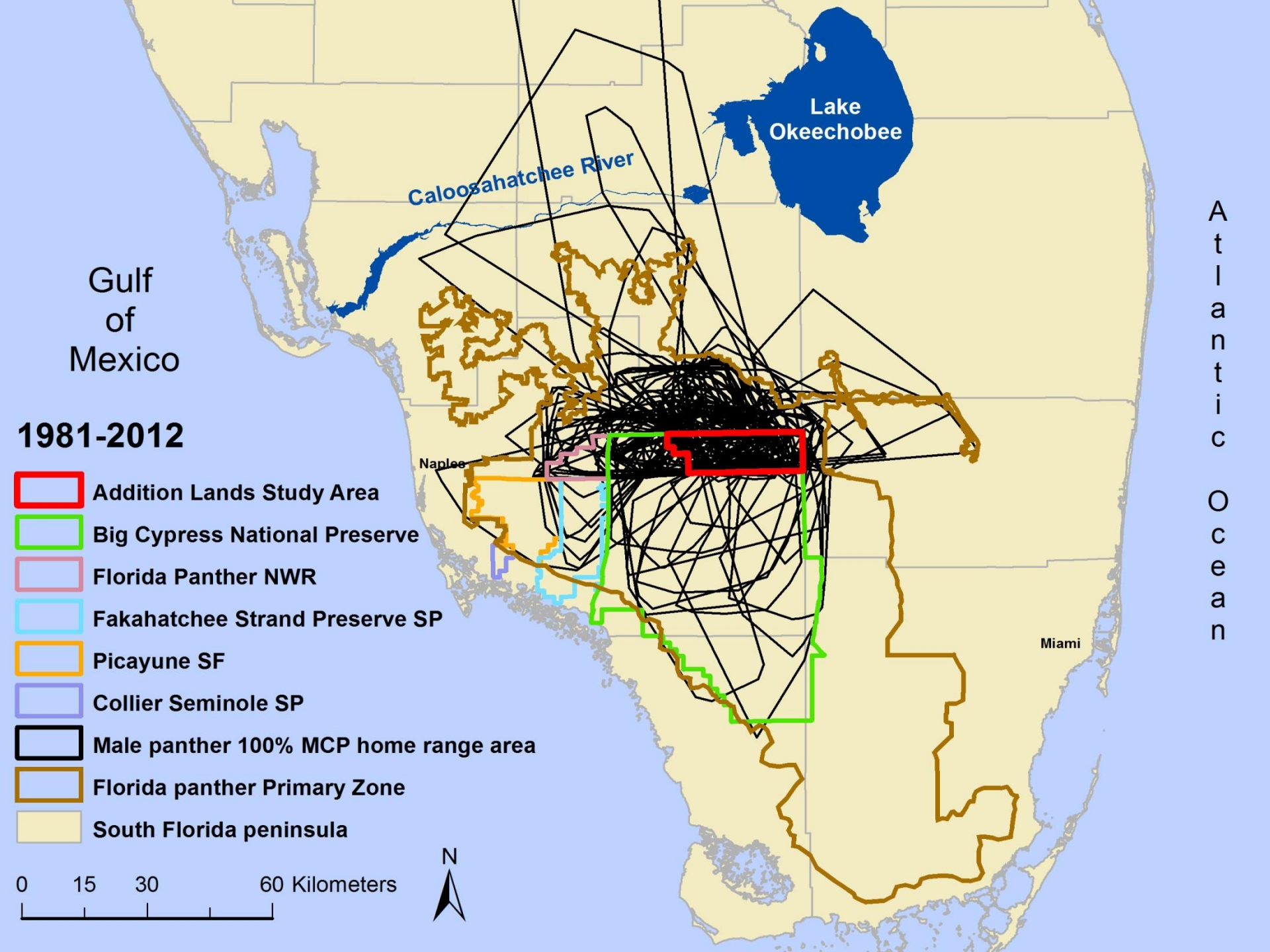


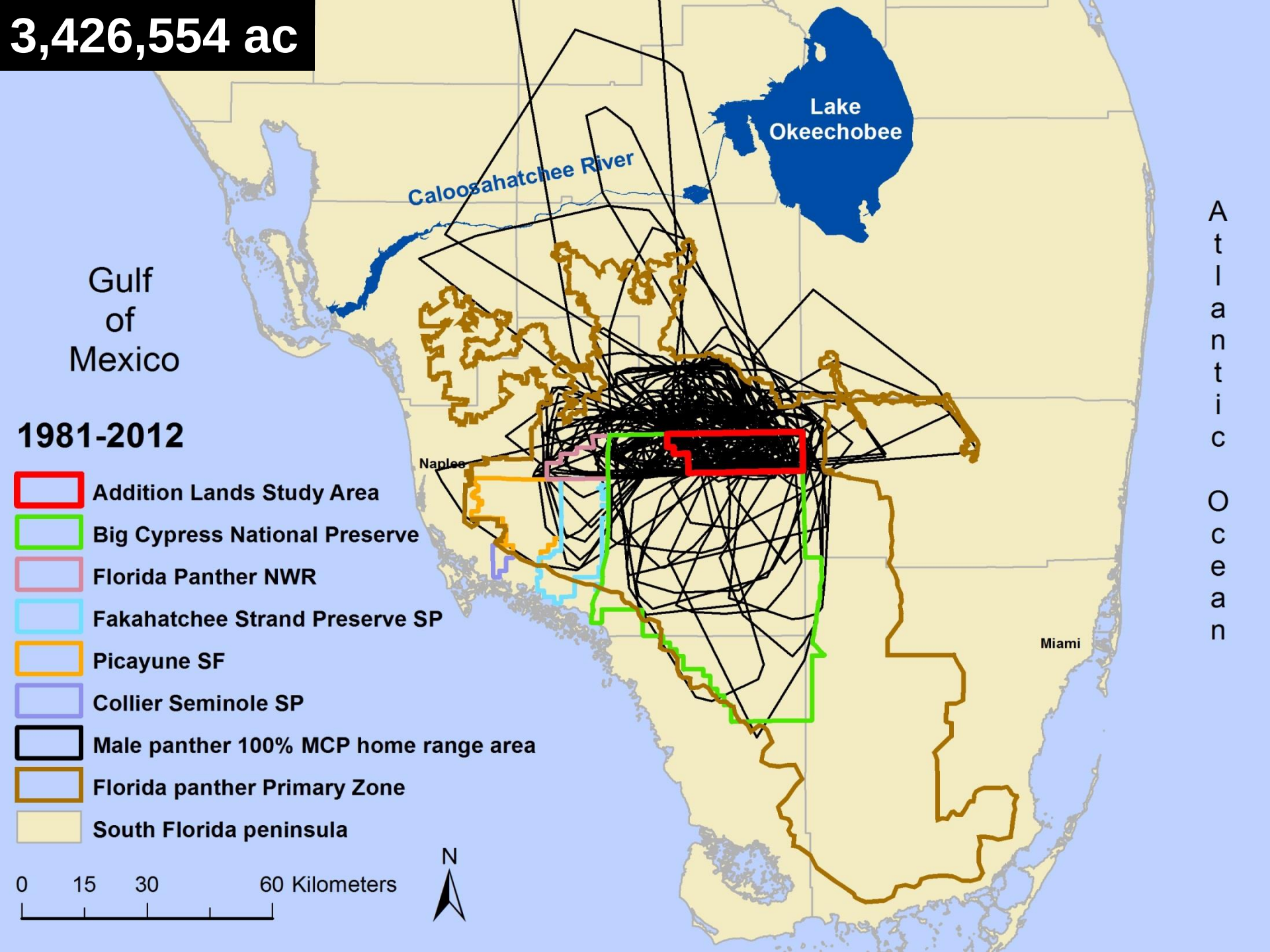
BICY Northern Addition Lands
70,000 acres

