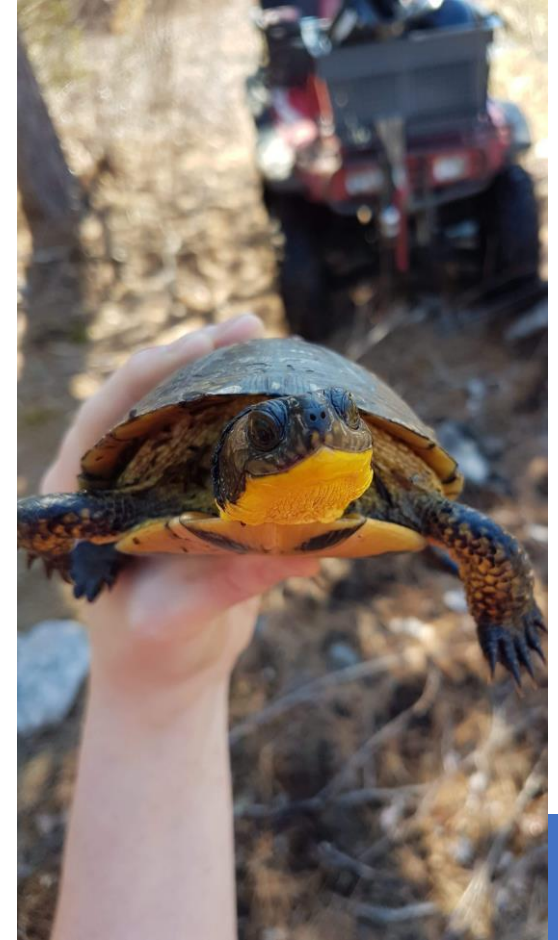


# ENDANGERED SPECIES PROTECTION AND EVIDENCE-BASED DECISION-MAKING: CASE STUDY OF A QUARRY PROPOSAL IN ENDANGERED TURTLE HABITAT



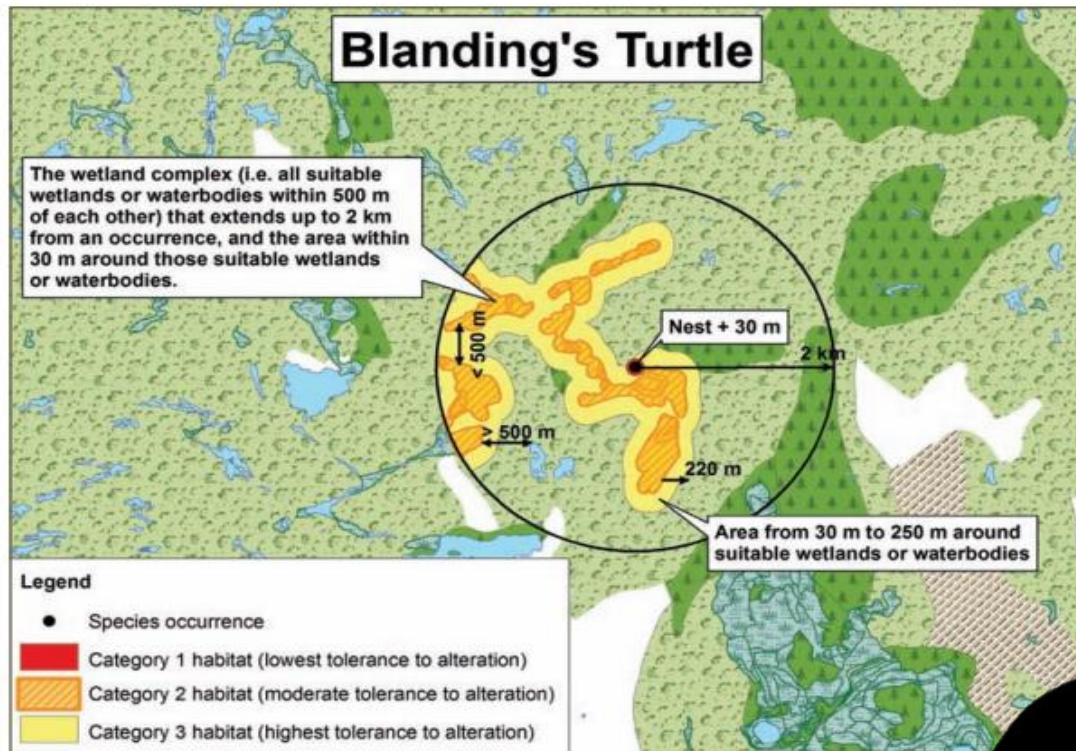
Gabriella M. Zagorski<sup>1\*</sup>, Douglas R. Boreham<sup>2</sup>, Jaqueline D. Litzgus<sup>1</sup>

<sup>1</sup>Department of Biology, Laurentian University [gmzagorsk@gmail.com](mailto:gmzagorsk@gmail.com), [jlitzgus@laurentian.ca](mailto:jlitzgus@laurentian.ca), Sudbury ON P3E 2C6

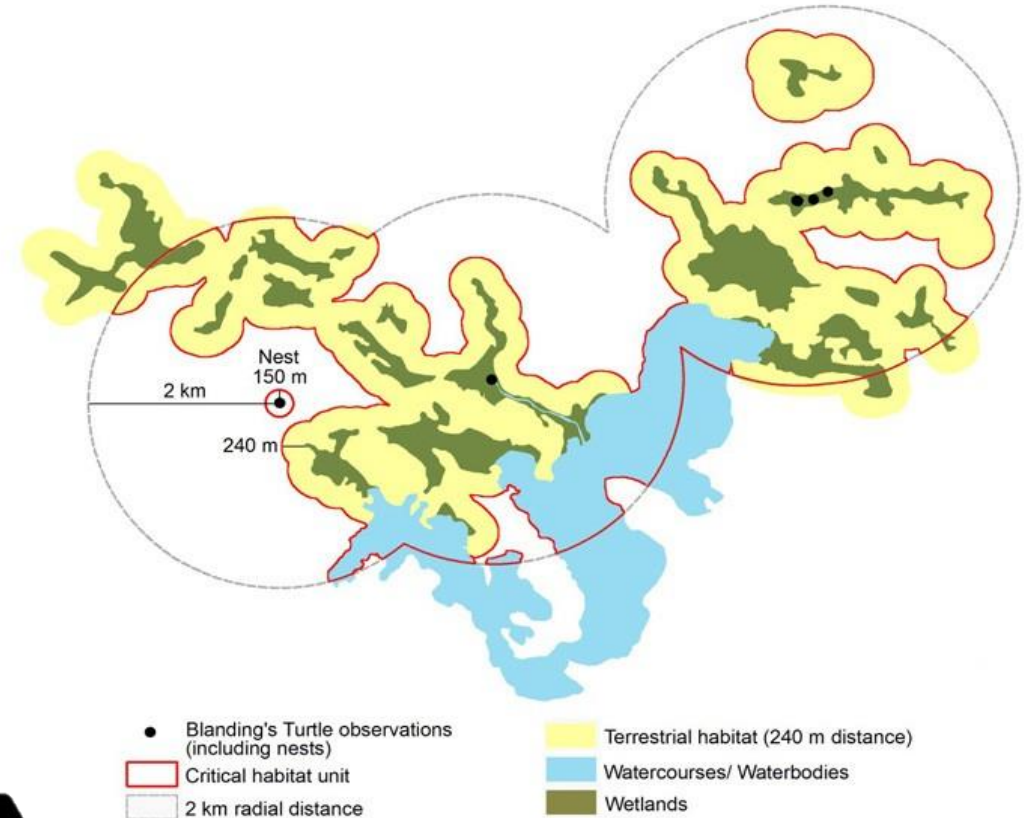
<sup>2</sup>Medical Sciences, Northern Ontario School of Medicine, [dboreham@nosm.ca](mailto:dboreham@nosm.ca), Sudbury ON P3E 2C6



# PROVINCIAL



# FEDERAL



# APPLY ENDANGERED SPECIES LEGISLATION TO ECOLOGICAL DATA TO INFORM DECISION- MAKING ABOUT RESOURCE EXTRACTION

- (1) COLLECT POPULATION DEMOGRAPHY DATA
- (2) COLLECT SPATIAL ECOLOGY DATA
- (3) DELINEATE CRITICAL HABITATS
- (4) DISCUSS THE CHALLENGES