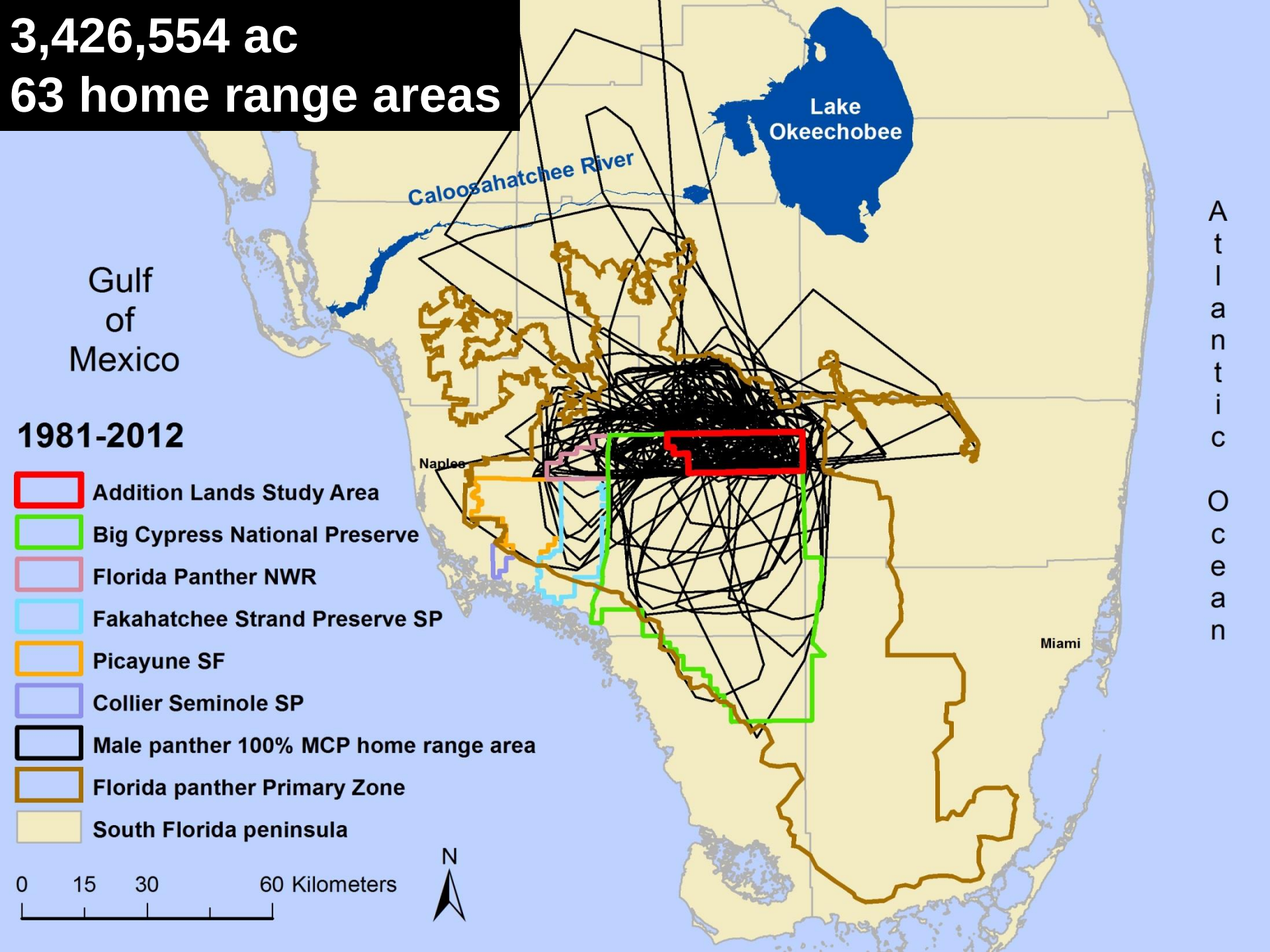


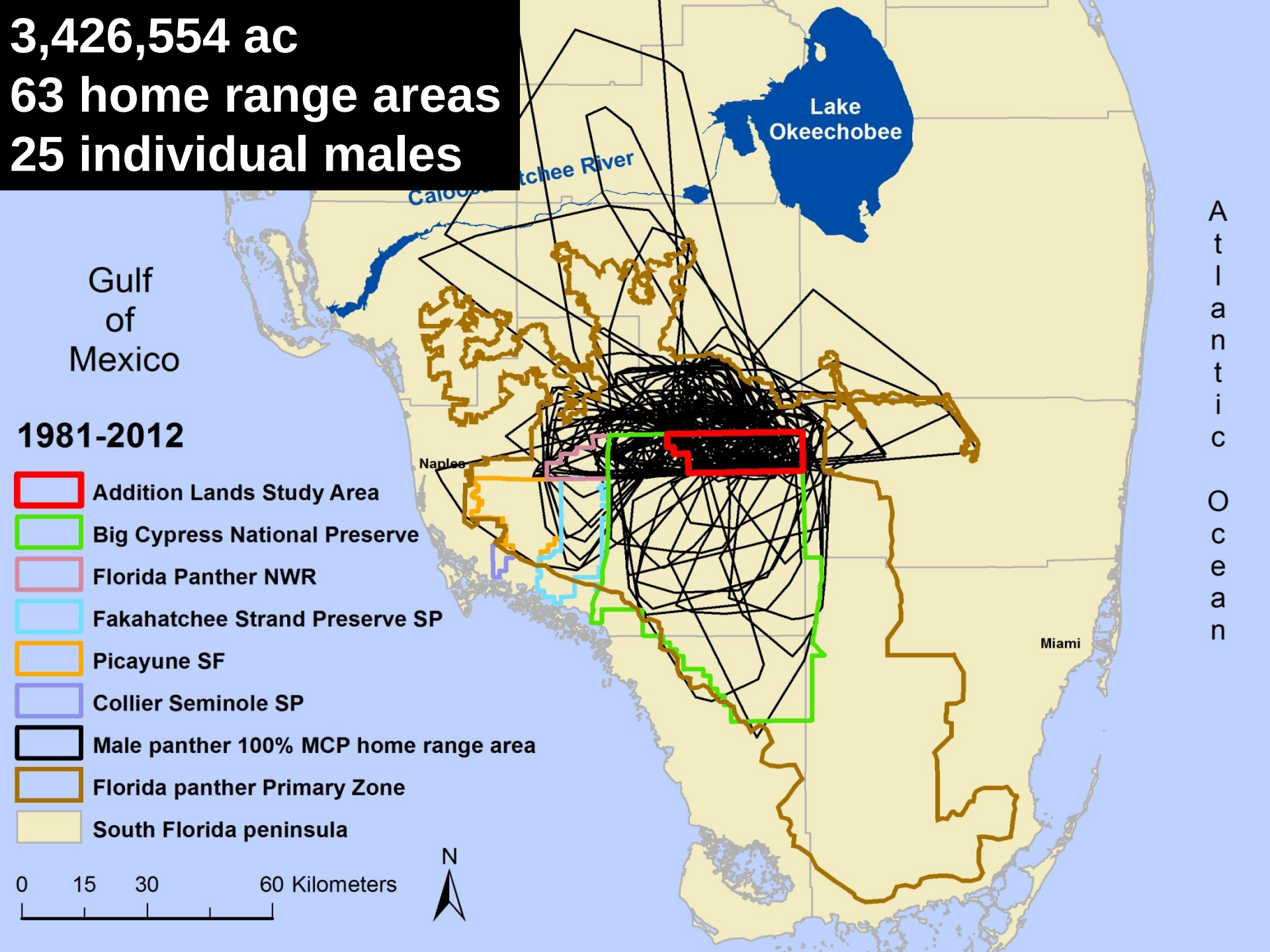

Caloosahatchee River
299,429 ac
51,688 ac
161,743 ac
197,405 ac
70,000 ac
Addition Lands Study Area
Male panther 100% MCP home range area
N
0 5 10 20 Kilometers


Caloosahatchee River
682,718 ac
299,429 ac
51,688 ac
161,743 ac
197,405 ac
70,000 ac
Addition Lands Study Area
Male panther 100% MCP home range area
N
0 5 10 20 Kilometers


Lake Okeechobee
Caloosahatchee River
Gulf of Mexico
1981-2012
Addition Lands Study Area
Big Cypress National Preserve
Florida Panther NWR
Fakahatchee Strand Preserve SP
Picayune SF
Collier Seminole SP
Male panther 100% MCP home range area
Florida panther Primary Zone
South Florida peninsula
Naples
Miami
Atlantic Ocean
N
0 15 30 60 Kilometers


3,426,554 ac
Lake Okeechobee
Caloosahatchee River
Gulf of Mexico
1981-2012
Addition Lands Study Area
Big Cypress National Preserve
Florida Panther NWR
Fakahatchee Strand Preserve SP
Picayune SF
Collier Seminole SP
Male panther 100% MCP home range area
Florida panther Primary Zone
South Florida peninsula
Naples
Miami
Atlantic Ocean
0 15 30 60 Kilometers
N


3,426,554 ac
63 home range areas
Lake Okeechobee
Caloosahatchee River
Gulf of Mexico
Atlantic Ocean
Naples
Miami
1981-2012
Addition Lands Study Area
Big Cypress National Preserve
Florida Panther NWR
Fakahatchee Strand Preserve SP
Picayune SF
Collier Seminole SP
Male panther 100% MCP home range area
Florida panther Primary Zone
South Florida peninsula
0 15 30 60 Kilometers
N


3,426,554 ac
63 home range areas
25 individual males
Lake Okeechobee
Gulf of Mexico
Atlantic Ocean
Naples
Miami
1981-2012
Addition Lands Study Area
Big Cypress National Preserve
Florida Panther NWR
Fakahatchee Strand Preserve SP
Picayune SF
Collier Seminole SP
Male panther 100% MCP home range area
Florida panther Primary Zone
South Florida peninsula
0 15 30 60 Kilometers
N

The preceding slides showing the historical use of a specific area by male panthers, illustrates the difficulty of determining their density and measuring the size of the area sampled.

CONCLUSION

Panthers are considered to be elusive

In reality, their sign is easily detected by trained observers

The difficulty is in determining how many panthers made the sign that is observed

Therefore, the collection of physical evidence in conjunction with exclusionary rules is essential to prevent overcounting

- The Annual Count consists of adults, juveniles and sub adults but not kittens at the den.

- We may not agree on panther numbers but we can all agree the population has increased exponentially since 1985

Questions?