## **POPULATION ECOLOGY**

MARK RECAPTURE  
POPULATION ESTIMATE  
DENSITY CALCULATION

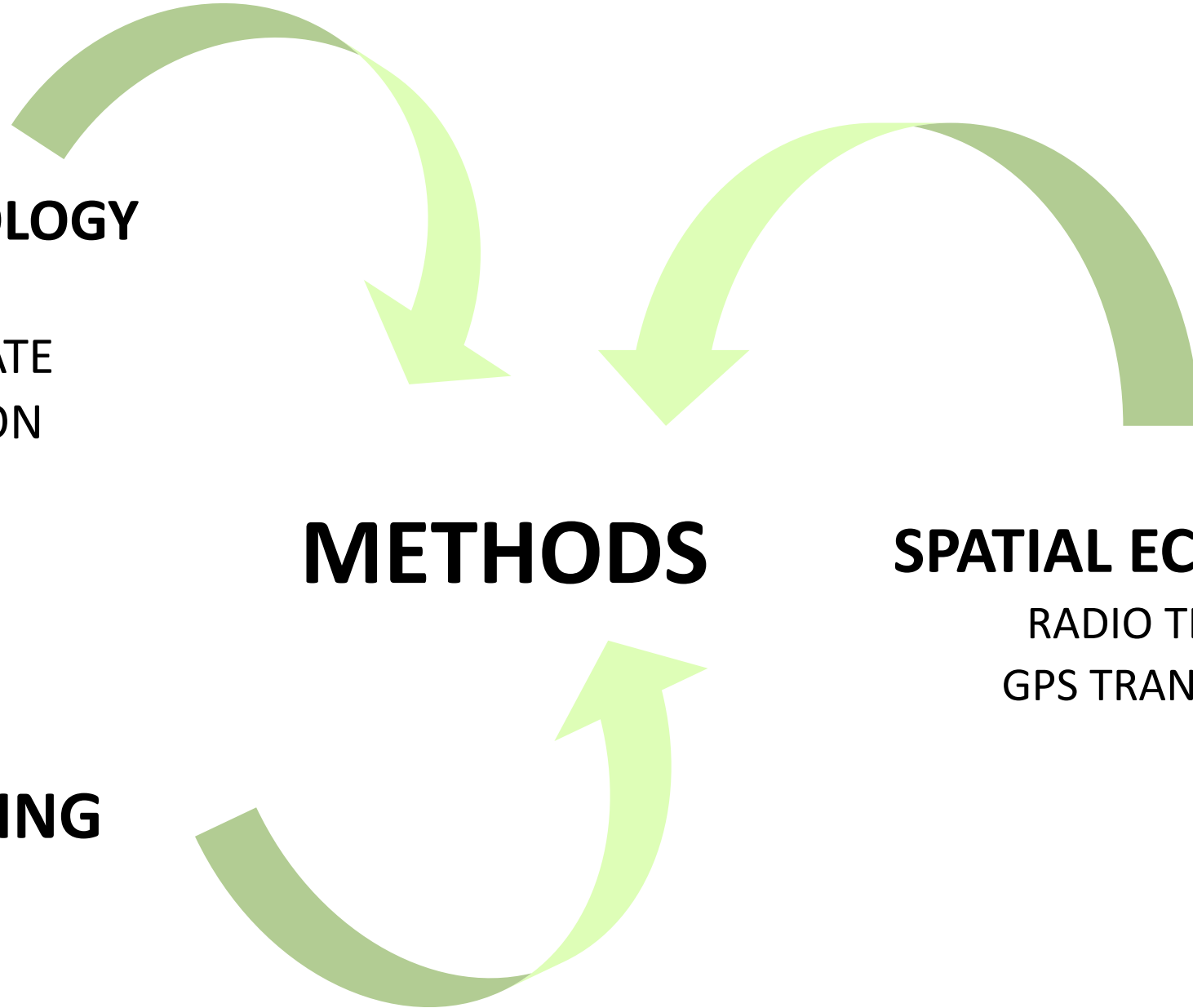
## **METHODS**

## **SPATIAL ECOLOGY**

RADIO TELEMETRY  
GPS TRANSMITTERS

## **HABITAT MAPPING**

FEDERAL MAP  
PROVINCIAL MAP



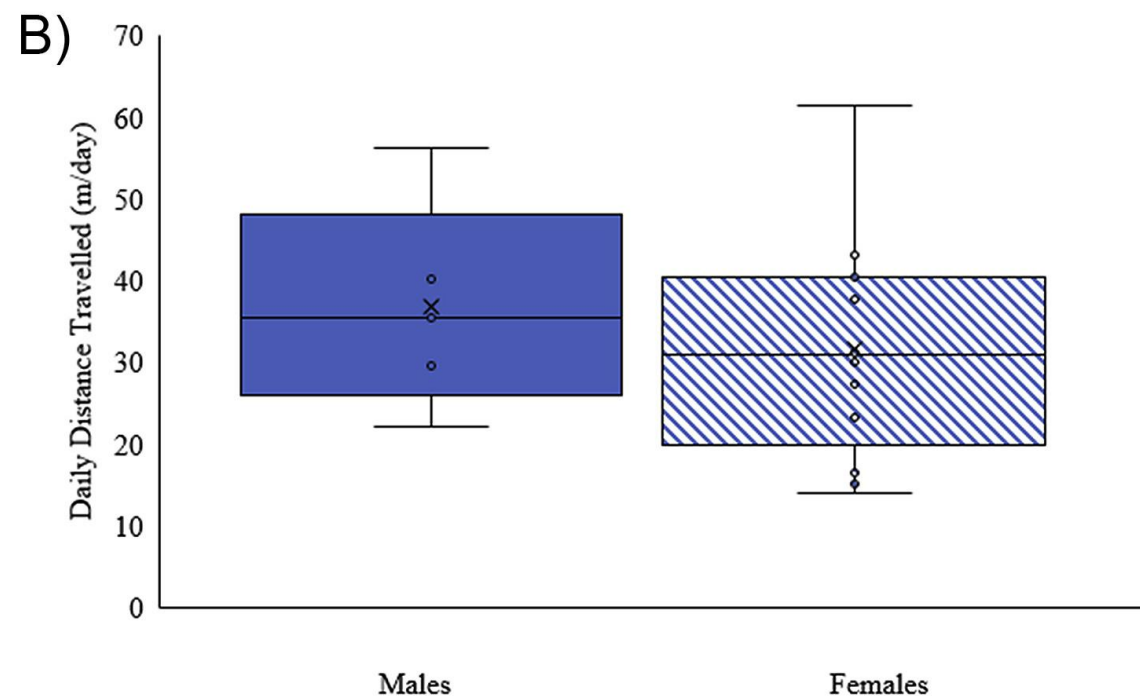
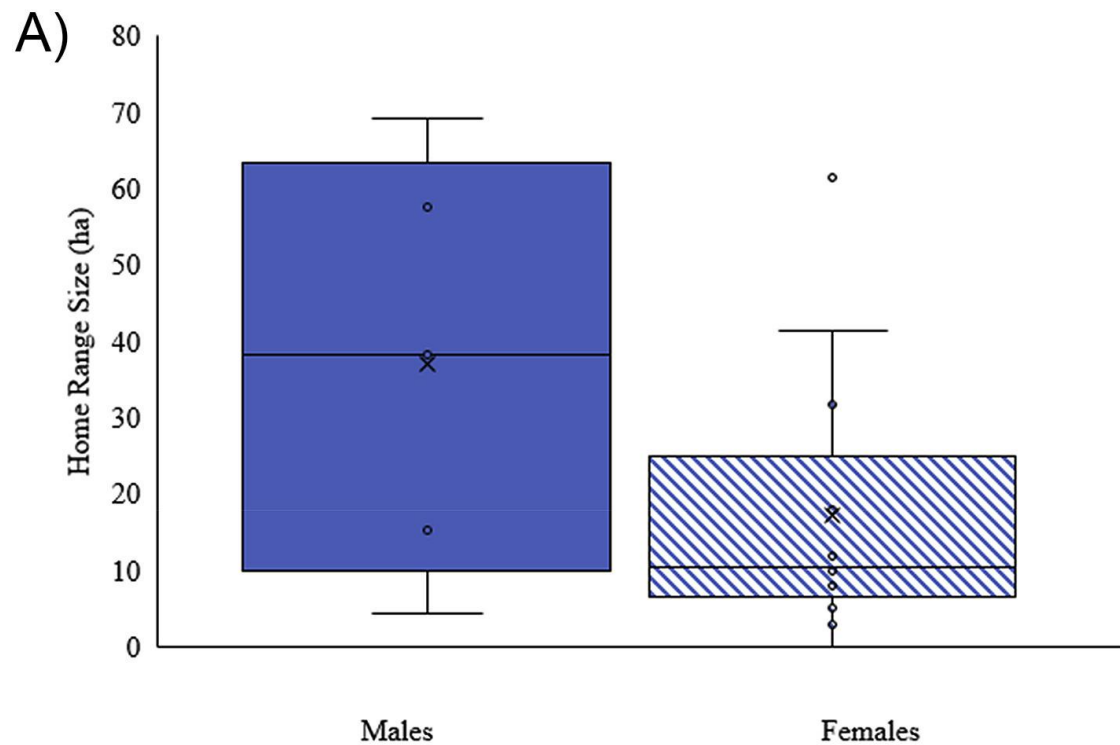






<b>Turtles Captured (Recaptures)</b>	<b>56 (31)</b>
<b>Population Size Estimate (Density)</b>	<b>79.6 ± 17.9 (1.84 turtles/ha)</b>
Body Mass (g)	
Males	1574.89 ± 143.51
Females	1432.68 ± 167.93
Midline Carapace Length (cm)	22.71 ± 0.80
Males	21.62 ± 0.61
Females	
Carapace Width (cm)	
Males	15.30 ± 0.53
Females	14.52 ± 0.60
Male: Female	26:28 (+ 1 Juvenile)





HRS AND DDMS WERE GENERALLY SMALLER THAN  
OTHER VALUES REPORTED IN THE LITERATURE



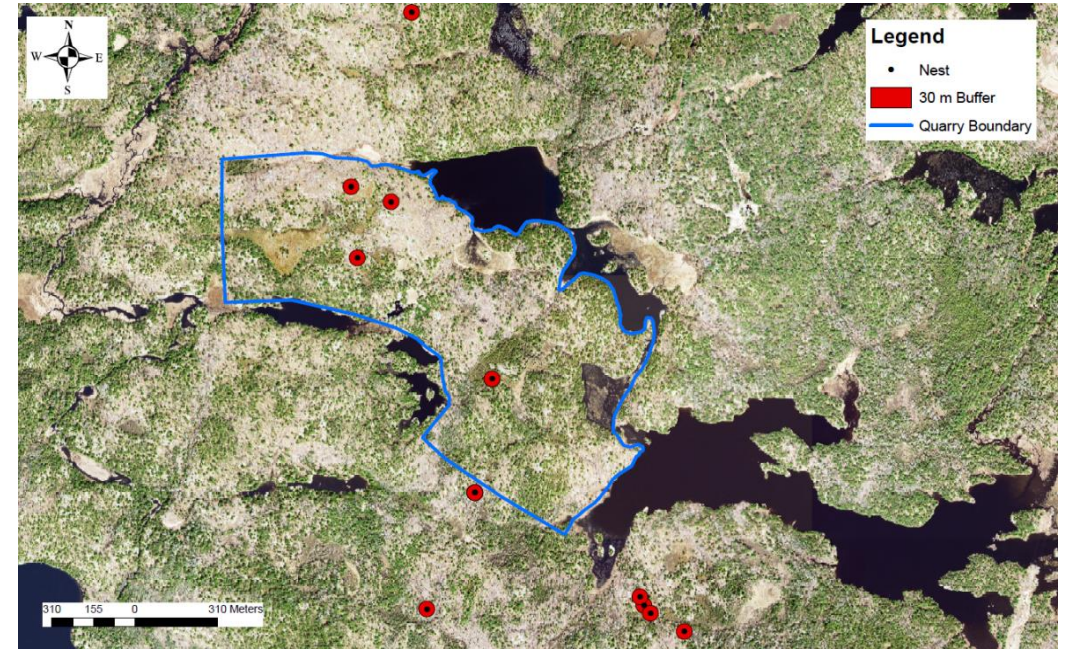
HIGH QUALITY HABITAT?



1 GRAVID FEMALE FOUND IN 2017  
(GPS LOGGER ATTACHED)

11 GRAVID FEMALES FOUND IN 2018  
(GPS LOGGERS ATTACHED)

TOTAL NESTS FOUND = 15



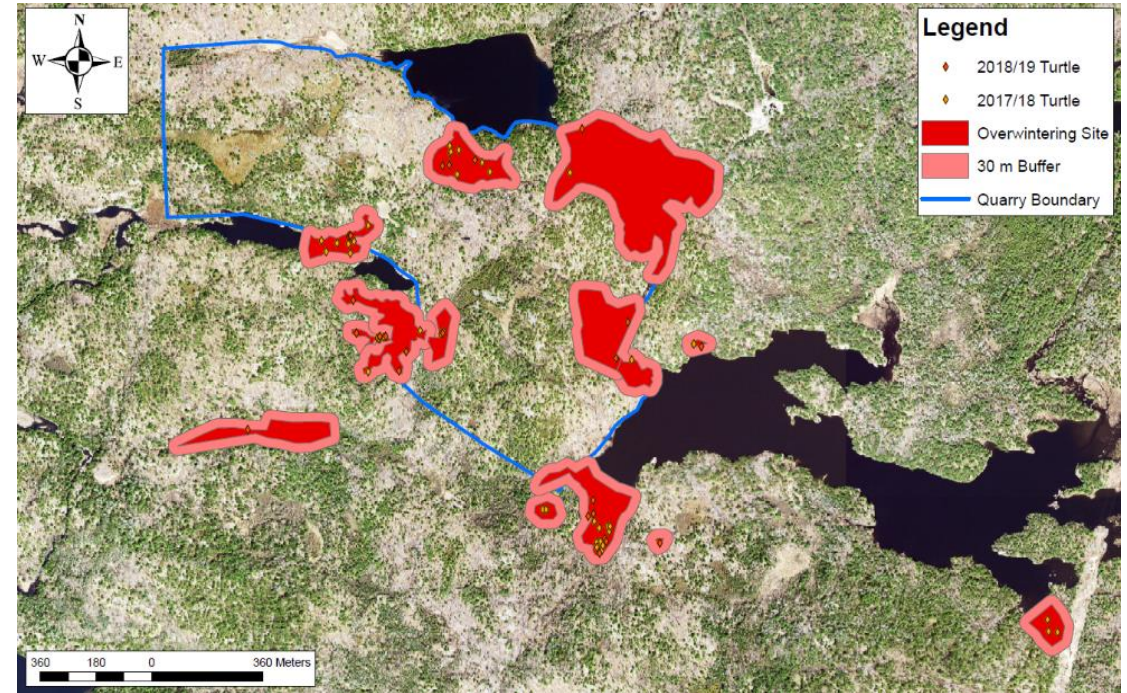


14 WETLANDS HOUSED  
OVERWINTERING TURTLES

39 IMPACT 2017/2018 WINTER  
30 IMPACT 2018/2019 WINTER

71% RETURNED TO THE SAME  
WETLANDS TO OVERWINTER

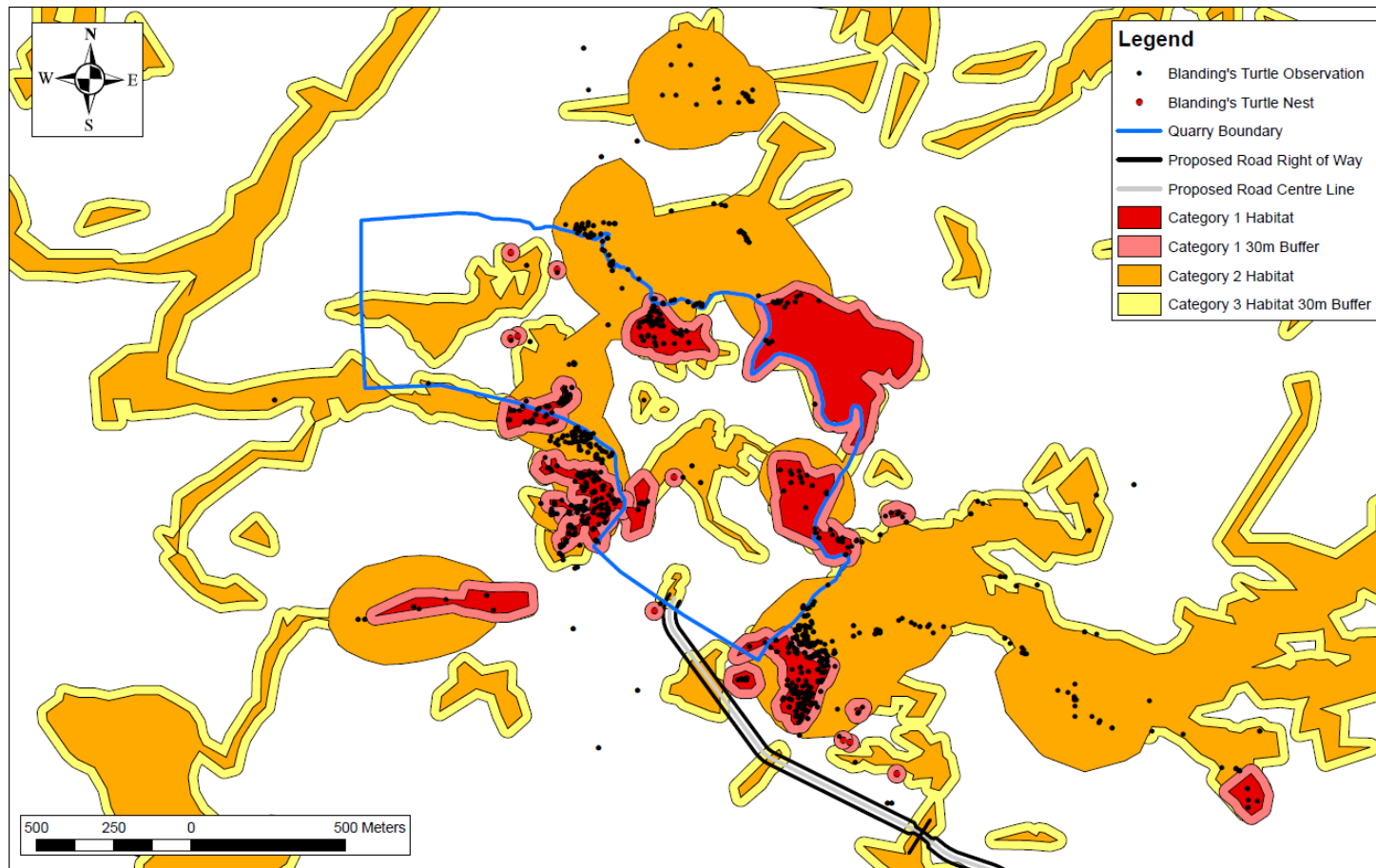
13% OVERWINTERED WHERE NO  
OTHER TURTLE WAS OBSERVED  
OVERWINTERING



# HABITAT CHARACTERIZATION (30 M) PROVINCIAL

## Habitat Categorization

1	Nest & Overwintering
2	Wetlands and Waterbodies
3	Terrestrial Buffer



TOTAL CATEGORIZED HABITAT =  
66.6HA (62.6%) OF THE 115HA

14.8HA (12.9%) CATEGORY 1  
HABITAT

26.2HA (22.8%) CATEGORY 2  
HABITAT

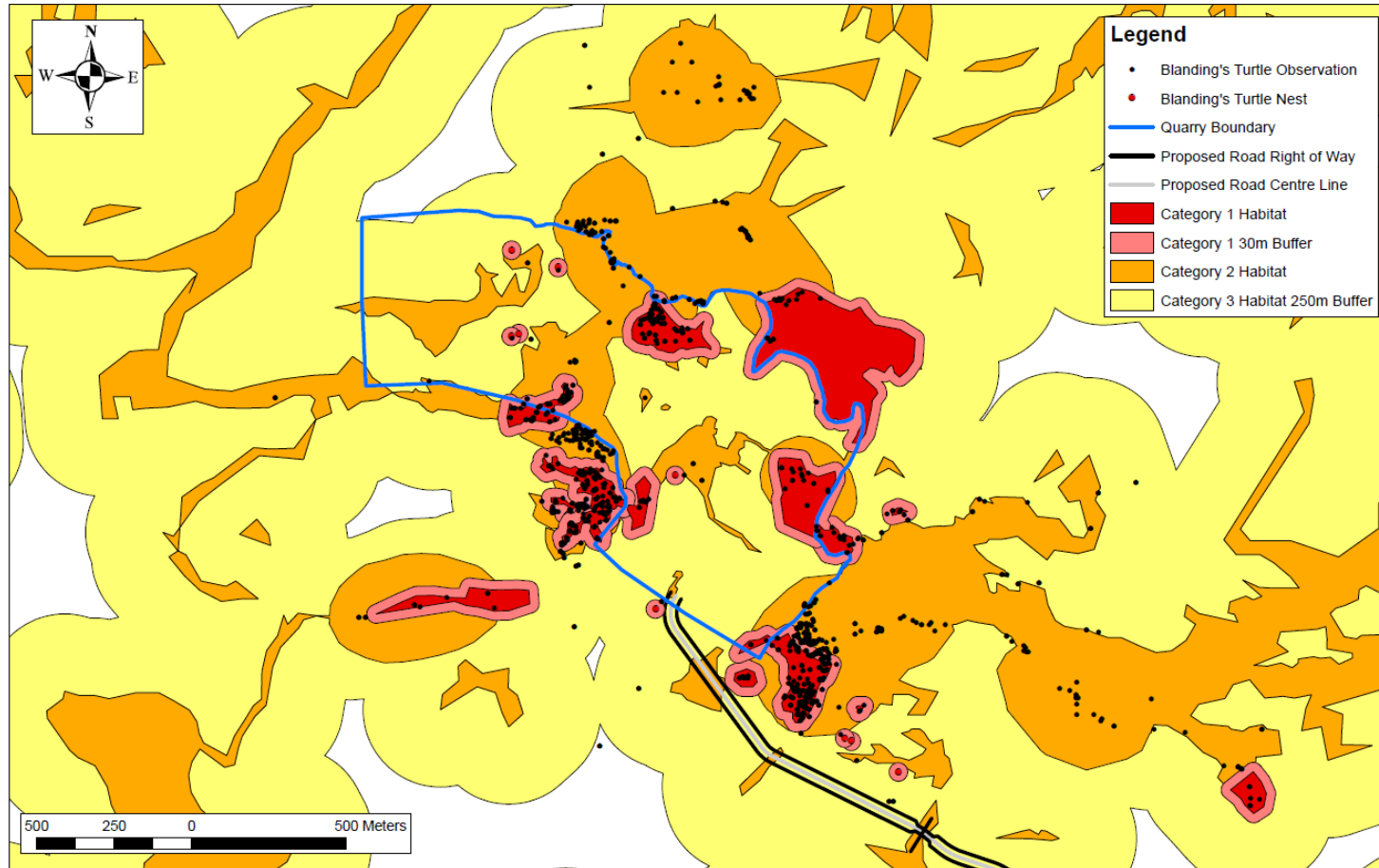
25.6HA (22.3%) CATEGORY 3  
HABITAT



# HABITAT CHARACTERIZATION (250 M) PROVINCIAL

## Habitat Categorization

1	Nest & Overwintering
2	Wetlands and Waterbodies
3	Terrestrial Buffer



TOTAL CATEGORIZED HABITAT=  
114.8HA (100%) OF 115HA

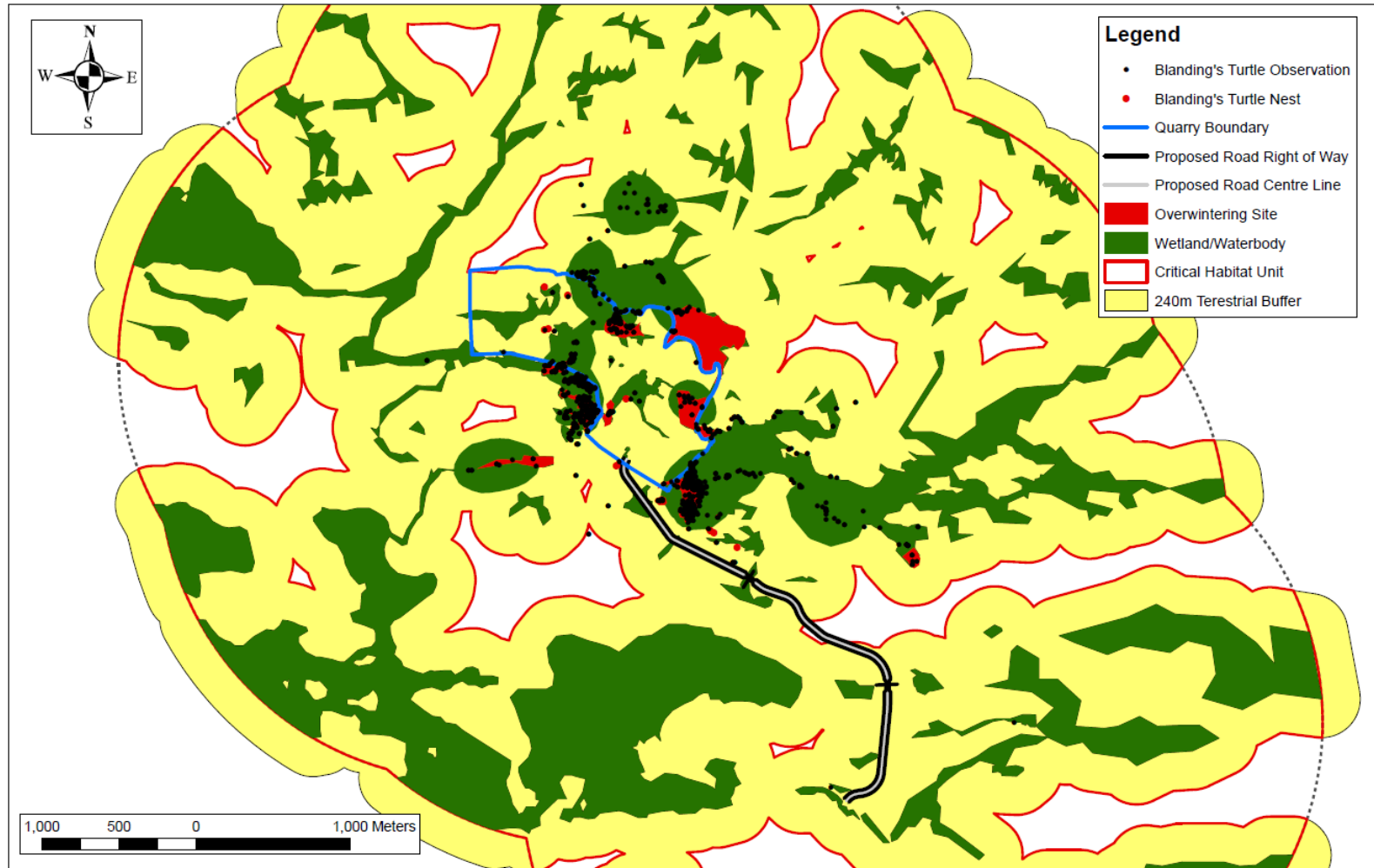
14.8HA (12.9%) CATEGORY 1  
HABITAT

26.2HA (22.8%) CATEGORY 2  
HABITAT

73.8HA (64.2%) CATEGORY 3  
HABITAT

# CRITICAL HABITAT (FEDERAL)

No Categories (All areas outlined in red are critical habitat!)



TOTAL CRITICAL HABITAT=  
113.9HA (99.9%) OF 115  
HA



OUR MAPPING RESULTS INDICATE THAT THE QUARRY PROPOSAL  
SHOULD BE **REJECTED** IF THE SPIRIT OF THE ENDANGERED SPECIES  
ACT AND SPECIES AT RISK ACT ARE UPHELD

UPON SEEING OUR PRELIMINARY DATA, THE QUARRY COMPANY AND THEIR CONSULTANT LAUNCHED A DEFAMING ATTACK ON OUR CAREERS BY WIDELY DISSEMINATING, IN WRITING, **ACCUSATIONS OF ACADEMIC MISCONDUCT, CONFLICT OF INTEREST, AND DATA FABRICATION.**

AFTER SEVERAL EXCHANGES BETWEEN LAWYERS, A LETTER OF APOLOGY AND RETRACTION OF THE ACCUSATIONS WAS RECEIVED FROM THE CONSULTANT (BUT NOT THE QUARRY COMPANY)



ADVOCATE FOR A DATA-DRIVEN EVIDENCE-BASED APPROACH

DELINEATING CRITICAL HABITAT IS ESSENTIAL FOR THE PROTECTION OF  
ANY SAR

ENFORCING LEGISLATION DURING DEVELOPMENT PROJECTS IS  
CRITICAL FOR THE CONSERVATION OF SAR





# Northern Ontario's turtle tussle pits scientists against quarry builders, with a threatened species caught in the middle

When ecologists found a haven for Blanding's turtles on a patch of Crown land, they waded into a conflict that is testing the Ford government's new policy on endangered species protection. Then things got really ugly.

IVAN SEMENIUK > SCIENCE REPORTER

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48 COMMENTS

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Original Research Article

# Endangered species protection and evidence-based decision-making: Case study of a quarry proposal in endangered turtle habitat



Gabriella M. Zagorski<sup>a</sup>, Douglas R. Boreham<sup>b</sup>, Jacqueline D. Litzgus<sup>a,\*</sup>

<sup>a</sup> Department of Biology, Laurentian University, 935 Ramsey Lake Road, Sudbury, Ontario, Canada

<sup>b</sup> Northern Ontario School of Medicine, 935 Ramsey Lake Road, Sudbury, Ontario, Canada

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Species at risk act (SARA)

### ABSTRACT

Surface mining practices can negatively impact turtles through degradation of wetlands and surrounding upland habitat, alteration of movement corridors, increased risk of nest and turtle predation, and direct mortality. These impacts, in turn, can cause changes in sex ratios and population demography, which may ultimately lead to population declines and extirpation. Using radio-telemetry, GPS data loggers, and capture-mark-recapture surveys over two field seasons, we described the demography of, and identified critical habitat for, a population of endangered Blanding's turtles (*Emydoidea blandingii*) inhabiting an area of interest for development of a trap rock quarry in Ontario, Canada. We captured 56 turtles and estimated population size to be  $80 \pm 18$  turtles, and density to be 1.84 turtles/ha, which is among the highest reported densities for the species. Daily distances moved and home range sizes were generally smaller than conspecific values reported in the literature, suggesting that habitat quality was high as turtles did not need to move much to acquire necessary resources. We identified 15 nesting sites and 12 wetlands that housed overwintering turtles, both considered by government to be critical habitats with lowest tolerance to destruction. We mapped our spatial data based on the application of legislated provincial and federal recovery guidelines, and the results indicate that the quarry proposal should be rejected if the spirit of the law is upheld given that at least 63% and at most

# THANK YOU!



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